

# Hedge Fund Fees

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## Abstract

As of 2006, hedge fund assets stood at \$1.8 trillion. While previous research shows that hedge fund incentive and management fees can consume over 40% of funds' assets, the literature is scant on the relationship between fee levels and other fund characteristics. In this paper, we use a unique body of nine hedge fund data sets spanning the period 1998–2006 to examine cross-sectional fee level variation and its effect on fund performance and flows. We find that hedge funds' management fee levels and incentive fee levels are related to fund characteristics that change agency and overhead costs, but are also unrelated to net of fee alpha performance. Funds of funds' fee structures, however, conflict with many of the hedge funds' results and also display a negative relationship between incentive fee levels and performance. Redemption fee use is not correlated with other fee levels or portfolio liquidity, but is associated with poor performance and higher flows. Overall, our results have important implications for investors and the investment industry, especially with regards to pricing and performance.

*Keywords:* hedge funds, funds of funds, fee structure, change in fees

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## Abstract

As of 2006, hedge fund assets stood at \$1.8 trillion. While previous research shows that hedge fund incentive and management fees can consume over 40% of funds' assets, the literature is scant on the relationship between fee levels and other fund characteristics. In this paper, we use a unique body of nine hedge fund data sets spanning the period 1998–2006 to examine cross-sectional fee level variation and its effect on fund performance and flows. We find that hedge funds' management fee levels and incentive fee levels are related to fund characteristics that change agency and overhead costs, but are also unrelated to net of fee alpha performance. Funds of funds' fee structures, however, conflict with many of the hedge funds' results and also display a negative relationship between incentive fee levels and performance. Redemption fee use is not correlated with other fee levels or portfolio liquidity, but is associated with poor performance and higher flows. Overall, our results have important implications for investors and the investment industry, especially with regards to pricing and performance.

## **I. Introduction**

The fee structures of hedge funds have received considerable attention due to their large, asymmetric incentive fees and use of high water mark provisions. Incentive fee contracts in other investment industries, such as the mutual fund industry, do not share these characteristics and therefore do not display many of the same properties. For example, hedge fund incentive fee contracts resemble call options that increase in expected value along with increased portfolio risk. While such unique characteristics help align manager and investor interests, hedge fund incentive fees also have potential drawbacks. Managers are motivated to increase risk to raise their own compensation. Managers under their high water marks may also “go for broke” with high-risk investments to overcome past losses.

Research has uncovered little evidence that negative consequences arising from hedge fund incentive fees are a systematic problem in the industry. Brown, Goetzmann and Park (2001) find that managers alter fund risk conditional on relative fund performance, but not based on absolute benchmarks arising from career concerns. Panageas and Westerfield (2005) find that even risk-neutral managers with incentive fee contracts will limit their investments in risky assets. On the other hand, ample evidence exists that hedge funds provide positive alphas to investors.<sup>2</sup> While no studies have linked hedge fund fee levels to performance, Agarwal, Daniel and Naik (2007) link manager fee delta with subsequent positive performance. Funds of funds, on the other hand, struggle

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<sup>2</sup> Brown, Goetzmann and Ibbotson (1999) find hedge funds have positive alphas, even after accounting for fees. Aragon (2007) finds that large, positive hedge fund alphas are correlated with investor liquidity restrictions. Liang and Park (2007) study offshore hedge funds and discover that share restrictions are less severe for offshore funds due to their corporate structure. This results in greater trading activity and higher management costs.

to overcome their two-tiered fee structure, as funds of funds Sharpe ratios are negatively correlated to management fees.<sup>3</sup> This latter fee–performance relationship is consistent with the mutual fund performance literature.<sup>4</sup>

This study resolves two deficiencies in the literature by focusing on hedge fund fee structures themselves. First, researchers have largely ignored the interaction among hedge fund fees. Only Goetzmann, Ingersoll and Ross (2003) address this issue; they find that incentive fee and management fee contract value changes are often negatively correlated and they provide a set of incentive and management fee levels which would provide the same total cost to investors. They also find that incentive fee contracts are typically worth 10–20% of fund assets, but can be worth upwards of 40% of fund assets. Management fees can consume over 10% of fund assets and, in some cases, are more costly to investors than incentive fees. Anson (2001) also finds that incentive fee contracts can consume a substantial proportion of fund assets. Aragon and Qian (2006) find that funds with high water marks tend to be younger and have more volatile fund flows.

The second major deficiency in the literature involves several important questions concerning which factors relate to cross-sectional fee level variation and usage in the hedge fund industry. For example, research has not addressed which properties of hedge funds are related to fee levels. Due to limitations on time series data on fee changes, previous research has been unable to examine the time series behavior of hedge fund fee levels. Management fees have also been largely ignored and redemption fee usage and magnitude have gone unexamined as well. Nor have these same questions been answered

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<sup>3</sup> Brown, Goetzmann and Liang (2004) study the unique fee structure of funds of funds.

<sup>4</sup> Elton, Gruber, Hlavka and Das (1993) and Carhart (1997) find that mutual funds with higher management fees underperform funds with lower fees.

for funds of funds, whose two-tiered fee structure may have a significant effect. Finally, researchers have not characterized the impact of fee levels on hedge fund performance or whether investors view fee levels as signals of fund quality or future performance.

Using a unique data set consisting of nine hedge fund data sets that spans the period 1998–2006, we perform the first thorough analysis of hedge fund fees. We hypothesize that variation in the fee structures of hedge funds is driven by two major influences. First, hedge fund fee levels will be negatively correlated with each other. Although hedge fund managers have great latitude in setting fee levels, they must be cognizant of their total fee imposition on investors in order to stay competitive in the marketplace. Second, hedge fund fee levels are determined largely by cost structure, portfolio and manager skill level differences, not agency issues. Smart investors and a competitive marketplace will force hedge funds to set fee levels at an economically appropriate level.

The results of this study have important implications for the hedge fund marketplace. Understanding the drivers of fee level variation and the effect of such variation on fund performance is important for investors. Investors can use fee research to help them make better investment decisions and to avoid funds with characteristics and fee levels that may cause or be associated with poor performance.<sup>5</sup> They can also determine whether a particular fund's fee structure is in line with industry averages. Investors, especially those with large amounts of capital, have an ability to negotiate fee levels with hedge funds. By understanding the factors that influence fee levels, investors

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<sup>5</sup> In the case of returns, net of fee returns are obviously affected by fee levels. However, the selection of fee levels may also be a signal to investors about the quality of the fund or expected performance.

will gain more negotiating power, which will help lower their portfolio management costs.

Additionally, hedge fund fee levels provide information on how investment pools are priced in an unregulated marketplace. Unlike mutual funds, whose fees are heavily regulated, hedge fund fee levels are set in a completely free market. By evaluating whether fee level variation is driven by fund characteristics such as legal structure or portfolio liquidity, or by agency issues such as conflicts of interest or expected poor management performance, we can evaluate whether market forces are powerful enough to regulate fee levels. Finally, the effect of fee levels on performance also allows us to evaluate managers' ability to price their skill levels. Managers with high levels of skill will charge higher fees to compensate themselves, while those with low levels of skill must charge lower fees to make their funds more competitive. By examining the effect of fee levels on performance, we can glean insight into such pricing mechanisms.

Our findings lend support to our hypotheses. We find slight evidence that hedge fund management fee levels, incentive fee levels, and lockup periods are correlated in such a way as to reduce cross-sectional fee variation. Other variations in management and incentive fee levels are due to economic influences. For example, incentive fee levels are positively related to funds' past returns, while management fee levels are positively related to fund characteristics that decrease monitoring costs for investors, raise overhead costs, and reduce investor tax burdens. Overall, hedge fund managers price their funds properly as lifetime fund alphas are uncorrelated with incentive and management fee levels.

However, several results also conflict with our hypotheses. Hedge funds with high levels of assets under management charge higher management fees; this is unexpected given economy of scale considerations. Funds of funds fee levels conflict with almost all of our hypotheses, including weakly positively correlated management fee levels and incentive fee levels. Funds of funds are also not priced properly as high incentive fee level funds significantly underperform low incentive fee level funds. Redemption fees are not associated with lower incentive or management fee levels, are unrelated to portfolio liquidity and are associated with significantly lower performance. Finally, we find that investors do not view incentive fee levels as signals of superior future performance and view higher management fee levels as burdens. Investors also do not appear to know redemption fee funds are poor performing or may not be fully informed about redemption fees.

Below, Section 2 outlines our hypotheses for hedge fund and fund of funds fees. Section 3 describes the data and summary statistics. Section 4 examines management fee levels. Section 5 examines incentive fee levels and fee changes. Section 6 examines redemption fees and Section 7 examines performance. Finally, Section 8 examines investor flows and Section 9 presents our conclusion.

## **2. Fee Structure Hypotheses**

### *2.1 Interaction between Fees*

One of the most important considerations for any product is pricing. In the case of hedge funds, investors' prices are determined by the combination of management, incentive, and redemption fees charged. Unlike mutual funds, which have explicit limits

and oversight on fee levels, hedge funds have no regulation on fees and therefore retain a great degree of flexibility in the matter of fees. By changing management and incentive fee levels, and through the use of redemption fees, managers retain the ability to adjust the level of fees and how fees are generated. Management fees provide a steady stream of income while incentive fees are variable depending on the performance of the fund. Redemption fees help to restrict investor outflows by charging investors a fee to exit funds. This outflow restriction keeps money in the fund and, in turn, increases management fees. While managers do possess discretion with regard to fees, setting a fee level is a delicate task. Managers aim to maximize fee income, but they must remain competitive with their peers, as high fee levels will negatively affect performance. Although hedge fund research has not detected a relationship between fee levels and investment flows, lower net of fee performance does lead to significantly lower investment flows.<sup>6</sup>

In order that fee structures remain competitive, we hypothesize a negative relationship both between management fee levels and redemption fee use, and between management fee and incentive fee levels. Hedge funds are unlikely to charge high management and incentive fees because these can consume such a large proportion of fund assets. If funds charged high levels of both fees, net of fee performance would most likely be negatively affected and make such high-fee funds uncompetitive. Such high-fee funds would ultimately fail, and therefore hedge fund managers, *ex ante*, would not introduce these high management and incentive fee structures to the marketplace.

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<sup>6</sup> Ding, Getmansky, Liang and Wermers (2007) find that hedge fund flows, after controlling for performance, are unaffected by management and incentive fee levels. Barber, Odean and Zheng (2004) find mutual fund flows are negatively related to loads but are not related (or positively) related to expense ratios due to advertising and marketing costs.



Management fees should also be negatively related to redemption fees, as they have the effect of raising management fees. Management fees can be increased by redemption fees in two ways. Redemption fees could persuade investors to hold their investments for an extended period of time, generating increased management fees. On the other hand, if investors leave the fund early, redemption charges will also provide fees to managers. We should also note that lockup periods function in a manner very similar to redemption fees, and we expect that lockup periods will be associated with lower management fees.

The literature on investment funds supports these hypotheses. Goetzmann et al. (2003) find that changes in values of incentive and management fee contracts are often negatively related. They also determine a set of management and incentive fees that would cause no cross-sectional variation in total fund fees, assuming all other fund properties are equal. Elton et al. (2003) find that mutual funds with incentive fee contracts charge lower management fees, indicating an economic tradeoff between the two fees.

## *2.2 Management Fees*

Management fees provide hedge funds a steady income to cover operational expenses. We therefore expect that management fee levels will be related to fund characteristics that raise or lower these overhead costs for firms. Like mutual funds, hedge funds incur costs for providing reports to investors, brokerage commissions, administrative costs, and so forth. Some costs, such as brokerage commissions, do not increase with the number of investors, while other costs, such as administrative reports and client interactions, increase with each investor. If each additional client is relatively

small, new revenue will not eclipse new overhead costs and funds will be forced to charge higher management fees. One way for funds to avoid this situation is by the imposition of higher minimum investments. Large clients will generate greater revenues than overhead, giving large investors the ability to negotiate better fees than smaller investors. Overall, we expect that higher minimum investment amounts will be associated with lower management fees.

Two other fund characteristics affect costs. Larger funds typically experience economies of scale as many overhead costs increase more slowly than the additional revenue brought in by higher levels of assets.<sup>7</sup> Therefore, large hedge funds should be able to charge lower management fee levels than small funds. Second, experience is an important factor in costs. As managers and management companies gain experience, they develop the ability to make their operations and trading more efficient, which lower fund costs.<sup>8</sup> We expect that older funds should have lower management fee levels, as some cost savings are passed on to investors.

The physical locations of hedge funds also impact their cost structures. Offshore funds are generally established as corporations, whereas onshore funds typically use a partnership structure.<sup>9</sup> As a result, offshore funds have fewer restrictions on investor shares, leading to higher levels of trading, and ultimately higher transactions costs. Corporations generally experience higher levels of administrative overhead, increasing the cost basis of funds that use a corporate structure. Fund location impacts fund

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<sup>7</sup> This is particularly true of mutual funds whose expense ratios monotonically decline with size as costs are spread out over larger asset bases. See Matthew Fink's statement before the Subcommittee on Financial and Hazardous, Committee on Commerce, United States House of Representatives.

<sup>8</sup> The experience effect is noted in Porter (1980).

<sup>9</sup> Liang and Park (2007) study the difference between onshore and offshore hedge funds.

investors as well. Offshore hedge funds offer tax savings to investors.<sup>10</sup> The entirety of such tax savings could be passed on to investors; more likely, however, tax savings are split between funds and their investors. The combination of higher operational costs and lower taxes for investors should lead to higher management fee levels for offshore hedge funds.

While location may lower taxes for investors, other hedge fund properties may lower agency costs. The use of high water mark provisions and commitment of managers' personal capital help to better align manager and investor interests.<sup>11</sup> High water marks protect investors from prior fund losses, and the inclusion of managers' personal capital ensures managers have a vested interest in the management and performance of funds. Investors should be willing to accept higher fee levels for these additional incentives and lowered monitoring costs; the limited empirical evidence agrees. Brown et al. (2007) find that incentive fees for hedge funds that registered Form ADVs with the Securities and Exchange Commission are higher than for their unregistered counterparts. We therefore hypothesize that funds that utilize these two characteristics will have higher fee levels.<sup>12</sup>

While the above management fee level hypotheses should hold for both hedge funds and funds of funds, the properties of these two investment vehicles are quite different.<sup>13</sup> Investors in the two products are heterogeneous, with high net worth investors more likely to invest in hedge funds, while more conservative institutions tend to invest

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<sup>10</sup> This is true for offshore mutual funds as well. See Khorana, Servaes and Tufano (2006).

<sup>11</sup> Aragon and Qian (2006) investigate high water marks and find companies with shorter track records are more likely to use a high water mark to alleviate agency costs.

<sup>12</sup> While it may appear there is no cost to a manager to have these provisions, the use of a high water mark will ultimately lower the value of the incentive fee contract. Inclusion of personal capital concentrates the expected net worth of the manager further, as the manager's income is tied to the fund as well as to the manager's current assets.

<sup>13</sup> For a comparison of hedge funds and funds of funds, see Liang (2004).

in funds of funds. Funds of funds also have a double fee structure. Typically, a fund's raw returns are reported after fees for the underlying hedge funds have been deducted. A fund of funds then calculates its own incentive and management fees. Due to this double fee setup, the factors influencing the fee structures of funds of funds and hedge funds could vary greatly, and the hypotheses for hedge funds presented above may not apply. In addition, funds of funds have an incentive to increase their levels of risk in order to attempt to overcome the double fee issue.<sup>14</sup> We note that management fee levels may be positively related to risk when examining funds of funds, as hypothesized in Brown et al. (2004).

### *2.3 Incentive Fees*

Unlike management fees, income generated from incentive fees on a given level of assets is highly variable and based on performance. However, the use of high water mark provisions and the commitment of managers' personal capital should be associated with higher incentive fee levels, as investors will be willing to accept higher fee levels in return for the reduction in monitoring costs. Furthermore, two portfolio characteristics are crucial for determining incentive fee contract values given the option-like properties of hedge fund incentive fees; contract values increase as returns increase and as return standard deviations increase. As the expected values of these two portfolio properties increase, incentive fees will generate a disproportionate amount of total fund fees, and managers will focus on maximizing their incentive fee contracts.<sup>15</sup> We therefore expect

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<sup>14</sup> See Brown et al. (2004) for a thorough analysis of funds of funds' double fee structures.

<sup>15</sup> See Goetzmann et al. (2003).

that managers with higher returns and riskier portfolios will charge higher incentive fees and vice versa.

Incentive fee levels could also be used by managers to limit investor demand. Some hedge fund strategies and styles are able to utilize only limited amounts of capital. For example, arbitragers may have limited opportunities and must therefore curb the amount of capital in their portfolios to maintain performance. Getmansky (2005) finds four hedge fund styles that have capacity constraints—convertible arbitrage, fixed-income arbitrage, emerging markets, and event driven. Managers have two basic methods to cap assets: close funds to investment, or raise fees to lower investor demand. The latter method is preferable as it maximizes total fees. We therefore expect that hedge funds with high levels of assets or those in capacity constrained styles will increase fees to reduce investor demand as assets grow. Funds may be more likely to take the course of raising incentive fees, as such price increases would be linear in return and less likely to drive off current investors.<sup>16</sup>

#### *2.4 Redemption Fees*

Redemption fees help managers generate additional fixed revenues if investors withdraw money before a set period of time has passed. While redemption fees can guarantee a certain amount of fee income, they can also be used to discourage investors from withdrawing capital from funds with illiquid portfolios. Hedge funds are often comprised of illiquid assets that cannot be quickly liquidated to meet unexpected

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<sup>16</sup> This hypothesis seems to contradict our economies of scale hypothesis. However, economies of scale should be passed to investors in the form of lower management fees, while funds would use incentive fee levels to adjust fund performance lower in order to lower investor demand. Incentive fees are a better choice to adjust performance as they are explicitly linked to fund returns.

redemptions.<sup>17</sup> Typically, hedge fund managers use such fund properties as redemption notice periods and lockup periods to prevent investors from quickly removing capital when funds hold illiquid assets.<sup>18</sup> Alternatively, managers could implement redemption fees, as they would have the same effect of reducing investor share liquidity and protecting an underlying illiquid portfolio.<sup>19</sup> The literature has linked lockup periods and high redemption notice periods with high fund alpha performance arising from liquidity risk.<sup>20</sup> The use of redemption fees should be associated with superior performance, assuming managers use redemption fees to prevent withdrawals against illiquid portfolios.

### **3. Data and Methodology**

We obtain data from Lipper TASS, one of the most widely used data sets in the hedge fund literature.<sup>21</sup> This data set includes monthly returns, assets, and fee data, as well as other fund characteristics including lockup periods, and redemption and subscription periods. One novel aspect of this study is the use of multiple TASS databases to examine changes over time.<sup>22</sup> Data are compiled from nine different TASS data set versions. One data set is from each year between 1998 and 2006. Prior to 2002, TASS did not compile lockup and high water mark data into fields. For these years, data

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<sup>17</sup> While some of these positions could be liquidated to meet redemptions, forced liquidation by even a few investors may cause turmoil in the entire fund.

<sup>18</sup> Getmansky, Lo and Makarov (2004), and Aragon (2007). Chordia(1996) notes mutual funds with redemption fees also tend to hold less cash and more illiquid securities.

<sup>19</sup> The use of redemption fees in the mutual fund area is widespread and has expanded greatly due to the market timing and late trading scandals. Hedge funds do not have the same pricing restrictions as mutual funds and are not nearly as liquid. Thus, the market timing issue is not a valid explanation for redemption fee use.

<sup>20</sup> See Aragon (2007) and Liang and Park (2007). In the mutual fund area, see Chordia (1996)

<sup>21</sup> For example, these data are used in Liang (2001), and Brown, Goetzmann and Liang (2004).

<sup>22</sup> The use of multiple versions of the TASS data set also occurs in Liang (2001) and Brown et al. (2007).

are pulled from the 2002 data set. Performance and asset information are from the 2006 data set, as this data will provide the most recent and accurate version of these values. The 2006 version of TASS contains 4,019 funds in the live database and 2,487 in the graveyard database. Any fund that does not report returns on a monthly basis or on a net of fee basis is removed from the sample. We include both live and dead funds to avoid survivorship bias and remove the first 18 months of returns for any analysis explaining fund performance, to control for backfill bias.<sup>23</sup>

<Insert Table I here>

Table I describes the fee information in various TASS databases. For each year from 1998 to 2006, we compute the average and median incentive and management fee levels for all hedge funds and funds of funds. For the years 1999 to 2006, we compute the same figures for funds added to the database for each year, as well as for the number of fee level changes. Panel A reports the results for hedge funds while Panel B reports the results for funds of funds. Both hedge funds and funds of funds demonstrate a relatively small number of fee level changes over time, even though the number of changes recorded in TASS has increased since 2001. In both bodies of data, the majority of both incentive fee and management fee changes are in the positive direction.

For hedge funds, the average incentive fee has been monotonically increasing since the beginning of the sample period. Incentive fees increased by more than 2 percentage points, from an average of 16.73% in 1998 to 18.84% in 2006; however, the median incentive fee remained at 20.00% throughout the period. At the same time,

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<sup>23</sup> For more information on backfill bias, see Ackermann, McEnally and Ravenscraft (1999).

management fees have taken on a “smile” shape. Management fees were 1.52% in 1998, decreased to a low of 1.40% in 2004, and jumped back to 1.44% in 2006. Unlike incentive fees, this pattern is repeated in the management fee median values. At an aggregate level, hedge fund fee patterns support our tradeoff hypothesis. Management and incentive fee levels have been moving in opposite directions over the eight-year sample period.

Funds of funds exhibit a very different pattern. Management fees for the entire sample have been steadily decreasing since 1998. In 1998, the average management fee was 1.77%, while in 2006 the average fee was only 1.45%—a decline of over 30 basis points. New fund fee levels have not followed this pattern, although they have been consistently lower than the average industry fee at their times of entry. Incentive fees are also on the decline, with the average fee declining almost 2 percentage points over the eight-year period. New funds, once again, have average fees lower than the industry average at their time of entry in all years except 2006. Unlike hedge funds, funds of funds management and incentive fee levels have been moving in tandem over the eight-year period.

## **4. Management Fee Empirical Tests**

### ***4.1 New Hedge Funds***

To test our hypotheses, we first examine the management fee levels of new hedge funds. A fund is designated as new if the fund has not appeared in prior versions of the TASS data set.<sup>24</sup> We regress new funds’ management fee levels against individual fund

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<sup>24</sup> Hedge funds and funds of funds fee levels are examined separately due to the double fee issue discussed earlier.



characteristics, in addition to lagged flow and return measures. Year and style dummies are included to control for any year or style influences. Clustered standard errors are used to control for any residual correlation within management companies. Results are reported in Table II.

<Insert Table II about here>

Overall, these results provide mixed support for our two sets of hypotheses. First, management fees decline insignificantly as incentive fee levels rise. Management fees decline 0.1% for each 10% increase in fund incentive fees. Even if this result was significant, the magnitude of the tradeoff between management and incentive fees is well under the Goetzmann et al. (2003) estimate. Total fees charged to investors by high management fee funds will not be mitigated by incentive fee level differences. Lockup periods are associated with lower management fee levels, which is constant with our hypothesis that managers adjust fee levels to keep total fund fee variation low.

Our second set of hypotheses concerning management fee levels is largely supported. High water mark provisions are associated with economically and statistically higher management fee levels<sup>25</sup>, while the personal capital dummy is positive but insignificant.<sup>26</sup> Onshore funds with higher minimum investments have lower management fee levels. These results are consistent with Khorana et al. (2006), and

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<sup>25</sup> To verify this result was not due to backfilling high water mark values, this result was rerun using only data from 2002-2006. That high water mark result is consistent with the one reported. A similar robustness check was performed for the other cross-sectional results as well as the lockup period results.

<sup>26</sup> While the variable included in the analysis is a dummy variable, TASS does include a more detailed “Personal Capital Amount” variable. However, this variable is either omitted (in most cases) or in conflict with the personal capital dummy variable and therefore is not used.

suggest that hedge funds have significant administrative cost and offshore tax advantages, like their mutual fund counterparts. Unlike our hypothesis and unlike mutual funds, however, fund assets are positively related to management fee levels. Typically, fund assets in other investment industries are negatively related to fund fee levels due to economies of scale.<sup>27</sup> Hedge funds have no obligation to pass on scale-related cost savings to investors.<sup>28</sup> To protect their portfolios from overinvestment, some hedge fund managers may try to deter investment by imposing high fees. They may also exploit their market power to increase revenues by raising fee levels. Finally, fund age has a significant negative effect on fees. Older hedge funds have lower costs due to experience and they pass those savings on to investors.

#### ***4.2 Hedge Fund Fee Changes***

Although the above results largely conform to our hypotheses, we continue our analysis, examining hedge fund fee changes.<sup>29</sup> Previous studies were unable to examine fee changes, as TASS reports only the most current management and incentive fees. Fee changes do occur for both fee types and in both directions, although changes in fees are not as common in our nine data sets as mutual fund expense ratio changes. We examine fee changes through the use of a logistic regression.<sup>30</sup> We expect changes in fees to be related to the same factors as in the cross-sectional results presented above. In each year, funds are labeled with a 1 if the fee increased or decreased from the prior year. All other

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<sup>27</sup> Warner and Wu (2005) find higher assets are associated with lower advisory fees, and Khorana, Servaes and Tufano (2006) find lower expense ratios for funds with higher asset levels.

<sup>28</sup> Mutual fund boards of directors have a responsibility to ensure that fees are in line with the properties of the funds. For example, if fund assets rise, the board of directors has a responsibility to pass on the economies of scale in the form of lower fees. See Cremers, Driessen, Maenhout and Weinbaum (2005).

<sup>29</sup> We examine only hedge fund fee changes, as the number of funds of funds fee changes is quite small.

<sup>30</sup> To verify that changes were not simply typographical errors, we read the notes of the funds with changing fees. There was no evidence from the notes file that any of the fee changes are errors.

funds that existed in both data sets are assigned a zero value. Clustered standard errors are used to control for any residual correlation within management companies. Style and year dummies are included in the analysis, and management fee results are reported in Table III.

<Insert Table III about here>

Management fee changes are not as strongly related to our hypotheses as are the previous cross-sectional results, which may in part be due to the small number of changes. Management fee increases are more likely for funds with high water marks, which lends more support to agency influences driving fee levels. Funds change management fees in a manner that moves their management fee toward the style average, which helps keep their fee structure competitive.<sup>31</sup> There is no relationship between management fee changes and incentive fee levels. Fee changes do, however, provide additional evidence that managers do not pass economy of scale increases on to fund investors. Funds with higher investor flows and funds with large assets are both more likely to increase fees. While one would expect, in a competitive market, that larger funds would have greater economies of scale and therefore would reduce fees, hedge funds are heterogeneous entities and may not be perfectly substitutable. Unique funds with large amounts of capital most likely possess pricing power and can afford to raise fees without losing current investors. Managers may also have fixed investment sets and may try to limit fund flows by increasing fee levels.

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<sup>31</sup> Modifying the management fee to match the style average was explicitly mentioned in the fee notes. “In response to industry trends, ...has lowered its annual management fee from 1.5% to 1%.” (TASS notes)

### *4.3 New Funds of Funds*

Up to this point, we have examined how hedge fund management fees are determined. While hedge funds and funds of funds are often examined together, their fee structures are quite different; this section re-examines our hypotheses to determine whether fund of funds fee structures are driven by the same influences. Using the same model specification as in our previous cross-sectional examination of hedge fund management fee levels, Table IV reports the results for the structure of management fee levels for new funds of funds entering the TASS data set.

<Insert Table IV about here>

Few fee relationships are consistent from the hedge fund results or the original hypotheses. Funds of funds have a slight positive relationship between incentive and management fees. This result is significantly different than that for hedge funds or mutual funds, and will tend to exaggerate fee differences across funds. While there is limited evidence that funds with higher minimum investments have lower management fee levels, offshore funds of funds have lower fee levels. Offshore funds of funds' lower investor taxes and higher share turnover still result in higher fee levels for investors. Finally, as hypothesized by Brown et al. (2004), funds of funds with higher management fee levels consist of hedge funds with higher return standard deviations. Such funds may be attempting to overcome their higher fee structures by increasing the risk levels of their portfolios.

## 5. Incentive Fee Empirical Tests

### 5.1 New Hedge Funds

We continue our empirical tests by focusing on incentive fee levels. As with management fee levels, we regress new fund incentive fee levels against individual fund characteristics in addition to lagged flow and return measures. We continue to include year and style dummies, and report the results in Table V.

<Insert Table V about here>

As with hedge fund management fee levels, our results lend some support to our hypotheses. An inverse relationship is found between management and incentive fees. A 1% increase in management fees leads to a 0.45% decrease in incentive fees. While the result in this model is significant, the slope on this coefficient is less steep than from the management fee regression and the point estimate is still lower than the value estimated in Goetzmann et al. (2003) that causes total fund fees to be equal. However, these results suggest that total hedge fund fees, all else being equal, should have low cross-sectional variation due to this inverse relationship.

Incentive fees are positively related to previous returns, which is evidence that hedge fund managers maximize that fee with the highest expected value. Funds with higher return most likely generate a large portion of their revenue from incentive fees.<sup>32</sup>

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<sup>32</sup> Some have suggested the prior findings of a positive relationship between incentive fees and returns are related to a subset of the long/short hedged equity style. As a robustness check to the results reported in Table V, the same model was run excluding the aforementioned style. The return and standard deviation results are statistically similar to those reported here.

Funds with high water marks are more likely to have higher incentive fees, which protect investors from paying fees after fund losses and which mitigate investor monitoring costs. Age is negatively correlated with incentive fees, which may again be due to hedge funds passing experience-related cost savings on to investors. The use of lockup periods does not influence incentive fees as expected. Lockup periods are more important in terms of their effect on management fee revenue.

One unexpected result is that higher minimum investments are related to higher incentive fees. This result conflicts with our management fee level relationship results and with previous literature. We should not expect to see minimum investment levels influencing incentive fee levels since fund overhead costs are most likely to be covered by management fees. However, high quality funds or funds with positive reputations may wish to reduce their number of clients since the administration of funds is easier with fewer, larger investors.

## ***5.2 Hedge Fund Fee Changes***

As with management fee levels, we analyze incentive fee level changes to further test our hypotheses. Our expectation is that fee level changes are related to the same hypotheses as the cross-sectional results. We use the same model specification as in Section 4.2 and report the results in Table VI.

<Insert Table VI about here>

Our results do not support the notion of a tradeoff between management fee levels and incentive fee levels, but they do lend support to our other hypotheses. Funds with higher management fees are most likely to raise incentive fees, which would cause a higher fee structure overall. While inconsistent with our tradeoff hypothesis, a select group of high performing funds should have the ability to support a higher fee structure due to high levels of returns. Decreases in incentive fees are more likely to occur for funds without high water marks, which is consistent with our agency arguments. Increases in incentive fees are more likely with funds that have high returns and high return standard deviations. Managers take further advantage of their funds' properties by raising the percentage rate of their incentive fee. Managers with high returns also have more pricing power in the market and can raise their fees, as alternatives for investors are not as attractive.

Hedge funds in styles with higher than average assets, as well as funds with higher assets are more likely to raise incentive fees, further suggesting that managers use fee levels to discourage additional investment or when they feel they have market power. To further examine the relationship between size of assets and fee changes, we include an interaction between average style assets and a capacity dummy, which is 1 if the style is capacity constrained and zero otherwise.<sup>33</sup> The hypothesis is that the interaction term would be significantly positive, indicating that a fund in a capacity constrained style is more likely to raise fees as style assets rise. But if the industry had the ability to support unlimited capital inflow, it would have less incentive to raise fees to slow capital growth. Our results support this hypothesis, with the interaction variable having a significantly

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<sup>33</sup> We use Getmansky's (2005) results to determine which styles have capacity constraints. Those funds in emerging markets, convertible arbitrage, fixed income arbitrage and equity market neutral are assigned a value of 1.

positive coefficient, while the non-interaction asset mean variable has an insignificantly positive sign.<sup>34</sup>

### ***5.3 New Funds of Funds***

Our final analysis of incentive fee levels examines funds of funds. Results for hedge fund incentive fee levels are mixed, but generally support our hypotheses. We utilize the same model specification as Section 5.1, except that we include only funds listed as “funds of funds.” Table VII reports the results.

<Insert Table VII about here>

Incentive fee levels for funds of funds behave more like hedge fund fee levels than funds of funds management fee levels did. Management and incentive fee levels are not related, unlike the funds of funds management fee results which would cause a large fee variation between funds. Funds with managers’ personal capital invested, which reduces monitoring costs for investors, have higher incentive fee levels.<sup>35</sup> Older funds have lower fees, consistent with our expectation of lower fee levels arising from experience. Incentive fee levels are positively related to standard deviations of fund returns. Higher standard deviations increase incentive fee contract values and make it more likely that managers will focus on that fee.

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<sup>34</sup> Funds may choose to close themselves to new investment to limit capital inflows as well. However, such a scenario is outside the scope of this paper and is left to future research.

<sup>35</sup> We do not include the high water mark dummy in any of the incentive fee regressions. Unlike hedge funds, which almost always have incentive fees, approximately 25% of funds of funds have no incentive fee contract.



## 6. Redemption Fee Empirical Tests

The last fees we examine are redemption fees. Redemption fee data are not part of the standard data set and were hand collected from the TASS notes file. Both the live and graveyard data were input to avoid survivorship bias. Redemption fees consist of two components: time and cost. Time is typically specified in months or years and cost is specified in terms of a percentage of the redemption amount. The percentage rate of the fee usually declines over time. For example, the first year's redemption percentage would be 3%, the second year's would be 2%, and there would be no fee after 2 years.

<Insert Table VIII about here>

Table VIII reports summary information on the redemption fees. Approximately 14.5% of all hedge funds list some level of redemption fees in their notes. Of these, the mean of the highest fund redemption fee level is 2.56%, and the median fee is 2.00%. The average and median investment periods with a redemption fee are 1.3 years and 1 year, respectively.<sup>36</sup> There is a select group of funds with very long investment periods, or very high redemption fees. Over 4% of hedge funds have redemption fee periods over 5 years, and 2% of funds have maximum redemption fees over 4%.

Panel B compares characteristic data for funds with and without redemption fees. There is little evidence of a link between the use of redemption fees and investor and asset illiquidity, unlike in Aragon (2007) and Liang and Park (2007). Asset illiquidity (First-Order Autocorrelation) is not significantly different between the two groups. Funds

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<sup>36</sup> Note that in some cases the cutoff data were not given or were applied for the life of the investment. This condition applied for approximately 13% of the sample with redemption fees. Those observations were removed for these calculations.

with redemption fees have mixed results concerning investor liquidity. Inflow restrictions are lower, with a significantly shorter mean subscription period. Outflow restrictions are higher, with a significantly longer mean redemption notice period. Taken together, redemption fee funds are set up to capture and lock in fund flows. Furthermore, these univariate results do not suggest a tradeoff between redemption fees and the standard management and incentive fee levels, and are in conflict with our tradeoff hypothesis.

## **7. Performance**

Determining whether fee levels have an effect on fund performance is important for investors. If fee level differences in hedge funds are associated with cross-sectional performance, as they are in the mutual fund industry, it would be important for investors to avoid funds with certain fee levels. If managers are able to price their skill properly, then fees should have no impact on performance. In this section, we examine the performance of hedge funds and funds of funds to determine whether fee levels do in fact affect performance. We employ the Fung and Hsieh (2004) alpha model to compute alphas for all funds.<sup>37</sup> We then use these alphas as the dependent variable in a cross-sectional regression using a modified version of Aragon's (2007) model.<sup>38</sup> The first eighteen months of returns have been removed to control for backfill bias and style dummies are included in the hedge fund models to control for any style differences. Clustered standard errors are used to control for any residual correlation within

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<sup>37</sup> We thank David Hsieh for use of the factor data on his website.  
<http://faculty.fuqua.duke.edu/~dah7/DataLibrary/TF-FAC.xls>

<sup>38</sup> These results have been rerun with the top and bottom 1% of all fund alphas winsorized to control for outliers. Those results are qualitatively similar to the reported results. In addition, the models have been run requiring various return histories. Again, those results are qualitatively similar to the result reported.

management companies. The results for hedge funds are presented in Table IX Panel A while results for funds of funds are reported in Panel B.

<Insert Table IX about here>

Hedge fund incentive fee and management fee levels have no effect on performance. Managers appear to be able to price their skill levels properly. In addition, the slight negative relationship between management and incentive fee levels also helps reduce fee levels between funds. Redemption fee usage, on the other hand, is associated with poor performance. Funds with redemption fees have alpha levels of approximately 0.35% per month, or almost 4% per annum, lower than non-redemption fee funds. These results suggest that redemption fees are used to protect hedge fund managers from poor performance. Given a median fee of 2% and a median time of 1 year, the monthly loss of performance required to make an investor indifferent between the fee and the performance loss is 0.17% per month. This value is within the 95% confidence interval of the estimated coefficient. Such fees will discourage new investors from leaving funds even during periods of underperformance and will provide managers with additional compensation when funds would not necessarily have earned incentive fees.<sup>39</sup> Overall, investors should not be overly concerned with management and incentive fee levels, but should be cognizant of the use of redemption fees.

Funds of funds, on the other hand, are not priced properly. A significant negative relationship exists between alphas and incentive fee levels. In model 1, the *No Incentive*

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<sup>39</sup> Redemption fees, in some cases, are paid to the investment manager rather than the fund. They can also be split between the fund and the fund's manager.

*Fee Dummy* variable, which is 1 if the fund has no incentive fee and zero otherwise, is positive and significant. In models two and three where the incentive fee level itself is included, we find a negative relationship between incentive fee levels and fund alphas. If a fund had a 10% incentive fee, the alpha of the fund would drop by 0.18% per month or close to 2% per annum. Funds charging high incentive fees cannot overcome their cost disadvantage and significantly underperform lower cost funds. We also find a negative relationship between funds of funds' alphas and redemption fee usage, although this result is not significant at conventional levels. Funds of funds investors should be careful when investing in funds of funds with very high incentive fee levels and should be aware of whether funds charge redemption fees.

## **8. Investor Flows**

Besides their pricing implications, investors may view fee levels as signals of funds' expected future performance. A high fee level may lead investors to believe a manager has more skill and therefore will provide high future performance while a low fee level may suggest low fund quality, low expected performance and low sophistication. On the other hand, investors may see a high fee level as a burden that is difficult to overcome and may prefer a fund with low fee levels all else equal. Given the sophistication level of hedge fund investors, the prior performance related results may already be factored into their decisions. For example, investors should view redemption fees as negative signals due to their low performance and poor investor liquidity. One caveat to investors' reactions to redemption fees is their disclosure. While management and incentive fee levels are disclosed clearly in the TASS database and returns are after

incentive and management fees, redemption fees are not as clearly defined and returns are prior to any redemption costs.<sup>40</sup>

To investigate the effect of fee levels on investors' behavior, we examine fund flows. Using our datasets from 1998 to 2005, we run cross-sectional regressions of annual flows against performance, risk, style flow average, management and incentive fee levels and a redemption fee dummy. Performance is broken into three segments – low, middle and high based on previous research documenting a disproportionate amount of flows to high performing funds.<sup>41</sup> Overall results are compiled using the Fama and Macbeth (1973) technique and Newey-West (1987) standard errors are reported. Results are reported in Table X. Model 1 includes both hedge funds and funds of funds while Model 2 only includes hedge funds.

<Insert Table X about here>

Overall, the results indicate investors do not view high or low incentive fee levels as signals. Investors do, however, react negatively to higher management fee levels, although this result is weakened in the hedge fund only model. The most striking result concerns redemption fees. Funds with redemption fees experience almost 10% higher annual flows than funds without redemption fees. Investors are either unaware of the previously found underperformance or they may not be aware of the redemption fees

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<sup>40</sup> Some redemption fee information is disclosed in the “LockupComment” field; however, this information is neither standardized nor complete. Since there is no standard disclosure in the hedge fund industry, it is unclear how redemption fee charges are communicated to clients before investing.

<sup>41</sup> For example, see Sirri and Tufano (1998) and Ding et al. (2007).

when investing. Regardless, redemption fee funds do appear to be able to attract and/or retain significantly more flows.<sup>42</sup>

## **9. Conclusion**

The atypical fee structure of the hedge fund industry is a feature of great interest to the investment community. Various researchers have examined the ability of incentive fees to predict future performance, as well as their effects on fund manager behavior. In this paper, we perform the first detailed analysis on cross-sectional fee variation in the hedge fund industry and show how hedge fund fee levels influence net performance and flows. We hypothesize two influences that relate to cross-sectional fee level variation. First, hedge fund fee levels are negatively related and offset each other. Second, hedge fund fee levels are driven by economic and portfolio characteristics.

Using a unique set of nine hedge fund databases from the period 1998–2006, we find several results that support our major hypotheses. We find that hedge fund management fee levels, incentive fee levels, and lockup periods are slightly correlated in such a way as to reduce cross-sectional fee variation. Most other variation in management and incentive fee levels is due to cost influences. We also find hedge fund alphas are not related to fee levels. However, some results also conflict with our hypotheses. Funds of funds contradict almost all of our hypotheses and their performance is negatively related to incentive fee levels. Redemption fee usage is correlated with low fund performance and is not correlated with other fees or portfolio liquidity. Large funds charge higher fee levels and are more likely to raise fee levels. We also find investors do not view fee

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<sup>42</sup> Unfortunately, hedge fund data does not allow for a separate investigation of total outflows and total inflows for each fund.

levels as signals of future fund performance and do not appear to recognize the potential negative liquidity and performance information associated with redemption fees.

Our results have important implications for investors. Hedge fund investors can use these relationships to negotiate lower fee levels and also to determine whether funds are conforming to the overall cross-sectional patterns of hedge fund fee levels. Furthermore, investors can use our performance-related results to make better investment decisions. Investors should carefully examine funds with redemption fees, as these funds generally have poor performance and restrict investor liquidity. Hedge fund investors can ignore variation in management and incentive fee levels, as variation in these fee levels tend to offset each other and are not related to fund performance. Funds of funds investors must be cognizant of incentive fee levels and redemption fees.

While our results help explain hedge fund fees, they also raise several questions. Although we observe significant differences between hedge fund and fund of funds fee structures, we can only speculate that such differences are driven by the double fee structure of funds of funds. How well redemption fees are disclosed is also an open question given the significantly higher flows to redemption fee funds. Are large funds increasing fees to exploit their market power or limit investor flows? Answers to these questions would be extremely useful to market regulators when determining the proper level of disclosure and regulation for investment funds. We leave it to future research to answer these important questions.

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**Table I: Incentive and Management Fees over Time**

Reported below are the mean and median incentive and management fees over time. The average of all funds and funds newly added to TASS are reported. In addition, the numbers of both types of fee changes per year, as reported to TASS, are included. Panel A reports fees for hedge funds, not including funds of funds, whereas Panel B reports fees for funds of funds.

**Panel A: Hedge Funds**

	<b>All Funds</b>								
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of Observations	1308	1641	1808	2097	2585	2943	3424	4046	4928
Average Incentive	16.729	17.201	17.523	17.756	18.076	18.413	18.468	18.689	18.837
Median Incentive	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
Positive Incentive Fee Chg.		6	1	0	9	17	18	19	11
Negative Incentive Fee Chg.		7	0	1	6	8	8	8	10
Average Mgmt. Fee	1.519	1.494	1.477	1.435	1.425	1.406	1.397	1.413	1.443
Median Mgmt. Fee	1.250	1.200	1.200	1.000	1.000	1.000	1.000	1.265	1.500
Positive Mgmt. Fee Chg.		9	3	1	15	22	44	50	83
Negative Mgmt. Fee Chg.		5	3	0	22	15	29	22	17
	<b>New Funds</b>								
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of Observations		370	187	285	547	420	504	658	913
Average Incentive		18.711	18.797	18.993	18.922	19.485	18.672	19.661	19.434
Median Incentive		20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
Average Mgmt. Fee		1.434	1.287	1.153	1.345	1.362	1.350	1.478	1.522
Median Mgmt. Fee		1.000	1.000	1.000	1.000	1.000	1.500	1.500	1.500

**Panel B: Funds of Funds**

	<b>All Funds</b>								
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of Observations	319	375	408	423	527	659	877	1172	1578
Average Incentive	11.107	10.360	10.196	10.183	10.138	9.934	9.174	9.212	9.233
Median Incentive	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
Positive Incentive Fee Chg.		1	0	0	3	6	10	12	8
Negative Incentive Fee Chg.		6	0	0	1	3	5	11	11
Average Mgmt. Fee	1.774	1.702	1.662	1.649	1.580	1.549	1.514	1.461	1.453
Median Mgmt. Fee	1.500	1.500	1.500	1.500	1.500	1.500	1.500	1.500	1.500
Positive Mgmt. Fee Chg.		1	2	0	3	4	10	20	19
Negative Mgmt. Fee Chg.		5	0	0	7	12	11	9	4
	<b>New Funds</b>								
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of Observations		66	33	14	110	136	219	304	406
Average Incentive		8.576	8.333	9.446	9.841	8.757	6.742	9.145	9.328
Median Incentive		10.000	10.000	10.000	10.000	10.000	7.500	10.000	10.000
Average Mgmt. Fee		1.430	1.161	1.261	1.344	1.460	1.392	1.275	1.416
Median Mgmt. Fee		1.500	1.000	1.000	1.225	1.500	1.500	1.500	1.500

**Table II: Cross-sectional Analysis of Management Fee**

Table II reports results analyzing management fees. Data are the compilation of all new funds entered into TASS each year from 1999 to 2006. *Returns (Lagged)* are the fund's return the year before listing. *Std. Dev. (Lagged)* is the fund's monthly standard deviation the year before listing. *Incentive Fee* is the incentive fee of the fund. *Minimum Investment* is the log of the fund's minimum investment and *Personal Capital* is 1 if the manager has capital in the fund. *High Water Mark* and *Lockup Dummy* are 1 if the fund has a high water mark and has a lockup period respectively. *Fund Age* is the fund's age in years and *Fund Assets (Lagged)* is the log of the fund's assets. The *Onshore Dummy* is 1 if the fund is onshore and zero otherwise. Year and style dummies are included. Estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company.

	Model 1		Model 2		Model 3	
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value
Returns (Lagged)	-0.025	-0.37	0.004	0.06		
Std. Dev. (Lagged)	0.002	0.50	0.003	0.62		
Incentive Fee	-0.012	-1.22	-0.011	-1.11	-0.010	-1.06
Minimum Investment	-0.045	-2.95***	-0.037	-2.64***	-0.033	-2.34**
Personal Capital	0.010	0.23				
High Water Mark	0.222	3.68***	0.206	3.74***	0.211	3.85***
Lockup Dummy	-0.088	-2.31**			-0.036	-0.91
Fund Age	-0.025	-3.87***	-0.016	-2.75***	-0.013	-2.28**
Fund Assets (Lagged)	0.031	2.65***	0.020	1.80*	0.019	1.78*
Onshore Dummy			-0.178	-5.24***	-0.170	-5.05***
Style Dummies	Y		Y		Y	
Year Dummies	Y		Y		Y	
Number of Observations	2745		2850		2920	
R-squared	7.31%		8.04%		8.01%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table III: Analyzing Management Fee Changes**

This table reports results from a logistic regression analyzing management fee changes for hedge funds. *Num. Funds in Style* is the number of funds in that style. *Average Style Return* and *Average Style Flow* are the average return and flow for that style. *Log(Style Avg. Assets)* is the log of the average assets of funds in the fund's style. *Fund Flows*, *Fund Return* and *Fund Std. Dev.* are the flows, returns and monthly standard deviation for the fund a year prior to the change, respectively. *Style difference* is the difference between the fund's fee and the style's average fee. *Fund Age* and *log(Fund Assets)* are the fund's age in years and the log of the fund's assets. *High Water Mark* is 1 if the fund uses a high water mark. *Capacity/Asset Inter.* is an interaction term between average style assets and a capacity constrained dummy. The capacity dummy is 1 if the fund is in the Event Driven, Fixed Income Arbitrage, Convertible Arbitrage or Emerging Market style. *Incentive Fee* is the fund's incentive fee. All variables are lagged one period and style and year dummies are included. Estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company.

	Mfee Chg. Up		Mfee Chg. Down	
	Coefficient	Z-value	Coefficient	Z-value
Num. Funds in Style	0.007	1.28	0.007	2.14**
Average Style Return	-0.068	-0.03	-2.058	-0.90
Average Style Flow	-0.456	-0.45	-0.679	-0.44
Log(Style Avg. Assets)	0.354	0.59	0.743	1.48
Fund Flows	0.064	1.69*	-0.004	-0.06
Fund Return	0.761	1.61	0.089	0.18
Fund Std. Dev.	-0.011	-0.31	0.037	1.23
Style Difference	-1.952	-9.88***	0.867	4.88***
Fund Age	-0.002	-0.09	-0.017	-0.42
Log(Fund Assets)	0.205	3.22***	-0.004	-0.06
Personal Capital	-0.018	-0.09	0.290	0.95
High Water Mark	0.511	2.43**	0.156	0.47
Capacity/Asset Inter.	1.283	1.77*	0.477	0.75
Incentive Fee	-0.008	-0.51	-0.000	-0.01
Year Dummies	Y		Y	
Style Dummies	Y		Y	
Number of Observations	7515		7515	
Pseudo R-squared	17.55%		12.98%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table IV: Analysis of Funds of Funds Management Fees**

Table IV reports results analyzing management fees for funds of funds. Data are the compilation of all new funds entered into TASS each year from 1999 to 2006. *Returns (Lagged)* are the fund's return the year before listing. *Std. Dev. (Lagged)* is the fund's monthly standard deviation the year before listing. *Incentive Fee* is the incentive fee of the fund. *Minimum Investment* is the log of the fund's minimum investment and *Personal Capital* is 1 if the manager has capital in the fund. *High Water Mark* and *Lockup Dummy* are 1 if the fund has a high water mark and has a lockup period, respectively. *Fund Age* is the fund's age in years and *Fund Assets (Lagged)* is the log of the fund's assets. The *Onshore Dummy* is 1 if the fund is onshore and zero otherwise. Year and style dummies are included. Estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company.

	Model 1		Model 2		Model 3	
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value
Returns (Lagged)	-0.435	-1.28	-0.215	-0.83		
Std. Dev. (Lagged)	0.063	2.95***	0.061	3.44***		
Incentive Fee	0.021	2.02**	0.017	2.13**	0.023	2.12**
Minimum Investment	-0.013	-0.70	-0.028	-1.84*	-0.018	-0.90
Personal Capital	0.023	0.39	0.018	0.33	0.009	0.14
High Water Mark	-0.308	-2.77***	-0.246	-2.57**	-0.314	-2.69***
Lockup Dummy	0.111	1.37	0.048	0.69	0.110	1.34
Fund Age	0.009	0.61	0.006	0.57	0.012	0.82
Fund Assets (Lagged)	0.007	0.36			0.000	0.01
Onshore Dummy	-0.225	-3.33***	-0.183	-2.98***	-0.228	-3.43***
Style Dummies	Y		Y		Y	
Year Dummies	Y		Y		Y	
Number of Observations	875		1231		883	
R-squared	12.69%		11.37%		10.93%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table V: Cross-sectional Analysis of Incentive Fee**

Table V reports results analyzing incentive fees. Data are the compilation of all new funds entered into TASS each year from 1999 to 2006. *Returns (Lagged)* are the fund's return the year before listing. *Std. Dev. (Lagged)* is the fund's monthly standard deviation the year before listing. *Management Fee* is the management fee of the fund. *Minimum Investment* is the log of the fund's minimum investment, and *Personal Capital* is 1 if the manager has capital in the fund. *High Water Mark* and *Lockup Dummy* are 1 if the fund has a high water mark and has a lockup period respectively. *Fund Age* is the fund's age in years and *Fund Assets (Lagged)* is the log of the fund's assets. The *Onshore Dummy* is 1 if the fund is onshore and zero otherwise. Year and style dummies are included. Estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company.

	Model 1		Model 2		Model 3	
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value
Returns (Lagged)	1.353	2.19**	1.447	2.49**	1.511	2.60***
Std. Dev. (Lagged)	0.058	1.24	0.066	1.57	0.047	1.13
Management Fee	-0.448	-2.07**	-0.412	-1.90*	-0.416	-1.86*
Minimum Investment	0.192	1.78*	0.232	2.38**	0.193	1.85*
Personal Capital	0.143	0.66	0.123	0.64		
High Water Mark	2.261	4.75***	2.400	5.12***	2.058	4.70***
Lockup Dummy	-0.326	-1.12	-0.171	-0.82		
Fund Age	-0.096	-2.07**	-0.086	-2.25**	-0.086	-2.09**
Fund Assets (Lagged)	0.002	0.04			-0.016	-0.27
Onshore Dummy	0.256	0.80				
Style Dummies	Y		Y		Y	
Year Dummies	Y		Y		Y	
Number of Observations	2745		3374		2850	
R-squared	4.51%		4.75%		4.00%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.



**Table VI: Analyzing Incentive Fee Changes**

This table reports results from a logistic regression analyzing incentive fee changes for hedge funds. *Num. Funds in Style* is the number of funds in that style. *Average Style Return* and *Average Style Flow* are the average return and flow for that style. *Log(Style Avg. Assets)* is the log of the average assets of funds in the fund's style. *Fund flows*, *Fund Return* and *Fund Std. Dev.* are the flows, returns and monthly standard deviation for the fund a year prior to the change, respectively. *Style difference* is the difference between the fund's fee and the style's average fee. *Fund Age* and *log(Fund Assets)* are the fund's age in years and the log of the fund's assets. *High Water Mark* is 1 if the fund uses a high water mark. *Capacity/Asset Inter.* is an interaction term between average style assets and a capacity constrained dummy. The capacity dummy is 1 if the fund is in the Event Driven, Fixed Income Arbitrage, Convertible Arbitrage or Emerging Market style. *Management Fee* is the fund's management fee. All variables are lagged one period and style and year dummies are included. Estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company.

	Ifee Chg. Up		Ifee Chg. Down	
	Coefficient	Z-value	Coefficient	Z-Value
Num. Funds in Style	0.012	1.64	0.010	2.46**
Average Style Return	-0.424	-0.15	4.695	1.31
Average Style Flow	-3.140	-1.79*	1.918	1.16
Log(style avg. assets)	1.241	1.50	-0.142	-0.23
Fund flows	-0.237	-2.74***	-0.471	-1.91*
Fund Return	1.469	2.22**	1.118	1.51
Fund Std. Dev.	0.092	2.25**	0.027	0.75
Style Difference	-0.181	-9.39***	0.155	5.36***
Fund Age	-0.072	-1.65*	0.064	1.13
Log(Fund Assets)	0.183	1.80*	0.019	0.11
High Water Mark	-0.229	-0.57	-0.902	-1.69
Personal Capital	0.102	0.30	0.122	0.30
Capacity/Asset Inter.	2.233	2.08**	0.479	0.44
Management Fee	0.163	3.30***	0.031	0.12
Year Dummies	Y		Y	
Style Dummies	Y		Y	
Number of Observations	7515		7515	
Pseudo R-squared	28.08%		18.79%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table VII: Analysis of Funds of Funds Incentive Fees**

Table VII reports results analyzing funds of funds incentive fees. Data are the compilation of all new funds entered into TASS each year from 1999 to 2006. *Returns (Lagged)* are the fund's return the year before listing. *Std. Dev. (Lagged)* is the fund's monthly standard deviation the year before listing. *Management Fee* is the management fee of the fund. *Minimum Investment* is the log of the fund's minimum investment and *Personal Capital* is 1 if the manager has capital in the fund. *High Water Mark* and *Lockup Dummy* are 1 if the fund has a high water mark and has a lockup period, respectively. *Fund Age* is the fund's age in years and *Fund Assets (Lagged)* is the log of the fund's assets. The *Onshore Dummy* is 1 if the fund is onshore and zero otherwise. Year and style dummies are included. Estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company.

	Model 1		Model 2		Model 3	
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value
Returns (Lagged)	3.208	1.13			-2.412	-0.67
Std. Dev. (Lagged)	0.879	4.88***			0.877	4.46***
Management Fee	1.127	1.13	1.465	1.49	1.148	1.22
Minimum Investment	0.099	0.49	-0.142	-0.65	-0.070	-0.33
Personal Capital	1.658	2.36**	1.778	2.38**	1.683	2.32**
High Water Mark						
Lockup Dummy	1.152	1.44	0.880	1.19		
Fund Age	-0.209	-1.77*	-0.246	-2.65***	-0.257	-2.85***
Fund Assets (Lagged)	-0.050	-0.29				
Onshore Dummy	-0.675	-1.02	-0.400	-0.64	-0.193	-0.28
Style Dummies	Y		Y		Y	
Year Dummies	Y		Y		Y	
Number of Observations	875		1261		1231	
R-squared	9.35%		6.22%		8.45%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table VIII: Redemption Fees**

This table reports descriptive statistics on redemption fees. Redemption fees are reported for both live and dead funds and are broken down into length of time and percentage in Panel A. Panels B and C report univariate statistics for hedge funds and funds of funds, respectively. *Incentive Fee* and *Management Fee* are the fund's incentive fee and management fee, respectively. *Sub. Frequency* is the subscription frequency of the fund in days. *Red. Notice Period* is the fund's redemption notice period in days. *Lockup Period* is the fund's lockup period in months. *Min. Investment* is the fund's minimum investment in millions of dollars. *Personal Capital* is 1 if the fund manager invested personal capital. *First-Order Autocorrelation* is the fund's monthly return first autocorrelation.

**Panel A: Redemption Fee Distribution**

Length of Fee	1 Year	2 Years	3 Years	4 Years	5 Years or More
Number of Funds	572	68	29	4	207
Fee Percent	1% or Less	1-2%	2-3%	3-4%	4% or More
Number of funds	177	376	173	54	114

**Panel B: Fee and Liquidity Comparison (Hedge Funds Only)**

	Redemption Fee				No Redemption Fee			Diff	p-Value
	N	Mean	Median		N	Mean	Median		
Incentive Fee	718	19.04	20.00		4229	18.80	20.00	0.24	0.14
Management Fee	718	1.52	1.50		4229	1.43	1.50	0.09	0.00***
Sub. Frequency	706	32.34	30.00		3992	37.71	30.00	-5.37	0.00***
Red. Notice Period	718	35.26	30.00		4229	29.12	30.00	6.14	0.00***
Lockup Period	718	2.77	0.00		4229	3.08	0.00	-0.31	0.19
Min. Investment	718	0.90	0.50		4140	1.24	0.50	-0.34	0.28
Personal Capital	718	0.29	0.00		4229	0.38	0.00	-0.09	0.00***
First-Order Autocorrelation	535	0.07	0.08		3251	0.08	0.09	-0.01	0.53

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Panel C: Fee and Liquidity Comparison (Funds of Funds Only)**

	Redemption Fee				No Redemption Fee			Diff	<i>p</i> -Value
	N	Mean	Median		N	Mean	Median		
Incentive Fee	127	10.27	10.00		986	8.73	10.00	1.54	0.02**
Management Fee	127	1.44	1.50		986	1.46	1.50	-0.02	0.65
Sub. Frequency	125	34.12	30.00		944	33.72	30.00	0.40	0.86
Red. Notice Period	127	35.46	35.00		986	38.28	35.00	-2.82	0.11
Lockup Period	127	3.19	0.00		986	2.43	0.00	0.76	0.23
Min. Investment	127	0.39	0.10		981	5.92	0.13	-5.53.	0.28
Personal Capital	127	0.15	0.00		986	0.29	0.00	-0.14	0.00***
First-Order Autocorrelation	127	0.13	0.11		986	0.15	0.16	-0.02	0.12

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table IX: Alpha Regressions**

This table reports regression results examining the effect of fee levels and usage on hedge funds' and funds of funds' lifetime alphas. *Lockup Dummy* is 1 if the fund employs a lockup period and zero otherwise. *Redemption Notice Period* is the fund's redemption notice period in days, while *Minimum Investment* is the fund's minimum investment in tens of millions of dollars. *RNP squared* is the redemption notice period squared (scaled by 0.01). *Incentive Fee* and *Management Fee* are the fund's incentive fee and management fee, respectively. *Redemption Fee Dummy* is 1 if the fund has a redemption period and zero otherwise. Panel A reports results for hedge funds while Panel B reports results for funds of funds. Unreported style dummies are included in the hedge funds' regressions. All estimates are computed using the estimating equations (GEE) approach of Liang and Zeger (1986) to account for correlations of the residual  $\varepsilon_i$  of funds within the same fund management company. The first 18 months of returns are removed to control for backfill bias.

**Panel A: Hedge Funds**

	Model 1		Model 2		Model 3	
	Coefficient	Z-Value	Coefficient	Z-Value	Coefficient	Z-Value
Lockup Dummy	0.273	1.92*	0.264	1.86*	0.228	1.67*
Redemption Notice Period	0.057	2.14**	0.006	2.14**	0.013	2.21**
Minimum Investment	0.001	3.40***	0.001	3.25***	0.013	3.27***
RNP squared					-0.008	-1.14
Incentive Fee					0.014	1.38
Management Fee					0.014	0.13
Redemption Fee Dummy			-0.351	-2.34**	-0.356	-2.29**
Number of Observations	3408		3408		3408	
R-squared	1.21%		1.40%		1.59%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Panel B: Funds of Funds**

	Model 1		Model 2		Model 3	
	Coefficient	Z-Value	Coefficient	Z-Value	Coefficient	Z-Value
Lockup Dummy	0.059	0.63	0.060	0.66	0.078	0.87
Redemption Notice Period	0.024	3.79***	0.023	3.70***	0.023	3.71***
Minimum Investment	-0.001	-2.95***	-0.001	-3.01***	-0.001	-3.22***
RNP squared	-0.019	-3.22***	-0.018	-3.13***	-0.018	-3.17***
No Incentive Fee Dummy	0.166	1.70*				
Incentive Fee			-0.018	-2.71***	-0.018	-2.66***
Management Fee	-0.070	-0.80	-0.030	-0.34	-0.033	-0.37
Redemption Fee					-0.212	-1.55
Number of Observations	1104		1104		1104	
R-squared	5.15%		5.83%		6.12%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.

**Table X: Investor Flows**

Table X reports results estimating the fund flow equation cross sectionally using data for each year from 1998-2005. Flows are computed annually using the following formula:

$$Flow_{it} = \frac{(Assets_{it} - Assets_{it-1} \times Return_{it})}{Assets_{it-1}}$$

Assets and returns are computed in the fund's native currency to avoid exchange rate affects. *Low Rank*, *Mid Rank* and *High Rank* are computed as  $\text{Min}(\text{Rank}_{t-1}, 0)$ ,  $\text{Min}(\text{Rank}_{t-1} - \text{Low Rank}, 0)$  and  $\text{Min}(\text{Rank}_{t-1} - \text{Mid Rank} - \text{Low Rank}, 0)$ , respectively, where  $\text{Rank}_{t-1}$  is the percentile level of the previous year's performance in the fund's TASS style. *Std Dev* is the previous year's monthly standard deviation. *Category Flow* is the average flow to that fund's particular style in year  $t$ . *Log Assets* is the log of the previous end of period's assets. *Management Fee* and *Incentive Fee* are the current management and incentive fee level. The *Redemption Fee Dummy* is one if the fund has a redemption fee and zero otherwise. Model 1 is all funds together while Model 2 is just hedge funds. Both models are run using the Fama and MacBeth (1973) framework. Standard errors are computed using Newey-West (1987) with 1 lag.

	Model 1		Model 2	
	Coefficient	<i>t</i> -value	Coefficient	<i>t</i> -value
Low Rank	0.671	6.05***	0.622	6.46***
Mid Rank	1.055	8.11***	1.185	7.89***
High Rank	0.851	8.08***	0.886	6.60***
Log Assets	-0.026	-3.85***	-0.026	-3.41**
Category Flow	0.660	8.07***	0.669	7.79***
Std. Dev.	-0.110	-6.49***	-0.121	-5.75***
Management Fee	-0.033	-2.09*	-0.026	-1.31
Incentive Fee	0.002	1.80	0.000	0.17
Redemption Fee Dummy	0.092	2.84**	0.116	4.00***
Average N	1154		921	
Avg. Adj. R-squared	13.15%		14.15%	

\*\*\*Significant at the 1% level; \*\*significant at the 5% level; \*significant at the 10% level.