Mutual Fund Exit and Mutual Fund Fees

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Abstract

We examine the effect of mutual fund fee structure on mutual fund exit mode and timing. The evidence presented herein is consistent with fee maximization by mutual fund sponsors or managers, increased conflicts of interest for funds charging 12b-1 fees and higher management fees, and a pecking order for mutual fund exit method. Specifically, mutual fund exits that result in decreased fee income are delayed relative to exits that do not and exit strategies that retain fee income are more likely than strategies that do not.

1. Introduction

Analysis of mutual fund exit depends, at least in part, on how exit is defined. For our purposes, a mutual fund exits or fails if shareholders' shares are transformed into shares in another mutual fund or into cash through any mechanism besides voluntary shareholder redemption. A mutual fund does not fail solely because it has poor returns; it fails because the fund manager or sponsor is removed by a vote of the board or because the manager or sponsor no longer wishes to manage it for the compensation received. Mutual fund boards, acting in a fiduciary manner, may relieve fund managers or sponsors because the performance of the fund does not justify the fees that shareholders incur (involuntary removal). Alternatively, since the revenue of a mutual fund investment company is inherently a variable revenue (calculated as a percentage of assets under management) and fund sponsorship a voluntary activity, classical economics suggests that mutual fund managers or sponsors will give up managing a mutual fund when the fixed costs of operating it exceed the benefits from fee

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income, including the opportunity cost of diverting limited resources away from running other funds (voluntary exit).[1]

The two primary types of managerial mutual fund exit are typically referred to as merger and liquidation in the existing literature (Zhao 2005; Jayaraman, Khorana, and Nelling 2002; Khorana, Tufano, and Wedge 2007). Mutual funds are referred to as merging when the assets of one fund are commingled with the assets of another fund under either the existing investment management company or sponsor (within-family merger) or a different investment management company or sponsor (between-family merger). A fund is referred to as having been liquidated when the fund ceases to exist and the value of the shares is involuntarily redeemed back to the shareholders. This paper focuses on the characteristics of the fund that are related to how and, more important, when an investment company stops managing a specific mutual fund through merger or liquidation.

We investigate the effect that management fees and 12b-1 fees have on observed mutual fund exit method and timing by using the traditional multinomial logit analysis and provide a unique contribution by analyzing the timing of exit using survival analysis. Differing from the previous literature, this paper notes that these fees represent revenue (cost avoidance) to the sponsor or manager of the fund.[2] If managers or sponsors influence exit method and timing, they will prefer methods that retain fee income (within-family merger) over methods that do not (between-family merger and liquidation) and, conditional upon choosing to exit the fund, will exit later for high-fee funds than for low-fee funds, holding fund performance constant. Holding performance constant and conditioning upon ultimate fund exit, boards or managers fulfilling a fiduciary duty will choose to fail high-fee funds rather than low-fee funds and to do so earlier.

In brief, we find that higher management fees are associated with a lower likelihood of a fund exit method that results in the loss of such fees (liquidation or between-family merger) and a higher likelihood of a fund exit method that results in fee retention (within-family merger). We further find that the liquid-

[1] This type of mutual fund exit is in stark contrast to the case in which a mutual fund is not meeting shareholders' goals, the board is unresponsive, and the shareholders exit the fund individually by redeeming the shares—in essence, voting with their feet. The two may, of course, be related. The issue of board composition and whether boards fulfill their fiduciary duty by inducing involuntary exit when appropriate is beyond the scope of this paper. By observation, the exits we examine have occurred and must, therefore, have had board approval when such approval was necessary. Boards cannot compel managers to stay but can force them to exit. Anecdotal evidence suggests that publicly observable involuntary exit is a relatively rare occurrence. Renberg (1991, p. M13) notes that fund "directors have seldom booted an investment adviser, no matter how lousy a fund's performance." By contrast, Khorana (1996) finds that open-end mutual fund managerial turnover is negatively related to fund performance.

[2] Part of the expense ratio represents costs incurred to run the fund as billed by fund management to fund shareholders. The actual costs of running the fund are not generally observable. An additional potential conflict of interest beyond that inherent in the compensation arrangement arises when the services rendered are provided by the entity billing for them, as is frequently the case with mutual funds.

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ation or between-family merger of high-fee funds is delayed relative to that of low-fee funds and that the within-family merger of such funds is accelerated. By delaying the liquidation or between-family merger of high-management-fee funds, managers and sponsors potentially realize more fee income in what ultimately is a fund that is failed. The evidence on choice of exit method is consistent with rational managerial fee-seeking behavior or shareholder wealth maximization (cost minimization) behavior, but the timing evidence is, by contrast, consistent with a fee-maximization motive with regard to management fee income for those funds that are ultimately failed.

We do not investigate potential beneficial effects associated with differing fee structures or differing classes of multiple-share-class funds (which typically have differing fee structures) in the aggregate but focus instead on the relationship between such fees and fund failure. Further, the evidence we find does not preclude potential benefits to shareholders arising from a menu of fee alternatives but does suggest that, conditional upon ultimate fund exit, shareholders investing in high-fee funds are likely to see delayed exit and exit methods that retain fee income for the managers and sponsors over a longer period of time.

Like a large body of existing literature reviewed here, this paper also finds that 12b-1 fees further exacerbate the conflict of interest inherent in the mutual fund fee structure. Fund managers that charge a 12b-1 fee are more likely to merge (between families or within a family) and less likely to liquidate the fund. As regards the timing of mutual fund exits, we find that it is also related to the presence and level of 12b-1 fees. Specifically, managers liquidate mutual funds with 12b-1 fees later than funds without 12b-1 fees.[3] Mutual fund managers merge 12b-1 fee funds more quickly, both within and between family, evidence consistent with actively seeking to retain or acquire expense alleviation through 12b-1 fees. Taken together, our results suggest that 12b-1 fees are also associated with a greater likelihood of fund exit and a delay in merging a fund. This evidence is consistent with the argument of opponents of 12b-1 fees who believe that they exacerbate the potential for a conflict of interest in fund management.

The paper proceeds as follows: Section 2 details prior research on fund exit, the impact of 12b-1 fees, and mutual fund investors' understanding of fund fees. Section 3 describes the data and sample characteristics, Section 4 presents the multinomial logit estimations and survival analysis, and Section 5 summarizes our findings.

[3] This delay is also consistent with fund managers' delaying exit to maintain an out-of-house distribution channel that directly receives income in the form of a share of the 12b-1 fees. To the extent that investment companies avoid in-house expenses by using out-of-house distribution channels, avoidance of supply chain expense implies the same motivations as fee revenue generation and in-house cost avoidance through pass-through expenses. Our results hold for funds that maintain the distribution channel through other 12b-1 fee funds (available upon request).

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2. Background

2.1. Mutual Fund Exit

Mutual fund exits have been viewed in finance primarily as an extension of the corporate finance literature or the industrial organization literature (see Jayaraman, Khorana, and Nelling [2002] and Zhao [2005], respectively). In these views, mutual fund mergers occur when the mutual fund manager is not meeting the performance goals of shareholders, and the board, representing those shareholders, makes decisions that lead to the dissolution of the fund or the combination of the fund with another fund either under the same manager or a new manager. Accordingly, most of the likelihood hypotheses offered for the different methods center around the performance of the mutual fund as reflected in expense ratios (higher expense ratios mean poorer performance) in absolute or relative form or the reputation and reporting effect of fund returns on management (lower returns mean poorer reported performance).[4] In short, the existing literature concludes that funds will be merged or liquidated when their expenses are high or their returns are low (Jayaraman, Khorana, and Nelling 2002; Khorana, Tufano, and Wedge 2007; Zhao 2005). In this body of research, mutual fund shareholders, through the board, are the decision-making entities with respect to mutual fund exits.[5] Both of these arguments raise the question, if shareholders are unhappy with fund performance, why do they not simply redeem their shares?[6]

We approach the decision-making process from a related view but one that permits managers a role in choosing the method and timing of exit. If the decision-making entity is the fund manager or sponsor in addition to the shareholders or a fiduciary board, it is not only fund performance and fiduciary duty that affect the decision to exit the fund but fund management expenses relative to fund fees as a basic business decision. Unfortunately, actual mutual fund administrative costs are generally unobservable (Freeman and Brown 2001). A primary contribution of this paper is the examination of the impact of the level

[4] Divestiture to avoid having to report a poorly performing fund and harm the fund manager's reputation is often given as a reason for liquidation or for between-family merger when discussing the effect of returns on the probability of exit where a managerial motive is clearly established. It is not clear, however, why a fund manager would transfer a fund to another fund manager instead of liquidating it, or why another fund manager would agree to accept the poorly performing fund. The answer is fee income. To the manager transferring the fund, this represents an opportunity to make money by selling the advisory seat; to the manager accepting the fund, this represents potential future income from an increase in assets under management without a necessary increase in the expense ratio.

[5] Jayaraman, Khorana, and Nelling (2002) and Zhao (2005) take into account the effect of managerial influence or alternative fund characteristics on the merger or liquidation decision to some degree, but clearly the decision-making focus is on the shareholders or their board, although differing board characteristics are not examined. Neither study attempts to address directly whether boards are fulfilling their fiduciary duties in the liquidation or merger decision.

[6] There is a large behavioral finance literature that relies on cognitive dissonance to explain why shareholders would continue to hold a poorly performing fund.

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of management and marketing fees actually charged, instead of the overall expense ratio, on the exit decision. By using these fees, we are able to more directly test the impact of managerial compensation, marketing expenses, and pass-through expenses on exit decisions and the potential role of the manager or sponsor in the choice of method and timing.

The level of management fees charged represents an expense for mutual fund shareholders but represents revenue for the mutual fund sponsor. Any distribution expenses retained out of the 12b-1 fees charged also represent direct cost alleviation of internal expenses for retained 12b-1 fees or avoided commissions and fees as regards the external distribution channel.[7] Wealth-maximizing fund managers or sponsors as decision makers will prefer exit forms that maximize their revenues and minimize their unobservable costs, ceteris paribus. Extending prior research, we derive testable implications for the choice of mutual fund exit mode and timing that admit as possible the view of mutual fund control promulgated in the legal literature, as detailed in Freeman and Brown (2001, p. 615): "The external manager typically controls all facets of fund life, from the fund's incorporation through the selection of the initial board. This control tends not to be relinquished over time, or at least until the advisory office is subsequently sold to another external adviser, typically at a very nice profit."

This is the position taken not only by legal scholars but also by at least one Securities and Exchange (SEC) commissioner (Manuel Cohen), the Second Circuit Court (*Gartenberg v. Merrill Lynch Asset Management,* 694 F.2d 923 [2d Cir. 1982]), and Tufano and Sevick (1997). In this view, mutual fund sponsors maximize their own wealth, subject to any constraints from competitive markets[8] and regulators, and choose exit forms and timing that are consistent with that maximization.

There is an alternative literature on the role of boards in mutual fund fee setting, managerial turnover, and fund performance. Tufano and Sevick (1997) find, in contrast to the above view, that open-end funds whose boards have a larger proportion of outside directors have lower fees. Rowe and Davidson (2000) find that closed-end funds have positive-abnormal returns following the replacement of a poorly performing manager but that this is unrelated to board composition and structure or the level of insider ownership. Ding and Wermers (2005) find that having a higher proportion of independent directors is associated

[7] Currently, Financial Industry Regulating Authority (FINRA) rules prohibit 12b-1 fee funds from using more than 75 basis points of the fee to compensate external brokers for marketing and distribution expenses. Shareholder service fees, which may be included in 12b-1 fees, are paid to parties, including selling brokers, that respond to inquiries by shareholders or potential shareholders and cannot exceed 25 basis points, according to FINRA rules.

[8] Mutual fund industry proponents generally contend that the very large number of competitors is a clear indication of rampant competition, although economically having a large number of competitors is not a necessary or sufficient condition to conclude that a market is fully competitive. Industry critics contend that the persistence of high and increasing expense ratios, even with an increasing number of participants, is an indicator of a lack of competitiveness, a conclusion supported by General Accounting Office (2000) and Securities and Exchange Commission (1966).

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with a higher likelihood of replacing an underperforming manager. Adams, Mansi, and Nishikawa (2009) find that managers of funds with large boards are less likely to be replaced than those of funds with small boards. Meschke (2007) finds that fund performance is unrelated to board independence but that having an independent board chair is associated with lower aggregate expenses and higher management fees. Khorana, Tufano, and Wedge (2007) find that across-family mergers benefit shareholders and are associated with a larger percentage of independent trustees but that the effect is strongest when 100 percent of the board is independent. From these observations and the following information on 12b-1 fees, we derive the pecking-order hypothesis in Section 2.3.

2.2. The Role of 12b-1 Fees

In 1980, the SEC relaxed a long-standing ruling that prohibited fund managers from using the assets of the fund to pay for fund distribution expenses. It had long been believed that such fees, now known as Rule 12b-1 fees, exacerbated the conflict of interest created by the nature of external fund management. Subsequently, a large body of academic inquiry has concluded that 12b-1 fees are a deadweight cost to shareholders (Ferris and Chance 1987; McLeod and Malhotra 1994; Livingston and O'Neal 1998), and perhaps more than a deadweight cost (Dukes, English, and Davis 2006).[9] We do not focus on 12b-1 fees as a deadweight cost but rather on their impact on mutual fund exit method and timing.

The effect of 12b-1 fees on the fee structure and cost alleviation, and therefore on the probability and timing of mutual fund exit, is important for several reasons. First, research shows that such fees are rarely understood by fund shareholders (Jones and Smythe 2002; Jain and Wu 2002; Capon, Fitzsimmons, and Prince 1996) and may represent a way for fund managers to hide a source of revenue. This is also believed to be the case by some regulators, as evidenced by the comments of Andrew Donohue, director of the SEC's Division of Investment Management, who stated, "Many investors do not understand rule 12b-1, the services that 12b-1 fees pay for, or even the fact that 12b-1 fees are being deducted from their fund investments" (Donohue 2008). If shareholders do not understand such fees, managers may be able to substitute 12b-1 fees for management fees without experiencing the same potential negative perception associated with higher management fees. In other words, the elasticity of substitution between 12b-1 fees and management fees may not be perfect. Second, following Dukes, English, and Davis (2006), we find that the presence of a 12b-1 fee may be indicative of other above-average charges by the fund manager. Finally, a primary goal of the SEC in the decision to allow 12b-1 fees was to increase the probability of survival for mutual funds with such fees (Freeman 1978). We provide a unique contribution to the literature on mutual fund exits by examining the actual level

[9] Freeman (1978) provides an excellent review of the legal proceedings leading up to the permissibility of 12b-1 fees.

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of 12b-1 fees charged (as opposed to the maximum) by separating out the effect of 12b-1 fees from management fees and by examining their impact on the timing of mutual fund exit and the choice of exit method.

2.3. Proposed Model of Mutual Fund Exit

We propose a pecking order of mutual fund exit. According to the pecking order, we propose that the manager employs the following decision process: Determine whether the fund's variable revenue exceeds its portion of the fixed costs and the opportunity cost of not employing the resources elsewhere.[10] If it does, continue managing the fund. If the excess is high enough, the fund will continue to stand alone (survive). If it does not, determine whether the advisory seat can be sold for an amount in excess of any cost associated with the effort and time to sell it and in excess of the reputation effects from selling it. Then compare this amount to the value of merging the potentially exiting fund with another fund in the same family, including any reputation costs of reporting combined fund performance, accounting costs, reduction in fund-specific fixed costs, and so on. If a within-family merger provides the necessary decrease in fixed costs while retaining revenue, and any potential sale price results in a lower net benefit to fund managers, merge the fund within the family subject to board approval. If the sale price, which generally cannot be observed, is greater than the present value of the lost revenue net of costs, sell the fund subject to board approval to do so. If the board will not approve the within-family or between-family merger or if no buyer is available, abandon the fund (an action for which the manager or sponsor does not need board approval). The board may then seek an external manager or liquidate the fund. Because the sale price and fund manager's costs are generally not observable, direct tests comparing the two cannot be conducted. The best feasible alternative is to conduct tests on the relative probability and timing of the different exit strategies to determine whether those effects are consistent with the proposed model.

In liquidation, the fund manager or sponsor receives nothing but potential reputation effects. There is a potential for negative reputation effects from abandonment and positive effects from removal of a poor performer according to reported performance. Any family-wide fixed costs remain, although variable costs and any fund-specific fixed costs are eliminated. In a between-family merger (more properly termed a sale in this view), the selling fund adviser or sponsor

[10] Fund managers consulted during the early phases of this project presented a number of motivations for shutting down a fund, but all were inherently based on the relationship between the revenue garnered from running the fund and the costs associated with running it, including the opportunity cost of the fund manager's time. Various versions of statements such as "we run the fund until we know whether or not it will make money" were commonplace. The evidence regarding fee waivers presented in Christoffersen (2001) is consistent with this view. Since we are using the actual level of fees charged, waivers are incorporated into our analysis. The mutual fund incubation process, as detailed in Evans (2010), typically relies on taking privately managed unregistered pools, frequently seeded by the sponsor, and creating publicly managed mutual funds out of the top performers.

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receives the sale price for the advisory seat net of any legal costs, any remaining flows from service arrangements with the new fund sponsor, and the net reputation costs or benefits associated with removing a low-surplus fund. The purchasing fund manager, by contrast, gains the fee income associated with the new fund but takes on the task of improving fund performance and the costs associated with the purchase (sale price, integration costs, fixed and variable operating costs). In a within-family merger (business combination), the fund manager retains the fee income, gains any economies of scale through reduced fund-specific fixed costs, potentially lowers reputation costs by reducing publicity about negative performance, and reduces any costs from perceived abandonment by abandoning a poorly performing strategy but not abandoning the shareholders.

For both the method and timing of fund exit, mutual fund characteristics fall into two categories: (1) those that create alternatives to exiting (number of portfolios at the family and objective levels, number of classes at the portfolio level) through a potential agglomeration and reduction of mutual fund operating costs and (2) those that represent the future benefits of fund management and therefore mitigate the incentive to exit for the fund sponsor (better performance, higher inflow, more classes, higher management fees, adoption or existence of 12b-1 fees). These are the same characteristics that make the portfolio potentially more attractive to an acquirer. Tables 1 and 2 summarize our hypotheses regarding these variables with a focus on the effect of the management fees and the 12b-1 fee on the timing and method of fund exit, and they present the hypothesized and estimated effects detailed in Zhao (2005) and Jayaraman, Khorana, and Nelling (2002).

We hypothesize that the variables representing cost-reducing alternatives to exiting will have positive logit coefficient estimates (increased probability) for within-family mergers and negative logit coefficient estimates (decreased probability) for between-family mergers and liquidations. Likewise, the variables that represent higher potential revenues to existing fund managers or sponsors are hypothesized to have positive logit coefficient estimates for within-family mergers and negative logit coefficient estimates for liquidations. Exit method represents only part of the exit decision; exit timing represents the other. We hypothesize that factors that increase the exit alternatives will result in earlier timing (shorter life spans, higher hazard, positive hazard coefficient estimates) for within-family mergers and later timing (longer lives, lower hazard, negative hazard coefficient estimates) for between-family mergers and liquidations. Factors that represent higher potential revenues should be associated with later exit for within-family mergers and liquidations (lower hazard, negative coefficient estimates) if managers or sponsors are the effective decision-making entities and earlier exit (higher hazard, positive coefficient estimates) if fiduciary boards or shareholders are the primary decision-making entities.

When a fund is liquidated, both the variable costs and revenues from managing the fund are eliminated. We hypothesize that the loss of fund revenue results in

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Table 1

Summary of Existing Hypotheses and Evidence: Probability of Within-Family and Between-Family Mergers

	Zhao (2005)		Jayaraman, Khorana, and Nelling (2002)		This Study	
Variable	Hypothesized	Found	Hypothesized	Found	Hypothesized Probability	Hypothesized Hazard
Within-family merger:						
Family level:						
Portfolios	+		N.A.		+	+
Inflow	–		N.A.		–	–
Performance	?		N.A.		?	–
Objective level:						
Portfolios	–		+	+	?	+
Inflow	–		?		–	–
Performance	–		N.A.		–	
Portfolio level:						
Size	–		–	–	–	–
Inflow	–		N.A.		–	–
Age	+		N.A.		–	–
Performance	–		–	–	–	–
Classes	+		N.A.		+	+
Expense ratio:	+		+	+		
Pass-through expense	N.A.	N.A.	N.A.	N.A.	+	–
Management fee	N.A.	N.A.	N.A.	N.A.	+	–
12b-1 Fee	N.A.	N.A.	N.A.	N.A.	+	–
Between-family merger:						
Family level:						
Portfolios	+	+	N.A.		–	–
Inflow	–	–	N.A.		–	–
Performance	?		N.A.		–	–
Objective level:						
Portfolios	–		–	–	–	–
Inflow	–		?		–	–
Performance	–		N.A.		–	–
Portfolio level:						
Size	–	–	–	–	–	?
Inflow	–	–	N.A.		–	–
Age	+		N.A.		–	–
Performance	–		?		–	–
Classes	+		N.A.		–	–
Expense ratio:	+		+			
Pass-through expense	N.A.	N.A.	N.A.	N.A.	+/?	?
Management fee	N.A.	N.A.	N.A.	N.A.	+/?	–
12b-1 Fee	N.A.	N.A.	N.A.	N.A.	+/?	?

Note. A question mark indicates a hypothesized indeterminate effect. Coefficient estimates for timing are the estimated effect on the hazard of the event for each characteristic. A negative coefficient estimate indicates decreased hazard at any given point in time, which is interpreted as delayed timing of the exit.

a decreased probability of liquidation for the funds with high management fees and high 12b-1 fees and later timing for the same if managers or sponsors are the primary decision-making entities. This is in contrast to the hypothesis and findings of Zhao (2005) with respect to expense ratios in the aggregate.

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Table 2
Summary of Existing Hypotheses and Evidence: Probability of Liquidation

	Zhao (2005)		This Study	
Variable	Hypothesized	Found	Hypothesized Probability	Hypothesized Hazard
Family level:				
Portfolios	+	+	−	−
Inflow	−		−	−
Performance	+		−	−
Objective level:				
Portfolios	?		−	−
Inflow	−		−	−
Performance	−		−	−
Portfolio level:				
Size	−	−	−	−
Inflow	−	−	−	−
Age	−	−	−	−
Performance	−	−	−	−
Classes	−		−	−
Expense ratio:	+	+		
Pass-through expense	N.A.	N.A.	−	−
Management fee	N.A.	N.A.	−	−
12b-1 Fee	N.A.	N.A.	−	−

Note. A question mark indicates a hypothesized indeterminate effect. Coefficient estimates for timing are the estimated effect on the hazard of the event for each characteristic. A negative coefficient estimate indicates decreased hazard at any given point in time, which is interpreted as delayed timing of the exit.

3. Data

We employ quarterly data from the Center for Research in Security Prices (CRSP) Survivor-Bias-Free Mutual Fund Database for 1999–2007. The data include the actual level of fees charged as management fees and 12b-1 fees after 1998, in contrast to the previously available CRSP mutual fund data, which included only the stated maximums and the actual expense ratios. The sample we derive from this database has an average size of approximately 16,000 observations per year if we consider each class of a multiple-share-class fund as a separate fund and approximately 7,000 funds per year if we consider only unique asset compositions (portfolios). The database uniquely identifies the underlying portfolio for part of the sample and represents another incremental contribution of our analysis.[11] Objective classification follows the Lipper objective-code investment classifications in the CRSP mutual fund database guide, and we employ

[11] Authors of prior research (for example, Zhao 2005) did not have access to a unique portfolio identifier and so used fund name, net asset value, return, and turnover ratio to determine the number of unique portfolios. Since the matches are not always exact, this process introduces the potential for additional measurement error into the estimations, particularly those that include family and portfolio effects. For the early years (1999–2002), when the Center for Research in Security Prices (CRSP) unique portfolio identifier is not available, we follow Zhao (2005). For the later years (2003–7), we use the unique identifier.

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modifications as in Zhao (2005) and Jayaraman, Khorana, and Nelling (2002) to create a small-company growth fund objective.

We measure the performance of the fund as in Zhao (2005), wherein portfolio performance is the asset-weighted average of the portfolio holding-period returns; objective performance is the asset-weighted average of the portfolio holding-period returns within an objective, excluding the portfolio for which this variable is calculated; and family performance is the asset-weighted average of the objective-adjusted portfolio returns within the family, excluding the portfolio for which this variable is calculated. The single-factor alpha value is measured using the capital asset pricing model for equity portfolios and the single-factor model employed in Jayaraman, Khorana, and Nelling (2002) for bond portfolios. Multifactor alpha values are computed using the Fama and French (1993) three-factor model for equity portfolios and a four-factor model from the Jayaraman, Khorana, and Nelling (2002) methodology for bond portfolios. Management fees are measured as the actual level of management fees to net assets as reported by the fund at the share class level. The 12b-1 fee is measured as the level of 12b-1 fee reported by the fund at the share class level. Pass-through fees are measured as the expense ratio minus the management and 12b-1 fees at the share class level. Size is measured as the total net asset value of the fund in the summary statistics and as the natural logarithm of total net asset value in the multinomial logit and survival estimations. Inflow is measured as the total net flow of redemptions and initiations as reported at the share class level divided by total net asset value (asset growth rate net of portfolio return). Portfolio age is the length of time the portfolio has been in existence, in quarters. Classes indicate the number of unique share classes in the portfolio.

Table 3 contains summary statistics for our sample segmented along different fund types, Table 4 contains tests of difference in median for the summary statistics segmented by exit mode, and Table 5 segments the sample by year across the sample period. The reported medians are for the entire aggregate sample period, 1999–2007.

As expected, surviving portfolios are larger than nonsurviving portfolios and, in general, older (see Table 3 for medians and Table 4 for differences). Consistent with the pecking-order hypothesis of fund exit, funds that are merged between families are older than surviving funds and older than funds that are merged within a family. Liquidated funds are younger than both surviving funds and merged funds. Managers, sponsors, and boards decide early whether to liquidate and then progress to choosing between merging within the family or selling the fund (a between-family merger). It presumably takes time to identify a buyer and agree to a suitable price, which results in between-family mergers for older funds. Surviving funds have better performance than nonsurviving funds. There is some evidence that liquidated funds have worse performance than merged funds and some evidence that funds merged within a family may have worse performance than those merged between families.

From the standpoint of fees, surviving funds have significantly lower pass-

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Table 3
Summary Statistics (Medians), 1999–2007

			Method of Exit		
	Surviving	Exiting	Liquidated	Within-Family Merger	Between-Family Merger
Objective-adjusted performance (%):					
Quarterly	1.406	.443	.284	.843	.286
Annual	5.933	4.586	2.740	5.345	5.757
Single-factor α	.170	−.171	−.179	−.196	−.092
Multifactor α	.092	−.137	−.167	−.117	−.092
Characteristics:					
Size ($ millions)	230.600	40.550	14.900	62.200	84.600
Quarterly inflow (%)	−1.220	−.287	−.163	−.652	−.252
Fund age (quarters)	6.242	5.867	4.997	6.001	6.902
Portfolio age (quarters)	9.246	7.247	5.517	7.997	8.994
Overall expense ratio	1.250	1.450	1.235	1.570	1.500
Pass-through expense (%)	.127	.171	.408	.137	.201
Management fee (%)	.556	.520	.347	.600	.584
12b-1 Fee (%)	.250	.250	.100	.350	.250
Portfolios:					
N	8,635		900	920	355
%	79.880		8.326	8.511	3.284

through expenses than exiting funds, regardless of exit mode. They tend to have higher management fees and 12b-1 fees than liquidated funds but lower management fees and 12b-1 fees than funds merged within a family. This is consistent with fund managers or sponsors exiting funds with low fee income and retaining funds with high fee income within a family, further evidence of which can be observed in the difference between medians for different exit classifications. Liquidated funds have lower fees in both categories than funds that are ultimately merged. Funds merged within a family have higher fees than funds merged between families.

Funds that are liquidated are significantly smaller and younger than funds that are merged, which is further evidence in support of the pecking-order hypothesis. They have significantly higher pass-through expenses and significantly lower management fees and 12b-1 fees, also consistent with our hypothesis that there is a pecking order to mutual fund exit choice. Managers or boards appear to decide early in a fund's life in terms of both size and age if the fund should be exited via liquidation, and that decision is associated with funds charging low fees. The same is true with a between-family merger, although exiting fund sponsors may receive unobserved compensation for the advisory seat from the acquiring manager or sponsor. Funds that are merged within a family tend to be smaller and younger than funds merged between families. They tend to have higher management and 12b-1 fees and lower pass-through expenses. They also tend to have somewhat poorer performance, although evi-

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Table 4

Tests of Median Difference between Summary Statistics across Survival Modes

	Survived versus All Exits	Survived versus Liquidated	Survived versus Merged Within	Survived versus Merged Between	Liquidated versus Merged Within	Liquidated versus Merged Between	Merged Within versus Between
Objective-adjusted performance (%):							
Quarterly	.963**	1.122**	.563**	1.12**	−.559**	−.002	.557
Annual	1.347**	3.193**	.588**	.176	−2.605**	−3.017**	−.412**
Single-factor α	.341**	.349**	.366**	.262**	.017	−.087**	−.104**
Multifactor α	.229**	.259**	.209**	.184**	−.05	−.075*	−.025
Characteristics:							
Size ($ millions)	190.05**	215.7**	168.4**	146**	−47.3**	−69.7**	−22.4**
Quarterly inflow (%)	−.933**	−1.057**	−.568**	−.968**	.489**	.089*	−.4
Fund age (quarters)	.375**	1.245**	.241	−.66**	−1.004**	−1.905**	−.901**
Portfolio age (quarters)	1.999**	3.729**	1.249**	.252*	−2.48**	−3.477**	−.997**
Overall expense ratio	−.2000**	.0150	−.320**	−.250**	−.335**	−.265**	.070**
Pass-through expense (%)	−.13**	−.367**	−.096**	−.16**	.271**	.207**	−.064**
Management fee (%)	.036**	.209**	−.044**	−.028	−.253**	−.237**	.016**
12b-1 Fee (%)	0**	.15**	−.1**	0**	−.25**	−.15**	.1**

Note. Values are median differences and *p*-values for Wilcoxon tests of no median difference between the indicated outcomes for fund survival or exit. Wilcoxon tests for 12b-1 fee expense ratios reveal a significant difference in distribution centrality both between surviving versus exiting funds and funds merged within family or between families. This difference in distribution centrality appears as a significant difference between the rankings of different funds with no 12b-1 fees (statistically different zeros).

* Significant at $p < .05$ or better.

** Significant at $p < .01$ or better.

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Table 5
Mutual Fund Portfolio Characteristics by Year

	1999	2000	2001	2002	2003	2004	2005	2006	2007
All funds:									
Funds (*N*)	12,929	13,571	15,195	15,794	16,493	17,190	17,399	17,901	18,254
Portfolios (*N*)	6,929	7,009	7,352	7,274	7,268	7,261	7,081	6,991	6,920
Pass-through expense (%)	.153	.146	.142	.140	.127	.112	.112	.110	.107
Management fee (%)	.529	.536	.546	.546	.545	.555	.547	.544	.543
12b-1 Fee (%)	.000	.000	.000	.000	.014	.014	.014	.015	.000
Size ($ millions)	126.000	130.600	121.900	117.800	149.900	168.300	177.950	202.400	227.400
Inflow (%)	−7.462	−3.115	−.939	−6.449	−3.314	−8.850	−7.832	−1.071	−5.275
Liquidated (%)	1.775	1.441	4.706	3.849	4.141	5.509	2.952	2.446	1.604
Merged within (%)	2.049	1.327	6.692	4.605	3.536	7.217	2.994	4.048	4.118
Merged between (%)	.536	.699	1.918	1.553	1.527	4.132	1.652	1.273	.520
With 12b-1-fee funds:									
Portfolios (*N*)	3,222	3,323	3,551	3,599	3,698	3,712	3,576	3,525	3,452
Pass-through expense (%)	−.015	−.017	−.015	−.013	−.019	−.033	−.037	−.041	−.040
Management fee (%)	.544	.549	.561	.566	.575	.585	.570	.562	.555
12b-1 Fee (%)	.250	.250	.250	.250	.250	.250	.250	.250	.250
Size ($ millions)	119.700	126.200	124.900	113.000	145.400	160.600	167.65	179.700	194.200
Inflow (%)	−8.766	−3.947	−.465	−6.910	−3.711	−9.114	−8.029	−1.149	−5.143
Liquidated (%)	1.117	.873	2.872	2.278	2.407	2.936	1.874	1.504	.898
Merged within (%)	1.552	.873	3.999	2.195	2.299	4.553	1.957	3.007	4.085
Merged between (%)	.497	.572	1.098	1.250	1.325	2.047	1.230	1.078	.290
Without 12b-1 fee funds:									
Portfolios (*N*)	3,707	3,686	3,801	3,675	3,570	3,549	3,505	3,466	3,468
Pass-through expense (%)	.258	.246	.243	.243	.249	.233	.230	.230	.221
Management fee (%)	.510	.520	.514	.512	.500	.512	.514	.515	.526
Size ($ millions)	131.900	132.900	118.850	121.400	153.700	175.500	192.100	225.400	265.400
Inflow (%)	−5.803	−2.140	−1.332	−5.988	−2.691	−8.455	−7.607	−1.000	−5.391
Liquidated (%)	1.376	1.438	3.552	2.776	3.249	4.086	1.854	1.616	1.067
Merged within (%)	.998	.651	1.999	1.714	1.008	1.972	1.141	1.414	.980
Merged between (%)	.162	.298	1.079	.544	.420	1.860	.628	.173	.346

Note. Values are medians for the cardinal portfolio characteristics (pass-through expense, management fee, 12b-1 fee, size, and inflow) on a year-by-year basis and percentage representation for exit mode classifications (liquidated, merged within, and merged between). A portfolio is classified as having a 12b-1 fee fund if at least one fund in the portfolio has a 12b-1 fee. Liquidated is the percentage of funds liquidated during the year.

dence of this is mixed. These differences are also consistent with fee retention by managers or sponsors and the pecking-order hypothesis. Managers and sponsors appear to prefer to retain fee income and cost alleviation via a within-family merger rather than lose it to a between-family merger or liquidation. The result of this preference is that, for high-fee funds, within-family merger occurs earlier in life than sponsor exit via between-family merger. The difference in between-family merger and within-family merger asset size suggests that larger funds are more attractive candidates for sale. The evidence in Tables 3 and 4 is consistent with a pecking order for mutual fund exit that appears related to fee generation and cost alleviation.

The number of portfolios increases from 1999 to 2001 and then decreases to approximately initial levels in 2007 (see Table 5), with portfolios containing 12b-1 classes representing a slightly greater portion of the existing funds in 1999 than in 2007. The number of funds (individual share classes within the multiple-share-class structure) increases across the sample period by about 50 percent (from 12,924 to 18,254), which reflects the increasing popularity among fund managers of the multiple-share-class structure. This is consistent with 12b-1 fee funds having a lower failure rate across a fixed period of time and with more new funds having 12b-1 fees, as detailed in Dukes, English, and Davis (2006). The median sizes of portfolios with 12b-1 fees and those without 12b-1 fees generally increase over this period, although there are periods of decrease and the difference is not consistently greater with either type.[12] Both types of portfolios have net negative inflows over the sample. Using only the fraction of funds in each exit category, we find that there are no readily apparent differences in choice of exit mode over time or between classifications.

4. Results

4.1. Empirical Design

Allison (1995) states that the multinomial logit (MNL) method by itself provides an incomplete picture of exit behavior because it addresses the choice of exit method and ignores exit timing.[13] Accordingly, we follow his advice and estimate the effect of different fund characteristics on exit choice using MNL and on exit timing using Cox regression. We begin by following Zhao (2005) and Jayaraman, Khorana, and Nelling (2002) and employ MNL analysis to de-

[12] In Table 5, we classify multiple-share-class portfolios with a 12b-1 fee share class as 12b-1 fee portfolios for the purpose of clarity in the discussion of 12b-1 fee adoption patterns. The aggregate dollar amount of total net assets in 12b-1 fee funds, as opposed to portfolios, is smaller than the total net asset value of funds without 12b-1 fees.

[13] Multinomial logit (MNL) analysis also equally weights the effect of observations of the merged fund after the merger occurs rather than only the impact of information known to the decision-making entities at the time of exit decision.

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termine the effect of mutual fund fee structure on mutual fund exit.[14] We extend prior studies by decomposing the expense ratio into the actual management fee charged, the 12b-1 fee charged, and the pass-through fees (defined as the difference between the expense ratio and the sum of management and 12b-1 fees) to assess the effect of these fees on the choice and timing of fund exit method. Finally, we add to the existing evidence on fund exit decisions by using Cox regression with time-dependent covariates to conduct survival analysis on the different classifications of fund exit and levels of managerial and 12b-1 fees to assess their effect on the timing of the exit.

4.2. Effect of Fees on the Probability of Different Exit Modes

Table 6 presents coefficient estimates for the types of mutual fund exit inclusive of the impact of pass-through fees, management fees, and 12b-1 fees. We employ an extension of the empirical design found in Zhao (2005) and estimate one specification (model 1) at the fund level and another at the family level (model 2). Improving and refining the expense ratio findings of Jayaraman, Khorana, and Nelling (2002) and Zhao (2005), we find that the probability of a within-family merger is positively associated with the level of management fees as well as 12b-1 fee cost alleviation. This is consistent with the overall expense ratio evidence in Jayaraman, Khorana, and Nelling (2002) but in contrast to Zhao (2005).[15] Furthermore, we find, also in contrast to the Zhao (2005) expense ratio evidence, that the level of fees as captured by the 12b-1 fee and management fees is negatively associated with the probability of liquidation. For between-family mergers, the level of 12b-1 fees is associated with a higher likelihood of between-family mergers, while management fees negatively impact the likelihood when controlling for family- and objective-level influences, including fund performance. The management fee evidence for liquidations and between-family mergers is consistent with mutual fund managers and sponsors with board approval preferring exit methods for funds with high fee levels that avoid losing the fee income, an argument investigated further in the succeeding tables.

Higher levels of 12b-1 fees increase the likelihood of both within- and between-family mergers. This is consistent with exiting fund managers or sponsors trying to retain 12b-1 fees or acquiring fund managers or sponsors valuing them when they are willing to purchase a fund. High management fees are associated with an increased probability of a within-family merger and a decreased probability of a between-family merger. Within-family mergers of funds with high management fees and high 12b-1 fees allow fund managers to keep the revenue,

[14] A replication of the MNL tables in Zhao (2005), along with a table condensing and summarizing the characteristics of merged funds before and after, as in Jayaraman, Khorana, and Nelling (2002), is available upon request.

[15] When we replicated the findings in Zhao (2005) for our sample period, it was brought to our attention by a representative of CRSP that the Survivor-Bias-Free Mutual Fund database changed data providers and was backfilled over time. Any resulting differences in findings may be attributable to the backfilling process and are not necessarily shortcomings of the initial research.

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which makes them preferable to liquidation or between-family mergers from a revenue-generation standpoint. If managers or sponsors choose an exit method to generate or retain fee income, as the evidence in Table 6 suggests, they may also choose the timing of exit to further achieve the goal. The lower portion of Table 6 provides the estimated economic impact of a 1 percent change in each variable on the probability of each exit method, assessed at the rate at which each exit choice is observed in the sample. The interpretation of the management fee coefficient estimate for model 1 and liquidation would then be that if management fees increase by 1 percent, the probability of liquidation decreases by 1.80646 percent at the aggregate probability of a liquidation of 8.326 percent. Examining only the likelihood of each exit method provides an incomplete picture of the exit decision. The examination of the timing of the exit completes that picture, and this aspect of exits is appropriately explored using survival analysis.

4.3. Effect of Expenses on the Timing of Different Exit Modes

We employ survival analysis techniques to assess whether the survival rate of funds differs among exit modes. We begin this process by examining the impact of high management fees and high 12b-1 fees on fund survival distributions and then refine and extend these findings using Cox regression to precisely estimate the impact of the differing fund characteristics on fund survival (exit). Figures 1, 2, and 3 present the survival curves for funds with management fees in the top quartile[16] exiting via liquidation, within-family merger, and between-family merger, respectively. The solid lines indicate the survival distribution of funds with management fees in the bottom three quartiles over time, and the dotted lines indicate the survival distribution of funds with management fees in the top quartile over time. Wilcoxon tests of equality between strata reject equality at $p = .0056$ (Figure 1), $p < .0001$ (Figure 2), and $p = .8846$ (Figure 3).

As can be seen, fund managers delay liquidation of funds with high management fees, thereby retaining the fee income longer for funds that will ultimately fail. By contrast, funds that have high management fees and are ultimately merged within a family are exited more quickly. The difference in survival curves for both liquidation and within-family merger is statistically detectible at the $p = .01$ level or better. There is no detectable difference due to high management fees associated with between-family mergers.

Similar evidence exists for funds with 12b-1 fees in the top quartile. Figures 4–6 present the survival curves for exiting funds in this classification. The solid lines indicate the survival distribution of funds with 12b-1 fees in the bottom three quartiles over time, and the dotted lines indicate the survival distribution of funds with 12b-1 fees in the top quartile over time. In Figures 4 and 5, Wilcoxon tests of equality between strata reject equality at $p < .0001$; in Figure 6, a Wilcoxon test of equality between strata fails to reject equality at $p = .7465$.

[16] The results are qualitatively and statistically similar if we use the top two quartiles.

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Table 6
Impact of Fund Characteristics on Choice of Exit Method, 1999–2007

	Model 1			Model 2		
Variable	Liquidation	Within-Family Merger	Between-Family Merger	Liquidation	Within-Family Merger	Between-Family Merger
Multinomial logit:						
Intercept	−3.7441**	−4.3524**	−6.1921**	−3.3562**	−4.673**	−5.3424**
Family level:						
Portfolios				−.00664**	.00386**	−.0304**
Inflow ($t-1$)				−.00322	−.00352	−.00062
Inflow ($t-2$)				−.00105	−.00359	−.00098
Performance ($t-1$)				1.0624	1.9474*	−2.9077*
Performance ($t-2$)				−.6572	.405	.6636
Objective level:						
Portfolios				−.00032**	.000481**	.000271**
Inflow ($t-1$)				−.00059	−.00044	−.00047
Inflow ($t-2$)				−.00013	−.00026	−.00039
Performance ($t-1$)				−3.6053**	−3.6226**	−5.7972**
Performance ($t-2$)				3.2233**	2.0341**	.5522
Portfolio level:						
Size	−.4711**	−.4034**	−.2707**	−.4764**	−.4122**	−.2123**
Inflow ($t-1$)	−.4873**	−.465**	−.5023**	−.5271**	−.5533**	−.6243**
Inflow ($t-2$)	−.4358**	−.318**	−.5031**	−.4275**	−.351**	−.5641**
Age	−.0098**	.00883**	.00994**	−.012**	.0105**	.00332
Performance ($t-1$)	−6.0637**	−5.754**	−6.6994**	−3.4156**	−3.1067**	−2.4042**
Classes	−.0679**	.1569**	−.00842	−.018	.1362**	.0876**
Fees and expenses:						
Pass-through expense	−6.4055*	−4.3642	.3357	−10.5758**	−.4316	−8.7843
12b-1 Fee	−78.4629**	39.4286**	18.8839*	−79.0174**	40.4688**	31.4671**
Management fee	−23.6671**	14.8918**	−3.8034	−29.3846**	19.5435**	−16.3012*

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Economic impact:						
Observed frequency	.08326	.08511	.03284	.08326	.08511	.03284
Family level:						
Portfolios				−.00051**	.00030**	−.00097**
Inflow ($t-1$)				−.00025	−.00027	−.00002
Inflow ($t-2$)				−.00008	−.00028	−.00003
Performance ($t-1$)				.08109	.15164*	−.09235*
Performance ($t-2$)				−.05016	.03154	.02108
Objective level:						
Portfolios				−.00002**	.00004**	.00001**
Inflow ($t-1$)				−.00005	−.00003	−.00001
Inflow ($t-2$)				−.00001	−.00002	−.00001
Performance ($t-1$)				−.27518**	−.28208**	−.18413**
Performance ($t-2$)				.24603**	.15839**	.01754
Portfolio level:						
Size	−.03596**	−.03141**	−.00860**	−.03636**	−.03210**	−.00674**
Inflow ($t-1$)	−.03719**	−.03621**	−.01595**	−.04023**	−.04308**	−.01983**
Inflow ($t-2$)	−.03326**	−.02476**	−.01598**	−.03263**	−.02733**	−.01792**
Age	−.00075**	.00069**	.00032**	−.00092**	.00082**	.00011
Performance ($t-1$)	−.46283**	−.44804**	−.21278**	−.26071**	−.24191**	−.07636**
Performance ($t-2$)	.00097	−.03087	−.02938*	−.18539**	−.16953**	−.05338*
Classes	−.00518**	.01222**	−.00027	−.00137	.01061**	.00278**
Fees and expenses:						
Pass-through expense	−.48892*	−.33982	.01066	−.80723**	−.03361	−.27900
12b-1 Fee	−5.98890**	3.07016**	.59978*	−6.03122**	3.15116**	.99944**
Management fee	−1.80646**	1.15957**	−.12080	−2.24286**	1.52178**	−.51775*

Note. In the multinomial logit (MNL) regressions, the dependent variable takes a value of one for the indicated class of exit (liquidation, within-family merger, or between-family merger) and zero otherwise. Measures of estimated economic impact at the margin are calculated as the observed probability of each exit type following Allison (1995). Significance levels for economic impact are retained from the MNL regressions for ease and clarity in reading. Both models include year indicators. For model 1, $N = 552{,}533$, pseudo-$R = .1174$; for model 2, $N = 524{,}997$, pseudo-$R = .1352$.

* Significant at $p < .05$ or better.

** Significant at $p < .01$ or better.

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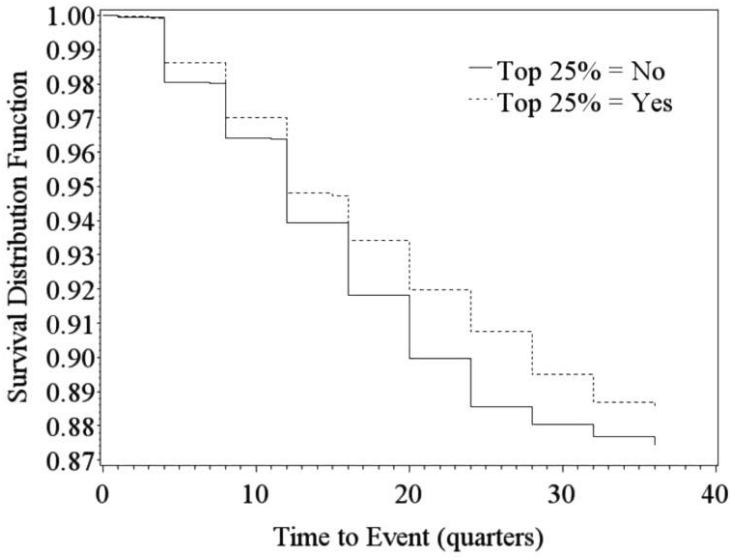

Figure 1. Survival curves for funds in the top 25 percent of management fees: liquidations

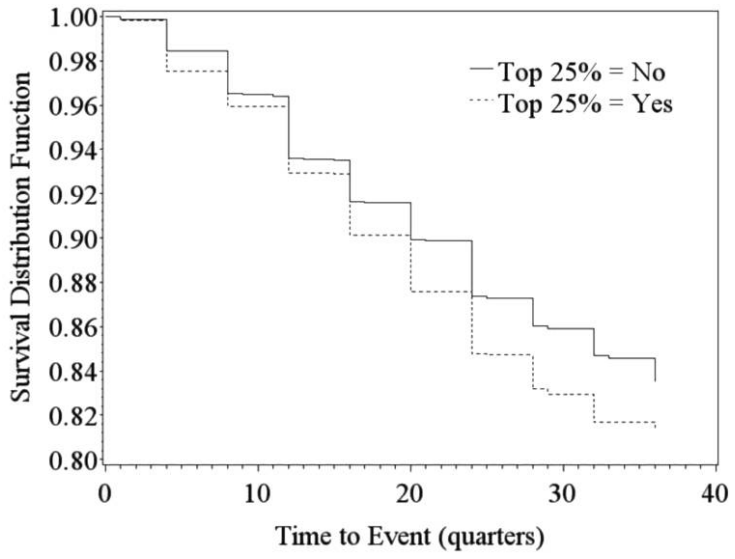

Figure 2. Survival curves for funds in the top 25 percent of management fees: within-family mergers.

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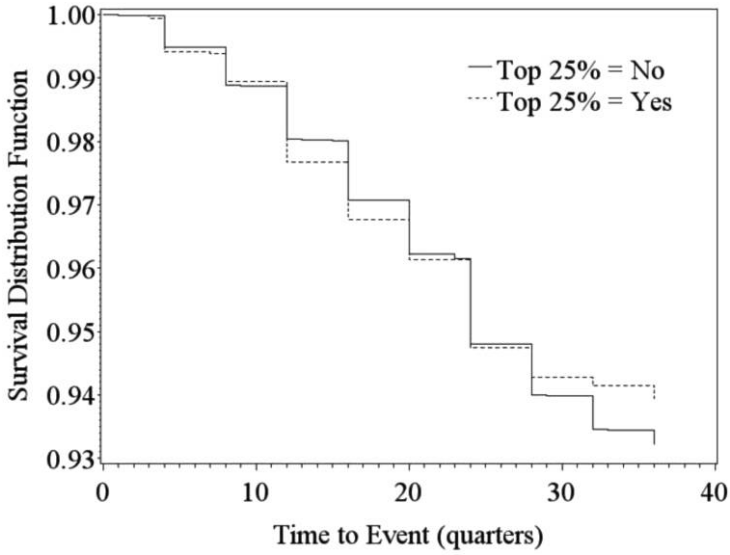

Figure 3. Survival curves for funds in the top 25 percent of management fees: between-family mergers.

Just as with high management fees, high 12b-1 fees lead to delayed exit by liquidation and early exit via within-family merger. The survival functions are statistically different at the $p = .001$ level or better. This evidence also supports the hypothesis that managers choose exit methods that delay the loss of cost-alleviating fees and accelerate techniques that maintain cost alleviation within a family. Accelerated within-family merger may also occur because managers wish to realize economies of scale more quickly or because there is no compelling reason for differential timing (no loss of fee income). The differing results for liquidation, within-family mergers, and between-family mergers suggest that there are other factors at work in addition to those captured by the survival plots. Accordingly, we estimate a hazard model to assess the effect of various fund characteristics on the timing of mutual fund exit decisions.

Allison (1995) recommends Cox regression as the appropriate technique for assessing the effect of time-varying covariates on the survival distribution. Table 7 contains coefficient estimates for the effect of a series of time-varying covariates on the hazard of different classifications of mutual fund exit. We follow the MNL estimations and calculate coefficient estimates from Cox regression with time-varying covariates for multiple-fund families for model 1, which includes only fund-level variables, and model 2, which includes variables for fund level, objective level, and family level. The partial likelihood method underlying Cox

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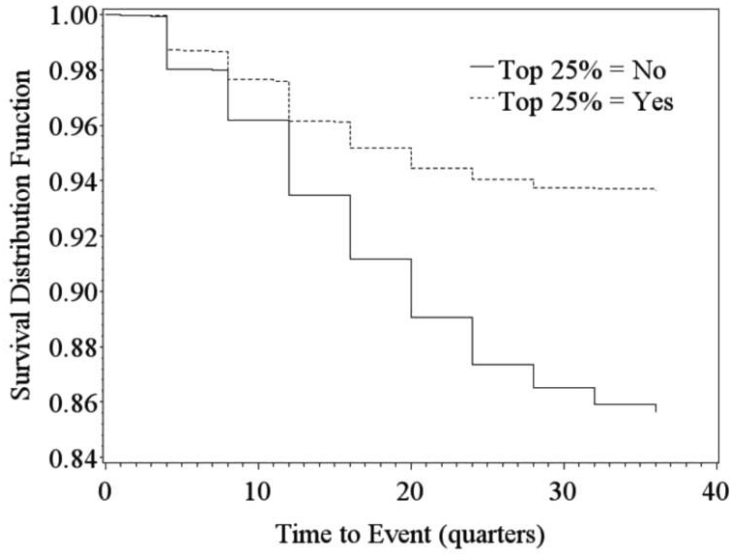

Figure 4. Survival curves for funds with 12b-1 fees in the top quartile: liquidations

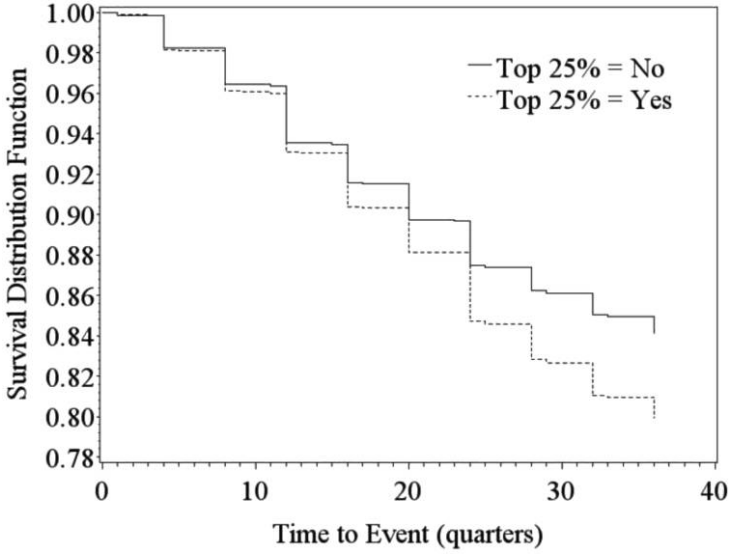

Figure 5. Survival curves for funds with 12b-1 fees in the top quartile: within-family mergers

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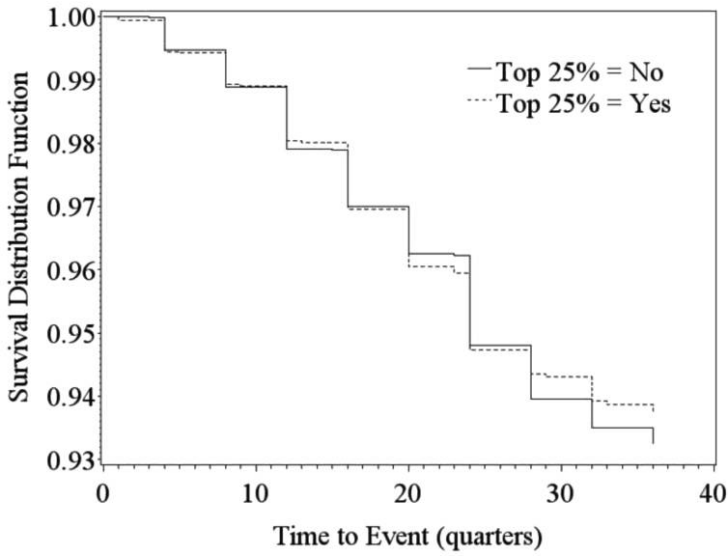

Figure 6. Survival curves for funds with 12b-1 fees in the top quartile: between-family mergers.

regression makes estimation of each survival partial likelihood function independent of the estimation of the other partial likelihood functions.

Higher management fees and 12b-1 fees increase the hazard (lead to earlier exit timing) for within-family mergers. Funds with high management fees and high cost amelioration through 12b-1 fees are merged within a family more quickly than funds with lower fees, consistent with retaining the fee income and cost alleviation. High 12b-1 fees and management fees decrease the hazard of liquidation (later timing). This is consistent with fund managers or sponsors with board approval delaying the elimination of management fees and 12b-1 fees for funds that are ultimately failed. Larger portfolios are failed later regardless of exit method, and older funds have a lower risk of liquidation, consistent with exit decisions being made early in a fund's life. Having more funds available within family decreases the risk of liquidation or between-family merger (lengthens life) and increases the hazard of within-family merger (shortens life). Having a greater number of objective-level portfolios is associated with decreased hazard of liquidation but increased hazard of within-family merger. Perhaps a lower allocation of fund-specific fixed costs causes within-objective funds to share the costs specific to investments in the objective area (for example, information costs). Taken together with the MNL results, these results are consistent with fund managers or sponsors delaying the transfer of high-fee assets to retain the revenues associated with higher fees. They choose both the method and timing

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Table 7
Survival Analysis of Fund Characteristics on Timing of Exit

Variable	Liquidation (1)	Within-Family Merger (2)	Between-Family Merger (3)
Model 1:			
Portfolio level:			
Size	−.45958**	−.43081**	−.26870**
Inflow ($t-1$)	−2.38304**	−1.46507	−.03501
Inflow ($t-2$)	−.88642	−1.10340**	−1.06179
Age	−.02595**	.00656**	.00940*
Performance ($t-1$)	−2.74680**	−2.12533*	−2.48597**
Performance ($t-2$)	−2.49336**	−2.00277**	−2.02613*
Classes	−.08264**	.13889**	−.06082*
Fees and expenses:			
Pass-through expense	.00564	1.75602	.70375
12b-1 Fee	−73.33841**	54.69530**	25.19630**
Management fee	−14.92098**	34.83946**	−.89999
R^2	.08708	.05112	.01176
Model 2:			
Family level:			
Portfolios	−.00576**	.00384**	−.03838**
Inflow ($t-1$)	−.03139	−.02173	−.01326
Inflow ($t-2$)	.04187**	−.00401	.00381
Performance ($t-1$)	.77812	2.26360*	−5.96776**
Performance ($t-2$)	−2.62674**	−4.91745**	.30907
Objective level:			
Portfolios	−.00024**	.00059 **	.00010
Inflow ($t-1$)	6.57015**	−6.47794*	−7.42052
Inflow ($t-2$)	.51595	−.00058	−.05022
Performance ($t-1$)	7.28542**	−2.10870 **	−5.01876
Performance ($t-2$)	3.44197**	2.33755 **	.41752
Portfolio level:			
Size	−.46328**	−.44229**	−.19073**
Inflow ($t-1$)	−2.86145*	−1.88507	−.21841
Inflow ($t-2$)	−.85627	−1.19298**	−.91230
Age	−.02959**	.00868**	.00325
Performance ($t-1$)	−3.80572**	−5.12622**	−3.23745**
Performance ($t-2$)	−4.12982**	−3.88739**	−2.70064*
Classes	−.03637	.11867**	.10042**
Expense ratio:			
Pass-through fee	.00727	3.78773	−.00001
12b-1 Fee	−73.89424**	55.30636**	49.96278**
Management fee	−16.94183**	40.03555**	−8.50011*
R^2	.0879	.0599	.0386

Note. Specifications for model 2 are separate estimations, unlike the earlier joint estimations. Values are Cox regression coefficients for the three modes and two models. The estimated models incorporate the partial likelihood time-varying nature of the covariates through Cox regression. The variable effects on each method can then be estimated independent of the effects on each other method. The dependent variable in each specification is the hazard of each exit method at each point in time for the sample period 1999–2007 at quarterly intervals. Quarterly and yearly indicator variables are omitted since the time-varying nature of the estimation accounts for timing differences. $N = 20{,}927$.

* Significant at $p < .05$ or better.

** Significant at $p < .01$ or better.

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Table 8
Wald Test *p*-Values for Coefficient Differences

Variable	(1) – (2)	(1) – (3)	(2) – (3)
Family level:			
Portfolios	< .0001**		< .0001**
Inflow ($t - 1$)	.8594	.8217	.9013
Inflow ($t - 2$)	.0888	.4418	.8790
Performance ($t - 1$)	.3972	.0003**	< .0001**
Performance ($t - 2$)	.2160	.1487	.0147*
Objective level:			
Portfolios	< .0001**	.0496*	.0008**
Inflow ($t - 1$)	.0014**	.0679	.9106
Inflow ($t - 2$)	.4267	.3904	.6588
Performance ($t - 1$)	.0264*	.1145	.7323
Performance ($t - 2$)	.4083	.0705	.2073
Portfolio level:			
Size	.3162	< .0001**	< .0001**
Inflow ($t - 1$)	.6489	.1433	.3076
Inflow ($t - 2$)	.6618	.9601	.7821
Age	.0000**	.0003**	.3111
Performance ($t - 1$)	.5711	.7978	.3611
Performance ($t - 2$)	.8373	.3785	.4408
Classes	< .0001**	.0001**	.5401
Expense ratio:			
Pass-through fee	.2640	.9763	.2638
12b-1 Fee	< .0001**	< .0001**	.6568
Management fee	< .0001**	.1265	< .0001**

Note. Estimates are for specifications (1)–(3) in model 2 in Table 7.
* Significant at $p < .05$ or better.
** Significant at $p < .01$ or better.

of transfer, taking into account fee income, merging within a family earlier than between families, and liquidating only after extracting management fees for longer. Further evidence supporting a pecking order for the timing and method of mutual fund failure is contained in Table 8.

With partial likelihood estimations, such as Cox regression, it is possible to test directly for coefficient differences using a Wald test (see Allison 1995). With the Wald tests in Table 8, it is possible to determine the relative effect of each factor on the timing of each type of exit. These tests reveal that the effects of management fees on the hazard of liquidation and between-family merger in which the manager loses the fee income are different from the effect of management fees on within-family merger but are not different from each other at the $p = .001$ level or better. This evidence is consistent with the pecking-order hypothesis, which proposes that managers or sponsors will prefer methods that retain fee income (higher hazard) over those that lose income (lower hazard, negative coefficient estimates). Tests of differential impact for fund age also support the pecking-order hypothesis. The hazard of liquidation is a negative function of age. The hazard of within-family and between-family mergers is an

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increasing function of age. The liquidation and merger coefficient estimates are statistically different at conventionally accepted levels only with regard to within-family merger. The estimated effect of age on merger hazard is statistically greater for within-family mergers than between-family mergers. Stated in terms of length of life, the longer the fund has survived, the less likely it is to be liquidated and the more likely it is to be merged.

5. Conclusions

The evidence we present on the choice and timing of mutual fund exit mode is consistent with a view in which the mode and timing of the exit decision is impacted by the retention of managerial fee income, subject to board approval where necessary. We find evidence of a pecking order for mutual fund exit mode and timing in which there is a preference for within-family mergers over between-family mergers or liquidation and in which exits that will reduce fee income or cost alleviation are delayed. Funds with high 12b-1 and management fees are liquidated more slowly than funds with low or no 12b-1 fees, and funds with high 12b-1 and management fees are merged within family more quickly. This is consistent with prior research suggesting that 12b-1 fees exacerbate the conflict of interest inherent in the relationship between investment companies and shareholders.

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