Where do Hedge Fund Managers Come from? Past Employment Experience and Managerial Performance

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Hedge funds are secretive products whose quality is difficult to ascertain in advance of investment. We examine two views of past work experience as predictors of hedge fund manager pedigree. In one, sector specific (hedge fund) work experience is positively related to performance. In the other, related industry (mutual funds, prime brokerages, custodian firms and securities brokerages) experience correlates with superior performance. Overall, aspects of specific and generally related industry experience appear important in signaling hedge fund quality. Funds whose management team possesses past hedge fund experience report superior performance. However, diversifying across experience types in a fund has no impact on returns. Hedge fund manager teams with prime brokerage and custodian experience along both proportional and diversity dimensions experience higher survival probabilities.

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Hedge funds are secretive products whose quality is difficult to ascertain in advance of investment. We examine two views of past work experience as predictors of hedge fund manager pedigree. In one, sector specific (hedge fund) work experience is positively related to performance. In the other, related industry (mutual funds, prime brokerages, custodian firms and securities brokerages) experience correlates with superior performance. Overall, aspects of specific and generally related industry experience appear important in signaling hedge fund quality. Funds whose management team possesses past hedge fund experience report superior performance. However, diversifying across experience types in a fund has no impact on returns. Hedge fund manager teams with prime brokerage and custodian experience along both proportional and diversity dimensions experience higher survival probabilities.

The hedge fund industry resembles market settings in which product quality matters but cannot be ascertained by consumers in advance (Nelson (1970)). Hedge funds are characterized by secrecy about their sources of returns (Glode and Green (2011). At the same time, hedge fund firms must convince investors and information intermediaries such as analysts that their products are worthy of selection. That portfolio managers' abilities are only observed with considerable imprecision has led to a growing literature linking qualitative hedge fund attributes to performance (for example, operational risk in Brown et al. (2008 and 2012). In this empirical article, we introduce the past employment background of a portfolio manager as a potential indicator of hedge fund performance. We ask whether differences in types of industry experience found in hedge fund management teams help explain the cross section of various measures of performance. This paper establishes new insights into the origins of hedge fund managers and how their pre-history relates to fund returns and survival.

Having worked in the same or closely related industry to one's current job may result in better-aligned skill matching and valuable networks for some managers than those who have worked in unrelated industries, implying differences in expertise, investment opportunity sets, access to funding and information, *etcetera*, across firms. While the literature documents the prevalence of networks in financial markets, networks formed from past work experiences have largely escaped the attention of investment management researchers. Despite the fact that the vast majority of portfolio managers across all types of funds have work experience, little is known in the investments literature about the economic impact of employment history on managerial performance.

Our starting point is that hedge fund managers' performance persistence (see Jagannathan, Malanhov, and Novikov (2010) and Fung et al. (2008)) can be attributed to knowledge which is transferrable when managers change jobs. In Glode and Green's (2011)

model the persistence of performance found in the hedge funds industry may be attributable to "strategies or techniques that could be expropriated by others if they were informed about them." We consider two views related to fund managers' human capital developed at previous employers that could be transferred to subsequent portfolio management roles in hedge funds. In one perspective, individuals transfer sector specific skills to their hedge fund employers. We refer to this view as the *sector specific experience* perspective. The theory literature allows for sector specific skill accumulation through learning by doing or previous work experience (see Dustmann and Meghir (2005) and Chang, Gomes and Schorfheide (2002), for example). Empirical evidence shows inter-firm transfers of tacit knowledge through employees who change jobs (Almeida and Kogut, 1999). Studies relating an individual's prior work experience to performance in a subsequent job are scarce due to data limitations (Bertrand and Schoar 2003). Dokko, Wilk and Rothbard's (2009) work is among the few exceptions. In this paper we try to fill this gap by tracking the performance of managers with hedge fund industry experience. Fitting the sector specific hypothesis to our context, the skills required to differentiate managerial quality in the hedge fund market are specialized and therefore only experience obtained from other hedge funds will matter for all aspects of a manager's performance, measured by returns and survival.

In another perspective, human capital may also be taken from previous employers in the form of general, transferable skills obtained while working in related industries (see Dustmann and Meghir's (2005) theoretical exposition and the empirical studies reviewed by Bertrand (2009)). We refer to this view as the *related industry experience* perspective. In our setting, we identify cases where individuals who subsequently became hedge fund managers obtained related industry experience working as mutual fund managers, employees of prime brokers and custodians, and as securities brokers. We also observe a holdout sample of

managers who worked for firms such as industrial undertakings, whose activities are removed from portfolio investments.

We generate conjectures that are specific to the type of related industry experience. Mutual fund experience is generally regarded to be closely related to hedge fund management as seen in mutual fund companies that concurrently manage hedge funds (Cici, Gibson and Mousawi (2010) and Nohel, Wang and Zheng (2010)). We hypothesize that mutual fund management skills such as security picking are relevant for the outperformance and, indirectly, the survival of fund managers when they join hedge funds. Prime brokerage and custodian related experience may impact a manager's subsequent performance and liquidation probabilities. Prime brokers provide financial, administrative and operational services to hedge funds. The services broadly include securities clearing, handling hedge funds' collateral, and providing finance. Custodians are institutions that traditionally provide the infrastructure and back office support for hedge funds. Custodians can also control the flow of capital to meet margin calls. In recent years, custodians have been encroaching into prime brokerage business. Hybrid "prime custodial" services, where one institution provides financing and lending for short positions and holds and services long assets, are now a common feature of the market.[1] We hypothesize experience in these services has a positive impact on a manager's performance and survival in the hedge fund industry. The likely channel for this advantage is savings on securities and cash borrowing costs.

Based on studies of the day-to-day operations of hedge funds we also identify brokerage firm experience as being relevant to performance. Hedge funds keep close contacts with brokerage firms for "raw" investment ideas (Simon et al. (2010)). Experience in brokerage firms also offers skills that are transferable to managing hedge funds of different styles. An example is expertise in controlling price impact on large trades that could

[1] See, for example, "Settling the fight for hedge funds", *Financial Times Mandate*, pp. 50-51, 1 June 2009.

exacerbate brokerage commissions and create a substantial drag on managers' returns. Further, Tang (2011) finds that mutual fund managers who have previously worked as equity analysts pick winning stocks among those they previously covered. Finally, we create a holdout sample of managers with no sector specific or related industry experience. We expect either neutral or negative effects of their experience on performance and survival. [2]

For all types of industry experience, we analyze the effects of experience obtained at the specific unit level (e.g. a securities brokerage subsidiary). Separately, we consider individuals who have worked at the holding company level of financial conglomerates that operate units related to our target types of experience. Considering experience at the broader holding company level may be important as Massa and Rehman (2008) and Hao and Yao (2011) show that privileged information can be exchanged between units in financial conglomerates.

To analyze the two perspectives on the influence of hedge fund managers' pre-history, we trace the career histories of almost 1,600 managers whose identities appear in two of the most prominent hedge fund databases – the Lipper TASS and Hedge Fund Research (HFR) databases. We then compare the performance of fund manager teams sharing our selected types of industry experience to those without such work histories. We also analyze the determinants of hedge fund liquidation probabilities conditioned on past manager experience and other fund characteristics.

Our unit of analysis needs to take into account the operational architecture of the portfolio management function in a typical hedge fund. In most hedge funds, portfolios are managed in teams. We therefore employ two variations of the team as our unit of analysis.

[2] Arguably, there are other types of industry experience we omit that could be related to hedge fund management. Examples include bank trust, insurance company and REIT portfolio management. However, we experimented with different categories of experience and retained the ones that give the most reasonable coverage without compromising the power of our econometric analyses.

First, we compute the proportion of managers in a team belonging to each of our target types of past employment experience. Second, we adopt the Teachman (1980) entropy based index to measure diversity of hedge funds' managerial teams (see Jehn, Northcraft and Neale (1999) and Pelled, Eisenhardt and Xin (1999) for similar applications). Analyzing the fractional representation of an experience type in a team of hedge fund managers informs us whether it is the concentration of such skills that matters. In addition, we are also interested in whether diversity, measuring the spread of different types of experience, is important for fund performance. Our treatment of teams along lines of diversity based on previous experience is motivated by studies linking managerial diversity to performance in the mutual fund industry (see Bär, Kempf and Ruenzi (2011) on individual versus group decision making; and Bogan, Just and Dev (2011) on gender diversity, for example).

Our main findings are as follows. We show that peer hedge funds, mutual funds, prime brokerages, custodians and brokerage firms are the main producers of hedge fund managers. Some prime brokerage, custodian and securities brokerage employers continue to offer services to their past employers. Based on simple observations of managerial experience, an investor could surmise that funds whose managers have our selected types of related industry experience generally tend to be smaller and younger. Past hedge fund experience favors long/short strategies while managers with broader brokerage related (prime broker, custodial and securities broking) become relative value and event driven strategists. Other notable features of the simple separation of fund managers on experience are that connected funds charge higher management fees but lower incentive fees.

Controlling for a variety of fund characteristics, we find that having a concentration of hedge fund and prime broker experience in a fund boosts performance. Particularly with regards to historical working links with hedge funds, experience gathered at the holding

company level is appears to be as relevant as operating unit level experience for a manager's future performance. On fund returns, increasing the diversity of past experience housed in a fund does not impact performance, suggesting that it is the concentration of specialized skill sets that matter.

We find that prime brokerage and custodian connections reduce the probability of fund liquidation. In this case, both the concentration and diversity of industry relevant experience are important for hedge fund welfare. These findings imply that through networks with their last places of employment, hedge fund managers are likely able to obtain preferential access to services such as securities and cash lending. However, these apparent benefits do not apply to continuing prime brokerage and custodial relationships between current hedge fund managers and their former employers. Likely, banking regulations applying to prime brokers and custodians serve as deterrents to less than arm's length relationships in this regard.

This paper is closely related to several strands of the finance literature. First, the contribution of individual fund managers' characteristics on portfolio performance has since permeated the hedge fund literature (see, for example, Li, Zhang and Zhao, 2010) from the mutual fund literature (Cohen, Frazzini and Malloy (2008), Chevalier and Ellison (1999), and Khorana (1996)). Our paper differs from these studies by considering past employment history instead of educational backgrounds and experience at the same firm as key managerial characteristics.

Second, a nascent literature is also concerned with the origins of hedge fund managers. To date, though, virtually all the studies in this category have targeted the mutual fund industry as the main source of talent for the hedge fund industry. Kostovetsky (2009) draws indirect inferences from the widening gap between old and young mutual fund

managers coinciding with the rapid growth of the hedge fund industry to conjecture that there has been a brain drain from mutual funds to hedge funds. Nohel, Wang and Zheng (2010) and Cici, Gibson and Moussawi (2010) examine the concurrent or "side-by-side" management of hedge funds and mutual funds by samples of investment managers to test for possible conflict of interest in such arrangements and find to the contrary. Deuskar et al. (2011) looks at actual departures of portfolio managers from the mutual fund industry to the hedge fund sector. Deuskar et al. are concerned with assessing the retention of good fund managers by the mutual fund industry. Our paper concentrates on the performance implications of larger variety of forms of managers' prior employment history on their subsequent performance in hedge funds. Moreover, we analyze fund liquidations and in addition to returns.

Finally, our paper is related to the literature on the impact of business ties on investment managers' performance. For example, Hao and Yan (2011) and Reuter (2006) show that mutual funds affiliated to investment banks through institutional (investment banking) and brokerage (underwriting) relations, respectively, get preferential access to IPOs. Massa and Rehman (2008) provide evidence that return sensitive information on borrowing firms passes from the borrowers' banks to mutual funds they are affiliated with through informal channels such as personal contacts. In our paper, we consider both past and current affiliations through the job-change channel. The economic significance of networks developed from past interactions has been demonstrated in many financial markets. Historical school ties, for instance, give equity analysts an advantage when they have educational links to the companies they cover (Cohen, Frazzini and Malloy (2010)). Similarly, in the mutual fund industry, Cohen, Frazzini and Malloy (2008) find that portfolio managers benefit from investing in stocks with which they share past educational relations at the board level. Being networked through common experience from past venture capital (VC) syndication arrangements improves VC fund performance (Hochberg, Ljungqvist and Lu (2007)).

The remainder of the article is crafted as follows. In Section I we describe how we constructed the data set and provide summary statistics and univariate findings. The empirical design and results are presented in Section II. Section III concludes.

I. Constructing the Data Set

We utilize several sources of data to create a rich taxonomy of hedge fund managers' career histories and performance. First, we obtain hedge fund data from the Hedge Fund Research (HFR) and Lipper TASS databases, two of the most frequently used databases in hedge fund research. We follow previous studies that strive for a more complete representation of the hedge fund industry by combining databases (see for example, Agarwal, Daniel and Naik (2009) and Kosowski, Naik and Teo (2007)). However, we restrict ourselves to the HFR and TASS databases since they contain fund manager identities. Nevertheless, the drawbacks of hedge fund databases such as survivorship and backfill biases are well known and, thus, readers should consider these issues when interpreting our findings. We contend, though, that the size of our sample and comprehensiveness of employment histories ameliorates some of the concerns with biases in the hedge fund databases. To circumvent problems with identifying fund liquidations required for part of our analysis, we begin with the most unrestricted definition of liquidations including all funds that stopped reporting to HFR and Lipper TASS. We then perform a robustness check by restricting the analysis to only those funds clearly identified as having been liquidated, in this way excluding discretionary withdrawals from the sample. Since our findings are qualitatively unchanged, we only tabulate those based on the fuller definition.

From the HFR and Lipper TASS databases we extract returns and other fund characteristics data - specifically, NAVs, age (calculated from inception and liquidation dates), fund objectives, management fees, incentive fees, and whether a fund is leveraged.

We identify the key institutions related to each hedge fund in the capacities of administrator, auditor, bank, custodian, investment advisor, legal counsel, management firm, prime broker, registrar/transfer agent, sub advisor, or underwriter/sponsor. After carefully checking the questionnaire that Lipper TASS uses to collect data from hedge fund managers, for the purposes of our study, we collapse the roles into four categories: (1) prime brokers; (2) custodians (comprising the original bank and custodian roles); (3) investment advisors (investment advisor and management firm); and (4) other roles (all the remaining roles). The rationale for our new classification is that we are interested in the first three roles since they represent important financial links between the hedge funds and institutions.[3] (We discuss the past employment relationships targeted in this paper in detail below).

Fund manager biographical data come from the BarclayHedge Hedge Fund Directory and the Morningstar Direct database.[4] The 2010 BarclayHedge Directory lists about 5,000 key individuals involved in the management of more than 3,000 hedge funds as well as their professional biographies. Morningstar Direct covers biographies of approximately 1,000 hedge fund managers. From the BarclayHedge and Morningstar biographies, we identify current and previous employers of the hedge fund managers. We match the fund manager profiles and hedge fund data by hand. First, we identify all cases where fund managers are linked to hedge funds using company names and verifying close matches through electronic sources such as company websites, news articles and SEC lodgments. Where a fund is not covered by the BarclayHedge Directory or Morningstar Direct, we augment our biographical data with internet searches, primarily Zoominfo.com, following papers such as Cohen, Frazzini and Malloy (2010) and Kaplan, Klebanov and Sorenson (2011).

[3] We exclude the non-financial roles of administrator, auditor, legal counsel and registrar/transfer agent.
[4] See www.barclayhedge.com.

Since our analysis requires the separate identification of financial groups and operating units that are former employers of hedge fund managers, we encounter difficulties when holding company and subsidiary names are not closely related. Prime brokers, for instance, often operate under names that are completely unrelated to their parent organizations (for example, Pershing LLC operated by Bank of New York Mellon and Fimat, part of Société Générale Group). To resolve this problem we obtain the universe of 46 prime brokerage firms from the 2008 FINalternatives Prime Broker Directory, the source we identified from discussions with hedge fund managers to be an authoritative listing. We then check the ownership of each firm and in this way identify those prime brokers related to fund managers in our sample. We follow a similar matching process of starting with authoritative directories for custodians (FINalternatives), mutual funds (CRSP mutual funds database) and securities brokerages (Ancerno – formerly known as Abel/Noser).[5]

Having discussed our main data sources, we are now ready to enumerate the main past employment relations targeted by our paper. First, we identify past employment at hedge funds as signifying sector specific knowledge. Second, we denote general experience that is relevant to hedge fund management. Four professions fall in this category: (1) mutual fund management, (2) prime brokerage, (3) custodial experience and (4) securities brokerage.[6] Finally, we identify a group of fund managers with experience unrelated to any of our categories, for example, previous employment in an oil company.

Table I lists the firms and professions that were most active in producing hedge fund managers in our sample period. From the data construction process described above, we

[5] For information on FINalternatives directories see www.finalternatives.com. The CRSP mutual fund database has been used in numerous studies, including papers cited in the current article, e.g. Deuskar et al 2011. See Goldstein et al. (2009) for a description of the broker information available in the Ancerno database.

[6] Note that our experience categories incorporate other professions that may be reasonably expected to spawn hedge fund managers. For example, some bank trust investment officers are counted under mutual funds, and equity analysts show up as having been employed by securities brokerages.

identified approximately 6,000 individual hedge fund managers in the HFR, Lipper TASS and Morningstar Direct databases. Out of these, we could link 1,596 to more than 900 employers prior to joining hedge funds. Panel A of Table I lists the 34 financial services firms that produced five or more hedge fund managers during our sample period, representing almost 30 percent of our 1,596 hedge fund managers. The most prolific producers of hedge fund manager talent are global investment banking brands as is apparent from a listing of the top ten: Merrill Lynch (42 managers), Deutsche Bank (37), JP Morgan (29), Goldman Sachs (25), Bear Stearns (24), Morgan Stanley (24), Lehman Brothers (23), Credit Suisse First Boston (21), UBS (21) and Citigroup (20). Panel B summarizes how the fund managers with traceable employment histories map to the manager-former employer relationships. We define three types of links to past employers. (A) A direct connection (denoted, for example, "Hedge Fund Unit") is one where a fund manager worked directly in an operating unit offering hedge fund services. (B) An indirect connection is one in which a manager was employed by a holding company (hence "Hedge Fund Holdco", for example). (C) A current connection is one where the manager was formally employed by an organization that continues to offer services (prime brokerage, custodial or securities brokerage) to the manager's current hedge fund. A given fund manager may fall into more than one of the experience categories above.

Panel B shows that targeting hedge fund experience at both the unit and holding company levels results in a total of 2,580 manager-hedge fund observations. We see 2,163 matches of funds with 423 managers who left financial groups incorporating a hedge fund operating unit and 417 matches of funds managed by 118 executives working in a hedge fund unit in their past employment. The rest of the Unit (Holdco) level manager-hedge fund matches are 474 (1,673) for the mutual fund sector, 1,548 (1,077), the prime brokerage industry, 1,672 (1,103), custodians, and 1,010 (1,575) for securities brokerages. We observe

165 manager-fund pairs where the former prime broker employer currently provides services to the manager's hedge fund; 122 such pairs for custodial connections; and 138 for equity brokerages. Finally, 446 fund managers have worked for companies that fall outside our sector and general industry categories, matching with 1,245 hedge funds. For ease of reference, a full description of the coding of our managerial experience data is given in Panel C.

To examine the heterogeneity of employment backgrounds within funds, we use the Teachman (1980) entropy based Diversity Index, a widely used measure in examining work diversity or, in general, the diversity of any group (see Jehn, Northcraft and Neale (1999) and Pelled, Eisenhardt and Xin (1999)). The Diversity Index is estimated for each fund as:

$$Diversity\ Index = \sum_{i} -p_i . \ln(p_i) \quad (1)$$

where *i* is one of the six categories fund managers can belong to in their past employment, i.e.: prime brokers, custodian, brokerage firms, mutual funds, hedge funds or other industries. The proportion of fund managers belonging to one category, *pi*, is computed to obtain the past employment diversity measure. For example, if there is one fund manager with mutual fund experience and one with a hedge fund company background, our past employment diversity index equals 0.69.

Table II reports descriptive statistics for our main fund specific variables of interest based on funds whose information is available to us in the period 1994 through 2009. The variable ln(NAV) is the natural logarithm of hedge fund net asset value. Fund Age (Age) is computed from the date of inception to the reporting date. Long/Short Equity, Funds of Funds, Global Macro, Relative Value, Event Driven, and Other Strategy are fund style classification dummy variables. Management Fee is a percentage of assets under

management. Incentive Fee is a percentage of achieved returns. Underwater is a binary indicator for funds that report a negative cumulative return over the previous 12 months. Leveraged is a binary indicator for funds that opt to employ leverage. Lockup Period is measured in months. Open To Public is a dummy (1 if a fund is open to public and 0 otherwise). High Water Mark is an indicator (1 if a high water mark provision is present and 0 otherwise). Style Effect is measured as the average flow for a particular category on monthly basis. Fund Excess Return is measured as fund monthly returns minus Treasury bill rate. Fund Flow is measured as the percentage change of net assets of the fund between the beginning and end of a month, net of investment returns and assuming flows are invested at the end of the period.

Panel A of Table II reports descriptive statistics for our main fund specific variable of interest based on a unique sample of 1,596 individual hedge fund managers whose past employment information is available to us. Similarly, in Panel B we report descriptive statistics for the overall hedge fund sample excluding funds covered in Panel A. In doing so, we are able to examine any similarities or differences between our unique sample of hedge fund managers and the general population of managers. Comparing Panels A and B, we observe that both subsamples are roughly similar in terms of fund size and age, investment strategies (apart from long/short equity, fund of funds and relative value), management fee, style effect and fund excess returns. The salient differences between the two subsamples are that our sample hedge funds whose managers have specific and related general industry experience tend to have higher incentive fees in line with their high water mark provision, longer lockup periods, greater usage of leverage, and experience negative fund flows on average.

We subject differences between funds whose management composition differs by past work experience to simple difference in means tests in Table III based on averages of the

nominated variables for the funds over the sample period. The results are arranged by type of industry sector experience in Panels A-E. For the reader's convenience, Panel F summarizes the preceding panels. Panels C-E also report the findings on effects of selected industry sector experience that carry over to the current employment of hedge fund managers. An example of such a case is a prime broker that a hedge fund manager previously worked for and is contracted as a prime broker to the manager's current fund. Focusing on past work experience at the Unit level, the tabulations show that funds whose managers have our industry experience of interest tend to be smaller and younger than unrelated experience funds with the exception of those with securities brokerage experience. This finding may be related to the age of the hedge fund industry itself. It is reasonable to conjecture that the first hedge fund managers emerged out of mutual funds and, as the hedge fund industry itself matured, individuals experienced in the sector began to move to other funds. However, we cannot preclude alternative explanations using these univariate results. For example, hedge fund working experience could be associated with high attrition rates. We subject such issues to multivariate analysis below.

The next salient feature of our findings concerns the impact of the nature of managerial experience on the distribution of fund styles. Hedge fund experience seems to result in specialization in long/short strategies. Managers with brokerage related (prime broker, custodial and securities broking) experience tend to favor relative value and event driven strategies. Hedge fund experience appears to discourage participation in event driven and other non-mainstream (from a hedge fund industry perspective) styles among the individuals with such experience. Finally, all types of past connections seem to prepare managers to manage funds-of-funds but to avoid global macro strategies. The overall impression given by our findings with regards to style specialization is that would-be hedge fund managers tend to sort on sector specific experience when it comes to job preferences.

Our preliminary results also point to potentially interesting trends in terms of the implications of type of past experience on the financial health of funds managers control later on in their careers. Except for mutual fund unit experience, all other experience categories tend to reward hedge fund managers with higher management fees. However, there is also a consistent tendency for connected managers to charge lower incentive fees, suggesting there is a trade-off between higher ongoing management fees based on manager pedigree and higher at-risk compensation for managers deemed not to possess industry relevant experience. Industry experience generally reduces the chances of running consecutive losses which result in being 'underwater' according to our definition of fund financial distress. The only exception in this regard is mutual fund unit experience. All forms of industry related employment pre-history generally result in lower lock-up periods as well as less reliance on opening funds to the public or high water marks. Perhaps surprisingly for prime brokerage and custodial backgrounds, industry relevant experience tends to lead to less reliance on leverage. We note though that securities borrowing might be captured in the long/short style favored by those with hedge fund experience. As well, our results might point to lower reliance on leverage in quantity terms, but cannot provide information on quality of leverage.

The type of experience that a hedge fund manager previously acquired also seems to relate to her subsequent performance. Prior experience with hedge funds as well as financial groups that house prime brokerage, custodial and equity broking units is associated with higher excess returns. On the other end we see evidence suggestive of former mutual fund managers performing worse than the rest.

In summary, our univariate findings seem to suggest the industry experience categories used in this paper are relevant in segregating hedge fund manager attributes. Generally, the results vindicate the choice we made to count experience obtained from

working in a holding company hosting units more directly involved in activities relevant to managing hedge funds.

II. Analysis

We present the results here in two subsections. We begin in Section II.A by analyzing the role of managers' employment history among other determinants of hedge fund performance. In Section II.B we examine whether past employment networks affect hedge fund survival probabilities.

A. Effects of Past Employment Connections on Hedge Fund Performance

To examine hedge fund performance we use Fung and Hsieh's (2004) seven factor model to estimate fund abnormal returns. The seven factors are: (1) Standard and Poor's 500 stock return; (2) Wilshire Small Cap 1750 minus Wilshire Large Cap 750 return; (3) month-end to month-end change in the U.S. Federal Reserve 10-year constant-maturity yield; (4) month-end to month-end change in the difference between the Moody's Baa yield and the Federal Reserve's 10-year constant-maturity yield; (5) return of a portfolio of lookback straddles on bond futures; (6) return of a portfolio of lookback straddles on currency (foreign exchange) futures; and (7) return of a portfolio of lookback straddles on commodity futures.

The analysis of determinants of fund's performance is based on Fama-MacBeth (1973) OLS regressions. We report our findings in Table IV. Panel A reports the coefficients from our base model in which hedge fund returns are regressed on well established determinants of performance. In Panel B we add the managerial past employment variables described above and estimate variations of the base model for each experience type. For brevity, Panel B only reports the regression coefficient estimates for the past employment variables. The most notable finding is that current fund manager performance benefits if the manager has hedge fund experience obtained at unit (FRAC_HF coefficient = 0.122) or holding company level (FRAC_HF_HOLDCO = 0.139). The coefficients on the respective

hedge fund experience measures are significant at the 1% level of statistical significance. Prime Brokerage experience at the holding company level (FRAC_PB_HOLDCO = 0.112) is also a significant indicator of an executive's future performance running a hedge fund (at the 2% level of statistical significance). Fund managers who have worked for mutual funds, prime brokers and custodians are also observed to generate positive returns. This is in line with our earlier conjecture that fund managers with past connections to prime brokers, custodians and securities brokerage firms will benefit current hedge funds in cost savings and operational efficiencies. However, in the case of mutual fund and custodian experience, the beneficial effects disappear once country and time fixed effects are introduced into the model. Consistent with Li, Zhang and Zhao (2010) and Jagannathan, Malanhov and Novikov (2010), we attribute our main finding to the likely transfer of specialist hedge fund and prime brokerage skills from individuals' past employment. We therefore conclude that both industry specific and related industry forms of experience are relevant for subsequent career performance.

Our evidence does not support the conjecture that the channel through which benefits of managers' past employment history flow to hedge fund performance is diversity of top fund management's experience. It is only the fractional representation of experience types that is relevant, not our Diversity Index. This result suggests that it is skill concentration, and not diversity of talents, that matters for hedge fund performance.

B. Effects of Past Employment Connections on Hedge Fund Liquidation and Survival

To examine the effects of past employment history on hedge fund survival, we utilize probit regression estimates of the determinants of fund liquidations. Specifically, we compare the probability of hedge fund liquidations for a sample of hedge funds that have industry relevant experience to those without. The majority of our independent variables are motivated from the existing literature such as Brown, Goetzmann and Park (2001) and ter Horst and

Verbeek (2007). Among these variables are lagged returns, fund size (ln(NAV)), fund risk (StDev, the standard deviation of the previous twelve months' returns), and fund age (in years). We also employ six binary indicators of fund investment style, following Baquero, ter Horst and Verbeek (2005) and ter Horst and Verbeek (2007), excluding those classifications with little representation in our dataset (for example, managed futures, convertible arbitrage and offshore). We incorporate indicators of long/short equity; fund of funds; global macro; relative value; event driven, and other style groups. Management fees (measured as a percentage of assets under management) and incentive fees (hedge fund managers' participation in fund returns over agreed thresholds) represent managers' incentives. Underwater is a dummy variable indicating whether a fund has a negative cumulative return over the past 12 months. Leverage is a binary indicator denoted 1 if the use of leverage is permitted in the fund, and 0 otherwise. We hypothesize that leverage will be negatively associated with fund survival.

In a variation of the basic model described above, we include time fixed effects to control for time-varying market wide changes in the hedge fund industry as well as fund home country dummy variables to control for differences in the hedge fund industries of various countries. Standard errors are clustered across quarters as well as across hedge funds to correct for cross-sectional dependence in fund liquidations. As a robustness check, we examine hedge fund survival using a log-logistic model following Calomiris and Mason (2003) and Richardson and Troost (2009). The main advantage of using this survival model is that it allows us to examine the same explanatory variables as employed in our probit models (since the model is flexible enough to permit the inclusion of data sampled and aggregated at different points in time and levels). The dependent variable in the log-logistic specification is the natural logarithm of the number of days until liquidation. We present the results of the log-logistic regressions alongside our probit results.

In Table V, we report the results of our examination of the determinants of fund liquidation. Models (b) and (d) incorporate fixed effects into the basic models (a) and (c), respectively. Panel A of Table V reports the base regression estimates of probit and log-logistic regression model without incorporating our new connection variables to facilitate a comparison with other studies of hedge fund attrition (such as Brown, Goetzmann and Park 2001 and ter Horst and Verbeek 2007). In Panel B we re-run the probit and log-logistic regression models, sequentially introducing each of our past employment indicator variables. For brevity, in Panel B we report only the regression coefficient estimates for the past employment variables.

Our main finding from probit regression estimates in model (a) is that hedge fund managers with past employment connections linked to prime brokers and custodians face lower probability of fund liquidation while hedge fund experience is largely irrelevant in this regard. This result is robust to the inclusion of country and time fixed effects in model (b), with findings significant at 1% level. By splitting our analysis between employment history at the unit and holding company levels, we shed more light on the dynamics at work with regards to the contribution of managerial past work experience to fund survival. Fund liquidation risk is lower for those managers who were directly employed by prime brokerage and custodian units. These findings imply that through networks with their last places of employment, hedge fund managers are likely able to obtain preferential access to services such as securities and cash lending. Notably, when fund managers continue to obtain prime brokerage, custodian and securities broking services from their past employers, their survival chances are not significantly affected. The diversity of a fund's managerial team in terms of past employment increases survival chances, although the evidence is weaker than the case of fractional representation of employment history in a fund's management team.

The remaining explanatory variables are largely consistent with the findings of previous studies. Past performance is negatively related to fund liquidation. In terms of the investment style classifications, only hedge funds with focus on long/short equity are observed to show resilience against the probability of liquidating as compared to other investment styles. Management fees are negatively related to fund closures but high incentive fees seem to increase the likelihood of liquidations. Finally, hedge funds with negative cumulative returns over the previous 12 months are more likely to be.

The results of log-logistic regression estimates of the determinants of fund liquidations are reported in model (c) and (d). To interpret the coefficients note that our interest is in how each explanatory variable is associated with hedge fund liquidation rates rising above the baseline during the sample period. A coefficient that is negatively related to the dependent variable indicates the explanatory variable is associated with liquidations rising above baseline. The results show that most of the coefficients that correspond to statistically significant parameters in models (a) and (b) are also significant and of opposite sign to the probit regressions. These results confirm our earlier findings on the base model of determinants of fund liquidations. This also applies to our connection variables in which hedge fund managers with past employment connections linked to prime brokers, custodians, and brokerage firms (at holding company level) are positively related to the probability of fund survival.

Overall, our findings suggest that connections with other financial institutions such as prime brokers, custodian and brokerage firms at holdings levels benefit hedge funds by improving their chances in surviving in a competitive hedge fund industry.

III. Conclusion

This paper examines the impact of an investment executive's past employment experience on her subsequent performance as a hedge fund manager. While various forms of managerial social networks have received considerable attention from financial economists and the popular press, past employment has received virtually no systematic attention. We show that hedge fund managers mostly come from peer hedge funds, mutual funds, prime brokerages, custodians and brokerage firms. In a significant number of cases, we observe past employment links continuing to the provision of services to hedge fund managers by their managers' past prime brokerage, custodian and securities brokerage employers.

An investor making simple comparisons of those funds whose managers have experience in our selected related industry sectors would draw the following conclusions. Funds employing managers with experience in other hedge funds as well closely related activities, including mutual fund, prime broker, custodian and securities brokerage firms, tend to be smaller and younger than those with non-related experience. Hedge fund experience seems to predict a manager's specialization in long/short strategies. Managers with brokerage related (prime broker, custodial and securities broking) work experience tend to favor relative value and event driven strategies. All types of past connections seem to prepare managers to manage funds-of-funds but to avoid global macro strategies. Except for mutual fund experience, connected funds charge higher management fees but lower incentive fees, and experience lower incidences of distress (measured as consecutive losses). All forms of industry related employment pre-history result in lower lock-up periods as well as less reliance on opening funds to the public or high water marks. On performance, past employment in hedge funds as well as financial groups that house prime brokerage, custodial and securities broking units is associated with higher excess returns.

Controlling for a variety of fund characteristics, our findings show that having a concentration of hedge fund experience in a fund boosts performance. Mutual fund, prime broker and custodian experience also positively contributes to investor returns. The benefits of mutual fund and custodian experience are only discernible when the manager worked at the mutual fund or custodian holding company level. Increasing the diversity of past experience in a fund's managerial team does not impact performance, suggesting that it is concentration of specialized skill sets that matters. Past prime brokerage and custodian connections reduce the probability of fund liquidation. In this case, both the concentration and diversity of industry relevant experience are important for hedge fund welfare.

There are a number of further related research questions we plan to pursue. We hope to explore whether the quality of managers' past employment matters. First, our findings call for further research on how investors interpret managerial biographical data. Second, we plan to segregate between types of former employers by pedigree measured by industry metrics such as ratings in professional publications. We suspect that being connected to a well established hedge fund, for example, will have better implications for a fund manager's subsequent performance and appeal to investors, than experience gained at a short-lived startup. Third, we plan to examine transfers of employees between hedge funds. How does inter-firm migration affect the former employer? In particular, does it have a negative effect on the performance of the former employer as employees transfer secrets to other firms? For instance, are fund managers from more successful hedge funds more or less likely to be successful themselves? Finally, is there persistence in hedge fund managers' style as they change jobs?

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Table I
Summary Information on Previous Employers of Hedge Fund Manager and Fund Sample

The sample consists of hedge funds listed in HFR and Lipper TASS during the period 1994 to 2009. We trace the last employer of each hedge fund whose managers are identified based primarily on biographies listed in the BarclayHedge Hedge Fund Directory and the Morningstar Direct database. Panel A lists 34 firms/financial groups that produced more than five individuals who went on to manage hedge funds in the sample period 1994 to 2009. Panel B lists the five main financial sectors that produced hedge fund managers as well as the funds in which the individuals are principals during our sample period. A relationship between a fund manager and her former employer is at the "Unit" level where the manager worked directly under a hedge fund, prime brokerage, custodial, mutual fund or equity brokerage unit, and at the "Holdco" level where a holding company or group is the previous employer. A given manager may fall into more than one of the above groups. A "Current" relationship is one where a prime broker, custodian or securities brokerage past employer currently offers services to the hedge fund of its former employee. A given manager may fall into more than one of the above groups.

Panel A: Top Employers of Future Hedge Fund Managers

Company	# of Departures to Hedge Funds	Company	# of Departures to Hedge Funds
Merrill Lynch & Co Inc	42	Fidelity	9
Deutsche Bank	37	Barring Asset Management	8
JP Morgan & Co	29	Cowen & Co	8
Goldman Sachs & Co	25	EBF & Associates	8
Bear Stearns & Co	24	Kidder, Peabody & Co	8
Morgan Stanley & Co	24	Deloitte & Touche	6
Lehman Brothers	23	Donaldson, Lufkin & Jenrette	6
Credit Suisse First Boston	21	KPMG	6
UBS Group	21	Pictet & Cie	6
Citigroup	20	Prudential Investments	6
Bankers Trust Company	15	Schroder & Co Inc	6
Salomon Brothers Inc	12	Smith Barney, Inc	6
Barclay Group	11	Aeltus Investment Management	5
Drexel Burnham Lambert	11	Ernst & Young LLP	5
ABN AMRO	10	J&W Seligman & Co	5
HSBC	10	Lazard Freres & Co. LLC	5
Bank of America	9	Oppenheimer & Co	5

Continued

Table I - *Continued*

Panel B: Top Related Industry Employers of Future Hedge Fund Managers and Fund Sample

Past Employer Industry	Manager-Past Employer Observations	Manager - Hedge Fund Observations
Hedge Fund Unit	118	417
Hedge Fund Holdco	423	2163
Total with HF Experience	541	2580
Mutual Fund Unit	135	474
Mutual Fund Holdco	304	1673
Total with MF Experience	439	2147
Prime Broker Unit	327	1548
Prime Broker Holdco	205	1077
Total with PB Experience	532	2625
Prime Broker Current	44	165
Custodian Unit	349	1672
Custodian Holdco	211	1103
Total with Custodian Experience	560	2775
Custodian Current	36	122
Brokerage Unit	240	1010
Brokerage Holdco	326	1575
Total with Brokerage Experience	566	2585
Brokerage Current	41	138
Other Experience	446	1245

Continued

Table I - *Continued*

Panel C: Description of Connection Variables	
FRAC_HF	Proportion of principals with past hedge fund experience
FRAC_HF_HOLDCO	Proportion of principals with past hedge fund holdco experience
FRAC_MF	Proportion of principals with past mutual fund experience
FRAC_MF_HOLDCO	Proportion of principals with past mutual fund holdco experience
FRAC_PB	Proportion of principals with past prime brokerage firm experience
FRAC_PB_HOLDCO	Proportion of principals with past prime broker holdco experience
FRAC_PB_CURRENT	Proportion of principals with past prime brokerage firm experience serving as the principals' current prime broker
FRAC_CUS	Proportion of principals with past custodian firm experience
FRAC_CUS_HOLDCO	Proportion of principals with past custodian firm holdco experience
FRAC_CUS_CURRENT	Proportion of principals with past custodian firm experience serving as the principals' current custodian
FRAC_BROKER	Proportion of principals with past brokerage firm experience
FRAC_BROKER_HOLDCO	Proportion of principals with past brokerage firm holdco experience
FRAC_BROKER_CURRENT	Proportion of principals with past brokerage firm experience serving as the principal's current securities brokerage firm
FRAC_OTHER	Proportion of principals not previously employed by hedge funds, mutual funds, prime brokers, custodian, or securities brokerage firms
DIVERSITY_INDEX	The Teachman (1980) entropy-based measure of each fund team's past employment background diversity calculated as described in text

Table II
Summary statistics of fund specific variables

This table reports descriptive statistics for the main fund specific variables based on 20,632 hedge funds in the period 1994 through 2009. The variable ln(NAV) is the natural logarithm of hedge fund net asset value. Fund Age (Age) is computed from the date of inception to the reporting date. Long/Short Equity, Funds of Funds, Global Macro, Relative Value, Event Driven, and Other Strategy are fund style classification dummy variables. Management Fee is a percentage of assets under management. Incentive Fee is a percentage of achieved returns. Underwater is a binary indicator for funds that report a negative cumulative return over the previous 12 months. Leveraged is a binary indicator for funds allowed to employ leverage. Lockup Period is measured in months. Open To Public is a dummy (1 if a fund is open to public and 0 otherwise). High Water Mark is an indicator (1 if a high water mark provision is present and 0 otherwise). Style Effect is measured as the average flow for a particular category on monthly basis. Fund Excess Return is measured as fund monthly returns minus Treasury bill rate. Fund Flow is measured as the percentage change of net assets of the fund between the beginning and end of a month, net of investment returns and assuming flows are invested at the end of the period.

Panel A: Summary Statistics of 3,191 hedge funds with past employment connections

Variable	Mean	Std Dev	Minimum	Maximum
LN(Size)	5.716	1.730	-1.204	17.378
LN(Age)	1.084	1.097	-5.900	3.342
LN(Age)²	2.379	2.169	0.000	34.809
Long/Short Equity	0.462	0.499	0.000	1.000
Fund of Funds	0.169	0.375	0.000	1.000
Global Macro	0.078	0.267	0.000	1.000
Relative Value	0.121	0.327	0.000	1.000
Event Driven	0.088	0.283	0.000	1.000
Other Strategy	0.082	0.274	0.000	1.000
Management Fee	1.465	0.653	0.000	20.000
Incentive Fee	16.513	7.151	0.000	50.000
Underwater	0.200	0.400	0.000	1.000
Leverage	0.626	0.484	0.000	1.000
Lockup Period	3.223	5.960	0.000	84.000
Open To Public	0.509	0.500	0.000	1.000
High Watermark	0.761	0.427	0.000	1.000
Style Effect	0.015	1.565	-5.093	6.707
Fund Excess Return	-2.257	4.024	-16.140	10.820
Fund Flow	-0.116	3.698	-13.213	13.434

Continued

Table II - *Continued*

Panel B: Summary Statistics of all hedge funds (excluding the 3,191 hedge funds in Panel A)

Variable	Mean	Std Dev	Minimum	Maximum
LN(Size)	5.806	1.768	-13.816	14.233
LN(Age)	1.005	1.176	-6.999	4.700
LN(Age)²	2.395	2.995	0.000	48.979
Long/Short Equity	0.311	0.463	0.000	1.000
Fund of Funds	0.386	0.487	0.000	1.000
Global Macro	0.068	0.253	0.000	1.000
Relative Value	0.069	0.253	0.000	1.000
Event Driven	0.061	0.239	0.000	1.000
Other Strategy	0.104	0.305	0.000	1.000
Management Fee	1.413	0.695	0.000	21.000
Incentive Fee	13.578	8.399	0.000	200.000
Underwater	0.218	0.413	0.000	1.000
Leverage	0.586	0.493	0.000	1.000
Lockup Period	2.588	5.936	0.000	180.000
Open To Public	0.449	0.497	0.000	1.000
High Watermark	0.650	0.477	0.000	1.000
Style Effect	0.030	1.545	-5.093	6.707
Fund Excess Return	-2.515	3.919	-16.140	10.820
Fund Flow	0.021	3.600	-13.213	13.434

Table III
Univariate Analysis of Hedge Funds' Characteristics Conditioned on Managers' Past Work Experience

The sample consists of hedge funds listed in HFR and Lipper TASS during the period 1994 to 2009. We trace the last employer of each hedge fund whose managers are identified primarily based primarily on biographies listed in the BarclayHedge Hedge Fund Directory and the Morningstar Direct database. A relationship between a fund manager and her former employer is at the "Unit" level where the manager worked directly under a hedge fund (HF), prime brokerage (PB), custodial (Cus), mutual fund (MF) or securities brokerage (Broker) unit, and at the "Holdco" level where a holding company or group is the previous employer. A "Current" relationship in Panels C-E is one where former prime broker, custodian and securities brokerage employers continue to offer services to hedge funds operated by their former employees. Panels A-E compare the characteristics of funds managed by 1,108 former employees of hedge funds, mutual funds, prime brokers, custodians, and brokerages, respectively to those who did not work in to a holdout sample of funds managed by 405 managers who worked in Other industries. Panel F summarizes the findings in Panels A-E. Fund characteristics are defined in Table II. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels, respectively.

Panel A: Characteristics of Hedge Funds Managed by Former Hedge Fund Employees

	Unit Level Experience				Holdco Level Experience			
Variable	HF Experience	Other Experience	Diff		HF Experience	Other Experience	Diff	
LN(Size)	5.465	5.904	-	***	5.349	6.149	-	***
LN(Age)	1.026	1.122	-	***	1.024	1.031	-	
LN(Age)²	2.279	2.445	-	***	2.279	2.269	+	
Long/Short Equity	0.469	0.458	+	***	0.47	0.461	+	**
Fund of Funds	0.181	0.162	+	***	0.184	0.167	+	***
Global Macro	0.076	0.078	-		0.072	0.103	-	***
Relative Value	0.116	0.125	-	***	0.116	0.119	-	
Event Driven	0.078	0.094	-	***	0.082	0.059	+	***
Other Strategy	0.079	0.083	-	***	0.077	0.091	-	***
Management Fee	1.494	1.447	+	***	1.504	1.445	+	***
Incentive Fee	16.344	16.617	-	***	16.108	17.68	-	***
Underwater	0.201	0.2	+		0.2	0.206	-	**
Leverage	0.613	0.634	-	***	0.589	0.736	-	***
Lockup Period	2.54	3.66	-	***	2.447	3.037	-	***
Open To Public	0.428	0.56	-	***	0.415	0.495	-	***
High Water Mark	0.761	0.76	+		0.741	0.866	-	***
Style Effect	0.019	0.012	+		0.02	0.014	+	
Fund Excess Return	-2.208	-2.289	+	***	-2.211	-2.185	-	
Fund Flow	-0.133	-0.102	-	**	-0.135	-0.13	-	

Continued

Table III - *Continued*

	Panel B: Characteristics of Hedge Funds Managed by Former Mutual Fund Employees							
	Unit Level Experience				Holdco Level Experience			
Variable	MF Experience	Other Experience	Diff		MF Experience	Other Experience	Diff	
LN(Size)	5.514	5.838	-	***	5.463	5.728	-	***
LN(Age)	1.079	1.087	-	**	1.063	1.13	-	***
LN(Age)²	2.392	2.374	+	***	2.365	2.477	-	***
Long/Short Equity	0.457	0.465	-	***	0.419	0.58	-	***
Fund of Funds	0.238	0.135	+	***	0.255	0.182	+	***
Global Macro	0.047	0.093	-	***	0.046	0.047	-	
Relative Value	0.098	0.133	-	***	0.107	0.07	+	***
Event Driven	0.077	0.094	-	***	0.088	0.037	+	***
Other Strategy	0.084	0.081	+	***	0.084	0.083	+	
Management Fee	1.442	1.477	-	***	1.488	1.292	+	***
Incentive Fee	15.11	17.221	-	***	14.809	16.165	-	***
Underwater	0.207	0.197	+	***	0.204	0.217	-	***
Leverage	0.58	0.649	-	***	0.557	0.657	-	***
Lockup Period	2.571	3.552	-	***	2.807	1.805	+	***
Open To Public	0.446	0.54	-	***	0.431	0.491	-	***
High Water Mark	0.689	0.797	-	***	0.661	0.78	-	***
Style Effect	0.023	0.011	+	**	0.026	0.012	+	
Fund Excess Return	-2.278	-2.246	-	**	-2.288	-2.241	-	*
Fund Flow	-0.076	-0.14	+	***	-0.07	-0.106	+	

Continued

Table III - *Continued*

Panel C: Characteristics of Hedge Funds Managed by Former Prime Broker Employees

	Unit Level Experience				Holdco Level Experience				Current Relationship			
Variable	PB Experience	Other Experience	Diff		PB Experience	Other Experience	Diff		Other Experience	Not Connected	Diff	
LN(Size)	5.621	5.796	-	***	5.487	5.744	-	***	5.757	5.49	+	***
LN(Age)	1.072	1.093	-	***	1.056	1.084	-	***	1.005	1.032	-	**
LN(Age)²	2.347	2.403	-	***	2.295	2.385	-	***	2.319	2.237	+	***
Long/Short Equity	0.425	0.489	-	***	0.379	0.457	-	***	0.497	0.511	-	***
Fund of Funds	0.2	0.146	+	***	0.22	0.186	+	***	0.018	0.076	-	***
Global Macro	0.064	0.087	-	***	0.059	0.068	-	***	0.16	0.082	+	***
Relative Value	0.142	0.106	+	***	0.144	0.14	+	***	0.069	0.152	-	***
Event Driven	0.093	0.084	+	***	0.088	0.096	-	***	0.227	0.098	+	***
Other Strategy	0.076	0.086	-	***	0.108	0.054	+	***	0.029	0.081	-	***
Management Fee	1.505	1.436	+	***	1.545	1.477	+	***	1.543	1.526	+	**
Incentive Fee	16.036	16.866	-	***	15.12	16.687	-	***	18.874	17.987	+	***
Underwater	0.194	0.205	-	***	0.19	0.197	-	***	0.229	0.188	+	***
Leverage	0.593	0.65	-	***	0.626	0.57	+	***	0.697	0.669	+	***
Lockup Period	2.778	3.549	-	***	2.333	3.098	-	***	5.013	3.226	+	***
Open To Public	0.474	0.535	-	***	0.397	0.528	-	***	0.562	0.495	+	***
High Water Mark	0.732	0.782	-	***	0.698	0.756	-	***	0.903	0.792	+	***
Style Effect	0.02	0.01	+	**	0.018	0.022	-		0	0.012	-	
Fund Excess Return	-2.25	-2.262	+		-2.169	-2.307	+	***	-2.138	-2.177	+	
Fund Flow	-0.108	-0.123	+		-0.128	-0.089	-	*	-0.294	-0.148	-	***

Continued

Table III - *Continued*

Panel D: Characteristics of Hedge Funds Managed by Former Custodian Employees

	Unit Level Experience				Holdco Level Experience				Current Relationship			
Variable	Cus Experience	Other Experience	Diff		Cus Experience	Other Experience	Diff		Cus Experience	Other Experience	Diff	
LN(Size)	5.592	5.828	-	***	5.475	5.697	-	***	6.162	5.391	+	***
LN(Age)	1.07	1.095	-	***	1.055	1.08	-	***	0.966	1.047	-	***
LN(Age)²	2.332	2.419	-	***	2.291	2.358	-	***	2.037	2.277	-	***
Long/Short Equity	0.431	0.487	-	***	0.387	0.461	-	***	0.545	0.454	+	***
Fund of Funds	0.2	0.144	+	***	0.214	0.191	+	***	0.027	0.23	-	***
Global Macro	0.063	0.089	-	***	0.06	0.066	-	***	0.049	0.054	-	*
Relative Value	0.141	0.105	+	***	0.141	0.141	-		0.232	0.122	+	***
Event Driven	0.087	0.089	-	**	0.087	0.087	-		0.119	0.066	+	***
Other Strategy	0.077	0.086	-	***	0.112	0.054	+	***	0.028	0.074	-	***
Management Fee	1.506	1.432	+	***	1.544	1.48	+	***	1.462	1.484	-	***
Incentive Fee	16.015	16.922	-	***	15.161	16.584	-	***	19.077	14.864	+	***
Underwater	0.195	0.205	-	***	0.191	0.198	-	***	0.209	0.201	+	
Leverage	0.592	0.654	-	***	0.613	0.578	+	***	0.801	0.538	+	***
Lockup Period	2.862	3.517	-	***	2.402	3.172	-	***	3.826	2.535	+	***
Open To Public	0.481	0.532	-	***	0.395	0.537	-	***	0.437	0.421	+	***
High Water Mark	0.741	0.777	-	***	0.698	0.769	-	***	0.882	0.665	+	***
Style Effect	0.022	0.009	+	***	0.016	0.025	-		-0.004	0.024	-	
Fund Excess Return	-2.249	-2.264	+		-2.158	-2.309	+	***	-2.028	-2.264	+	***
Fund Flow	-0.106	-0.125	+		-0.143	-0.073	-	***	-0.382	-0.05	-	***

Continued

Table III - *Continued*

Panel E: Characteristics of Hedge Funds Managed by Former Brokerage Employees

	Unit Level Experience				Holdco Level Experience				Current Relationship			
Variable	Broker Experience	Other Experience	Diff		Broker Experience	Other Experience	Diff		Broker Experience	Other Experience	Diff	
LN(Size)	5.726	5.709	+	**	5.592	5.962	-	***	5.491	5.647	-	***
LN(Age)	1.119	1.058	+	***	1.075	1.182	-	***	1.113	1.062	+	***
LN(Age)²	2.432	2.34	+	***	2.346	2.557	-	***	2.563	2.282	+	***
Long/Short Equity	0.399	0.511	-	***	0.384	0.42	-	***	0.405	0.488	-	***
Fund of Funds	0.188	0.155	+	***	0.177	0.204	-	***	0.019	0.073	-	***
Global Macro	0.071	0.082	-	***	0.055	0.094	-	***	0.181	0.075	+	***
Relative Value	0.163	0.089	+	***	0.151	0.179	-	***	0.153	0.167	-	***
Event Driven	0.103	0.076	+	***	0.14	0.048	+	***	0.218	0.106	+	***
Other Strategy	0.077	0.086	-	***	0.092	0.054	+	***	0.025	0.092	-	***
Management Fee	1.517	1.425	+	***	1.548	1.472	+	***	1.481	1.544	-	***
Incentive Fee	16.141	16.798	-	***	16.01	16.329	-	***	19.194	17.987	+	***
Underwater	0.193	0.207	-	***	0.194	0.191	+		0.223	0.185	+	***
Leverage	0.611	0.637	-	***	0.613	0.609	+		0.676	0.703	-	***
Lockup Period	3.13	3.297	-	***	2.953	3.382	-	***	4.433	3.654	+	***
Open To Public	0.493	0.52	-	***	0.45	0.555	-	***	0.668	0.52	+	***
High Water Mark	0.729	0.785	-	***	0.724	0.735	-	***	0.905	0.802	+	***
Style Effect	0.019	0.011	+		0.02	0.018	+		0.006	0.012	-	
Fund Excess Return	-2.275	-2.243	-	***	-2.201	-2.383	+	***	-2.236	-2.175	-	
Fund Flow	-0.108	-0.122	+		-0.142	-0.049	-	***	-0.208	-0.166	-	

Continued

Table III - *Continued*

Panel F: Summary of Panels A-E – Characteristics of Hedge Funds Whose Managers Have Selected Past Employment Experience

Former Employer	HF		HF		MF		MF		PB		PB		CUS		CUS		BROKER		BROKER	
Connection	Unit		Holdco		Unit		Holdco		Unit		Holdco		Unit		Holdco		Unit		Holdco	
LN(Size)	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***	+	**	-	***
LN(Age)	-	***	-		-	**	-	***	-	***	-	***	-	***	-	***	+	***	-	***
LN(Age)²	-	***	+		+	***	-	***	-	***	-	***	-	***	-	***	+	***	-	***
Long/Short Equity	+	***	+	**	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***
Fund of Funds	+	***	+	***	+	***	+	***	+	***	+	***	+	***	+	***	+	***	-	***
Global Macro	-		-	***	-	***	-		-	***	-	***	-	***	-	***	-	***	-	***
Relative Value	-	***	-		-	***	+	***	+	***	+	***	+	***	-		+	***	-	***
Event Driven	-	***	+	***	-	***	+	***	+	***	-	***	-	**	-		+	***	+	***
Other Strategy	-	***	-	***	+	***	+		-	***	+	***	-	***	+	***	-	***	+	***
Management Fee	+	***	+	***	-	***	+	***	+	***	+	***	+	***	+	***	+	***	+	***
Incentive Fee	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***
Underwater	+		-	**	+	***	-	***	-	***	-	***	-	***	-	***	-	***	+	
Leverage	-	***	-	***	-	***	-	***	-	***	+	***	-	***	+	***	-	***	+	
Lockup Period	-	***	-	***	-	***	+	***	-	***	-	***	-	***	-	***	-	***	-	***
Open To Public	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***
High Water Mark	+		-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***	-	***
Style Effect	+		+		+	**	+		+	**	-		+	***	-		+		+	
Fund Excess Return	+	***	-		-	**	-	*	+		+	***	+		+	***	-	***	+	***
Fund Flow	-	**	-		+	***	+		+		-	*	+		-	***	+		-	***

Table IV
Multivariate Analysis of Hedge Fund Performance Conditioned on Managers' Past Work Experience

This table reports OLS regression estimates using Fung and Hsieh's seven factor alpha as dependent variable covering the period from 1994 through 2009. Panel A reports the results of the base model. Panel B represents the base model with additional variables representing the composition of each hedge fund's managerial team by type of work experience. The independent variables are: Size and Age (the natural logarithm of fund net assets and fund age), fund flows, standard deviation of monthly returns, fund's alpha, Management Fee (measured as a percentage of assets under management), Incentive Fee (measured as a percentage of a fund's upside above a specific threshold), Open To Public dummy (1 if a fund is open to public and 0 otherwise), High Water Mark dummy (1 if a high water market provision is present and 0 otherwise), Lockup Period (measured in months), Subscription Period (measured in days), Total Redemption Period which is the sum of redemption and advance notice periods (measured in days), and Team Size (number of fund managers in a fund). "FRAC_" is a qualifier denoting proportion of managers in a firm with particular industry (hedge fund (HF), prime brokerage (PB), custodian (CUS), and securities brokerage (BROKER)) experience at the unit or Holdco levels. Diversity is an entropy based measure of the variety of employment backgrounds present in a fund manager team. Standard errors are adjusted for autocorrelation and heteroscedasticity and we performed clustering at fund level. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels, respectively.

	Model (a)			Model (b)		
Parameters	Estimate	Std error		Estimate	Std error	
		Panel A: Base Model				
Intercept	0.087	0.143		-0.727	0.158	***
LN($Size_{t-1}$)	-0.042	0.011	***	-0.06	0.012	***
LN(Age_{t-1})	0.122	0.04	***	0.173	0.039	***
$Flow_{t-1}$	0.101	0.01	***	0.087	0.011	***
$Stdev_{t-1}$	-0.117	0.012	***	-0.058	0.012	***
$Alpha_{t-1}$	0.181	0.009	***	0.153	0.01	***
Management Fee	0.081	0.025	***	0.08	0.022	***
Incentive Fee	-0.001	0.003		-0.001	0.003	
Open To Public	-0.192	0.049	***	-0.165	0.047	***
High Water Mark	0.047	0.038		0.092	0.037	**
Lockup Period	0.002	0.004		-0.001	0.003	
Subscription Period	0	0		0	0	
Total Redemption Period	0	0		0	0	
Team Size	-0.011	0.014		-0.004	0.015	

Continued

Table IV – *Continued*

Panel B: Extended Model						
FRAC_HF	0.141	0.039	***	0.122	0.042	***
FRAC_HF_HOLDCO	0.145	0.04	***	0.139	0.041	***
FRAC_MF	0.057	0.045		-0.008	0.044	
FRAC_MF_HOLDCO	0.136	0.045	***	0.072	0.048	
FRAC_PB	-0.024	0.038		-0.01	0.039	
FRAC_PB_HOLDCO	0.121	0.046	***	0.112	0.05	**
FRAC_PB_CURRENT	-0.16	0.174		-0.169	0.156	
FRAC_CUS	-0.049	0.039		-0.053	0.041	
FRAC_CUS_HOLDCO	0.103	0.046	**	0.081	0.051	
FRAC_CUS_CURRENT	0.274	0.139	**	0.163	0.115	
FRAC_BROKER	-0.052	0.04		-0.02	0.039	
FRAC_BROKER_HOLDCO	0.026	0.041		0.02	0.045	
FRAC_BROKER_CURRENT	-0.475	0.201	**	-0.315	0.205	
FRAC_OTHER	0.056	0.048		0.027	0.047	
DIVERSITY INDEX	0.03	0.056		0.014	0.059	
Strategy Dummies	Yes			Yes		
Country Fixed Effects	No			Yes		
Time Fixed Effects	No			Yes		
No. of Observations	50363			50363		
R^2	0.025			0.044		

Table V

Determinants of Hedge Funds Liquidation / Survival Conditioned on Hedge Fund Managers' Past Work Experience

This table reports the results of probit (Models (a) and (b)) and log-logistic (Model (c) and (d)) regressions of hedge fund liquidations/ survival, in Panels A and B, respectively. The dependent variable in models (a) and (b) is a binary indicator that takes a value of unity if a hedge fund liquidates in a given month and zero otherwise. The dependent variable in Model (c) and (d) is the natural logarithm of the number of days until liquidation. Past returns are denoted r(-1) through r(-6). The variable LN(NAV) is the natural logarithm of hedge fund net asset value. StDev is fund risk proxied by the standard deviation of the previous twelve month's returns. Fund Age (Age) is computed from the date of inception to the reporting date. Long/Short Equity, Fund of Funds, Global Macro, Relative Value and Event Driven are fund style classification dummy variables. Management Fees are a percentage of assets under management. Incentive Fees are a percentage of achieved returns. Underwater is a binary indicator of funds that report a negative cumulative return over the previous 12 months. Leverage denoted funds allowed to employ leverage. Team Size is the number of fund managers in a fund). ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels, respectively.

	Probit Model						Log-Logistic Model					
	Model (a)			Model (b)			Model (c)			Model (d)		
Parameters	Estimate	Std error		Estimate	Std error		Estimate	Std error		Estimate	Std error	
					Panel A: Base Model							
r(-1)	-0.014	0.005	***	-0.015	0.005	***	0.005	0.002	**	0.001	0	**
r(-2)	-0.006	0.005		-0.007	0.005		0.002	0.002		0	0	
r(-3)	-0.009	0.005	*	-0.008	0.005		0.002	0.002		0	0	
r(-4)	-0.011	0.005	**	-0.01	0.005	*	0.003	0.002		0.001	0	***
r(-5)	-0.02	0.005	***	-0.019	0.005	***	0.007	0.002	***	0.001	0	***
r(-6)	-0.017	0.005	***	-0.015	0.005	***	0.005	0.002	**	0.001	0	***
LN(NAV)	-0.025	0.011	**	-0.034	0.012	***	0.012	0.005	**	0.002	0.001	***
StDev	-0.029	0.01	***	-0.025	0.011	**	0.015	0.005	***	0.002	0.001	***
LN(Age)	0.194	0.113	*	0.199	0.116	*	-0.039	0.05		-0.006	0.006	
LN(Age)²	-0.081	0.04	**	-0.077	0.04	*	0.029	0.018		0.003	0.002	
Long/Short Equity	-0.088	0.058		-0.025	0.059		0.014	0.025		0	0.003	
Fund of Funds	-0.143	0.084	*	-0.044	0.09		0.065	0.038	*	0.001	0.005	
Global Macro	-0.217	0.114	*	-0.156	0.118		0.054	0.053		0.007	0.007	
Relative Value	-0.179	0.094	*	-0.13	0.097		0.043	0.042		0.006	0.005	
Event Driven	-0.185	0.096	*	-0.146	0.099		0.047	0.042		0.006	0.005	
Management Fee	-0.041	0.036		-0.095	0.04	**	0.045	0.018	**	0.005	0.002	**
Incentive Fee	0.014	0.004	***	0.013	0.004	***	-0.007	0.002	***	-0.001	0	***
Underwater	0.402	0.046	***	0.376	0.051	***	-0.115	0.023	***	-0.022	0.003	***
Leverage	0.045	0.046		0.007	0.05		0.03	0.021		-0.001	0.003	
Team Size	-0.006	0.015		-0.009	0.016		0.009	0.007		0	0.001	

Table V – *Continued*

Panel B: Extended Model												
FRAC_HF	0.058	0.044		-0.006	0.048		-0.004	0.02		0.001	0.003	
FRAC_HF_HOLDCO	0.084	0.045	*	0.017	0.048		-0.018	0.02		0	0.003	
FRAC_MF	-0.022	0.048		-0.041	0.051		0.011	0.021		0.002	0.003	
FRAC_MF_HOLDCO	0.029	0.05		-0.012	0.055		-0.013	0.022		0	0.003	
FRAC_PB	-0.114	0.045	**	-0.148	0.05	***	0.042	0.021	**	0.007	0.003	***
FRAC_PB_HOLDCO	-0.148	0.06	**	-0.224	0.068	***	0.061	0.028	**	0.012	0.004	***
FRAC_PB_CURRENT	-0.105	0.139		-0.119	0.14		0.061	0.063		0.008	0.008	
FRAC_CUS	-0.156	0.046	***	-0.193	0.052	***	0.063	0.021	***	0.01	0.003	***
FRAC_CUS_HOLDCO	-0.153	0.06	**	-0.233	0.069	***	0.068	0.028	**	0.013	0.004	***
FRAC_CUS_CURRENT	-0.254	0.201		-0.227	0.205		0.071	0.1		0.015	0.012	
FRAC_BROKER	-0.029	0.044		-0.006	0.048		-0.016	0.02		0	0.003	
FRAC_BROKER_HOLDCO	-0.056	0.05		-0.099	0.056	*	0.009	0.023		0.005	0.003	
FRAC_BROKER_CURRENT	-0.087	0.162		-0.092	0.167		0.075	0.075		0.007	0.009	
FRAC_OTHER	-0.156	0.058	***	-0.151	0.064	**	0.053	0.026	**	0.006	0.003	*
DIVERSITY INDEX	-0.151	0.061	**	-0.174	0.067	**	0.046	0.027	*	0.009	0.004	**
Country Fixed Effects	No			Yes			No			Yes		
Time Fixed Effects	No			Yes			No			Yes		
No. of Observations	112907			102067			112907			112907		
Log Likelihood	-2059.43			-1983.52			-1637.46			-858.59		
Pseudo R^2	0.077			0.098			-			-		