Can Capacity Constraint Explain Introduction of New Hedge Funds?

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Abstract

In this paper we test the idea that hedge funds' capacity constraints may play a significant role on the decision of fund families to open a new hedge fund. Our empirical analysis shows that fund families' propensity to open new funds increases with degree of capacity constraint faced by existing funds of the families. We argue that hedge fund families face diseconomies of scale because of the non scalability of their investment strategies and as their existing funds approach the critical size, fund families prefer opening a new hedge fund rather than allowing the existing funds to grow. We find that the strategy of starting new hedge funds to divert fund flows from an existing fund works well as fund flows to the existing fund decreases, and that the introduction of new funds also lead to an improvement in the performance of the existing funds of the same family.

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I. Introduction

In this study, we explore if capacity constraint is a major factor motivating hedge fund managers to open new funds. Over the past two decades, hedge funds have become a vital force in the financial landscape[1]. Hedge funds claim to exploit market inefficiencies in various forms in order to earn abnormal returns for their shareholders. In their quest to beat the market, hedge fund managers adopt various active (and, arguably, risky) portfolio management strategies based on specific events, sectors and market characteristics as well as through the use of derivatives, all of which have come under increasing criticism, and scrutiny, in recent years. However, while most of these funds remain largely unknown to ordinary investors, what happens to them impact just about everyone. It should not require much persuasion to make the case that the likelihood of exploiting market inefficiencies in order to make profits should be a decreasing function of portfolio size. This non-scalability of scale of hedge fund portfolio could be due to endogenous factors such as strategy complexity (Fung and Hsieh, 1997) and fund manager's skill; or it could be because of exogenous market related factors such as increased competition, low liquidity, limited profitable opportunities as suggested by Getmansky (2005) and Zhong (2008). If one accepts this premise, a logical next step would be to expect a natural limit on the capacity, or size, of any hedge fund portfolio. And as the number of hedge funds mushroomed through the nineties, and through parts of the twenty-first century, it seems intuitive that hedge fund size would have presented a natural barrier to its growth beyond a critical point. The extant literature does suggest a negative relationship between size and the performance of hedge funds (see, for example, Getmansky, 2005; Naik, Ramadurai and Stromqvist, 2007 ; Fung, Heish, Naik and Ramadurai

[1]According to Hedge Fund Research over the last decade hedge funds expanded beyond their traditional investor base among the ultra-rich and raised billions of dollars from pension funds, endowments and foundations. From 1998 to 2008, the number of hedge funds grew from just over 3,000 hedge funds to more than 10,000 and assets within the funds exploded from $374 billion to nearly $2 trillion.

,2007). We argue that new hedge funds can help managers in diverting new fund inflows from existing funds to new funds and may effectively help in controlling the size of the existing funds.

The issue of capacity constraint associated with hedge funds is a controversial one. It not only questions the future profit potential of the hedge funds but also raises concerns over the influx of less talented fund managers in the industry. In 2005 a report by Edhec Risk and Asset Management Research Centre provides a comprehensive survey to explore the capacity effect on hedge fund performance. The basic findings of Edhec (2005) are: a) a global increase in fund inflows to hedge funds reduces market inefficiencies. Thus, implementing "niche arbitrage" strategies become less profitable as the fund grows in size; b) Over time, the frequency of less talented fund managers entering the industry has increased, attracted by lucrative pay and incentives. Consequently, the average performance of the industry has suffered as the overall size of the industry has grown. In sum, the survey reflects the view that while a majority of hedge fund industry insiders are optimistic about a double digit future growth of the industry, they worry that future arbitrage opportunities will decline due to capacity constraints. Regarding the existence of a critical size of hedge funds, the respondents were almost equally divided although the overarching belief was that the market's, as well as manager's, capacity are two major threats to hedge fund performance.

In this paper we argue that capacity constraints of existing funds can be a determinant for new hedge fund start ups by fund families. Our research relates to a stream of study that provides evidence that the hedge fund industry experiences a diminishing, and even negative, marginal returns to scale (Goetzmann, Ingersoll and Ross , 2001;Agarwal, Daniel and Naik ,2004; Fung, Heish, Naik and Ramadurai ,2007; Zhong; 2008). Specifically, we test the notion that opening new hedge funds could be a strategic choice for fund managers in order to divert new fund inflows away from existing funds so that the existing funds do not exceed their critical size. Using the Barclay's hedge fund database we analyze a sample of 9,050 funds, comprising of 3,195 funds of hedge funds (FOF) and 5,855 hedge funds, over the period of 1990 to 2007. We find that the probability of a new hedge fund opening is a positive function of capacity constraint of the existing funds in the same fund family. We measure

hedge fund's capacity based on excess fund size relative to the average size of funds in the similar strategy category. We find that hedge fund families' propensity of opening new funds increases with the excess fund size of the existing funds in the same family. An analysis of fund flows also supports our hypothesis in that we show that new funds successfully help decreasing net fund flows to the existing funds. We also find that introduction of new hedge funds positively affects the performance of the existing funds in the same family.

The paper is organized in six sections. The next section discusses the relevant literature and proposes the testable hypotheses for this study. Section three provides a description of the data and discusses the methodological details. Section four analyses the empirical findings. We discuss robustness analyses in section five. Section six concludes the paper.

II. Background Literature and Hypothesis

Hedge fund research has grown exponentially in many different directions over the past decade. For instance, one stream of research has provided evidence on performance of hedge funds using different databases (see, for example, Ackermann, McEnally and Ravenscraft, 1999); Agarwal and Naik 2000a, 2000b,; Edwards and Caglayan, 2001, Fung and Hsieh, 1999, 2000, 2001; Kao 2002; and Liang1999, 2000, 2001) Another stream has focused on the style analyses of hedge funds and investigated the determinants of hedge fund performance (for example, Agarwal & Naik, 2000a, 2000b; Brown & Goetzmann, 2001; Brown, Goetzmann & Ibbotson, 1999; Brown, Goetzmann, & Park, 1997, 2000, 2001; Fung & Hsieh,1997 and Lochoff, 2002)

In this paper we aim to connect two distinct research streams, one the literature on hedge funds capacity constraints and the other on decisions regarding new fund opening. Existing literature such as Goetzmann, Ingersoll and Ross (2001), Agarwal, Daniel and Naik (2004), Getmansky (2005), Fung, Heish, Naik and Ramadurai (2007), Zhong (2008) discusses the issue of capacity constraint for the hedge funds. Compared to mutual funds, hedge funds follow a more

complex and unorthodox investment strategy. Fung and Hsieh (1997) underscore the point that the active investment management style of the hedge funds do not allow them to grow indefinitely without sacrificing performance. Goetzmann, Ingersoll, Ross (2001) argue that a limit to growth is a typical characteristic of hedge funds which has motivated the hedge fund industry to introduce performance based fee structures for its managers. These authors also argue that most of the hedge fund investment strategies have capacity constrains and, as a result, growth of assets under management beyond a critical point hurts the performance of hedge funds. Therefore, a manager compensation scheme based on asset size, similar to that prevalent in the traditional mutual fund arena, is not likely to be effective for hedge funds. Goetzmann etal. (2001) also point out that successful funds' unwillingness to accept new monies may indicate a diminishing return in the hedge fund industry. Agarwal, Daniel and Naik (2004) show that hedge funds with greater inflows perform worse in the future. Analyzing fund of funds within the hedge fund industry, Fung, Heish, Naik and Ramadurai (2007) report that funds that earn abnormal return, and attract large inflows, are less likely to produce positive abnormal returns in the future. Zhong (2008) finds that fund level inflow has a positive (negative) impact on the future performance of small (large) funds, while inflows at the strategy level are negatively related to future fund performance. These results point to a non-scalability of managers' ability and/ or limited profitable opportunities in the market.

Though prior research has analyzed hedge funds' capacity constraints through fund flow and return relationship, relatively little attention has been paid in exploring whether capacity constraints can affect fund families decision in starting new hedge funds. In this paper we explore just such a relationship between hedge funds' capacity constraints and fund families' motivation for opening a new hedge fund. We argue that hedge funds face diseconomies of scale due to the non scalability of their investment strategies. Consequently, when a hedge fund approaches its optimal size, the fund family, rather than allowing the fund to grow beyond its optimal size, can simply choose to start a new fund by diverting incoming fund flow to this new fund.

Khorana and Serveas (1999) examine the determinants of new fund opening decisions by mutual fund families. They report that fund families' prior performance, size, fee structure and

competition are all major factors in determining a new fund opening decision for mutual fund families. One could assume that these factors may also be applicable in the hedge fund context. However, hedge funds are quite different from mutual funds in terms of their investment philosophy and risk characteristics, etc. Therefore variables associated to economies of scale and scope may affect the decision to open new hedge funds in a very different way relative to mutual funds. According to our hypothesis, fund houses' propensity to open a new hedge fund depends on the size of their existing funds. Due to the non scalability of complex and dynamic investment strategies, as size of the existing funds grow the fund managers may find it difficult to continue producing positive abnormal return. Hence when existing funds grow beyond a critical size fund managers may prefer opening up new funds to divert new investments from the existing funds. So we propose that probability of opening a new fund is function of excess fund size, i.e., the difference between the size of the existing fund and the average (or median)size of funds in the same strategy. Moreover as the fund with largest excess size is more likely to experience capacity constraint than other funds in a fund family, Therefore we hypothesise that:

H1: the propensity to open a new fund by a fund family increases with increase in the size of the largest existing fund of the family.

H2: *The net fund flow to the existing funds decreases after the introduction of a new fund*

As previous hypotheses argues that opening of new funds help existing funds from growing beyond their critical size, so we expect positive impact of new fund opening on the performance of the existing funds. Therefore we hypothesise:

H3: The performance of the existing funds should improve after the introduction of the new funds.

Note that *H3* also follows from *H2* and the existing evidence of a negative relationship between fund flow and hedge fund performance.

III. Data and Methodology

We use the Barclay's Hedge Fund Database (BHFD) for this study. BHFD is one of the most comprehensive databases for hedge funds. It covers almost 12,000 hedge funds, fund of hedge funds, Commodity Trading Advisors (CTAs), Commodity Pool Operators (CPOs) and hedge fund indices. BHFD provides monthly data on hedge fund returns net of all fees and charges, end of the month assets under management for each fund and several other variables including fund domicile, year of inception, parent investment company identifier, details of the fee structure and details of fund strategy. For the purpose of this study we use hedge fund and fund of hedge funds (FOF) data over a period of 18 years (1990 to 2007). In our initial sample we have 3,163 (2,750) active (dead) hedge funds and 2,387 (831) active (dead) FOFs from 3,380 investment companies. Figure 1 shows the distribution of fund domiciles in the data set. Cayman Island is the most popular choice for fund domicile in our data with 2,741 funds, followed by the USA with 2,635 hedge funds. Apart from the eight major destinations for fund domicile described in Figure 1, our data also includes funds from 38 other countries across the world. Figure 2 provides details of age distribution for the funds in our data. The mean (median) hedge fund age is 6.8 years (5.8 years) though a typical fund in the dataset is 3.9 years old. For 143 funds in our data, the date of inception is not available.

---------- Insert Figure 1 & 2 here ----------

Barclay's database reports one main and two alternative investment strategies for each fund though, for a majority of the funds, we found that the data on alternative strategies are not available. Therefore we classify the funds based on their main investment strategy only. To keep our strategy classification consistent with the previous literature, following Ackermann et al. (1999), Brown et al. (1999) and Brown et al. (2007), we classify all the funds in our sample in 10 different strategy classes. These strategy classes are: *Emerging Market, Event Driven, Fund of Hedge Funds, Global Macro, Long Only, Multi-strategy, Relative value, Sector focused, Short Bias and Others*. There are 60 funds for which strategy details are not available. In our sample, the two largest strategy categories are *Relative value* with 3,443 funds and funds of hedge funds (*FOFs*) with 3,218 funds. Details of the different investment strategies in our sample are given in Figure 3. Though we identify 10 different

strategy classes in our sample however for strategy wise analysis of new fund opening we do not consider *Short Bias* and *Others* categories. We exclude *Short Bias* as there are very few new hedge funds opened when *Short Bias* is the strategy of the largest fund in the family. The strategy category *Others* is excluded for the obvious reason that it is a mixed bag of different strategies and is likely to introduce noise in our analysis.

----------Insert Figure 3 here ----------

From our initial sample of 9,131 funds we remove 61 as they did not have at least 12 continuous observations of monthly returns. We perform our analysis on a sample of 9,050 funds comprising 3,195 FOFs and 5,855 hedge funds.

Table 1 provides a description of hedge fund families included in our sample. The table shows that the number of hedge fund families has increased rapidly over time. In 2002 our sample covers almost 1600 fund families however the number came down to around 1200 by 2007. Average number of funds per family is below 2 till 2001 however, this increases to 4.7 by 2007. This table also shows that there is a high proportion (about 34% in 2007) of single fund families in our sample. Consequently the concentration of families with single investment strategy is also quite high (about 77% in 2007) in the sample. The average number of strategies per family remains less than 1.5 through the entire sample period. Our sample also includes greater proportion of US fund families than non US fund families. The total number of US fund families and non US fund families does not add up to the total number fund families in the sample as several fund families do not report the country of domicile for their hedge funds.

---------- Inset Table 1 here ----------

A detail description of new hedge fund openings across the entire sample period is provided in Table 2. The table shows how many funds are opened by fund families with single fund, fund families with multiple funds and fund families with multiple strategies. Over the years 4634 new hedge funds are opened by the fund families covered in our sample out of those 1622 hedge funds are opened by the US fund families.

----------Insert Table 2 here ----------

To the best of our knowledge, Khorana and Servaes (1999) is the only available research on new (mutual) fund opening decision by fund families. Khorana and Servaes suggest several variables related to the various motivations (such as, economies of scale, specialisation, competition etc.) for introducing new managed funds. These variables include family size, objective size, family performance, objective performance, family fund flow, objective fund flow, family fee structure and competition. We too use similar variables to control for some of those motivations for the introduction of new hedge funds by the fund families. However, we are primarily interested in exploring if capacity constraint influences new hedge fund opening. In this study, we use the following excess fund size measures to capture the capacity constraints potentially faced by the hedge fund families:

$$ExSize\_Avg_{i,j,t} = \underset{i,t}{Max}[AUM\ of\ Funds\ in\ Family\ i\ and\ Stategy\ j\ in\ year\ t - Average\ AUM\ of\ Funds\ in\ Strategy\ j\ in\ year\ t] \quad (1)$$

$$ExSize\_Med_{i,j,t} = \underset{i,t}{Max}[AUM\ of\ Funds\ in\ Family\ i\ and\ Stategy\ j\ in\ year\ t - Median\ AUM\ of\ Funds\ in\ Strategy\ j\ in\ year\ t] \quad (2)$$

The above capacity constraint variables compare the size of the largest fund in a family against the average or median size of the funds in the same strategy category in order to ascertain the degree of capacity constraint experienced by the fund families. Also, since we use hedge funds data from various countries, and over a seventeen (17) year period, we convert all reported fund AUMs in terms of 1990 US dollar values.

Following Khorana and Servaes (1999) we use a pooled binary regression model to investigate the impact of capacity constraints on the decision of opening new funds by the investment companies. Specifically, our dependent variable is a binary variable representing the decision of the fund family *i* to open a new hedge fund with investment strategy *j* in the year *t*. In our empirical analysis, we use the following Probit model:

$$Probability\ of\ new\ fund\ opening_{i,j,t} = \alpha + \gamma_1 ExSize_{i,j,t} + \sum_{2}^{k} \beta_k x_k \quad (3)$$

The dependent variable takes the value 1 if, investment company *i* opened a new fund in strategy class *j* during period *t*; otherwise, it takes the value 0. $ExSize_{i,t}$ is the excess size variable. In this study we use four different proxies for excess fund size. Specifically, we use *Exsize_Avg* and *Exsize_Med* as described above in Eq. (1) and Eq. (2) and also *Exsize_Avg_Dum* (*Exsize_Med_Dum*) – dummy variable which takes the value 1 when *Exsize_Avg (Exsize_Med*) is positive and takes the value 0 otherwise. The variable x_k is a vector of (k-1) control variables related to fund family, fund strategy and other fund and market characteristics. We also use dummy variables to control for the strategy of the largest fund in the family. As larger fund families tend to have larger size funds, there is a possibility of high correlation between total assets under management of the fund family and the excess fund size variables defined in Eq.(1) and Eq.(2). Therefore, in order to control for the size effect of the fund families in our analysis we use the residual fund family size variables. In particular, we define the residual fund family size as follows:

$$\begin{bmatrix} Rsd\_Familysize\_Avg_{i,t} \\ Rsd\_Familysize\_Med_{i,t} \end{bmatrix} = S \times \ln \begin{vmatrix} e_{i,t} \\ u_{i,t} \end{vmatrix} \quad (4)$$

Where S takes the value -1 id $e_{i,t}$ or $u_{i,t}$ is negative otherwise S is +1, $e_{i,t}$ and $u_{i,t}$ are the residuals of the following regression equation.

$$Fundfamily\_AUM_{i,t} = a + b\begin{bmatrix} Exsize\_Avg_{i,t} \\ Exsize\_Med_{i,t} \end{bmatrix} + \begin{bmatrix} e_{i,t} \\ u_{i,t} \end{bmatrix} \quad (5)$$

The Probit model described in Equation (3) helps to estimate the average sensitivity of the fund families' propensities to open new hedge funds with respect to their capacity constraints. However, as the capacity constraint is argued to be strategy specific (see, for example, Getmansky, 2005), we also estimate the following Probit model that provides the fund families' strategy-wise sensitivity to capacity constraints.

$$Probability\ of\ new\ fund\ opening_{i,j,t} = \alpha + \sum \gamma_{2,j} Strategy\_Dum_j \times ExSize_{i,j,t} + \sum \beta_k x_k \quad (6)$$

The variables $Strategy\_Dum_j$ are dummy variables indicating the strategy of the fund families' largest funds which are most likely to suffer from capacity constraints. As discussed earlier, for our analysis, we focused on eight different hedge fund strategies *Emerging Market (EM), Event Driven (ED), Fund of Hedge Funds (FOF), Global Macro (GM), Long Only (LO), Multi Strategy (MS), Relative Value (RV) and Sector focused (Sec)*. Other variables remain same as described earlier.

A detail description of all independent variables used in Eq. (3) and Eq. (6) is provided in Table A1 in Appendix 1. The summary statistics of these variables are reported in Table 3. In our sample, over the period 1990 through 2007, the average fund family size is about $27.5 million though the largest fund family has about $32.35 billion invested in their portfolios. The average excess return of all the fund families is about 3.2% per year. While this is small, it is not unexpected, as the excess return is calculated based on industry median fund returns. We use the MSCI hedge fund index return as a proxy of market return. Over the sample period, the average market return is 11.22%. There are, on average, about 43 new funds introduced every year in each strategy category over the sample period. The average number of funds in each strategy category is about 230. However, in the initial years, some of the categories have very few funds while, in 2007, there are 2,393 FOFs in our sample.

For testing *H2* and *H3* we analyze the average net fund flow and average abnormal performance of the existing funds and also the net fund flow and the average abnormal performance of the largest existing funds in the families. To test if fund flows to the existing hedge funds decrease after the introduction of a new fund within a family (*H2*), we calculate the net fund flow to the hedge funds following Sirri and Tufano (1998) and others as :

$$Dollar\ Fund\ Flow_t = AUM_t - AUM_{t-1}(1+R_t) \tag{7}$$

$$Fund\ Flow\ Rate_t = \frac{Dollar\ Fund\ Flow_t}{AUM_{t-1}} \tag{8}$$

Where AUM_t is the end of the month asset under management and R_t is the monthly return of a hedge fund.

We use pooled regression models to test *H2*:

$$Fund\ FlowRate_{i,t} = a + b_1 Pre\_NewFamFund_{i,t} + b_2 Post\_NewFamFund_{i,t} + \sum c_i y_i \quad (9)$$

$$Dollar\ Fund\ Flow_{i,t} = a + b_1 Pre\_NewFamFund_{i,t} + b_2 Post\_NewFamFund_{i,t} + \sum c_i y_i \quad (10)$$

Where $Pre\_NewFamFund$ ($Post\_NewFamFund$) is a dummy variable which takes the value one if the fund family of the hedge fund *i* introduced at least one new hedge fund within the next (previous) one year i.e. within the period *t* to *t*+12 (*t*-12 to *t*) months. Other independent variables are represented by the vector y_i. A detailed description of those variables is provided in Table A2 of Appendix 1.

We calculate the abnormal fund performance, or the alpha of the hedge funds using the following seven (7) factor model proposed by Fung and Hsieh (2004). A similar factor model is also used by Fung,Hsieh, Naik and Ramadorai (2007).

$$R_{f,t} = \alpha + \beta_1 SNPMRF_t + \beta_2 SCMLC_t + \beta_3 BD10RET_t + \beta_4 BAAMTSY_t + \beta_5\ PTFSBD_t + \beta_6 PTFSFX_t + \beta_7\ PTFSCOM_t \quad (11)$$

R_f is the monthly hedge fund return for fund *f* and month *t*. The set of factors comprises the excess return on the S&P 500 index (*SNPMRF*); a small minus big factor (*SCMLC*) constructed as the difference of the Wilshire small and large capitalization stock indices; the yield spread of the US ten year treasury bond over the three month T-bill, adjusted for the duration of the ten year bond (*BD10RET*); and the change in the credit spread of the Moody's BAA bond over the ten year treasury bond, also appropriately adjusted for duration (*BAAMTSY*). The other factors are based on primitive trend following strategies discussed by Fung and Hsieh (2001). These are: excess returns on portfolios of look-back straddle options on currencies (*PTFSFX*),

commodities (*PTFSCOM*) and bonds (*PTFSBD*), which are constructed to replicate the maximum possible returns to trend-following strategies on their respective underlying assets[2].

We estimate the factor model for all the hedge funds using first 60 months of their return history. Based on the estimated parameters of the seven factor model we calculate monthly alpha of the funds for rest of the sample period as follows:

$$Alpha_{i,t} = R_{i,t} - \hat{\beta}_{i,1} SNPMRF_t + \hat{\beta}_{i,2} SCMLC_t + \hat{\beta}_{i,3} BD10RET_t + \hat{\beta}_{i,4} BAAMTSY_t + \hat{\beta}_{i,5}\ PTFSBD_t + \hat{\beta}_{i,6} PTFSFX_t + \hat{\beta}_{i,7}\ PTFSCOM_t \quad (12)$$

Where, the $\hat{\beta}_{i,j}$ s refer to the estimated parameters from Eq. (11) for hedge fund *i*.

Finally we use the following pooled regression model to investigate the potential impact of a new fund opening decision on the performance of the other funds in the same family as:

$$Alpha_{i,t} = \lambda + \delta_1 Pre\_NewFamFund_{i,t} + \delta_2 Post\_NewFamFund_{i,t} + \sum \theta_k y_k \quad (13)$$

Where $Pre\_NewFamFund$ and $Post\_NewFamFund$ are dummy variables as described earlier. y_k is a vector of (k-2) control variables. A description of these control variables are provided in Table A2 of Appendix 1.

IV. Results

A. Excess Fund Size and Probability of New Hedge Fund Opening:

In hypothesis *H1,* we argue that hedge fund families may prefer opening new funds when their existing funds experience a capacity constraint so that new fund inflows can be diverted from the existing funds to a new fund. The Probit model, described in the previous section, tests the influence of capacity constraints on the new hedge fund opening decision. As discussed earlier, we use the excess fund size of the largest fund of a family in order to capture fund families' capacity constraints. Model 1 and Model 3 in table 4 report the coefficients estimated from the binary Probit

[2] The data on hedge fund risk factors used for estimation of the 7 factor model are collected from the website of David A. Hsieh: http://faculty.fuqua.duke.edu/~dah7/DataLibrary/TF-FAC.xls

models where $ExSize\_Med\_Dum_{i,j,t}$ and $ExSize\_Avg\_Dum_{i,j,t}$ are used as the proxies for capacity constraints, whereas Model 2 and Model 4 use $ExSize\_Med_{i,j,t}$ and $ExSize\_Avg_{i,j,t}$ respectively.

---------- Insert Table 4 here ----------

The results of the Probit analysis presented in Table 4 show that our capacity constraint proxies positively and significantly impact the propensity of new hedge fund opening. The coefficients of the excess fund size proxies are positive and significant at the 1% level in all models reported in Table 4. This supports our hypothesis *H1* that the probability of new fund opening increases with an increase in the excess fund size of the largest fund of the family. We find that large fund families have a greater propensity to open new funds as *Rsd_Fundsize_Med* and *Rsd_Fundsize_Avg* have positive and significant coefficients. Our results suggest that fund families are more inclined to open hedge funds in larger and better performing strategy classes as the coefficients of $Log\ (Strategy\_AUM)_{t-1}$ and $(Strategy\_Exret)_{t-1}$ are positive and significant. We find that fund families with higher management and incentive fees are more inclined to open new hedge funds and that the probability of new fund opening increases when the largest fund of the family uses leverage. However, we find that variables such as the performance of the fund family, net fund flow to the family, and net fund flow to the strategy, are not significant in explaining new fund opening decisions. Even market return is found to be insignificant in explaining the decision of opening new hedge funds. Interestingly, we find that the propensity to open a new hedge fund increases when fund families open new hedge funds in the strategy class similar to the strategy of the largest fund of the family. This may sound counter intuitive as it may mean that fund families prefer opening new funds in the strategy class where they experience capacity constraints. However, as we use a very broad strategy classification, our findings can also be interpreted as hedge fund families preferring to specialize in their respective successful strategies instead of diversifying. This evidence is well in line with the findings of Boyson (2008) who finds that hedge fund families open new funds in the area of their core competencies in order to increase their market share. In the

results reported in Table 4 we find evidence that fund families tend to follow their competitors as we find that fund families follow industry trends in that there is higher probability of opening a new fund in the strategy class that attracted a greater number of new funds in the previous year. However, when opening new funds, fund families appear to avoid strategy categories that have more funds in favour of funds that have fewer funds, as the probability of new fund opening is negatively correlated to number of existing funds in the any strategy class.

Hedge funds' capacity constraints generally depend on their specific investment strategies and the underlying liquidity of the market where the fund invests. Therefore it is reasonable to expect that some strategies may experience greater capacity constraints than others. Hence, we estimate the strategy wise influence of capacity constraints on fund families' decision to open new funds. Table 5 reports the estimated coefficients of the Probit models described in Equation (5). These results are quite similar to the findings reported in Table 4. In these models, we interact the excess fund size variables with the strategy dummy thereby focusing on capacity constraint of the funds in the the investment strategy classes of the largest funds of the families. Overall, we find that the coefficients of most of the interaction variables are positive and highly significant. However, in some of the models, the coefficients associated with the "Long only" and the "Multi strategy" categories are statistically insignificant and, hence, insignificantly distinct from zero. Therefore with the exception of these two strategy categories, in all other strategy classes, we find very strong evidence of capacity constraint influencing new hedge fund opening decisions.[3] Nevertheless the results of Table 4 and 5 strongly support our hypothesis *H1* that capacity constraint significantly influences new fund opening decisions of fund families.

B. *Critical Fund Size:*

The results reported in Table 4 and 5 not only support hypothesis *H1* they also help us in finding the critical fund size beyond which the fund families are more inclined to open a new hedge fund rather than continuing on with the existing funds. Figure 4 plots the probability of a new fund

[3] One may reconcile this week evidence of capacity constraint on these strategy classes by arguing that *Long only* and *Multi Strategy* are relatively broader and less homogeneous strategy classes compared to other categories.

opening with the increase in the excess fund size of the largest fund in the family. Figure 4 is based on the estimated results of Model 4 in Table 5. The figure shows how the probability of a new fund opening varies with the strategy of the largest fund in the family. Specifically, this figure shows that sector focused funds reach their capacity much faster than other strategy classes. The figure shows that for the *Multi Strategy* category the capacity constraint hypothesis does not hold as probability of a new fund opening decreases with an increase in the excess fund size. Intuitively these results make sense as sector focused funds generally invest in less liquid markets compared to funds in the *Global Macro* and *Long Only* strategies.

Figures 5 and 6 compare critical fund sizes across the various strategies. The critical size of a fund is defined as the fund size beyond which the likelihood of new fund opening by a given fund family falls above the 50% level. Figure 5 reports that, in dollar value terms, funds with a *Global Macro* strategy appear to have the highest capacity. However, relative to the average fund size in the different strategy categories, Figure 6 shows that the capacity of the fund of hedge funds is the largest, approximately 60 times the average fund size in that category. In dollar value terms, and relative to the average fund size in the strategy category, sector specific hedge funds have the smallest capacity.[4]

Based on the estimated coefficients of Model 3 reported in Table 5, Figure 7 compares the probability of new fund opening by fund families when the size of the largest fund of the family is greater than the average fund size in that strategy class with that when they are smaller than the average fund size in their strategy category. The figure shows that when the size of the largest fund in the family increases from below average size to above average fund size, the probability of a new fund opening increases on an average by 20% , when the strategy of the largest fund is *Long Only*. For *Global Macro* funds, the corresponding probability increases by about 18%.

C. Fund Flows and New Fund Opening:

The basic argument behind hypothesis *H1* is that, while experiencing capacity constraints, fund families open new hedge funds in order to divert new fund flows from existing funds to this new

[4] In Figures 6 and 7 the critical sizes for the *Long Only* strategy is not plotted as, according to Model 4 of Table 3, the probability of a new fund opening for the *Long Only* strategy does not reach the 50% level within the range of fund sizes available in our data.

fund. Therefore, in *H2*, we test if fund flows to the existing funds decreases after the introduction of new funds. Table 6 reports the results of a pooled regression analysis testing the influence of new hedge fund openings on the fund flows to existing funds. The dependent variable in these models is the net fund flow rate. Models 1 and 2, reported in this table, are estimated for all funds in a family, while Model 3 is estimated only for the largest fund in each family. For Model 1, we find fund flows to the existing funds to be positive and significant for the 12 months before any new fund introduction, and the coefficient of Post_NewFamFund, the dummy variable capturing the 12-month period after introduction of new funds by the families, is statistically insignificant. This result suggests that fund flows to the existing funds decrease following the introduction of a new fund. However, we also find that *Pre_NewFamFund* and *Post_NewFamFund* are both insignificant in Model 2. The results from Models 1 and 2 do not strongly support our hypothesis *H2*; however this is not unexpected as we are estimating these models based on all of the existing funds within a family and not specifically restricting our analysis to the largest funds within each, which are the ones most likely to face the capacity constraint issue. To investigate this issue, in model 3, we use data from only the largest fund within each family.

In doing so, we find the results of Model 3 appear quite consistent with hypothesis *H2*. In particular, we find that the coefficients of *Pre_NewFamFund* and *Post_NewFamFund* dummies are both positive and significant. However, the value the coefficient of *Post_NewFamFund* is much smaller than that associated with *Pre_NewFamFund* which supports the hypothesis that, fund flows to the existing fund decreases following a new opening.

Table 7 reports an analysis similar to the one reported in Table 6 with an important difference. Specifically, in this table fund flows are analyzed based on the dollar value of net fund flows to the existing funds. Model 1 in the table is estimated for all the existing funds and Model 2 is estimated for the largest funds only. In Model 1, we find that fund flows to the existing hedge funds are positive and significant before the introduction of new funds. However, it becomes negative and significant following the opening of a new fund. In the model estimated for the largest funds of the family, we find that fund flows are positive and significant both before and after new fund opening.

However, similar to the previous analysis for fund flow rates, the coefficient of the dummy variable for the post new fund opening period is smaller relative to the coefficient of the dummy for the pre new fund opening period. These results support *H2* and provide evidence that opening new hedge funds could be a strategic choice by the fund managers to divert new fund flows away from the existing funds.

D. Abnormal Return and New Fund Opening:

Finally we also investigate if the strategy of opening new hedge funds to divert new fund flows from the existing fund helps in improving the performances of the existing funds. Table 8 reports the estimated coefficients of the pooled regression model given by (12). Model 1, reported in Table 8, is estimated for all of the existing funds within a family and Model 2 is estimated for only the largest funds in each of the fund families. Corresponding to Model 1, we find that the monthly abnormal returns on the existing funds are not significantly different in the 12-months prior to the opening of a new fund. However, the new funds' performances increase significantly in the 12-month period following the new fund opening. The results of Model 2 are quite consistent with those of Model 1. Although we find that the abnormal performances of the largest funds are positively and significantly different in both the pre and post periods of new fund openings, we also find that the coefficient of the post new fund opening dummy is larger than the pre new fund opening dummy which would again suggest an improvement of fund performance following the opening of a new fund by the family. This result indicates that the strategy of opening a new hedge fund in order to divert fund flows from existing funds to newly introduced funds is an economically rewarding exercise.

V. Robustness Checks:

A. Alternative excess size measure:

In the Probit analyses discussed in section IV, dollar value measures of excess fund size were used as a proxy for the capacity constraint of fund families. As robustness check, we also measure the capacity constraint using excess fund size as a fraction of the mean and median fund size with in a strategy class. Specifically, we define alternative excess fund size measures as follows:

$$ExSize\_AvgR_{i,j,t} = \frac{ExSize\_Avg_{i,j,t}}{Average\ AUM\ of\ Funds\ in\ Strategy\ j\ in\ year\ t} \quad (14)$$

$$ExSize\_MedR_{i,j,t} = \frac{ExSize\_Med_{i,j,t}}{Median\ AUM\ of\ Funds\ in\ Strategy\ j\ in\ year\ t} \quad (15)$$

Note that both of these measures are relative measures of excess fund size. Table 9 shows the results of Probit models for estimating the propensity of new fund opening using these alternative excess fund size measures. We find that most of the coefficients of excess fund sizes are positive and highly significant in all of the models. However the coefficients of the interaction between *Long Only* strategy and the alternative excess fund size variables are positive but insignificant and the coefficients of the interaction between *Multi Strategy* and the alternative excess fund size variables are negative and insignificant. These results are consistent with our initial findings reported in Table 4 and reconfirm our hypothesis *H1* that the capacity constraint faced by fund families positively influences the decision to open a new fund.

B. Evidence from Large and Small Fund Families:

In our analysis, we assume that fund families decide to open new funds when their largest funds experience capacity constraint. However one may argue that this is true only for the fund families with very large funds. Therefore, to check if the results of our analysis are driven by a few fund families with large hedge funds, we split our sample into large fund family and small fund family sub samples. The large fund family sub sample includes the fund families whose largest funds are within the largest 25% funds in their respective strategy class. Similarly the small fund family sub sample is defined by the fund families with their largest funds within the smallest 25% funds in their respective strategy class. The results of this analysis are presented in Table 10 and 11 and are consistent with our earlier findings. We find evidence of capacity constraint in both small family and

large fund family sub samples. However Figure 8 shows that small families' sensitivity to new fund opening in response to increased fund size of their largest fund is higher compared to the large families. For an additional $1bn in excess fund size of the largest fund of the family, the marginal propensity of opening a new fund is almost 27% for average small families compared to about 5% for large families. Similarly on average small families that have largest funds with positive excess fund size have 21% more probability of opening new funds than small families with negative excess fund size. The corresponding marginal probability in large fund family sub sample is only 8%. This reflects the fact that fund families with smaller funds have low probability of opening a new fund compared to fund families with larger funds as a result they experience greater marginal increase in the probability of new fund opening.

C. Evidence from Fund Families with One Fund, Many Funds and Multiple Strategies:

As we mentioned earlier, one of the basic assumptions of our analysis is that the largest fund (i.e. fund with largest excess fund size) in the family is most likely to experience capacity constraint. However this assumption is not required for the single fund families that are deciding to open their second fund. Therefore we further test robustness of our findings by splitting our sample into three sub samples as 1) Fund families with single fund (SFF) 2) Fund families with multiple funds focused in single strategy class (MFSS) 3) Fund family with multiple funds and multiple strategies (MFMS). The results of this analysis are consistent with our main analysis[5]. We find evidence in support of our hypothesis *H1* in all three sub samples, however for SFF sub sample $ExSize\_Avg_{i,j,t}$ and $ExSize\_Med_{i,j,t}$ are found to be insignificant in predicting probability of new fund opening though both $ExSize\_Avg\_Dum_{i,j,t}$ and $ExSize\_Med\_Dum_{i,j,t}$ are negative and significant as per our expectation. For other two sub samples MFSS and MFMS the results are quite similar to our original analysis.

[5] The results of this robustness test are qualitatively quite similar to the results of the original analysis. We do not provide the detail results of this robustness test in the paper just to avoid repetitive reporting of similar results. However these results are available upon request.

D. Evidence from US and Non US Fund Families:

Our original analysis includes fund families from the US and various other countries. To check the robustness of our results we also test our hypothesis *H1* separately on the sub sample of the US and Non-US fund families. We find that the results of this robustness analysis are qualitatively very similar to our original results[6], implying that the influence of capacity constraints on fund families' decision of new hedge fund opening is a global phenomenon. Over all we find that all our robustness analyses provide strong support for our main findings.

VI. Summary and Conclusion

The extant literature suggests that hedge funds experience capacity constraints and provide evidence of a non scalability of hedge funds' investment strategies. In this paper, we argue that capacity constraint of hedge funds can explain the decision to open new hedge funds by fund families. We hypothesize that portfolio managers may find that it difficult to actively manage large portfolios with complex investment strategies and earn positive abnormal return for their investors at the same time. Therefore, they may restrict existing fund sizes to an optimal threshold level by diverting new incoming funds from investors to a newly created hedge fund within the same family. We find strong empirical evidence supporting our hypothesis. Specifically, using hedge fund data for a period of seventeen years (1990 through 2007) from the Barclay Hedge Fund Database, we find that fund families' propensity to open a new hedge fund increases with an increase in the excess size of the existing largest fund of a hedge fund family. Based on our analysis, we estimate the critical fund sizes beyond which fund families prefer opening new hedge funds than continue growing the existing funds. Our results show that funds that invest in relatively liquid markets suffer less from a capacity constraint. Strategies such as *Global Macro* and *Long Only* enjoy greater capacities compared to the *Sector focused* hedge funds. However, we do not find much evidence of the existence of capacity constraints for *Multi Strategy* hedge funds.

[6] The results of this robustness test are qualitatively quite similar to the results of the original analysis. We do not provide the detail results of this robustness test in the paper just to avoid repetitive reporting of similar results. However these results are available upon request.

We also find evidence that fund inflows to the existing funds increase before the introduction of new funds and they subsequently decrease following the opening of the new hedge funds. This supports our contention that capacity constraints may influence the new hedge fund opening decision by hedge fund families. Finally, we find that the performance of the existing funds of the family increases following the opening of a new fund. This implies that the strategy of diverting fund flows from existing funds to a new hedge fund helps fund families improve their performance overall.

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Appendix 1

Table A1

Variable Description for Probit Models.

This table provides description of the variables used for estimating fund families' propensity of opening new hedge funds. The empirical Probit models that use these variables are described in Equation 6. Table 2, 3, 7 & 8 reports the estimated coefficients from the models using these variables.

Variable	Description
$(Family\_ExAvgret)_{t-1}$	Cross sectional average of annual return of funds in a family minus median annual return of the hedge fund industry
$(Family\_fundfow)_{t-1}$	Sum of annual net fund flow to all the funds in a family. Net fund flow is calculated following Sirri and Tufano (1998).
$(Strategy\_AUM)_{t-1}$	Natural logarithm of total asset under management of all the funds in a strategy class.
$(Strategy\_ExAvgret)_{t-1}$	Cross sectional average of annual return of funds in a strategy minus median annual return of the hedge fund industry
$(Strategy\_Fundflow)_{t-1}$	Sum of annual net fund flow to all the funds in a strategy class. Net fund flow is calculated following Sirri and Tufano (1998).
Rsd_Familysize_Avg	Residual fund family size after controlling for correlation with Exsize_Avg.
Rsd_Familysize_Med	Residual fund family size after controlling for correlation with Exsize_Med.
High _Mgmt_Fee	Dummy variable which takes the value 1 if average management fee for the fund family is higher than the industry average

High_Incentive_Fee	Dummy variable which takes the value 1 if average incentive fee for the fund family is higher than the industry average
Leverage_Largest	Dummy variable indicates if largest fund of the family uses leverage
$(Strategy\_No\_of\_new\_funds)_{t-1}$	Number of new funds introduced in a strategy class
$(Strategy\_Total\_No\_of\_funds)_{t-1}$	Total number of funds in a strategy class
Market_Return	Annual return on MSCI hedge fund index
Strategy Dummies (*EM* = Emerging Markets, *ED* = Event Driven, *FOF* = Fund of Hedge Funds, *GM* = Global Macro, *LO* = Long Only, *MS* = Multi Strategy, *RV* = Relative Value and *Sec* = Sector Focused)	Dummy variables indicating strategy of the largest fund in the family for the year.
ExSize *ExSize_Avg* , *ExSize_Med* , *ExSize_Avg_Dum*, *ExSize_Med_Dum*, *ExSize_AvgR* *ExSize_MedR*	Excess fund size variables. Equation 1, 2, 14 & 15 defines various Exsize variables used in the analysis.
Strategy Dummies x ExSize	Interaction between strategy dummy and excess fund size variables.

Table A2

Variable description for Fund flow and Abnormal return analysis.

This table provides description of variables used to in empirical analysis of fund flows and abnormal returns of the hedge funds around a new fund opening by the fund family. The regression models that use these variables are described in Equation 9, 10 & 13. Table 4, 5 & 6 reports the estimated coefficients from the models that use these variables.

Variables	**Description**
AUM_t-1	End of the month asset under management.
Alpha_t-1	Abnormal return calculated using 7 factor model proposed by Fung and Hsieh (2001), Fung,Hsieh, Naik and Ramadorai (2007). Using monthly hedge fund return and factor data, the parameters of the 7 factor model are estimated over a period of 5 years. The monthly alphas are then calculated for the rest of the sample period using estimated parameters.
Market_ret_t-1	Market return. Monthly return on MSCI hedge fund index.
First_yr_Dum	Dummy variable indicating if the fund is introduced in previous one year.
US_Domicile_Dum	Dummy variable takes the value one if the fund is United States.
Boom1_Dum	Dummy variable indicating boom period of 2000 - 2001 based on economic cycles identified by NBER. The dummy variable takes value one for 6 months period ending on March 2001.
Boom2_Dum	Dummy variable indicating boom period of 2007

	based on economic cycles identified by NBER. The dummy variable takes value one for 6 months period ending on December 2007.
Rec_Dum	Dummy variable indicating recession period of 2001 based on economic cycles identified by NBER. The dummy variable takes value one for 6 months period ending on November 2001.
Strategy Dummies	Dummy variable for different hedge fund strategy classes.

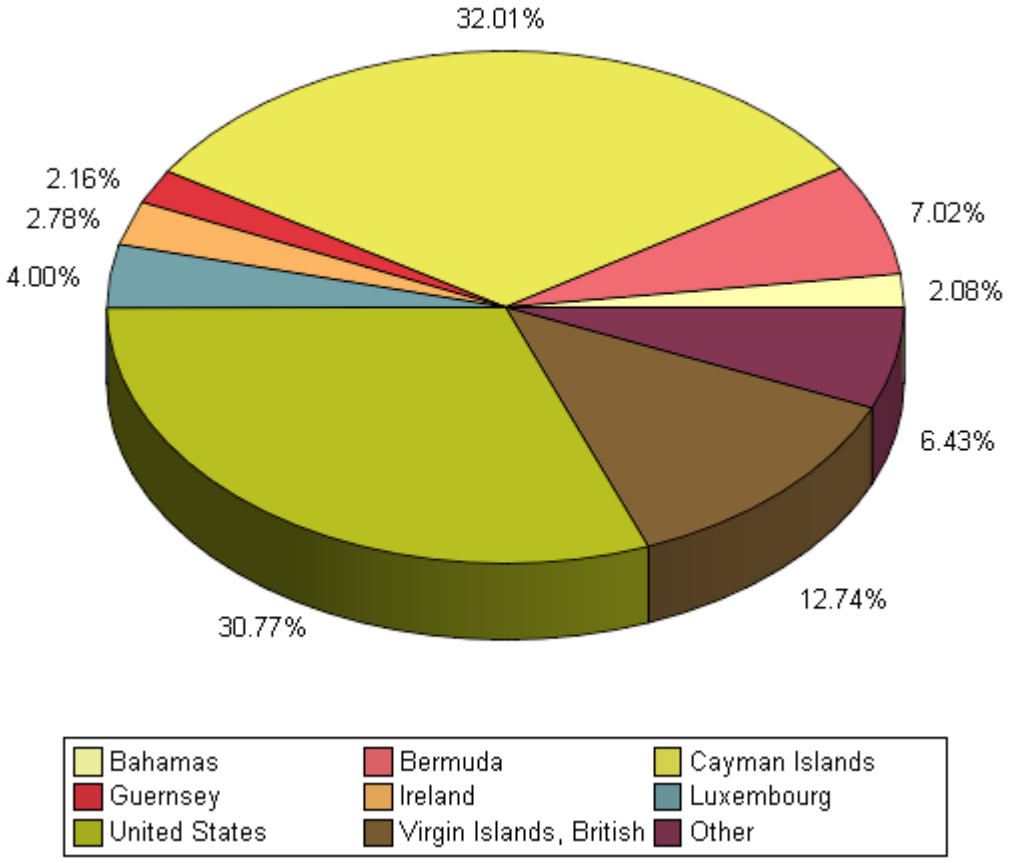

Figure 1: Hedge funds' Country of Domicile.

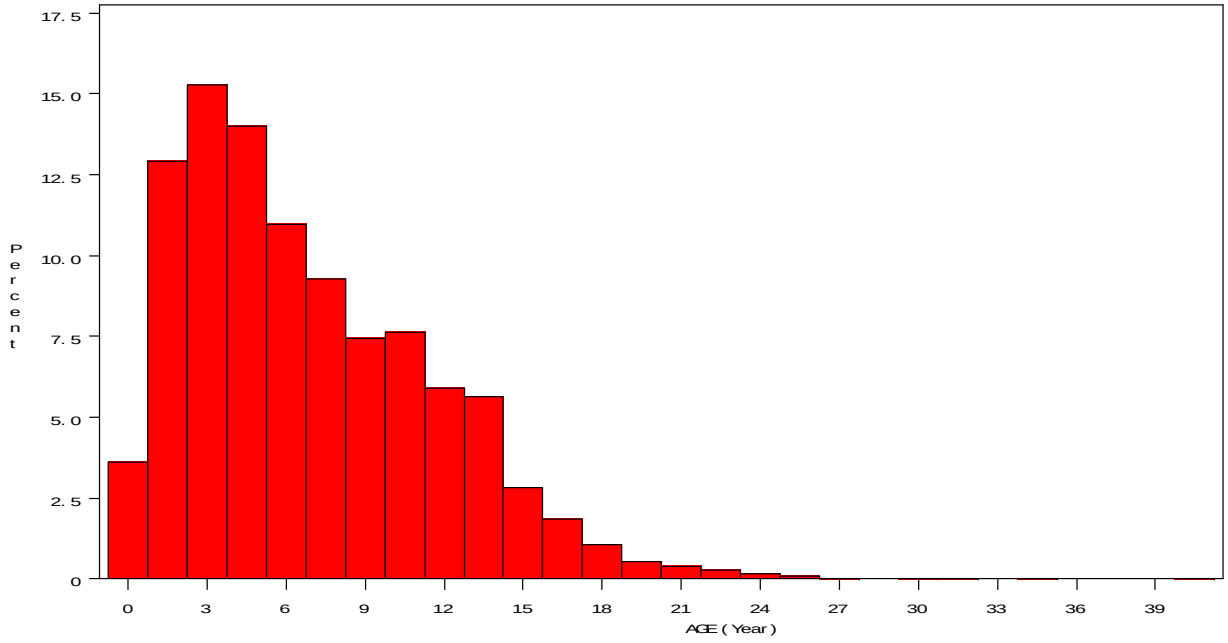

Figure 2: Distribution of age of the hedge funds in the sample

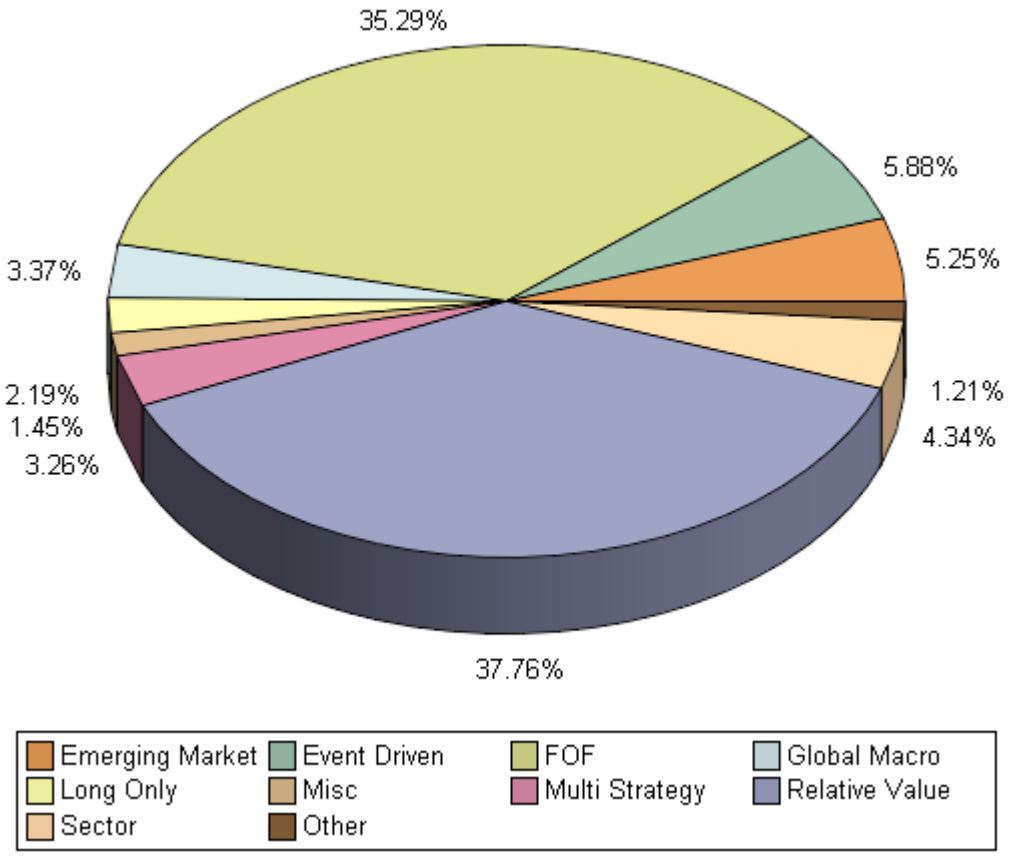

Figure 4: Investment Strategies of Hedge Funds included in the sample.

Table 1: Description of Hedge Fund Families									
Year	**No of Fund Families**	**Average No. of Funds per Families**	**Average Asset Under Management (US$Bn)**	**No of Single Fund Families**	**No Families with 5 or more Funds**	**Fund Families with one Strategy**	**Average No. of Strategies per Family**	**No. of US Fund Families**	**No. of Non US Fund Families**
1990	155	1.465	0.077093	121	4	138	1.129	96	54
1991	234	1.419	0.079492	186	6	215	1.094	146	82
1992	327	1.431	0.081987	255	10	302	1.089	200	116
1993	490	1.384	0.099511	391	12	458	1.078	290	185
1994	722	1.404	0.100651	583	18	676	1.075	407	292
1995	905	1.425	0.085681	721	26	842	1.081	513	372
1996	1061	1.473	0.095267	828	32	989	1.079	591	449
1997	1257	1.522	0.108278	958	42	1171	1.080	716	525
1998	1404	1.564	0.099951	1053	54	1297	1.093	799	587
1999	1489	1.652	0.111775	1082	69	1370	1.102	854	616
2000	1516	1.783	0.11248	1052	91	1380	1.117	854	640
2001	1549	1.986	0.122432	1018	128	1402	1.129	863	663
2002	1573	2.219	0.134864	945	142	1403	1.150	881	666
2003	1567	2.559	0.20154	878	192	1366	1.177	870	664
2004	1514	3.097	0.307443	767	233	1289	1.211	848	625
2005	1382	3.840	0.383944	569	280	1119	1.271	775	564
2006	1298	4.411	0.445793	468	313	1014	1.326	710	544
2007	1178	4.677	0.580718	406	288	911	1.337	638	512

Table 2: New Fund Openings by Hedge Fund Families										
	Single Fund Families		Multiple Fund Single Strategy Families		Multiple Fund Multiple Strategy Families		All Fund Families		US Families	
Year	Opened at least one new fund	Number of Funds Opened	Opened at least one new fund	Number of Funds Opened	Opened at least one new fund	Number of Funds Opened	Opened at least one new fund	Number of Funds Opened	Opened at least one new fund	Number of Funds Opened
1991	6	6	1	1	4	4	11	11	6	6
1992	18	19	3	6	5	9	26	34	12	13
1993	16	19	4	5	5	7	25	31	12	15
1994	23	29	17	29	8	18	48	76	29	37
1995	35	40	18	30	12	15	65	85	38	42
1996	41	60	25	38	11	16	77	114	40	51
1997	45	60	29	41	20	37	94	138	45	57
1998	39	45	32	49	21	30	92	124	55	67
1999	46	63	37	65	29	48	112	176	52	67
2000	43	51	44	72	32	67	119	190	66	99
2001	50	61	68	158	39	107	157	326	78	113
2002	66	91	74	139	49	129	189	359	92	144
2003	51	69	111	232	61	179	223	480	96	151
2004	56	79	136	379	77	266	269	724	117	225
2005	64	81	135	330	83	277	282	688	125	234
2006	37	56	113	268	88	290	238	614	95	185
2007	29	39	92	189	66	236	187	464	63	116
Total		868		2031		1735		4634		1622

Table 3: Descriptive Statistics of variables used

Variables	Mean	Std Dev	Minimum	Maximum	Median
Log(Family_AUM)	17.1274	1.9342	3.9610	24.2040	17.0954
Family_Exret	0.0326	0.2006	-2.2085	2.4467	0.0126
Family_Fundflow	0.6137	2.4628	-1.7402	86.2330	0.0996
Log(Strategy_AUM)	21.6130	2.2866	14.4458	25.9022	22.0095
Strategy_Exret	0.0219	0.0943	-0.3848	0.2875	0.0230
Strategy_Fundflow	0.2177	0.5715	-0.6842	5.4393	0.1286
Market_Ret	0.1122	0.1536	-0.1742	0.3150	0.1083
Strategy_No_of_new_funds	43.2841	74.8429	0	437	17
Strategy_Total_No_of_funds	229.838	434.5551	1	2393	78
Exsize_Avg ($Bn)	0.2038	2.86	-4.4	76.6	-0.37
Exsize_Med ($Bn)	0.7784	2.91	-1.9	80	0.0294

Table 4: **Modelling Propensity of New Fund Opening.** The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Model1		Model 2		Model 3		Model 4	
Variables	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error
Intercept	-5.749***	0.2903	-5.4233***	0.2869	-5.5756***	0.2892	-5.3319***	0.2847
$(Family\_Exret)_{t-1}$	0.0432	0.0675	0.0514	0.0646	0.06	0.0669	0.0348	0.0645
$(Family\_fundflow)_{t-1}$	0.539 $x10^{-2}$	0.418 $x10^{-2}$	0.775 $x10^{-2}$*	0.409 $x10^{-2}$	0.486 $x10^{-2}$	0.427 $x10^{-2}$	0.753 $x10^{-2}$*	0.411 $x10^{-2}$
$Log(Strategy\_AUM)_{t-1}$	0.1188***	0.0127	0.1179***	0.0126	0.1192***	0.0127	0.1158***	0.0125
$(Strategy\_Exret)_{t-1}$	0.3202*	0.1869	0.3304*	0.1849	0.2987*	0.1859	0.3126*	0.1837
$(Strategy\_Fundflow)_{t-1}$	-0.298 $x10^{-2}$	0.0476	-0.189 $x10^{-2}$	0.0469	-0.0144	0.0487	-0.0163	0.0479
Rsd_Familysize_Avg					0.919 $x10^{-2}$***	0.73 $x10^{-3}$	0.861 $x10^{-2}$***	0.727 $x10^{-3}$
Rsd_Familysize_Med	0.013***	0.732 $x10^{-3}$	0.0101***	0.704 $x10^{-3}$				
Similar_Strategy	1.2238***	0.0259	1.2006***	0.0256	1.217***	0.0258	1.1948***	0.0255
Leverage_Largest	0.0785***	0.0263	0.1095***	0.0259	0.0946***	0.0262	0.1132***	0.0259
Market_Return	0.0631	0.0699	0.0811	0.0692	0.0788	0.0702	0.0693	0.0698

$(Strategy\_New\_funds)_{t-1}$	0.206 $x10^{-2}$***	0.187 $x10^{-3}$	0.195 $x10^{-2}$***	0.186 $x10^{-3}$	0.208 $x10^{-3}$***	0.188 $x10^{-3}$	0.203 $x10^{-2}$***	0.187 $x10^{-3}$
$(Strategy\_No\_of\_funds)_{t-1}$	-0.214 $x10^{-3}$***	0.037 $x10^{-3}$	-0.192 $x10^{-3}$***	0.037 $x10^{-3}$	-0.218 $x10^{-3}$***	0.037 $x10^{-3}$	-0.202 $x10^{-3}$***	0.037 $x10^{-3}$
High _Mgmt_Fee	0.1533***	0.0238	0.1705***	0.0235	0.1504***	0.0237	0.1666***	0.0234
High_Incentive_Fee	0.2557***	0.0257	0.2781***	0.0254	0.2496***	0.0255	0.2858***	0.0254
Strategy _EM	0.0395	0.0987	0.0166	0.098	0.0222	0.0978	-0.00163	0.0972
Strategy _ED	-0.1991**	0.0981	-0.2167**	0.0976	-0.208**	0.0976	-0.2274**	0.097
Strategy _FOF	-0.0131	0.0919	0.00479	0.0914	-0.0111	0.0913	-0.0203	0.0907
Strategy _GM	-0.0831	0.1108	-0.2785***	0.1128	-0.2727***	0.1108	-0.4214***	0.1116
Strategy _LO	-0.1002	0.1418	-0.1469	0.1403	-0.1007	0.1416	-0.173	0.1395
Strategy _RV	-0.2502***	0.0912	-0.2754***	0.0907	-0.269***	0.0905	-0.2957***	0.09
Strategy _MS	0.0126	0.1247	-0.0596	0.1246	-0.0427	0.1239	-0.1196	0.1242
Strategy _Sec	0.0254	0.0992	0.331 $x10^{-2}$	0.0987	0.359 $x10^{-2}$	0.0983	-0.899 $x10^{-2}$	0.0978
Exsize _Med_Dum	0.5087***	0.0288						
Exsize_Med			0.03***	$2.3x10^{-3}$				
Exsize _Avg_Dum					0.4444***	0.0236		

Exsize_Avg				0.032***	2.34 x10^{-3}
Pseudo Rsq	0.3344	0.3222	0.3306	0.3188	

Table 5: Modelling Propensity of New Fund Opening – Evidence of strategy wise capacity constraint. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Model 1		Model 2		Model 3		Model 4	
ExSize Variable	Exsize_Med_Dum		Exsize_Med		Exsize_Avg_Dum		Exsize_Avg	
Variables	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error
Intercept	-5.4138***	0.2905	-5.3857***	0.2873	-5.431***	0.2908	-5.3267***	0.2854
$(Family\_Exret)_{t-1}$	0.0459	0.0681	0.0616	0.0656	0.0722	0.0679	0.0405	0.0653
$(Family\_fundflow)_{t-1}$	0.571×10^{-2}	0.418×10^{-2}	0.738×10^{-2}*	0.412×10^{-2}	0.546×10^{-2}	0.425×10^{-2}	0.722×10^{-2}*	0.414×10^{-2}
$Log(Strategy\_AUM)_{t-1}$	0.1194***	0.0127	0.117***	0.0126	0.1217***	0.0128	0.1157***	0.0125
$(Strategy\_Exret)_{t-1}$	0.3362*	0.1874	0.3406*	0.1859	0.2906	0.1867	0.3267*	0.1845
$(Strategy\_Fundflow)_{t-1}$	-0.347×10^{-2}	0.0478	-0.282×10^{-2}	0.0473	-0.0214	0.0501	-0.0153	0.048
Rsd_Familysize_Avg					0.972×10^{-2}***	0.739×10^{-3}	0.852×10^{-2}***	0.733×10^{-3}
Rsd_Familysize_Med	0.0134**	0.739×10^{-3}	0.0103***	0.711×10^{-3}				
Similar_Strategy	1.2261***	0.026	1.2093***	0.0257	1.2277***	0.026	1.2006***	0.0256
Leverage_Largest	0.0717***	0.0264	0.1193***	0.0261	0.0833***	0.0263	0.1248***	0.0261
Market_Return	0.0616	0.0701	0.0923	0.0695	0.0671	0.0707	0.0786	0.07
$(Strategy\_New\_funds)_{t-1}$	0.205×10^{-2}***	0.188×10^{-3}	0.202×10^{-2}***	0.187×10^{-3}	0.21×10^{-2}***	0.189×10^{-3}	0.207×10^{-2}***	0.188×10^{-3}
$(Strategy\_No\_of\_funds)_{t-1}$	-0.209×10^{-3}***	0.037×10^{-3}	-0.204×10^{-3}***	0.037×10^{-3}	-0.226×10^{-3}***	0.037×10^{-3}	-0.208×10^{-3}***	0.037×10^{-3}
High _Mgmt_Fee	0.1569***	0.0239	0.1555***	0.0237	0.1545***	0.0238	0.155***	0.0237
High_Incentive_Fee	0.2537***	0.0259	0.2627***	0.0256	0.2494***	0.0257	0.276***	0.0255
Strategy _EM	-0.2521**	0.1228	-0.000777	0.0995	-0.0834	0.1044	-0.00574	0.0978

Strategy _ED	-0.6167***	0.1267	-0.232**	0.0992	-0.4292***	0.1073	-0.2281**	0.0977
Strategy _FOF	-0.2278**	0.1007	0.00033	0.0917	-0.1502*	0.0932	-0.0154	0.0909
Strategy _GM	-0.8231***	0.2053	-0.2065*	0.1138	-0.8086***	0.1398	-0.3828***	0.1121
Strategy _LO	-0.647**	0.2757	-0.1117	0.1421	-0.572***	0.2031	-0.1445	0.1394
Strategy _RV	-0.7078***	0.0982	-0.3359***	0.0913	-0.555***	0.0927	-0.3234***	0.0903
Strategy _MS	-0.288	0.2013	0.0459	0.1289	0.0185	0.1379	-0.0424	0.1247
Strategy _Sec	-0.1828	0.1213	-0.0776	0.1007	-0.0553	0.1047	-0.0494	0.0988
Exsize x EM	0.4344***	0.0977	$4.31x10^{-2}$***	$1.67x10^{-2}$	0.2482***	0.0842	$4.5x10^{-2}$***	$1.7x10^{-2}$
Exsize x ED	0.5973***	0.1014	$3.4\ x10^{-2}$***	$1.15x10^{-2}$	0.4828***	0.0833	$3.4\ x10^{-2}$***	$1.16x10^{-2}$
Exsize x FOF	0.3424***	0.0513	$2.5x10^{-2}$***	$4.69x10^{-2}$	0.3284***	0.0406	$2.6\ x10^{-2}$***	$4.69x10^{-3}$
Exsize x GM	0.9899***	0.1979	$2x10^{-2}$***	$4.02x10^{-3}$	1.1176***	0.1388	$2.6x10^{-2}$***	$3.92x10^{-3}$
Exsize x LO	0.7628	0.289	$-2.84x10^{-4}$	$2.68x10^{-2}$	0.9875***	0.2372	$3.3\ x10^{-3}$	$2.5\ x10^{-2}$
Exsize x RV	0.6522***	0.0454	$6.6\ x10^{-2}$***	$5.32x10^{-3}$	0.6146***	0.0382	$6.3\ x10^{-2}$***	$5.35x10^{-3}$
Exsize x MS	0.451**	0.2059	$-1.96\ x10^{-2}$	$2.53x10^{-2}$	-0.1818	0.1871	$-1.62\ x10^{-2}$	$2.35x10^{-2}$
Exsize x Sec	0.3203***	0.0981	0.14***	$2.33x10^{-2}$	0.1499*	0.0893	0.14***	$2.43x10^{-2}$
Pseudo Rsq	0.3366		0.3263		0.3356		0.3221	

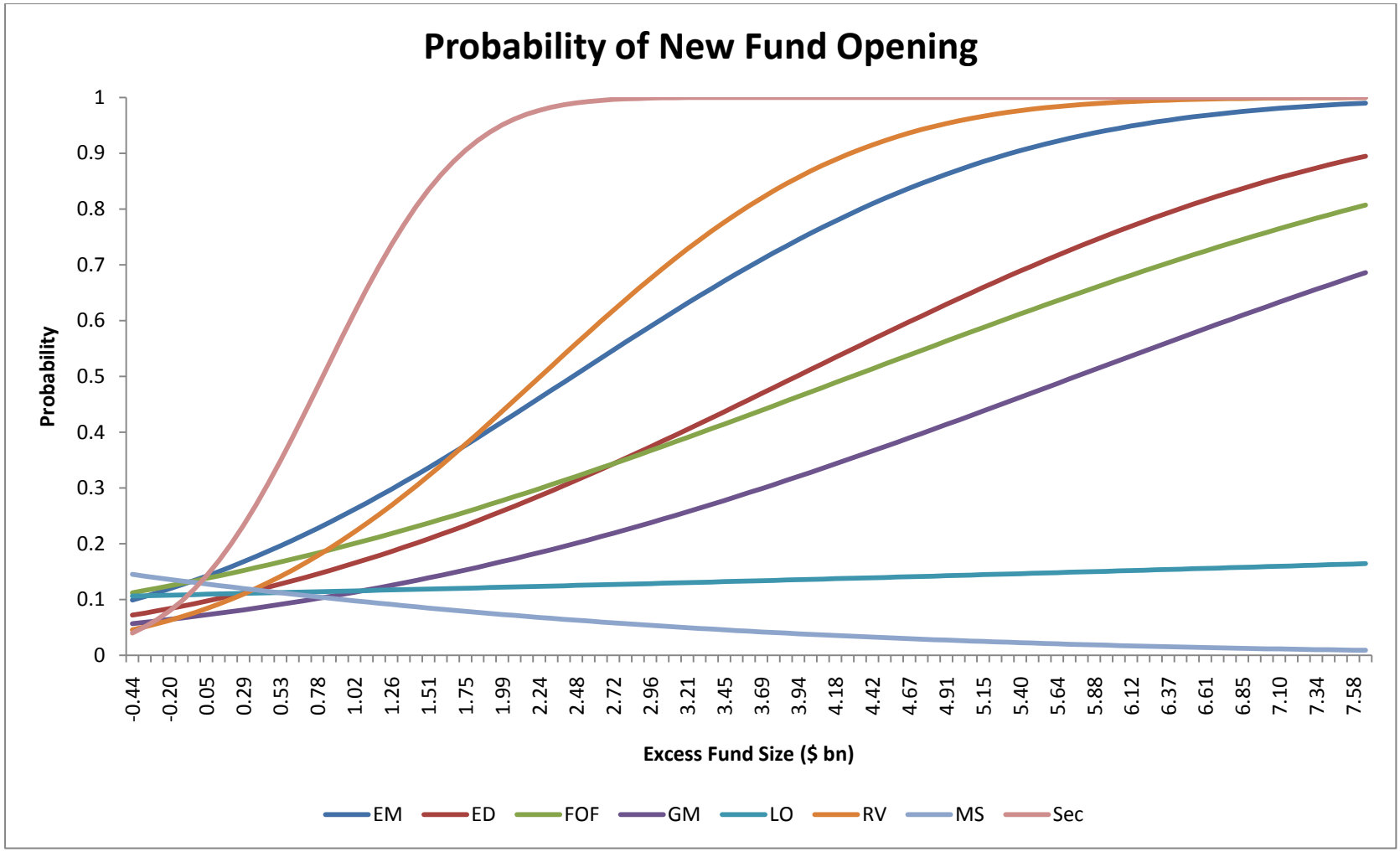

Figure 4: Probability of new fund opening for different strategy categories.

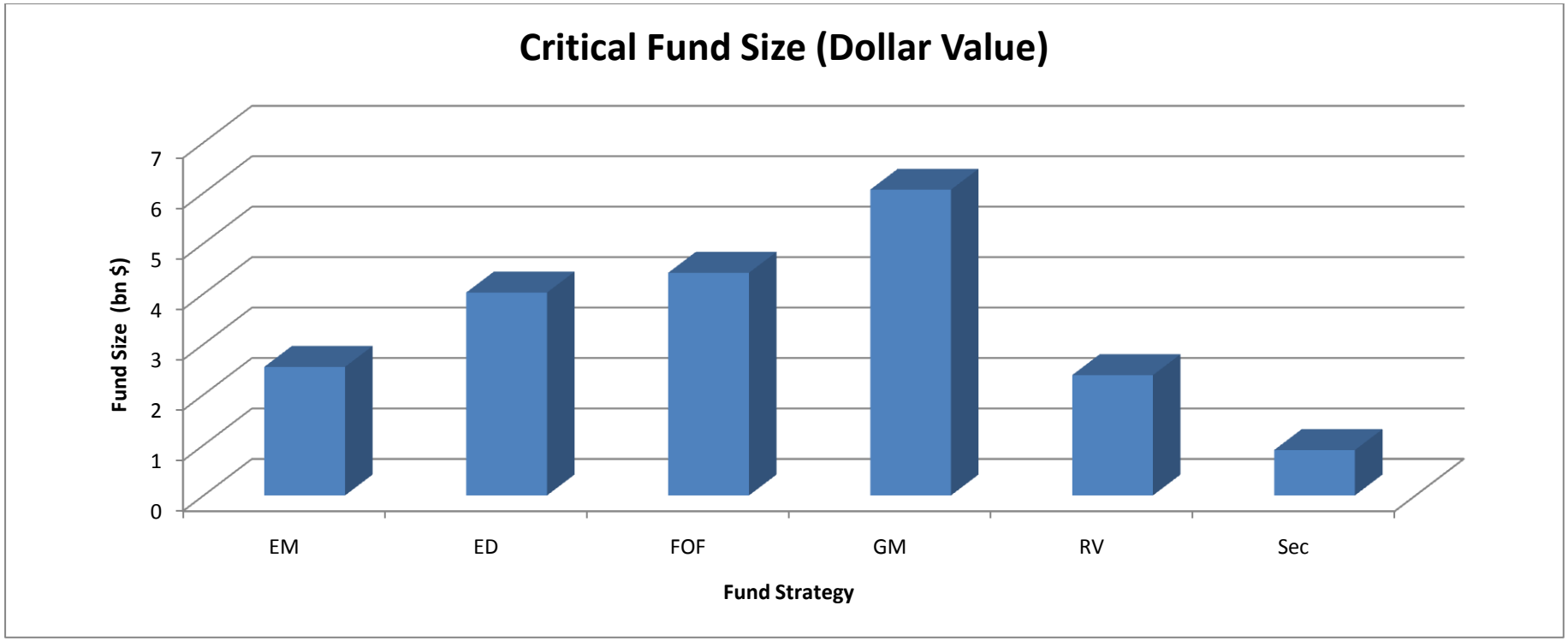

Figure 5: Critical fund size for different strategy classes. – This figure plots estimated critical size of hedge funds with different investment strategies. The critical fund size represents the (approx) asset under management value beyond which the probability of openning a new fund is greater than 50%.

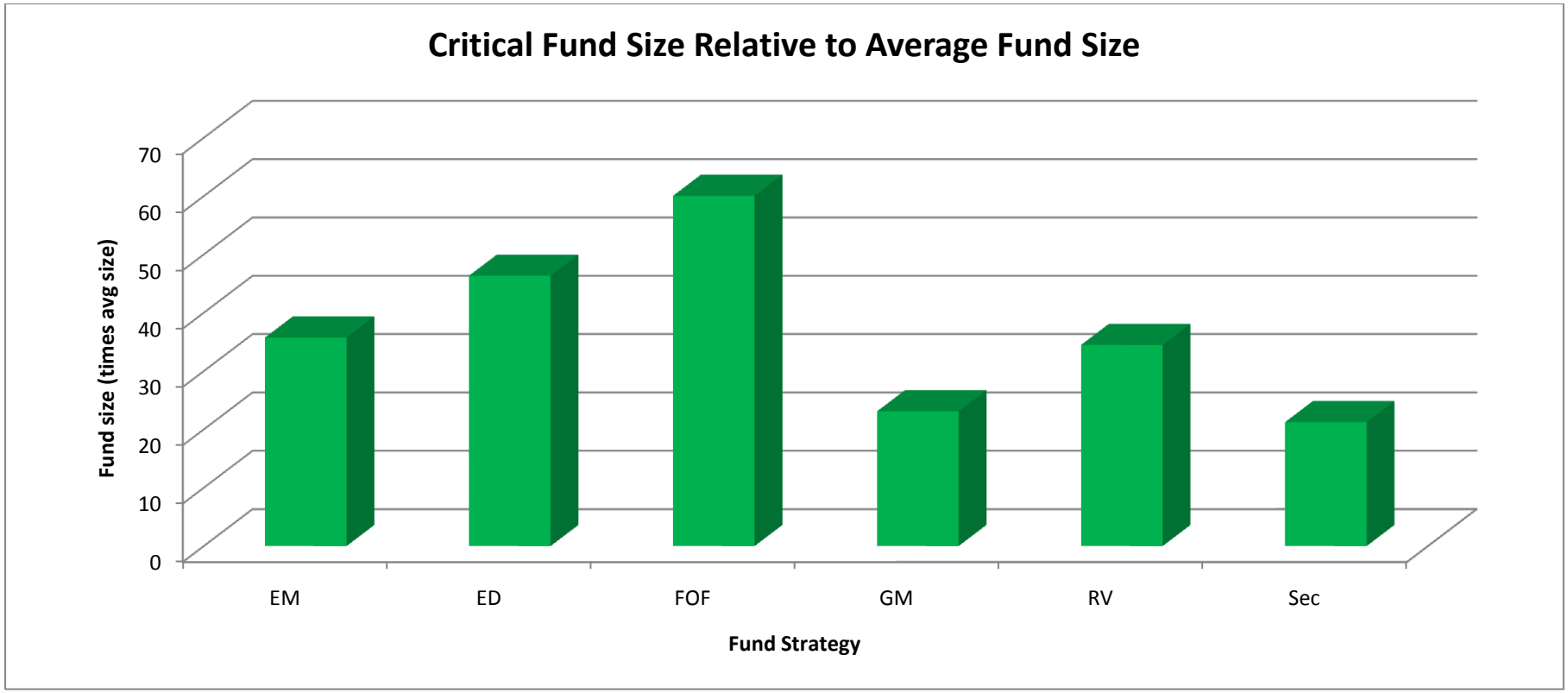

Figure 6: Critical fund size for different strategy classes. – This figure plots estimated critical size of hedge funds with different investment strategies. The plotted values are critical fund sizes relative to the average fund sizes in respective strategy class. The critical fund size represents the (approx) asset under management value beyond which the probability of openning a new fund is greater than 50%.

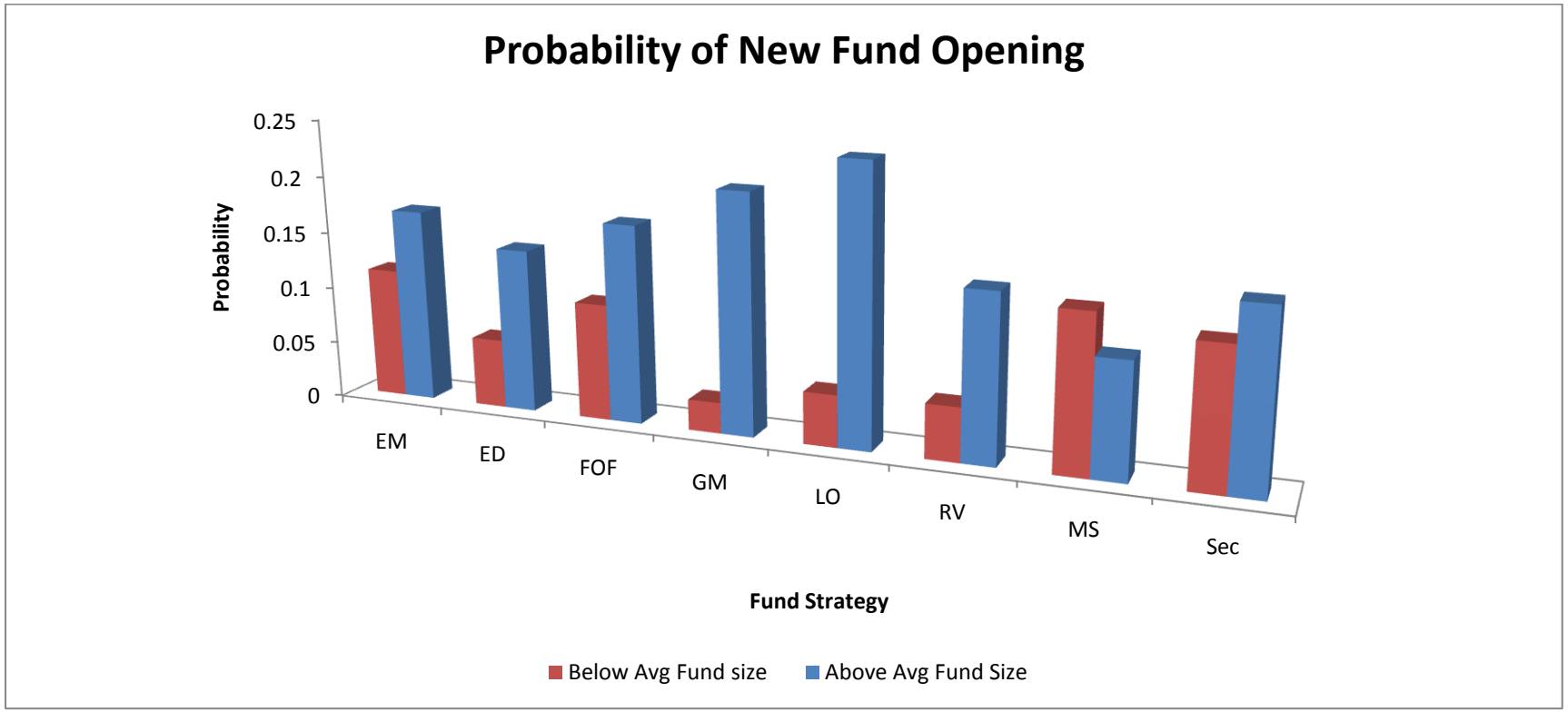

Figure 7: This figure shows the difference in probability of new fund opening between funds below and above average fund sizes in respective strategy categories.

Table 6: New Fund Opening and Fund Flow to Existing Funds. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Models estimated for all funds in the family				Models estimated for the largest funds in the family	
	Model 1		Model 2		Model 3	
	Coefficients	SE	Coefficients	SE	Coefficients	SE
Intercept	0.26146***	0.02955	0.26472***	0.03013	0.11871***	0.00420
AUM_t-1	-0.01337***	0.00161	-0.01361***	0.00164	-0.00605***	0.00022378
Alpha_t-1			0.02532	0.01555	0.00335*	0.00194
Market_ret_t-1			0.15535**	0.07105	0.07069***	0.00895
Pre_NewFamFund	0.01404*	0.00846	0.01368	0.00864	0.01158***	0.00123
Post_NewFamFund	0.00025701	0.00741	0.00015	0.00757	0.00802***	0.00114
First_yr_Dum	0.01543	0.08576	0.01271	0.08699	0.04960	0.03436
US_Domicile_Dum	-0.00813	0.00540	-0.00840	0.00550	-0.00644***	0.00074946
Boom1_Dum	-0.00880	0.01805	-0.00639	0.01852	-0.00311	0.00220
Boom2_Dum	0.01689*	0.00980	0.01924*	0.00998	0.00104	0.00153
Rec_Dum	-0.00783	0.01171	0.26472***	0.03013	0.00301**	0.00144
R^2	0.0005		0.0005		0.0017	

Table 7 : New Fund Opening and Dollar Fund Flow to the Existing Funds. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Models estimated for all funds in the family		Models estimated for the largest funds in the family	
	Model 1		Model 2	
	Coefficients	Standard Errors	Coefficients	Standard Errors
Intercept	-11.86558***	0.46738	-11.53026***	0.21032
AUM_t-1	0.66619***	0.02539	0.65034***	0.01120
Alpha_t-1	1.14168***	0.24117	1.26341***	0.09734
Market_ret_t-1	6.25889***	1.10168	5.85876***	0.44799
Pre_NewFamFund	0.94383***	0.13406	1.09819***	0.06157
Post_NewFamFund	-0.21979*	0.11746	0.27965***	0.05730
First_yr_Dum	1.50023	1.34867	1.85598	1.71962
US_Domicile_Dum	0.96074***	0.08525	0.76131***	0.03752
Boom1_Dum	0.23675	0.28707	-0.03187	0.11028
Boom2_Dum	-0.33306**	0.15480	-0.03833	0.07652
Rec_Dum	0.33805*	0.18624	0.32130**	0.07216
Rsq	0.0108		0.0112	

Table 8: New Fund Opening and Performance of Existing Funds. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Model 1		Model 2	
	Coefficients	Standard Errors	Coefficients	Standard Errors
Intercept	0.01002*	0.00560	0.02480***	0.00257
AUM_t-1	-0.00064964**	0.00030454	-0.00175***	0.00013682
Alpha_t-1	0.28132***	0.00289	0.31651***	0.00119
Market_ret_t-1	0.23732***	0.01322	0.15800***	0.00547
Pre_NewFamFund	-0.00219	0.00161	0.00341***	0.00075182
Post_NewFamFund	0.00292**	0.00141	0.00496***	0.00069922
First_yr_Dum	0.02599	0.01622	0.03396	0.02103
US_Domicile_Dum	0.00378***	0.00102	0.00861***	0.00045827
Boom1_Dum	-0.06463***	0.00345	-0.06277***	0.00135
Boom2_Dum	-0.06576***	0.00185	-0.06203***	0.00093409
Rec_Dum	0.00179	0.00224	0.00265***	0.00088218
Rsq	0.1123		0.1317	

Table 9: Robustness Check A – Modelling Propensity of New Fund Opening with Alternative Excess Fund Size Measures. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Model 1		Model 2		Model 3		Model 4	
Exsize Variable	*Exsize_AvgR*		*Exsize_MedR*		*Exsize_AvgR*		*Exsize_MedR*	
Variables	Coefficients	Standard Errors	Coefficients	Standard Errors	Coefficients	Standard Errors	Coefficients	Standard Errors
Intercept	-5.3465***	0.2855	-5.4485***	0.2878	-5.3641***	0.2865	-5.4242***	0.2884
$(Family\_Exret)_{t-1}$	0.0368	0.0646	0.0481	0.0643	0.0323	0.0652	0.0497	0.0651
$(Family\_fundfow)_{t-1}$	0.705×10^{-2}*	0.412×10^{-2}	0.736×10^{-2}*	0.409×10^{-2}	0.732×10^{-2}*	0.413×10^{-2}	0.705×10^{-2}*	0.412×10^{-2}
$Log(Strategy\_AUM)_{t-1}$	0.1162***	0.0125	0.1186***	0.0126	0.1174***	0.0125	0.1186***	0.0126
$(Strategy\_Exret)_{t-1}$	0.3237*	0.1833	0.3517**	0.1843	0.3307*	0.1839	0.3539**	0.185
$(Strategy\_Fundflow)_{t-1}$	-0.0104	0.047	0.00324	0.0457	-0.0119	0.0471	0.333×10^{-2}	0.0457
Rsd_Familysize_Avg	0.846×10^{-2}***	0.727×10^{-3}			0.859×10^{-2}***	0.732×10^{-3}		
Rsd_Familysize_Med			0.01***	0.704×10^{-3}			0.0104***	0.711×10^{-3}
Similar_Strategy	1.1916***	0.0254	1.192***	0.0254	1.195***	0.0255	1.1984***	0.0255
Leverage_Family	0.114***	0.0259	0.1158***	0.0258	0.1198***	0.026	0.0941	0.0691
Market_Return	0.0814	0.0696	0.0911	0.0689	0.0798	0.0698	0.1134***	0.0261
$(Strategy\_New\_funds)_{t-1}$	0.197×10^{-2}***	0.187×10^{-3}	0.186×10^{-2}***	0.185×10^{-3}	0.198×10^{-2}***	0.187×10^{-3}	0.189×10^{-2}***	0.186×10^{-3}

$(Strategy\_No\_of\_funds)_{t-1}$	-0.189×10^{-3}***	0.037×10^{-3}	-0.172×10^{-3}***	0.036×10^{-3}	-0.193×10^{-3}***	0.037×10^{-3}	-0.177×10^{-3}***	0.036×10^{-3}
High _Mgmt_Fee	0.1537***	0.0236	0.1734***	0.0234	0.1574***	0.0237	0.1583***	0.0237
High_Incentive_Fee	0.2825***	0.0254	0.2821***	0.0254	0.28***	0.0255	0.2729***	0.0255
Strategy _EM	0.00639	0.0971	0.0285	0.0978	-0.00176	0.0978	0.0102	0.0991
Strategy _ED	-0.2169**	0.0969	-0.191**	0.0974	-0.2385***	0.098	-0.2529***	0.1
Strategy _FOF	-0.0178	0.0906	0.0311	0.0911	-0.0113	0.0908	0.00606	0.0917
Strategy _GM	-0.3303***	0.1096	-0.2413**	0.1128	-0.3996***	0.1127	-0.1706	0.1124
Strategy _LO	-0.1773	0.1396	-0.1536	0.1405	-0.1584	0.1412	-0.1387	0.1454
Strategy _RV	-0.2935***	0.0899	-0.2602***	0.0906	-0.3191***	0.0902	-0.3091***	0.0911
Strategy _MS	-0.0905	0.1235	-0.0156	0.1239	-0.0406	0.1249	0.054	0.1298
Strategy _Sec	-0.00712	0.0976	0.0116	0.0985	-0.0327	0.0987	-0.0772	0.1015
Exsize_Avg	0.031***	0.253×10^{-2}						
Exsize_Med			0.43×10^{-2}***	0.424×10^{-3}				
Exsize x EM					0.0292**	0.0153	0.734×10^{-2}**	0.35×10^{-2}
Exsize x ED					0.0421***	0.0128	0.0154***	0.424×10^{-2}
Exsize x FOF					0.0201***	0.384×10^{-2}	0.559×10^{-2}***	0.106×10^{-2}
Exsize x GM					0.0619***	0.966×10^{-2}	0.26×10^{-2}***	0.651×10^{-3}
Exsize x LO					0.0142	0.0195	0.235×10^{-2}	0.328×10^{-2}
Exsize x RV					0.0454***	0.438×10^{-2}	0.0107***	0.116×10^{-2}
Exsize x MS					-0.0246	0.0305	-0.775×10^{-2}	0.841×10^{-2}
Exsize x Sec					0.0607***	0.0173	0.0301***	0.639×10^{-2}
Pseudo Rsq	0.3177		0.3194		0.3198		0.3226	

Table 10: Robustness Check B - Modelling Propensity of New Fund Opening for Large Fund Family Sub Sample. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Model 1		Model 2		Model 3		Model 4	
Variables	Coefficients	Standard Errors	Coefficients	Standard Errors	Coefficients	Standard Errors	Coefficients	Standard Errors
Intercept	-5.3335***	0.2853	-5.1852***	0.284	-5.5628***	0.291	-5.3149***	0.2881
$(Family\_Exret)_{t-1}$	0.208×10^{-2}	0.0796	-0.0321	0.079	-0.0276	0.0804	-0.0449	0.0798
$(Family\_fundfow)_{t-1}$	-0.61×10^{-3}	0.0054	1.69×10^{-3}	5.29×10^{-3}	0.77×10^{-3}	0.539×10^{-2}	0.176×10^{-2}	0.532×10^{-2}
$Log(Strategy\_AUM)_{t-1}$	0.1126***	0.0122	0.1123***	0.0122	0.1142***	0.0124	0.1152***	0.0124
$(Strategy\_Exret)_{t-1}$	0.089	0.1928	0.0957	0.192	0.14	0.1942	0.1238	0.1937
$(Strategy\_Fundflow)_{t-1}$	-0.00865	0.0506	-0.00775	0.0501	0.00076	0.0498	0.00654	0.0491
Rsd_Familysize_Avg	1.3443***	0.0262	1.3362***	0.0261	1.3564***	0.0264	1.3491***	0.0263
Rsd_Familysize_Med	0.0124***	0.733×10^{-3}	0.0125***	0.731×10^{-3}				
Similar_Strategy					0.0157***	0.743×10^{-3}	0.0152***	0.738×10^{-3}
Leverage_Family	0.019	0.0266	0.0257	0.0265	-0.0176	0.0268	-0.00364	0.0268
Market_Return	0.143**	0.0715	0.1423**	0.0715	0.1122	0.0718	0.1502**	0.0714
$(Strategy\_New\_funds)_{t-1}$	2.13×10^{-3}***	0.177×10^{-3}	2.07×10^{-3}***	0.176×10^{-3}	2.07×10^{-3}***	0.176×10^{-3}	2.03×10^{-3}***	0.176×10^{-3}
$(Strategy\_No\_of\_funds)_{t-1}$	-0.123×10^{-3}***	0.033×10^{-3}	-0.109×10^{-3}***	0.033×10^{-3}	-0.113×10^{-3}***	0.033×10^{-3}	-0.106×10^{-3}***	0.033×10^{-3}
High _Mgmt_Fee	0.1446***	0.0235	0.1334***	0.0234	0.1466***	0.0236	0.1427***	0.0236
High_Incentive_Fee	0.1613***	0.0253	0.1711***	0.0253	0.1398***	0.0256	0.1417***	0.0255

Strategy _EM	0.1173	0.1164	0.088	0.1161	0.1994*	0.1189	0.1604	0.1184
Strategy _ED	-0.0709	0.1147	-0.1118	0.1144	0.0126	0.117	-0.0323	0.1165
Strategy _FOF	-0.0216	0.1089	-0.0446	0.1088	0.0415	0.1111	0.0135	0.1108
Strategy _GM	0.1131	0.1238	0.0332	0.1238	0.3944***	0.126	0.3134***	0.1271
Strategy _LO	0.1496	0.1629	0.0977	0.162	0.2312	0.165	0.206	0.1646
Strategy _RV	-0.0735	0.1077	-0.1012	0.1075	0.00438	0.1101	-0.0261	0.1097
Strategy _MS	0.0192	0.149	-0.032	0.1489	0.182	0.151	0.1491	0.1506
Strategy _Sec	0.1523	0.1171	0.1353	0.1168	0.2171*	0.1198	0.1914	0.1193
Exsize _Avg_Dum	0.2021***	0.0254						
Exsize_Med_Dum					0.2934***	0.0443		
Exsize _Avg			0.012***	2.53×10^{-3}				
Exsize_Med							0.865×10^{-2}***	2.54×10^{-3}
Pseudo Rsq			0.3842		0.3929		0.3911	

Table 11: Robustness Check B - Modelling Propensity of New Fund Opening with Small Fund Family Sub Sample. The 1%, 5% and 10% level of statistical significance are indicated using ***, ** and * respectively.

	Model 1		Model 2		Model 3		Model 4	
Variables	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error
Intercept	-5.7324***	0.2809	-5.4399***	0.2775	-5.9495***	0.2826	-5.5258***	0.278
$(Family\_Exret)_{t-1}$	0.0425	0.0698	-0.00617	0.0672	-0.00837	0.0711	0.00869	0.0674
$(Family\_fundfow)_{t-1}$	-0.00141	0.0045	0.00247	0.00427	-0.0016	0.00447	0.00297	0.00425
$Log(Strategy\_AUM)_{t-1}$	0.1275***	0.0122	0.125***	0.0121	0.1279***	0.0123	0.1251***	0.0121
$(Strategy\_Exret)_{t-1}$	-0.0707	0.1911	-0.0312	0.1897	-0.0172	0.1924	-0.0163	0.191
$(Strategy\_Fundflow)_{t-1}$	-0.0413	0.0553	-0.0418	0.0545	-0.0424	0.0558	-0.0291	0.054
Rsd_Familysize_Avg	0.00777***	0.000723	0.00823***	0.000719				
Rsd_Familysize_Med					0.0115***	0.000723	0.00927***	0.000706
Similar_Strategy	1.3018***	0.0266	1.2767***	0.0262	1.313***	0.0268	1.2822***	0.0262
Leverage_Family	0.1278***	0.0257	0.1618***	0.0253	0.1131***	0.0257	0.158***	0.0253
Market_Return	0.053	0.0736	0.0664	0.073	0.0151	0.0735	0.0815	0.0723
$(Strategy\_New\_funds)_{t-1}$	0.0019***	0.000185	0.00176***	0.000184	0.0018***	0.000184	0.00173***	0.000182

$(Strategy\_No\_of\_funds)_{t-1}$	-0.000166***	0.000034	-0.00014***	0.000034	-0.000156***	0.000034	-0.000137***	0.000034
High _Mgmt_Fee	0.2372***	0.0235	0.2545***	0.0234	0.227***	0.0236	0.2601***	0.0234
High_Incentive_Fee	0.1731***	0.0257	0.202***	0.0255	0.1837***	0.026	0.1977***	0.0255
Strategy _EM	0.012	0.0993	-0.0874	0.0983	0.0225	0.1001	-0.0585	0.0989
Strategy _ED	-0.2643***	0.0989	-0.3418***	0.0977	-0.2627***	0.0992	-0.3247***	0.0981
Strategy _FOF	-0.0625	0.0913	-0.1339	0.0903	-0.0751	0.0916	-0.1085	0.0907
Strategy _GM	-0.1456	0.1101	-0.2656***	0.1086	0.0294	0.11	-0.1731	0.109
Strategy _LO	-0.1435	0.1618	-0.2516	0.1575	-0.1408	0.1623	-0.2234	0.1583
Strategy _RV	-0.2106**	0.09	-0.2929***	0.0889	-0.1961**	0.0904	-0.2625***	0.0894
Strategy _MS	-0.05	0.1277	-0.1553	0.1267	-0.0129	0.1282	-0.0936	0.1271
Strategy _Sec	0.109	0.0992	0.0204	0.098	0.128	0.1002	0.0446	0.0989
Exsize _Avg_Dum	0.5226***	0.0244						
Exsize_Med_Dum					0.6083***	0.0287		
Exsize _Avg			0.0675***	3.95×10^{-3}				
Exsize_Med							0.0656***	3.95×10^{-3}
Pseudo Rsq	0.3644		0.3531		0.3692		0.355	

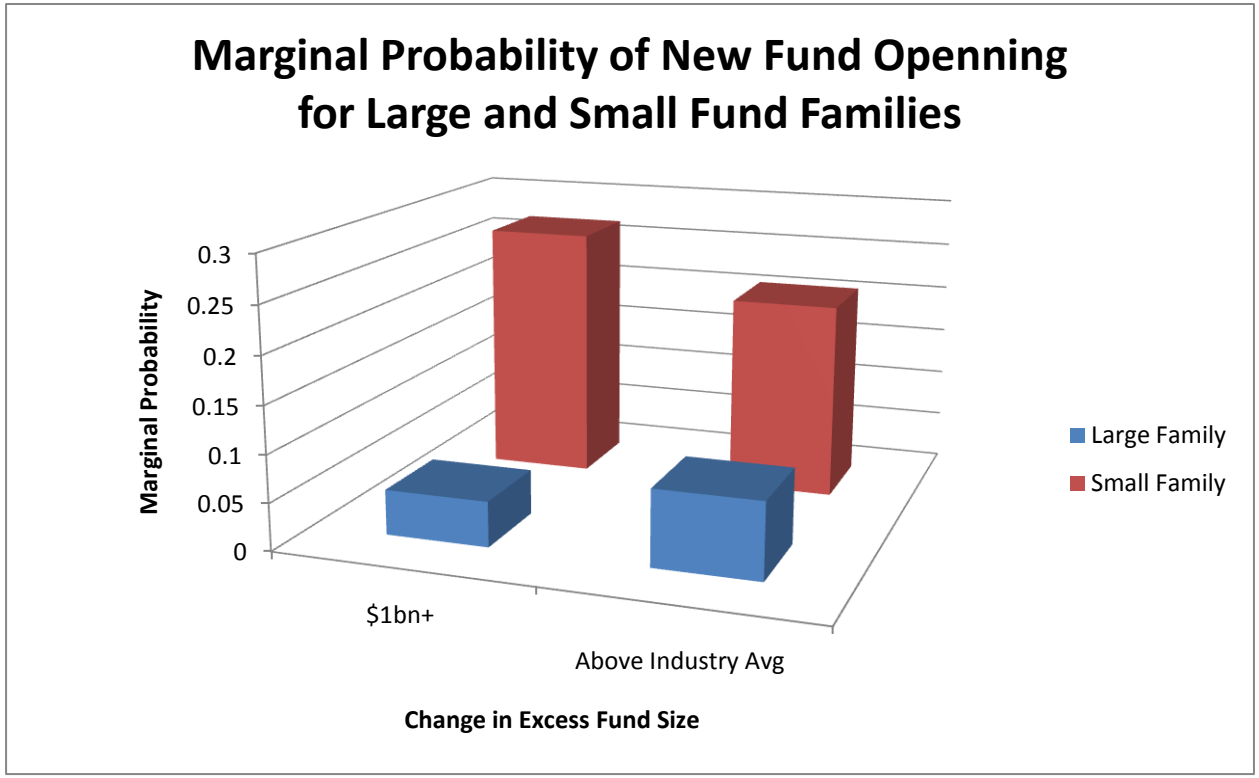

Figure 9: This figure plots marginal probability of opening a new fund by large fund family vs small fund families for two different scenarios 1) increase of fund size by $1bn and 2) increase of fund size from less than the industry average to more than the industry average.