Hedge fund performance and persistence in bull and bear markets

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Abstract

This paper tests the performance of 2894 hedge funds in a time period that encompasses unambiguously bullish and bearish trends whose pivot is commonly set at March 2000. Our database proves to be fairly trustable with respect to the most important biases in hedge funds studies, despite the high attrition rate of funds observed in the down market. We apply an original ten-factor composite performance model that achieves very high significance levels. The analysis of performance indicates that most hedge funds significantly out-performed the market during the whole test period, mostly thanks to the bullish sub-period. In contrast, no significant under-performance of individual hedge funds strategies is observed when markets headed south. The analysis of persistence yields very similar results, with most of the predictability being found among middle performers during the bullish period. However, the Market Neutral strategy represents a remarkable exception, as abnormal performance is sustained throughout and significant persistence can be found between the 20% and 69% best performers in this category, probably thanks to an extreme adaptability and a very active investment behavior.

JEL Classification codes: G2, G11, G15

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I Introduction

Since 1990, when around 2000 hedge funds were managing together assets of ca. $ 60 billion, the subsequent growth of number and asset base of hedge funds has never really been refuted. The industry only suffered from a relative slowdown in 1998, but has enjoyed since then a renewed vitality with an estimated size of 8400 funds managing $900 billion assets in 2004 (Van Hedge Funds Advisors International, 2002), corresponding to growth rates of respectively 10.8% and 21.3% respectively.

The growing trend of the sector could be remarkably sustained during the stock market collapse that started in March 2000, when the NASDAQ Composite Index reached an all-time high of 5132, and finished three years later with a floor level at 1253. In the meantime, the global net asset value (NAV) of hedge funds continued to grow at a steady 10.6% (Van Hedge Funds Advisors International, 2002), contrasting with a decrease of 2.7% in worldwide mutual fund industry (Investment Company Institute, 2003).

This relatively positive attitude of investors is typically motivated by the perceptions that hedge funds are largely market neutral, that their managers enjoy greater flexibility in their asset allocation that enables them to achieve a better market timing (Fung and Hsieh, 1997), or that hedge funds have a relatively low covariance with other classes of financial assets, making them a good diversification vehicle (Schneeweis and Spurgin, 1997; Capocci and Hübner, 2001; Kat and Amin, 2003).

The vast majority of performance studies on hedge funds has not focused on their behavior under different market conditions. This is generally due to the particularly bullish period corresponding to the time window under review, as most empirical evidence reveals that data collected prior to 1994 by several data vendors displays a significant survivorship bias, as shown by Fung and Hsieh (2000), Liang (2000) and Capocci and Hübner (2004).

In this context, Ackermann and al. (1999) and Liang (1999) find that hedge funds constantly obtain better performance than mutual funds, although lower and more volatile than the reference market indices considered.

On the other hand, the issue of persistence in performance is particularly important in the case of hedge funds because these funds experience a greater attrition rate than mutual funds (Brown and al.,1999, 2001; Liang, 1999). Agarwal and Naik (2000) find evidence of persistence in hedge funds performance, while Capocci and Hübner (2004) sustain that it can be mostly found among average performers and Brown and al. (1999) conclude that there is hardly any evidence of the existence of differential manager skills but persistence is rather due to style effects.

Few authors have attempted to estimate the behavior of hedge funds in bear markets. The periods under study do not favor this exercise, as periods of downward trends on the stock market were rare and discontinuous. For the period 1990-1998, Edwards and Caglayan (2001) find that only three hedge fund strategies (Market Neutral, Event Driven and Macro) provide protection to investors when stock markets head south. More recently, Ennis and Sebastian (2003) contend that in general, hedge funds did not provide investor protection after the market downturn of March 2000; rather, their superior performance is mostly due to the good market timing of their managers during the US stock market bubble that preceded it.

This study benefits from the fact that stock markets have experienced a long period of depression, since stock indices have been almost continuously going down for a period of three years. Thus, our analysis neither suffers from discontinuities between down periods, that preclude any analysis of persistence, nor from arbitrarily chosen definitions of a bear market, as Fabozzi and Francis (1979), Kao et al. (1998), Rao (2001), Edwards and Caglayan (2001) and Liang (2003).

In this paper, using a similar methodology as the one developed by Capocci and Hübner (2004), we study the performance of hedge funds and its persistence during a time window that encompasses relatively long bullish and bearish periods.

This paper introduces several key modifications with respect to the previous studies on hedge funds performance and persistence. Firstly, although Capocci and Hübner (2004) and Liang (2001) consider a relatively short bearish sub-period with the Asian crisis, their sample does not enable them to distinguish between unambiguously bullish and bearish sub-periods. Our study will thus identify and separately analyze two sub-periods corresponding to upward and downward market trends, with a pivot set at the end of March 2000.

Secondly, we introduce a modified asset pricing model encompassing the risk premia that proved to be relevant for assessing funds performance in previous studies, successively proposed by Fama and French (1993), Carhart (1997), Agarwal and Naik (2002) and Capocci and Hübner (2004). This yields a model with 10 risk premia, which may look at first sight overspecified but one has to bear in mind that hedge funds families are very heterogeneous and, unlike mutual funds, involve investments in many types of assets and markets.

Thirdly, we specifically identify one hedge fund strategy, namely Market Neutral that, following the results of Edwards and Caglayan (2001), supposedly hedge investors against bearish markets. It has also been studied in an unambiguously bullish setup by Capocci and Hübner (2004), who find that this family of funds tends to out-perform the market during the 1994-2000 period. In this paper, we perform an in-depth analysis of the level and persistence of its performance before and after the stock markets downturn.

The paper is organized as follows. Section 2 sets out the performance models we will use. In Section 3, we provide a thorough analysis of the database. The fourth Section studies potential biases in the database. The next Section reports the performance of hedge funds for the whole period and the sub-periods considered. Section 6 documents and explains the persistence in hedge fund returns over the same time windows, with a special focus on the Market Neutral strategy. Section 7 concludes the paper.

II Performance Measurement Models

The starting point of our study of hedge funds performance is the original Sharpe (1964) – Lintner (1965) CAPM. As the basic multi-factor specification, we use the Carhart (1997) model as it is that is widely used in practice and it is not dominated by any other model in the mutual funds performance literature. Finally, we construct a multifactor model that extends the Carhart (1997) specification by combining it with factors proposed in Agarwal and Naik (2002) and Capocci and Hübner (2004) and by adding an additional factor.

2.1 The Capital Asset Pricing Model

The first performance model we use is a single index model based on the classical CAPM developed by Sharpe (1964) and Lintner (1965). Its equation to estimate is the following :

$$R_{Pt} - R_{Ft} = \alpha_P + \beta_P \left(R_{Mt} - R_{Ft}\right) + \varepsilon_{Pt} \qquad t = 1,2,...,T \tag{1}$$

where R_{Pt} = return of fund P in month t; R_{Ft} = risk-free return on month t; R_{Mt} = return of the market portfolio on month t; ε_{Pt} = error term; α_P and β_P are the intercept and the slope of the regression, respectively.

The intercept of this equation, α_p commonly called Jensen's alpha (1968) is usually interpreted as a measure of out- or under-performance relative to the market proxy used.

2.2 The 4-Factor Model of Carhart (1997)

The four-factor model of Carhart (1997) is an extension of the Fama and French (1993) 3-factor model. It takes into account size and book-to-market ratio, but also an additional factor for the momentum effect. Grinblatt, Titman and Wermers (1995) define this effect as buying stocks that were past winners and selling past losers. This model is estimated with the following regression:

$$R_{Pt} - R_{Ft} = \alpha_P + \beta_{P1}\left(R_{Mt} - R_{Ft}\right) + \beta_{P2} SMB_t + \beta_{P3} HML_t + \beta_{P4} PR1YR_t + \varepsilon_{Pt} \qquad t = 1,2,...,T \tag{2}$$

where SMB_t = the factor-mimicking portfolio for size ('*small minus big*'), HML_t = the factor-mimicking portfolio for book-to-market equity ('*high minus low*')[1] and $PR1YR_t$ = the factor-mimicking portfolio for the momentum effect[2]. These factors aim at isolating the firm-specific components of returns.

2.3 The Composite Model

In order to take into account the complex characteristics of the hedge fund industry, we implement a combination and an extension of Carhart's (1997) 4-factor model, the model used by Agarwal and Naik (2002) and the one used by Capocci and Hübner (2004).

This model contains the market risk premium, Fama and French (1993) "size" and "value" factors, Carhart's (1997) "momentum" factor, five factors introduced by Agarwal and Naik (2002) : a factor for non-US equities investing funds (MSCI World excluding US), two factors to account for the fact that hedge funds invest in US and foreign bond indices[3] (Lehman High Yield Bond Index and Salomon World Government Bond Index) and one factor that Capocci and Hübner (2004) proved to be highly significant, the JP Morgan Emerging Market Bond Index, and finally a commodity factor (GSCI Commodity Index). Furthermore, we add an additional bond index factor that is not used in previous studies, namely the Lehman Mortgage-Backed Securities Index to take into account the fact that various hedge funds strategies (fixed income arbitrage, mortgage-backed securities) are exposed to this market and the Lehman High-Yield Credit Bond Index.

The market proxy used is the value-weighted portfolio of all NYSE, Amex and Nasdaq stocks market proxy that is usually used in mutual funds performance studies.

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Several additional factors, such as the MSCI Emerging Markets Index, the Lehman BAA Corporate Bond Index and the Salomon Brothers Government and Corporate Bond Index proposed by Agarwal and Naik (2002) and Capocci and Hübner (2004) and the Gold index used by Fung and Hsieh (1997) were not included in our extended model given their high colinearity with our set of indices[4].

[1] See Fama and French (1993) for a precise description of the construction of SMB_t and HML_t.

[2] For a description of the construction of PR1YR see Carhart (1997).

[3] The Lehman US Aggregate Bond Index, that was used in several previous hedge funds studies, was found to have an extremely high correlation with the Lehman BBA Corporate Bond Index and thus was removed from our study.

[4] Agarwal and Naik (2003) suggest that the Goldman Sachs Commodity index is a better approximation of the commodity market as the Gold index regarding hedge funds.

$$
\begin{aligned}
R_{Pt} - R_{Ft} = {} & \alpha_P + \beta_{P1}\left(R_{Mt} - R_{Ft}\right) + \beta_{P2} SMB_t + \beta_{P3} HML_t + \beta_{P4} PR1YR_t \\
& + \beta_{P5}\left(MSWXUS_t - R_{Ft}\right) + \beta_{P6}\left(SWGBI_t - R_{Ft}\right) \\
& + \beta_{P7}\left(JPMEMBI_t - R_{Ft}\right) + \beta_{P8}\left(HY_t - R_{Ft}\right) \\
& + \beta_{P9}\left(MORT_t - R_{Ft}\right) + \beta_{P10}\left(GSCI_t - R_{Ft}\right) + \varepsilon_{Pt}
\end{aligned} \tag{3}
$$

where R_{Mt} = return on the Russel 3000 Index; $MSWXUS_t$ = return of the MSCI World Index excluding US; $SWGBI_t$ = return of the Salomon World Government Bond Index; $JPMEMBI_t$ = return of the JP Morgan Emerging Market Bond Index; HY_t = return of the Lehman High Yield Credit Bond Index et $MORT_t$ = return of the Lehman Mortgage-Backed Securities Index, and $GSCI_t$ = return of the Goldman Sachs Commodity Index.

III Data

3.1 Database

Three main hedge fund databases are available for empirical studies: 'Managed Account Reports' (MAR), 'Hedge Fund Research, Inc.' (HFR), and 'TASS Management' (TASS) (Amin and Kat, 2001). These databases are the most used in academic and commercial hedge fund studies[5].

Data vendors do not only collect performance data. For a majority of funds, they record other useful information such as company name, start and ending date, strategy followed, assets under management, management and incentive fees, manager's name etc. There is no consensus on the definition of the strategy followed but there are similarities. MAR defines 9 strategies with a total of 16 sub-strategies. HFR defines sixteen different strategies in two categories, 12 non-directional and 5 directional strategies, plus the Funds of Funds and the Sector categories. Finally, TASS defines 15 strategies.

We use hedge fund data from MAR, as in Fung and Hsieh (1997), Schneeweis and Spurgin (1998), and Amin and Kat (2001). The database gives monthly net-of-fee individual returns and other information on individual funds and groups them in indices. We use 108 monthly returns on 2894 individual hedge funds plus 48 indices (16 investment styles with 3 indices for each investment style: onshore, offshore and a combined index). These funds include 1622 funds alive at the end of the period (56%) and 1272 dissolved funds (44%).

Hedge funds are classified in two categories. The Individual Funds category features 13 strategies: Event driven – Risk Arbitrage, Event-Driven – Distressed Securities, Global, Global Est., Global

[5] The three databases have never been used together in a study, but Ackermann and Ravenscraft (1998) and Ackermann et al. (1999) and Capocci and Hübner (2004) used a combination of HFR and MAR while Liang (2000) uses a combination of TASS and HFR.

Intern., Global Emerging, US Opp.[6], Macro, Mkt Neutral, Long Only Leveraged, Sector, Short Sales and No Category, the latter one corresponding to funds with no stated strategy and funds whose strategy does not fill in any of the above. The Funds of Funds category features 3 strategies: Niche, Diversified and Others.

We take the value-weighted portfolio of all NYSE, Amex and Nasdaq stocks market proxy that is usually used in mutual funds performance studies (see e.g. Fama and French, 1993, 1996; Carhart, 1997). Its almost perfectly correlation with the Russell 3000 index used in Agarwal and Naik (2002) suggests that both market proxies are very similar[7]. Finally, the one-month T-bill rate from Ibbotson Associates is taken as the risk-free rate.

3.2 Basic Performance

Panel A of Table 1 contains descriptive statistics of the funds, whether living or dead, in our database. These hedge funds data are contrasted against the descriptive statistics of the factors introduced in equation (3) of Section 2. These statistics are reported in panel B of Table 1.

Insert Table 1 approximately here

Panel A shows that the highest mean return was achieved by the Sector (1.66%), then the Global Est. (1.29%) and Global Emerging (1.17%) follow. Average returns of funds of funds are all around 0.70%, only followed by the Global (0.45%) strategy that achieves the lowest mean return. This pattern is similar for the mean excess returns.

These descriptive statistics differ from the results obtained by Capocci and Hübner (2004) for the 1994-2000 period, who find that the best performers are US Opportunistics Small Caps, US Opportunistics Growth and Sector while the worst average performers are Foreign Exchange, Short Sellers the and Funds of Funds, without sub-strategy. This difference can be explained by the difference in the database used (MAR combined with HFR for Capocci and Hübner, 2004) and the different time period studied.

The Sharpe measure (the ratio of excess return and standard deviation) offers a much different picture: accounting for risk, Market Neutral funds appear to be the best performers, while the funds that achieve the highest absolute returns are only among the average risk-adjusted performers.

A look at the t-stats indicates that mean returns are significantly different from 0 at the 5% significance level for all funds and that the mean excess returns are significantly positive for all cases but the Global and Diversified funds of funds categories.

[6] This strategy has been suppressed in 1999.

[7] See Capocci and Hübner (2004) for more a complete analysis of this correlation.

Panel B of Table 1 shows that the mean excess return of the Market Proxy is 0.78% per month (about 9.5% per year), only statistically different from zero at the 10% level. This reasonable value indicates that the bullish sub-period has been almost totally offset by the market correction. The mean excess premium of the MSCI World excluding US is an insignificant 0.22% per month. The average SMB and HML returns are insignificant; only the Momentum factor, with the highest mean, provides a significantly positive value. The highest mean return for bond indices was obtained by the JP Morgan Emerging Market Bond Index.

The Sharpe ratio obtained by our whole hedge fund database (0.29) is higher than the ones for the Market Proxy (0.19), and higher than for the MSCI World Excluding US (-0.15).

3.3 Analysis per Sub-periods

The cutting point chosen for the identification of the up and down periods has been set at March 2000. This month corresponds to the maximum observed value of the Russell 3000 Index that reached a value of 858.48 during the session of March 24, 2000. During the up period, the monthly index return was positive in 70% of the months (52 out of 74) with an average yearly return of 19.4%. During the down period, the monthly index return was positive in 39% of the months (12 out of 34) and the average yearly return was -16.9%. Those trends are sufficiently strong to allow us the consider the whole sub-periods as, respectively, bullish and bearish without having to use a complex rule to separate bullish, bearish and neutral months since these rules would obviously not match the ones used by funds managers for their market timing decisions.

The analysis of basic performance for the two sub-periods under study, presented in Table 2, reveals some interesting differences.

Insert Table 2 approximately here

Table 2 displays summary results for the bullish and bearish sub-periods. As expected from the nature of the time windows, excess returns obtained for the majority of hedge funds strategies are mostly due to the bullish sub-period, with the best performers before March 2000 also displaying the worst returns after the market reversal too place. There are three noticeable exceptions. Firstly, the US Opportunistics strategy did poorly in spite of favorable market conditions, which explains the disappearance of this category. Secondly, the Global strategy seems to achieve returns that are much less dependent on the conjuncture than the other strategies. Finally, the Short Sales strategy is the only one that records significant excess returns during bad times but at the expense of insignificant returns in good times.

Preliminary evidence does not seem to indicate that the behavior of the two Event Driven and of the Macro strategies out-perform the other ones in the bearish period, while the returns of the Market

Neutral strategy are then significant but not when excess returns are considered. Although further evidence is obviously needed, this does not support the findings of Edwards and Caglayan (2001) with a different definition of bearish market conditions.

For our factors, the same analysis shows that the Market and Momentum factors gave the highest excess returns during the first sub-period, while the Book-to-Market and Lehman Mortgage factors obtained significant positive abnormal returns during the second one. Poorest performers were the Lehman Aggregate US Bond Index during the up market trend period and the Market and World Excluding US factors during the down period.[8]

3.4 Correlations

The traditional hedge funds literature contends that, thanks to their weak correlation between hedge funds and other securities, hedge funds are likely to improve to the risk-return trade-off when added to a traditional portfolio (see Fung and Hsieh, 1997; Schneeweis and Spurgin, 1997; Liang, 1999; Amin and Kat, 2001).

This sub-section studies the ranges of correlation coefficients among and between hedge funds and passive investment strategies. The correlations have been computed for the whole 1994-2002 period and for two-sub-periods. In order to obtain periods with comparable lengths, we took the bearish sub-period starting in April 2000 (33 months) and matched it against the most bullish time window, that started in September 1998 (19 months) rather than the whole 1994-03:2000 period. Because of the extremely large number of results to be reported, we chose to report ranges in correlations. Results are reported in Table 3.

Insert Table 3 approximately here

In each cell, correlations increase as the color is darker. The upper part of the cell accounts for the correlation during the whole period, while the lower part is split between the pre- and post-March 2000 sub-periods.

Panel A reports correlations among hedge funds strategies. As typically reported (see a.o. Liang, 2003; Capocci and Hübner, 2004) in the literature, these strategies are in general highly correlated when indices are considered, with the exception of the Short Sellers strategy that systematically goes conversely – as expected. However, a closer look at their evolution over time indicates that the Global and, to a lesser extent, the Global International strategies tend to decrease their correlation with other funds in bearish times; on the other hand, the Global Emerging strategy follows the other strategies more closely during periods of down markets. The no Category and Niche strategies seem to be more correlated with the rest of hedge funds in the sub-periods than in the full period.

[8] Detailed data available upon request.

In Panel B, the behavior of our explanatory variables is also of considerable interest. Only four indices (Market, World Excluding US, SMB and Lehman High Yield) have a high correlation with most hedge funds strategies. These results confirm that hedge funds strategies are weakly correlated with most traditional investment tools

The first line indicates that almost all hedge funds strategies tend to follow the market (US and international) more closely in the bearish sub-period. This strong tendency is not invalidated for the supposedly investor-protecting strategies. In general, hedge funds strategies sharply decrease and even reverse their loading with the momentum factor, as they become momentum-contrarian during bad times. They also reduce their sensitivity towards the Emerging Market Bond factor, while increasing their exposure to the Lehman High Yield and the SMB factors. The Short Sellers strategy, for its part, noticeably switches from a "Glamour" strategy (low loading with the HML factor) to a "Value" one in the last sub-period. This is the only strategy that consistently invests in Value stocks in bearish markets.

Panel C indicates that the correlation coefficients of our regressors are low enough to raise serious multicolinearity concerns.

IV Analysis of biases

4.1 Survivorship bias

In order to reduce the severity of survivorship bias, an important concern for mutual funds (see a.o. Carhart, 1997) as well as hedge funds studies (see a.o. Ackermann et al., 2001 and Fung and Hsieh, 2000), data vendors backfill each fund's performance history prior to their addition to the database. Thus, they provide data that go back before the starting date of the database itself, usually 1993. However, before this starting date, one is left with only surviving funds data. Brown et al. (2001), for the TASS database, and Capocci and Hübner (2004) for the combined MAR and HFR databases have shown that data for the pre-1994 period is indeed subject to non-negligible survivorship bias that is very likely to hinder statistical inference (see Hendricks et al., 1997). Data starting in 1994 appears to be more reliable according to this criterion (Capocci and Hübner, 2004).

Two definitions of this bias are commonly used in mutual and hedge fund studies: the performance difference between surviving and dissolved funds (e.g. Ackermann et al., 1999) and the performance difference between living and all funds (e.g. Liang, 2000).

We report the bias using both definitions for the whole period and for 2 sub-periods 1994-03:2000 and 04:2000-2002.

Insert Table 4 approximately here

In Panel A of Table 4, we report the yearly returns of all funds, surviving funds and dissolved funds. Hedge funds experience extremely high returns in 1999, when the stock market experienced a sharp

positive return, without great difference between surviving and dissolved funds. In the subsequent years, returns gradually reduced but mostly due to the negative returns of dissolved funds. This is a clear effect of the bearish turn of the market after March 2000, leading to an increase in differences in hedge funds returns between the best and the worst performing managers.

In Panel B, our results yield a monthly survivorship bias of 0.41% (or 4.92% per annum) for the whole period using the first formula while in Panel C the bias of 0.13% per month (1.51% per annum) with the second formula. This latter value is much higher than the very low value obtained by Ackermann et al. for the period 1988-1995. It is similar to the percentage of 1.5% from Fung and Hsieh (1998), lower than the 0.30% monthly bias found by Fung and Hsieh (2000) and slightly higher than the percentage of 1.2% found by Capocci and Hübner (2004) for the 1994-2000 period. It is however lower than the 3% bias found by Liang (2001), which is also the industry consensus as stressed by Amin and Kat (2001)[9].

A look at sub-period biases indicates that the level of this bias is mostly due to the bearish period, where its level sets at 2.61%. The bias drifts up through the very high level of returns differential between surviving and dissolved funds, but this effect is somehow mitigated by the decrease in the proportion of returns from dissolved funds in the database (this proportion steadily decreases from 35.9% in 1999 to 9.1% in 2002). Thanks to this bias-reduction effect of recent data, the global behavior of the database in relationship to survivorship bias is kept within reasonable bounds.

4.2 Instant Return History Bias

As hedge funds are not allowed to advertise, their managers consider inclusion in a database primarily as a marketing tool. This creates a positive *instant history bias* or *backfilled bias* (Fung and Hsieh, 2000) that occurs because a fund's performance history is backfilled after inclusion. The upward bias results from the likelihood that funds with a poor track record are less likely to apply for inclusion than funds with good performance history.

We use the same two-step methodology as Park (1995), Brown et al. (1997), Fung and Hsieh (2000) to estimate this bias for our hedge fund database. On the one hand, we estimate the average monthly return of the "observable portfolio" which invests in all funds from our database each month. On the other hand, we estimate the average monthly return of the "adjusted observable portfolio" obtained from investing in all these funds after deleting the first 12, 24 and, if possible, 36, 48 and 60 months of returns. The bias is estimated for the whole period and for the bullish and bearish sub-periods in

[9] This consensus value quite high when compared to the 0.8-1.5 bias reported by Malkiel (1995) and Brown and Goetzmann (1995) for US mutual funds.

order to compare our results with those obtained by Fung and Hsieh (2000) and Capocci and Hübner (2004). Results are reported in Table 5.

Insert Table 5 approximately here

For the whole period, the observable monthly return averaged 0.99%, while the adjusted observable one was 0.88% (when deleting the 12 first months), 0.84% (24 months), 0.81% (36 and 48 months), and 0.80% (60 months). This gives an estimate of 1.32% per year, very much in line with the values of 1.4% found by Fung and Hsieh (2000) and 1.2% found by Capocci and Hübner (2004).

Contrarily to the analysis of the survivorship bias, the first sub-period is mostly responsible for the level of the bias. Because the period was increasingly bullish, with the highest returns being obtained around the end of the period, the bias starts at a fairly high level and increases as more returns are removed from the estimation, consistently with the phenomenon found by Capocci and Hübner (2004). For the "bearish" sub-period, only partial results are available due to the small length of this period, but the bias is kept at very reasonable levels.

One may relate the level of this bias to the one of survivorship bias in this context: during unfavorable market conditions, there is a sharp difference in the returns between surviving and dissolved funds that can be explained by attrition of the latter funds because of their bad performance. As only the most successful funds tend to remain during this time period, the corresponding instant history bias is likely to be mitigated by this self-selection of the most successful managers towards the end of the period, while the observable portfolio returns include returns from subsequently dissolved funds.

4.3 Conclusion

Overall, this examination of biases indicates that both survivorship and instant history biases are kept to very reasonable levels for the whole period as well as for the bullish and bearish sub-periods, but for very different reasons. Interestingly, survivorship bias is higher for the period of down market, while there is evidence of a more important instant history bias during the upward trending period.

One could have suspected that the high failure rate of hedge funds after March 2000 would have lead survivorship bias to suspiciously high levels, but this is avoided by the particular behavior of the database, and especially thanks to the increase in the number of funds that has been observed over the same time window. Yet, the phenomenon of elimination of the poorest performers under unfavorable market conditions is also responsible for the remarkably low level of the instant history bias.

V Hedge Funds Performance

This Section aims at studying whether hedge funds, as a whole or strategy by strategy, have significantly out-performed the market. We compute all estimations by using Newey-West (1987) standard errors to adjust for any autocorrelation in the returns.

Table 6 reports the results for All Funds, Individual Funds and Funds of Funds, and all funds strategies, with equally weighted portfolio excess returns for each investment style. The model is also estimated for each fund individually[10]. To analyze hedge funds performance in more details, the last columns give the distribution of individually estimated alphas per strategy, with the percentage of significantly positive, insignificant and negative alphas at the 5% level.

Insert Table 6 approximately here

5.1 Performance Measurement using the CAPM

Panel A of Table 6 reports performance estimates using the CAPM. The estimated betas are rather low, except for the Long Only Leveraged, and all R-squared are below 60%, except for Long Only Leveraged and Global Est., suggesting the need to use a more detailed model. Overall, two thirds of the individual funds strategies produce significantly positive alphas, while the two Funds of Funds strategies out-perform the market at the 10% level. Overall, hedge funds as a whole also significantly out-perform the market at the 1% level. Taken individually, 32% of the alphas are significantly positive.

5.2 Performance Measurement using Multi-Factor Models

It is presumably better to use a multi-factor model to account for all possible investment strategies. In Panel B of Table 6, we report the results for Carhart's 4-factor model and in Panel C the results for our combined model applied to hedge funds.

Panels B reveals that the premium on the SMB factor is, in almost all cases, significant, including in the Short Sellers strategy where it is negative. The coefficients of the HML and Momentum factors are significant for four and six individual funds strategies, respectively, and to all funds of funds strategies.

Panel C shows that the explanatory power of the HML factor seems marginal as only three betas are significantly positive at the 5% level. The Momentum factor remains a stronger indicator of hedge funds behavior, with only the Short Sales strategy being momentum contrarian over the whole period.

[10] To make individual estimation, we require all funds to have consecutive monthly return history for at least 24 months, so that relatively accurate risk measures can be estimated.

The results with our combined model also indicate that all additional factors add explanatory power to the regression. In particular, as already outlined by Capocci and Hübner (2004), the Emerging Bond factor adds explanatory power in more than 50% of the strategies with high significance levels. Event Driven strategies are more prone to bear a high exposure to high yield bond factors, while Global International and Emerging strategies share similar risk exposure characteristics except that the former is more momentum-driven and the latter is naturally heavily exposed to the Emerging Market Bond factor.

Evidence on alphas obtained in Panel C is not favorable to Funds of Funds and to the Macro strategy. Overall, accounting for more risk premia reduces the average reported out-performance by 0.1% per months. The individual alpha distribution shows that taking more factors into account drives down that the proportion of individual funds and funds of funds that significantly out-performed the market, and the distribution of performance among strategies is also more concentrated.

Overall it seems that the combined model does a very good job in describing hedge funds behavior. The average R^2_{adj} increases from 0.61 for the single factor model, to 0.80 for the 4-factor model and to 0.84 for our combined model. This coefficient is the best one reported in the literature so far[11].

5.3 Performance over bullish and bearish sub-periods

In order to analyze the performance components in the bullish and bearish market configurations, we only report results for our combined model. Table 7 shows the value of the coefficients for the sub-periods 01:1994-03:2000 (Panel A) and 04:2000-12:2002 (Panel B).

Insert Table 7 approximately here

A quick look at the alphas for the considered sub-period clearly indicates that the major part of the performance over the total 1994-2002 period is recorded prior March 2000, with the noticeable exception of the Market Neutral strategy that sustains positive out-performance for both sub-periods. This finding is consistent with the result obtained by Liang (2003) who investigates the behavior of hedge funds strategies using a piecewise linear regression setup: Market Neutral funds obtain by far the largest standardized value for alpha, with at the same time a very low explanatory power of the regression.

In contrast, Panel A shows that the Global strategy achieves significant negative performance during the bullish period. It is worth reporting that, although nine individual strategies and both funds of funds strategies recorded a negative alpha in Panel B, none of these values are shown to be significant. A look at individual alphas reinforces this finding, as the proportion of significantly positive alphas does not significantly differ from the total period to the first sub-period, but Panel B

[11] See for example .Liang (1999) and Amin and Kat (2001).

shows that 27% of the Market Neutral funds sustained positive out-performance while on average more than 80% of individual funds managers were in line with the market.

The strategies followed by funds managers sharply differed from one sub-period to another. All but the No-category strategies individual funds significantly followed the market until March 2000; only the Long Only Leveraged and the Sectors funds increased their exposure thereafter. The Global, Global International, Market Neutral and No-category strategies were not even significantly loaded to the market risk premium. In contrast, the Funds of Funds strategies all increased their US stock market exposure after March 2000.

Some general swings of exposures to several risk factors are observed from one period to another Exposure to the World excluding US usually becomes negative, although with low significance levels, in the bearish sub-period, except for Global International and Short Sales. On the other, the broadly negative exposure to the World Government Bond Index in the first sub-period fades away after March 2000 except for Global and Sectors, although the Short Sales strategy follows a converse tendency. The loadings for the Emerging Market Bond Index and High Yield Bond Index are generally positive in the first and second sub-period, respectively, which possibly indicates a broad sliding of bond strategies of hedge funds managers.

At the individual strategy level, some changes are also of particular interest after March 2000. Event driven strategies cease to be momentum-contrarian. All Global strategies increase their investments in small firms and reduce their exposures to bond factors; this latter statement also holds for Macro funds. Market Neutral funds managers relied more extensively on domestic bond indices. Strikingly, the Short Sales strategy left a pure market-contrarian profile for a much broader mix of exposures (positive for HML, World excluding US and Commodity Index; negative for SMB, Momentum and World Government Bond Index).

For funds of funds strategies, the noticeable difference is the noticeable reinforcement of the loadings to the Momentum factor and the High Yield Bond Index after March 2000, while the exposure to the World Government Bond Index goes from very negative to slightly positive.

VI Persistence in Performance

Our results show significant evidence of superior performance over the total period of time for most individual strategies. Nevertheless, results are mostly due to the first, bullish sub-period and the positive out-performance tends to fade away after March 2000. Nevertheless, active hedge funds selection strategies are likely to increase the expected return if performance is persistent, i.e. if a superior average return in a period is likely to be followed by a superior average return in the next period for a given fund. Sirri and Tufano (1998) document large inflows of money into last years best performers, and withdrawals from last years' losers. Zheng (1999) finds that newly invested money in

these best performing mutual funds is a predictor of future performance. This indicates that persistence in performance is critical for mutual funds.

This is all the more important given that we have found in the previous subsection a substantial break in performance at the peak of the stock markets. Is persistence sustainable over the total period, or is it likely to be observed only in a particular sub-period ?

6.1 Persistence over the total period

We follow the methodology of Carhart (1997) using our combined model. All funds are ranked based on their previous year total return. Every January, we put all funds into 10 equally weighted portfolios, ordered from highest to lowest past returns. Portfolios 1 (High) and 10 (Low) are then further subdivided on the same measure. The portfolios are held till the following January and then rebalanced again. Funds that disappear during the course of the year are included in the equally-weighted average until their death, then portfolio weights are readjusted appropriately. This yields a time series of monthly returns on each decile portfolio from 01:1995 to 12:2002.

Insert Table 8 approximately here

The monthly average return to the strategy of investing in portfolios 1 and 10 would have been, respectively, 1.07% and 0.44% for the total period.

The monthly excess returns on the decile portfolios decrease monotonically between portfolio D1 and D8, but the sub-decile D10c obtains an excess return higher than 1%, slightly significant. The spreads between decile excess returns are not significant. Cross-sectional variation in returns is considerably larger for the extreme deciles than for the middle deciles, in line with the results of Brown et al. (2001) and Capocci and Hübner (2004).

After controlling for the risk factors, the picture is dramatically altered. The D10c portfolio, i.e. the extreme losers, enjoy a remarkable monthly out-performance of 1.77%[12]. The 1a-10c spread goes from an insignificant 0.05% to a significant – 1.6%. Aside from this extreme value, significant alphas are mostly to be found in the middle deciles, with the most significant values (at 1% level) being observed in portfolios D4 to D8.

The pattern of loading to risk premia suggests that past winners more closely follow the market, invest more in small firms and in emerging bond markets but less in the world stock index than past losers. Quite naturally given the definition of the portfolios, past winners follow momentum strategies while past losers are momentum-contrarian.

[12] The poor value of the adjusted R^2 for this decile portfolio suggests however a very unstable behaviour of individual funds returns inside this decile portfolio.

In the middle deciles, where performance seems to be persistent when accounting for risk, we notice that these strategies are usually characterized by positive exposure to the HML factor (value strategy), negative exposure to the world bond index but positive exposure to the emerging bond markets, indicating arbitraging strategies on geographical bond markets. This is a possible source for their sustained performance.

6.2 Persistence over the sub-periods

The same analysis as before is performed in Table 9 for the bullish (Panel A) and for the bearish (Table B) sub-periods[13].

Insert Table 9 approximately here

Panel A of Table 9 displays, not surprisingly, very comparable results with the ones of Table 8, but there are some important differences. Firstly, the alpha for portfolio D10c is not significant anymore; only middle-decile portfolios have a significant alpha. This result is consistent with Capocci and Hübner (2004) that analyse the 01:1994- 06:2000 period. There is no significant spread between decile portfolio returns.

Loading to individual factors are to a large extent similar for stock indices, but not at all for bond indices. During the bullish period, past winners have not invested in any bond index, and even heavily divested from the world bond index. In contrast, they have also significant loadings with respect to the commodity index. At the same time, past average performers were mostly invested in the high yield bond market.

Unfortunately, Panel B indicates that there is no evidence of persistence in good performance during the bearish period. The only sustained performance is the negative one, as past losers are found to persistently aggravate their losses in portfolios D10, D10a and D10b. This finding is in line with our analysis of survivorship biases, reinforcing the conjecture that there was a particularly high mortality rate after March 2000 due to poor performance of the disappeared funds.

Top decile portfolios during that period had positive loadings in high yield bonds and in the Momentum factor, but negative loadings in the commodity market and the HML factor. The losing strategies, i.e. the ones persistently followed by bottom decile portfolios, had loading of opposite signs on the same factors and, additionally, very high loadings on the mortgage market.

We also notice that, contrarily to the "conventional wisdom" concerning the correlation between the momentum factor and hedge funds performance during bearish periods, past winners consistently invested in momentum strategies and past winners consistently followed contrarian strategies after March 2000. The paradox is only illusory, as past winners typically hold winner stocks in their

[13] For the second sub-period, we used returns of the 04:1999-03:2000 period to form the first decile portfolios.

portfolio and are thus naturally positively exposed to the momentum factor with these securities. Our results simply suggest that these funds managers did not actively manage this particular component of their portfolio.

6.3 Analysis of the Market Neutral strategy

This sub-section focuses on the persistence in returns for the only hedge funds strategy that has been found to provide significant abnormal returns for both sub-periods in the previous section, namely the Market Neutral strategy. We determine whether persistence in returns exists for this strategy for the whole period as well as for the sub-periods. As for the total sample, we classify funds in 10 decile portfolios, with the top and bottom decile divided in 3. Table 10 reports our results for these strategies.

Insert Table 10 approximately here

Panel A reports the results of the analysis for the global period. They show that there is no significant difference between good and bad performing funds. All alphas but the one of portfolio D10c are significantly positive for the whole period, although the significance level is lower for the extreme sub-deciles. Compared to our results for the whole database, excess returns are higher for the extreme deciles and smaller for middle deciles; however, returns of Market Neutral funds exhibit a much lower variance, and higher alphas for the top deciles (from D1 to D5). In a nutshell, all but the poorest past performers exhibit a significant persistence in performance. The review of risk coefficients shows that, aside from the fact that past best performers had a significant loading on the stock market index and on the SMB factor while past losers had a greater focus on world stock markets, no other clear pattern emerges.

Panels B and C display very different pictures. During the 1994-March 2000 period, only the alphas of top decile funds were systematically higher than for the whole period. In contrast, the lowest decile funds did not out-perform the market. Middle decile funds had a clearer focus on high yield bond markets.

Panel C shows that the persistence in performance during the market collapse was clearly sustained for portfolios D2 to D6, with high significance levels. These funds had no particularly remarkable investment pattern, except for the median decile (D4) whose loadings are significant for the High Yield factor (positive) and for the World Government Bond and Momentum factors (negative), with a relatively high adjusted R^2 of 57.8%.

Since these decile portfolios had significant alphas for the first sub-period too, this indicates that the superior performance of these funds was predictable irrespective of the prevailing market conditions. We view this as a major result considering that Market Neutral funds have traditionally been assigned

the role of protecting investors against negative market twists: this reinforces this claims on a double dimension, as our results suggest that this performance is not only sustained during positive or negative market conditions, but during both; however, persistence in performance is observable for the medium-to-top past performers only, showing that only a very targeted investment behavior in Market Neutral Funds would provide a sustained positive abnormal return.

Finally, it is worth mentioning that the poor adjustment of the model for the best performing decile portfolios during the down market period also signals that these funds managers tended to pursue very active and moving investment strategies, leaving a large importance to market timing and tactical allocation. The alternative explanation of missing risk factors, which is also reported in Liang (2003), although theoretically possible, is not very compelling given the proven very high accuracy of our combined model. However, this particular aspect opens the way to additional research on hedge funds performance and persistence during unfavorable market conditions.

VII Conclusion

The evolution of financial markets during the 1994-2002 period has been very rich in significant up and down market movements whose length and severity have been largely unprecedented. In this paper, we have seized this opportunity to test whether hedge funds displayed significantly different patterns of performance levels and persistence during this time window as well as in undoubtedly bullish and bearish market situations.

Firstly, our database constituted with 2894 funds obtained from MAR prove to be fairly trustable with respect to the most important biases in hedge funds studies, namely the survivorship and instant return history biases despite the high attrition rate of funds observed after March 2000. Our original ten-factor composite performance model also raises little suspicion concerning its ability to explain returns as we achieve very high significance levels with very little correlation among regressors.

The analysis of performance indicates that most hedge funds significantly out-performed the market during the whole test period, but this is mostly due to the bullish sub-period. The pattern is somehow attenuated for funds of funds strategies. In contrast, no significant under-performance of individual hedge funds of funds of funds strategies is observed when markets headed south. The Market Neutral strategy provides a noticeable exception, however, as is sustains abnormal performance over both the bullish and the bearish sub-periods.

Persistence analysis also indicates that most of the predictability of superior performance is to be found prior to March 2000. Our results confirm several previous studies that found that persistence, if any, is mostly located among medium performers. In the second sub-period, only negative persistence can be found among the past losers, suggesting that bad performance has probably been the decisive factor for hedge funds mortality.

Our analysis of the performance of the Market Neutral strategy is remarkably encouraging and is confirmed and refined with the persistence analysis: for portfolios that were between the 20% and 69% best performers in this category, abnormal performance and persistence are pervasive throughout the sub-periods, probably thanks to an extreme adaptability and a very active investment behavior.

Obviously, these very appealing results call for a much more detailed analysis of the Market Neutral strategy among individual hedge funds. Market timing issues do matter for their risk exposure, and traditional asset pricing models may not fully account for their highly unstable investment strategies. We believe that this paper potentially opens the way to a deeper examination of the properties of these particular hedge funds during negative market conditions, but this particular field of investigation is left for future theoretical as well as empirical research.

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Table 1: Descriptive Statistics of Hedge Funds Strategies and Passive Investment Strategies

Panel A: Hedge Funds strategies Jan.1994-December 2002 (108 months)

Individual Funds	Nr of Fds	% of the category	% of the total	Living Funds	Dead Funds	Mean Return	t(mean)	Std. Dev.	Med.	Min	Max	Skew.	Kurt	Excess return	t(mean exc.)	Sharpe ratio
Event driven - Risk Arb	136	6,1%	4,7%	85	51	0,93%	5,15	1,74%	0,92%	-6,4%	5,5%	-0,58	2,24	0,55%	3,05	0,32
Event driven - Distressed Sec	106	4,7%	3,7%	70	42	0,99%	5,48	2,25%	1,17%	-10,8%	7,0%	-1,16	6,25	0,61%	3,38	0,27
Global*	175	7,8%	6,0%	1	174	0,45%	2,47	3,80%	0,64%	-25,8%	13,6%	-2,74	21,61	0,07%	0,37	0,02
Global Est.	499	22,2%	17,2%	300	199	1,29%	7,15	3,25%	1,09%	-9,9%	12,3%	0,11	1,59	0,91%	5,04	0,28
Global Intern.	72	3,2%	2,5%	46	26	0,88%	4,87	2,42%	0,93%	-6,8%	8,9%	0,24	1,44	0,50%	2,77	0,21
Global Emerging	157	7,0%	5,4%	97	60	1,17%	6,48	5,02%	1,80%	-21,7%	14,3%	-0,66	3,18	0,79%	4,37	0,16
US Opp.**	39	1,7%	1,3%	0	39	0,23%	1,30	2,40%	0,21%	-5,6%	7,4%	0,09	0,70	-0,18%	-1,00	-0,08
Macro	144	6,4%	4,9%	52	92	0,82%	4,52	2,15%	0,61%	-4,1%	7,0%	0,45	0,57	0,44%	2,42	0,20
Market Neutral	635	28,3%	21,9%	385	250	1,04%	5,73	0,97%	1,05%	-2,5%	4,0%	-0,22	1,05	0,66%	3,62	0,67
Long Only Lev.	33	1,5%	1,1%	16	17	0,92%	5,06	5,83%	1,50%	-17,4%	13,3%	-0,44	0,16	0,54%	2,96	0,09
Sector	190	8,5%	6,6%	111	79	1,66%	9,17	4,43%	2,07%	-13,1%	19,9%	0,31	2,74	1,28%	7,06	0,29
Short Sales	37	1,6%	1,3%	24	13	0,88%	4,87	4,48%	0,67%	-13,6%	13,2%	0,09	0,74	0,50%	2,76	0,11
No category	24	1,1%	0,8%	6	18	0,93%	5,12	3,45%	0,58%	-7,8%	12,7%	1,17	3,20	0,55%	3,01	0,16
Individual Funds Total	**2247**	**100%**	**78%**	**1186**	**1061**	**1,08%**	**5,98**	**2,28%**	**1,11%**	**-8,6%**	**8,0%**	**-0,26**	**2,77**	**0,70%**	**3,87**	**0,31**
Funds of Funds																
Niche	114	18%	4%	86	28	0,74%	4,10	1,33%	0,67%	-4,1%	5,1%	0,22	1,73	0,36%	1,99	0,27
Diversified	501	77%	17%	349	152	0,71%	3,95	1,87%	0,75%	-7,3%	7,0%	-0,12	3,54	0,26%	1,41	0,14
Other	32	5%	1%	1	31	0,77%	4,27	1,69%	0,80%	-7,3%	5,8%	-0,89	4,86	0,39%	2,16	0,23
Funds of Funds Total	**647**	**100%**	**22%**	**436**	**211**	**0,72%**	**3,96**	**1,77%**	**0,71%**	**-6,8%**	**6,6%**	**-0,11**	**3,34**	**0,34%**	**1,85**	**0,19**
Total	2894	100%	100%	1622	1272	0,99%	5,49	2,14%	1,11%	-8,2%	7,6%	-0,2368	3,04	0,61%	3,38	0,29

The Global category has been gradually suppressed and replaced by the Global Est., Global Intern. And Global Emerging categories. Therefore, the funds disappearance is mostly due to category transfers

** US Opportunistics ended in 1999.

Table 1 (continued)

Equity	Panel B : Passive Strategies								
	Mean Return	t(mean)	Std. Dev.	Median	Min	Max	Mean exc. return	t(mean exc.)	Sharpe ratio
Market Proxy	0,78	1,70	4,77	1,58	-15,7	8,3	0,41	0,90	0,19
MSCI World Excluding US	0,09	0,22	4,36	0,47	-12,9	10,3	-0,28	-0,67	-0,15
F&F SMB Factor	0,02	0,04	4,45	-0,36	-16,3	21,4	-0,35	-0,82	-0,18
F&F HML Factor	0,60	1,50	4,16	0,68	-8,9	13,7	0,23	0,58	0,14
Momentum Factor	1,14	2,06	5,74	1,27	-25,1	18,2	0,77	1,39	0,24
Bond									
1 month T-bill	0,37	34,69	0,11	0,40	0,1	0,6	NA	NA	NA
Salomon WBGI	0,50	2,83	1,83	0,24	-3,4	5,9	0,13	0,72	0,39
JPM EMBI Global	0,82	1,81	4,67	1,16	-24,2	10,9	0,44	0,99	0,21
Lehman Mortgage	0,59	6,94	0,89	0,66	-2,6	3,2	0,22	2,66	2,99
Lehman High Yield Credit	0,40	1,99	2,11	0,66	-7,37	7,49	0,03	0,17	0,08
Commodity									
Goldman Sachs Commodity	0,59	1,14	5,35	0,61	-12,28	15,79	0,22	1,07	0,20

This Table shows the mean returns, t-stat for mean = 0, standard deviation, medians, minimum, maximum, mean excess returns, t-stat for mean excess return = 0, and Sharpe ratios for the individual hedge funds in our MAR database for the whole period 01:1994-12:2002. US Opp. Funds ended in 01:1999. Sharpe ratio is the ratio of excess return and standard deviation with a risk-free rate set at 5%. In panel A, No of Fds represent the number of funds following a particular strategy (or sub-strategy), Living Funds and Dead Funds represents the number of surviving and dead funds (in December 2002). We calculate the Mean Excess Return considering Ibbotson Associates one-month T-bills. Numbers in the table are monthly percentage.

Table 2 : Descriptive statistics of hedge funds strategies for the bullish and bearish sub-periods

	Sub-period 01:1994-03:2000						Sub-period 04:2000-12:2002					
Individual Funds	Nr of Fds	Living Funds	Dead Funds	Mean Return	Excess return	Sharpe ratio	Nr of Fds	Living Funds	Dead Funds	Mean Return	Excess return	Sharpe ratio
Event driven - Risk Arb	113	89	24	1,23%***	0,82%***	0,46	112	85	27	0,25%	-0,06%	-0,04
Event driven – Dist. Sec	83	65	18	1,27%***	0,85%***	0,36	94	70	24	0,37%	0,06%	0,03
Global	175	6	169	0,57%**	0,16%	0,04	6	0	6	0,16%	-0,14%	-0,05
Global Est.	400	342	58	1,96%***	1,54%***	0,48	441	300	141	-0,21%	-0,52%**	-0,19
Global Intern.	64	58	6	1,30%***	0,89%***	0,35	66	46	20	-0,08%	-0,39%	-0,22
Global Emerging	132	108	24	1,57%***	1,16%***	0,21	133	97	36	0,27%	-0,04%	-0,01
US Opp.	39	0	39	0,23%	-0,18%	-0,08	NA	NA	NA	NA	NA	NA
Macro	121	63	58	1,10%***	0,68%***	0,30	86	52	34	0,19%	-0,12%	-0,07
Market Neutral	487	350	137	1,18%***	0,77%***	0,75	498	385	113	0,71%***	0,40%	0,52
Long Only Lev.	31	22	9	1,83%***	1,42%***	0,26	24	16	8	-1,17%***	-1,48%***	-0,23
Sector	147	126	21	2,56%***	2,14%***	0,50	169	111	58	-0,38%	-0,69%**°	-0,16
Short Sales	34	25	9	0,39%*	-0,02%	0,00	28	24	4	1,99%***	1,68%***	0,33
No category	19	9	10	1,21%***	0,80%***	0,20	14	6	8	0,28%	-0,03%	-0,01
Individual Funds Total	1845	1263	582	1,47%***	1,06%***	0,45	1665	1186	479	0,19%	-0,12%	-0,06
Funds of Funds												
Niche	81	57	24	0,92%***	0,51%**	0,35	90	86	4	0,33%	0,03%	0,03
Diversified	408	333	75	0,96%***	0,26%	0,12	416	349	77	0,15%	-0,16%	-0,13
Other	31	18	13	0,92%***	0,50%**	0,26	19	1	18	0,44%*	0,14%	0,14
Funds of Funds Total	520	408	112	0,95%***	0,54%**	0,28	535	436	99	0,18%	-0,13%	-0,11
Hedge funds Total	**2365**	**1671**	**694**	**1,35%***	**0,93%***	**0,42**	**2214**	**1622**	**578**	**0,19%**	**-0,12%**	**-0,07**

*** statistically significant at the 1% level

** statistically significant at the 5% level

* statistically significant at the 10% level

This Table shows the number of funds following a particular strategy (or sub-strategy), the corresponding number of living and dead funds, mean returns, mean excess returns, and Sharpe ratios for the individual hedge funds in our MAR database for the sub-periods 01:1994-03:2000 (bullish) and 04:2000-12:2002 (bearish). Sharpe ratio is the ratio of excess return and standard deviation with a risk-free rate set at 5%.

Table 3 : Correlation among hedge funds, between hedge funds and passive investment strategies, and among passive investment strategies

Panel A : Correlation among Hedge Funds strategies

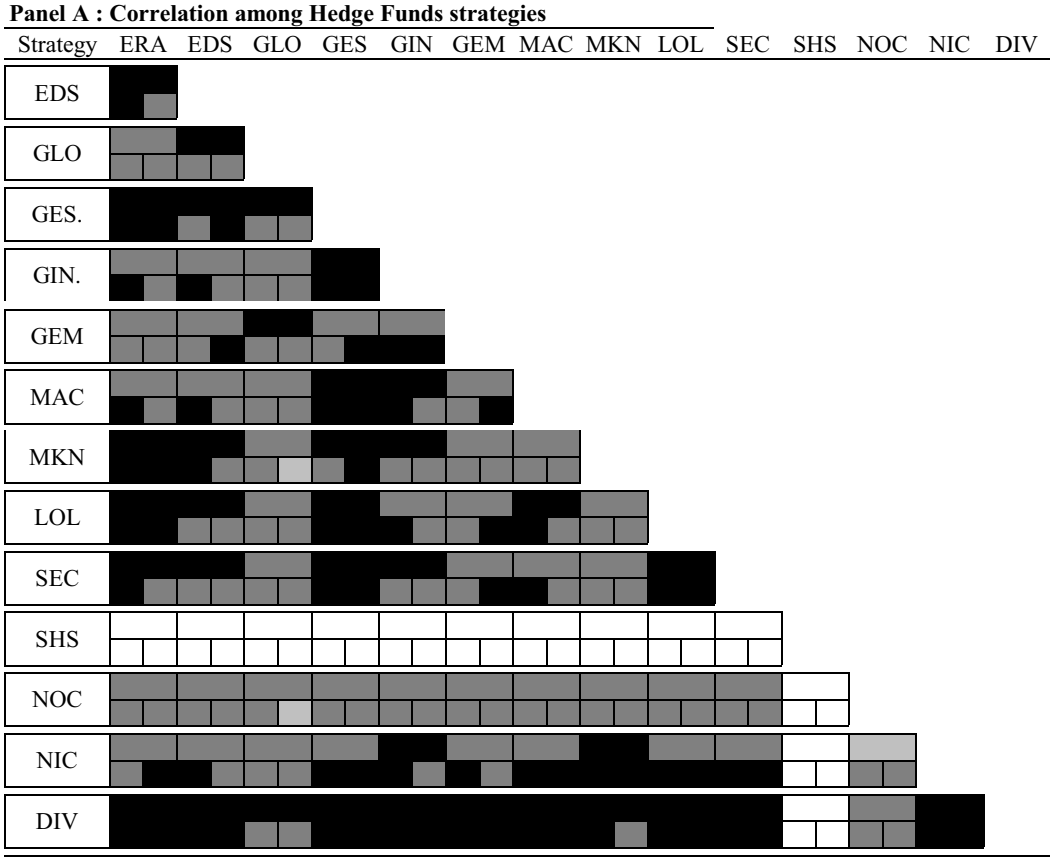
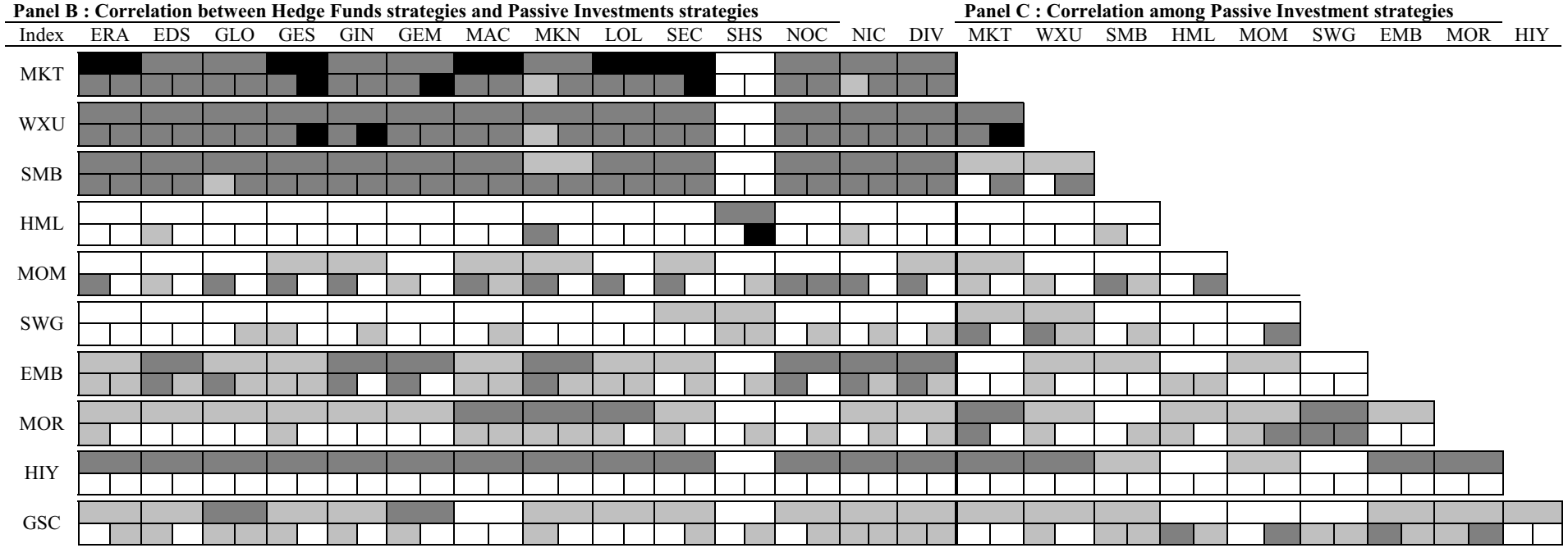


Table 3 (continued)



This Table reports the ranges of correlation coefficient among hedge funds strategies (Panel A), between hedge funds strategies and passive investment strategies (Panel B) and among passive investment strategies (Panel C). For each pair of strategies (in line and in column), the upper rectangle of the cell represents the range of correlation coefficient for the whole period (01:1994-12:2002); the bottom left square represents the range of correlation coefficient for the most bullish sub-period (09:1998-03:2000); and the bottom right square represents the range of correlation coefficient for the most bearish sub-period (04:2000-12:2002). Color codes for correlations are: >75% in black (■), between 50 and 75% in dark grey (■), between 25 and 50% in medium-dark grey (■), between 0 and 25% in medium grey (■), between -25 and 0% in light grey (■) and <-25% in white (□). ERA = Event Driven – Risk Arbitrage, EDS = Event Driven – Distressed Securities, GLB = Global, GES = Global Established, GIN = Globla International, GEM = Global Emerging, MAC = Macro, MKN = Market Neutral, LOL = Long only Leveraged, SEC = Sectors, SHS = Short Selling, OPP, NOC = no Category, NIC = Niche, DIV = Diversified, MKT = Market Proxy, WXU = World excluding US, MOM = Momentum, SWG = Salomon World Government Bond Index, EMB = JP Morgan Emerging Market Bond Index, MOR = Lehman Mortgage Index, HIY = Lehman High Yield Index and GSC = Goldman Sachs Commodity Index. The US Opportunistics and Other strategies were not included as they do not encompass the whole period.

Table 4 : Survivorship bias in hedge funds

Panel A: Annual performance (all funds, surviving funds and dissolved funds)

	All Funds			Surviving Funds			Dissolved Funds		
Year	Return	S.D.	Obs.	Return	S. D.	Obs.	Return	S. D.	Obs.
1994	1,81%	1,59%	8601	2,97%	1,38%	3419	1,03%	1,79%	5182
1995	18,64%	0,97%	10641	19,89%	1,02%	4630	17,65%	0,96%	6011
1996	21,29%	1,44%	13049	23,57%	1,29%	6200	19,25%	1,57%	6849
1997	20,40%	2,04%	15860	22,39%	1,89%	8136	18,32%	2,21%	7724
1998	3,59%	3,18%	17872	4,42%	3,03%	9954	2,58%	3,38%	7918
1999	33,46%	2,45%	18798	33,79%	2,21%	12052	33,29%	2,93%	6746
2000	9,62%	2,91%	20221	14,42%	2,34%	14395	-2,28%	4,34%	5826
2001	5,71%	1,62%	20591	8,00%	1,39%	16706	-3,17%	2,59%	3885
2002	0,43%	1,26%	20771	1,17%	1,21%	18899	-4,89%	1,99%	1872
Mean 01:94-03:00	0,17	1,95%	14137	0,18	1,80%	7399	0,15	2,14%	6738
Mean 04:00-12:02	0,05	1,93%	20528	0,08	1,65%	16667	-0,03	2,97%	3861
Mean 94-02	0,13	1,94%	16267	0,15	1,75%	10488	0,09	2,42%	5779

Panel B: Living - Dead Funds

Year	Return		Year	Return	
1994	0,02		1994	0,01	
1995	0,02		1995	0,01	
1996	0,04		1996	0,02	
1997	0,04		1997	0,02	
1998	0,02		1998	0,01	
1999	0,01		1999	0,00	
2000	0,17		2000	0,05	
2001	0,11		2001	0,02	
2002	0,06		2002	0,01	
Bias 01:94-03:00	0,16	per Month	Bias 1/94-3/00	0,09	per Month
	1,92	per Year		1,03	per Year
Bias 04:00-12:02	0,98	per Month	Bias 4/00-12/02	0,22	per Month
	11,75	per Year		2,61	per Year
Bias 94-02	0,41	per Month	Bias 1/94-12/02	0,13	per Month
	4,93	per Year		1,51	per Year

Panel C: Living - All Funds

This Table reports the survivorship bias of calculated from our database. Our MAR database contains 2894 hedge funds, including 1622 survived funds and 1272 dissolved funds as of December 2002. In Panel B survivorship bias is calculated as the performance difference between surviving funds and dissolved funds. In Panel C survivorship bias is calculated as the performance difference between surviving funds and all funds. All returns are net of fees. Numbers in the table are yearly percentage unless otherwise indicated.

Table 5 : Estimation of instant return history bias

	Mean Monthly Return	Monthly Difference	Annual Difference	Av. Nb of Fds
Period 94-02				
All	0,99%	NA	NA	1356
Without 12M	0,88%	0,11%	1,32%	1174
Without 24M	0,84%	0,15%	1,80%	999
Without 36M	0,81%	0,18%	2,16%	837
Without 48M	0,81%	0,18%	2,16%	694
Without 60M	0,80%	0,19%	2,28%	570
Sub-period 01:94-03:00				
All	1,35%	NA	NA	1197
Without 12M	1,22%	0,13%	1,56%	945
Without 24M	1,18%	0,17%	2,04%	752
Without 36M	1,14%	0,21%	2,52%	620
Without 48M	1,14%	0,21%	2,52%	539
Without 60M	1,13%	0,23%	2.76%	498
Sub-period 04:00-12:02				
All	0,19%	NA	NA	1715
Without 12M	0,10%	0,09%	1,08%	1489
Without 24M	0,08%	0,11%	1,32%	1256

This Table reports the *instant history bias* calculated from our database. Our MAR database contains 2894 hedge funds, including 1622 survived funds and 1272 dissolved funds as of December 2002. *Instant history bias* is calculated as the performance difference between the average monthly return using the portfolio which invests in all funds each month (the observable portfolio) and the average monthly return from investing in these funds after deleting the first 12, 24, 36 and 60 months of returns (the adjusted observable portfolio). All returns are net of fees and on a monthly basis unless otherwise indicated.

Table 6 : Performance measurement using the CAPM, Carhart's 4-factor model and the combined model

	Panel A : Single index model						**Panel B** : Carhart's 4-factor model								
				Alpha Distrib.									Alpha Distrib.		
Individual Funds	Alpha	Mkt	R² adj	+	0	-	Alpha	Mkt	SMB	HML	PR1YR	R² adj	+	0	-
Event driven - Risk Arb	0,46% ***	0,26 ***	0,515	48%	51%	0%	0,41% ***	0,28 ***	0,16 ***	0,08 ***	-0,01	0,674	37%	60%	1%
Event driven - Dist. Sec	0,50% ***	0,30 ***	0,410	34%	64%	1%	0,41% ***	0,33 ***	0,23 ***	0,11 ***	0,01	0,606	26%	71%	2%
Global	-0,11%	0,47 ***	0,331	9%	78%	11%	-0,19%	0,48 ***	0,19 ***	0,08	0,02	0,364	11%	77%	11%
Global Est.	0,69% ***	0,58 ***	0,719	30%	67%	2%	0,58% ***	0,58 ***	0,26 ***	0,04	0,07 ***	0,872	27%	71%	1%
Global Intern.	0,37% **	0,34 ***	0,449	22%	74%	2%	0,24%	0,38 ***	0,15 ***	0,09 **	0,05 *	0,543	21%	71%	7%
Global Emerging	0,55%	0,62 ***	0,337	20%	75%	4%	0,43%	0,64 ***	0,31 ***	0,12	0,02	0,397	18%	78%	3%
US Opp.	NA	NA	NA	NA	NA	NA	NA	NA	NA ***	NA	NA	NA	NA	NA	NA
Macro	0,32% **	0,30 ***	0,445	18%	72%	8%	0,16%	0,33 ***	0,13 ***	0,04	0,11 ***	0,631	17%	74%	8%
Market Neutral	0,62% ***	0,12 ***	0,378	44%	52%	2%	0,55% ***	0,15 ***	0,08 ***	0,07 ***	0,01	0,554	41%	54%	3%
Long Only Lev.	0,12%	1,05 ***	0,730	9%	80%	9%	0,13%	0,98 ***	0,39 ***	-0,02	0,02	0,816	12%	80%	6%
Sector	0,99% ***	0,73 ***	0,619	31%	67%	1%	0,81% ***	0,71 ***	0,43 ***	0,01	0,15 ***	0,873	26%	72%	1%
Short Sales	0,81% ***	-0,74 ***	0,607	11%	88%	0%	0,83% ***	-0,66 ***	-0,36 ***	0,09	-0,09 **	0,778	20%	79%	0%
No category	0,43%	0,31 ***	0,174	21%	78%	0%	0,26%	0,31 ***	0,26 ***	0,01	0,14 ***	0,357	21%	73%	4%
Individual Funds Total	*0,55%* ***	*0,39* ***	*0,651*	*31%*	*65%*	*3%*	*0,46%* ***	*0,40* ***	*0,20* ***	*0,06* **	*0,05* ***	*0,828*	*28%*	*67%*	*3%*
Funds of Funds															
Niche	0,31% ***	0,15 ***	0,285	43%	53%	2%	0,21% **	0,18 ***	0,11 ***	0,07 **	0,04 **	0,454	33%	62%	3%
Diversified	0,24% *	0,26 ***	0,427	33%	62%	3%	0,10%	0,29 ***	0,16 ***	0,07 **	0,07 ***	0,644	25%	68%	5%
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA ***	NA	NA	NA	NA	NA	NA
Funds of Funds Total	*0,25%* *	*0,24* ***	*0,419*	*34%*	*60%*	*4%*	*0,11%*	*0,27* ***	*0,15* ***	*0,07* **	*0,07* ***	*0,630*	*26%*	*66%*	*6%*
Hedge funds Total	**0,48%** ***	**0,35** ***	**0,614**	**32%**	**64%**	**3%**	**0,37%** ***	**0,37** ***	**0,19** ***	**0,06** **	**0,05** ***	**0,800**	**28%**	**67%**	**4%**

Table 6 (continued)

Panel C **: The combined model**

Individual Funds	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj	Alpha Distrib. + / 0 / -
Event driven - Risk Arb	0,39% ***	0,25 ***	0,13 ***	0,06 **	0,01	-0,02	0,04	0,04 *	0,17 ***	-0,07	0,03	0,707	37% 59% 2%
Event driven - Dist. Sec	0,40% ***	0,21 ***	0,19 ***	0,06	0,02	0,06	-0,11	0,10 ***	0,21 ***	0,18	0,03	0,693	27% 71% 1%
Global	-0,10%	0,30 **	0,12	0,01	0,04	0,18	-0,11	0,14 **	0,16	-0,09	0,12 **	0,421	9% 81% 9%
Global Est.	0,56% ***	0,58 ***	0,24 ***	0,03	0,08 ***	0,01	0,03	0,07 ***	0,00	-0,08	0,03	0,877	26% 71% 2%
Global Intern.	0,41% ***	0,12 **	0,10 ***	0,05	0,06 **	0,30 ***	-0,26 ***	0,05	0,05	0,15	0,05 *	0,655	28% 67% 4%
Global Emerging	0,61%	0,31 **	0,20 **	0,01	0,07	0,34 **	-0,66 ***	0,22 ***	0,18	0,11	0,12 *	0,517	15% 84% 0%
US Opp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA NA
Macro	0,12%	0,25 ***	0,13 ***	0,01	0,11 ***	0,05	-0,14 *	0,04	0,05	0,49 ***	-0,02	0,660	16% 78% 4%
Market Neutral	0,54% ***	0,12 ***	0,07 ***	0,05 ***	0,01	0,01	-0,06	0,04 ***	0,07 *	0,11	0,02	0,636	39% 57% 3%
Long Only Lev.	-0,11%	1,01 ***	0,38 ***	-0,08	0,00	-0,11	0,00	0,17 ***	0,06	0,71 **	0,05	0,847	6% 83% 9%
Sector	0,73% ***	0,84 ***	0,43 ***	0,02	0,15 ***	-0,12 *	0,03	0,04	-0,11	-0,18	0,06 **	0,880	19% 78% 1%
Short Sales	0,92% ***	-0,74 ***	-0,39 ***	0,08	-0,07 *	0,04	-0,01	-0,07	0,25 *	-0,13	0,01	0,775	23% 76% 0%
No category	0,33%	0,16	0,25 ***	-0,01	0,13 **	0,26 **	0,01	0,18 ***	-0,20	0,02	0,03	0,435	21% 78% 0%
Individual Funds Total	*0,46%* ***	*0,34* ***	*0,17* ***	*0,03*	*0,05* ***	*0,05*	*-0,10* *	*0,07* ***	*0,05*	*0,05*	*0,04* **	*0,862*	*26% 69% 3%*
Funds of Funds													
Niche	0,24% **	0,13 ***	0,08 ***	0,05 *	0,05 ***	0,04	-0,07	0,05 ***	0,06	-0,10	0,02	0,507	32% 64% 2%
Diversified	0,10%	0,21 ***	0,13 ***	0,03	0,08 ***	0,06	-0,17 ***	0,08 ***	0,07	0,16	0,03	0,714	24% 71% 3%
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA NA
Funds of Funds Total	*0,12%*	*0,20* ***	*0,12* ***	*0,04*	*0,08* ***	*0,06*	*-0,16* **	*0,07* ***	*0,07*	*0,14*	*0,03*	*0,701*	*25% 70% 3%*
Hedge funds Total	**0,38%** ***	**0,31** ***	**0,16** ***	**0,03**	**0,06** ***	**0,05**	**-0,11** **	**0,07** ***	**0,06**	**0,07**	**0,04** **	**0,841**	**26% 70% 3%**

This Table presents the results of the estimation of the single index model (Panel A), of Carhart's (1997) model (Panel B) and of our combined model (Panel C) for the 01:1994-12:2002 period. We report the OLS estimators for equally weigthed portfolios per investment strategy, per type of funds and for all funds. The last column gives the distribution of individually estimated monthly alphas for all funds with 24 monthly data or more in a specific investment style. Results for the US Opportunistics and Other categories are not reported as they have, respectively, 0 and 1 living fund in the second sub-period. We report the percentage of significantly positive alphas (+), significantly negative alphas (-) and alphas insignificantly different from zero (0) at the 5% level. t-stats are heteroskdasticity consistent. *** Significant at the 1% level, ** Significant at the 5% level and * Significant at the 10% level.

Table 7 : Performance of hedge funds during the bullish and bearish sub-periods

Panel A : 01:1994-03:2000

Individual Funds	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj	Alpha Distrib. + / 0 / -		
Risk Arb	0,50% ***	0,31 ***	0,19 ***	0,03	-0,07 **	-0,01	-0,01	0,04 **	0,11	-0,02	0,00	0,737	46%	51%	2%
Dist. Sec	0,50% ***	0,25 ***	0,22 ***	0,09 **	-0,07 *	0,11 **	-0,18 **	0,07 ***	0,51 ***	-0,11	0,04	0,809	33%	66%	0%
Global	-0,65% **	0,50 ***	0,02	-0,03	0,01	0,14	-0,39 **	0,08	0,86 ***	-1,10 **	0,17 ***	0,671	9%	81%	9%
Global Est.	0,62% ***	0,66 ***	0,31 ***	-0,01	0,06	0,03	0,00	0,06 ***	-0,18	-0,01	0,04	0,914	25%	72%	1%
Global Intern.	0,47% **	0,20 **	0,13 **	0,00	0,01	0,30 ***	-0,44 ***	0,05	0,00	0,23	0,06	0,664	27%	70%	1%
Global Emerging	0,27%	0,51 ***	0,13	0,09	-0,02	0,36 **	-0,98 ***	0,22 **	0,48	-0,71	0,17 *	0,558	10%	87%	1%
US Opp.	0,07%	-0,07	0,38 **	0,00	-0,13	0,00	-0,25	0,00	0,34	0,50	-0,09	0,089	6%	82%	10%
Macro	0,09%	0,32 ***	0,14 ***	0,00	0,10 **	0,06	-0,32 ***	0,04	-0,05	0,53 **	-0,01	0,695	15%	80%	3%
Market Neutral	0,53% ***	0,14 ***	0,07 ***	0,07 ***	0,02	0,00	-0,05	0,04 ***	0,15 *	-0,03	0,03 *	0,661	39%	59%	1%
Long Only Lev.	0,03%	1,03 ***	0,47 ***	-0,01	-0,04	-0,02	-0,08	0,17 ***	-0,10	0,85 *	0,01	0,802	3%	88%	7%
Sector	0,95% ***	0,82 ***	0,52 ***	0,03	0,17 ***	-0,05	0,00	0,03	-0,26	0,10	0,07 **	0,899	25%	74%	0%
Short Sales	0,92% ***	-0,65 ***	-0,45 ***	0,08	-0,05	-0,07	0,09	-0,06	0,33	-0,43	-0,04	0,711	17%	82%	0%
No category	0,25%	0,26 *	0,36 ***	-0,13	0,03	0,34 ***	-0,06	0,19 ***	-0,48	0,22	0,04	0,509	31%	68%	0%
Ind. Funds Total	*0,44%* ***	*0,41* ***	*0,20* ***	*0,03*	*0,04*	*0,06* *	*-0,17* ***	*0,06* ***	*0,03*	*-0,05*	*0,05* **	*0,893*	*26%*	*70%*	*2%*
Funds of Funds															
Niche	0,22%	0,17 ***	0,08 **	0,10 **	0,04	0,05	-0,12	0,05 **	0,12	-0,30	0,01	0,507	35%	60%	3%
Diversified	0,02%	0,29 ***	0,13 ***	0,06	0,08 **	0,06	-0,28 ***	0,08 ***	0,16	-0,06	0,03	0,763	21%	73%	4%
Other	0,24%	0,24 ***	0,11 **	0,04	-0,06	-0,01	-0,19	0,02	0,32 *	-0,06	0,03	0,485	18%	77%	4%
F. of Funds Total	*0,05%*	*0,27* ***	*0,12* ***	*0,07*	*0,07* *	*0,06*	*-0,26* ***	*0,07* ***	*0,15*	*-0,06*	*0,03*	*0,750*	*23%*	*71%*	*4%*
Total	**0,35%** ***	**0,38** ***	**0,18** ***	**0,04**	**0,04**	**0,06**	**-0,19** ***	**0,07** ***	**0,06**	**-0,06**	**0,04** **	**0,874**	**46%**	**51%**	**2%**

Table 7 (continued)

Panel B : 04:2000-12:2002

Individual Funds	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj	Alpha Distrib. + / 0 / -		
Risk Arb	-0,12%	0,17 **	0,12 ***	0,08 **	-0,02	-0,05	0,04	-0,01	0,23 ***	0,19	0,03	0,863	7%	91%	0%
Dist. Sec	-0,01%	0,22 *	0,18 ***	0,01	0,02	-0,16	0,10	0,12 **	0,22 ***	0,04	-0,05 *	0,740	13%	86%	0%
Global	-0,12%	0,36	0,29 *	0,16	-0,08	-0,08	0,71 *	0,27	-0,15	-0,56	0,02	0,265	0%	100%	0%
Global Est.	-0,19%	0,45 ***	0,15 ***	0,00	0,02	-0,08	0,08	0,06	0,14 **	0,38 *	-0,01	0,945	5%	89%	5%
Global Intern.	-0,02%	0,06	0,12 ***	0,08	0,03	0,25 **	0,00	-0,02	0,08	0,02	-0,01	0,783	9%	87%	3%
Global Emerging	0,25%	0,49 **	0,31 ***	0,06	0,04	-0,14	0,00	-0,04	0,21	0,08	-0,04	0,707	15%	80%	4%
US Opp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Macro	-0,25%	0,27 **	0,14 **	0,03	0,05	-0,07	0,23	0,07	0,06	0,44	-0,05	0,650	6%	85%	7%
Market Neutral	0,37% ***	0,06	0,05 **	0,03	0,00	0,01	-0,07	0,00	0,10 ***	0,25 *	-0,01	0,688	27%	68%	3%
Long Only Lev.	-0,50%	1,14 ***	0,18 *	-0,19	-0,03	-0,44 **	0,27	0,13	0,24	0,75	0,06	0,915	0%	95%	4%
Sector	-0,19%	0,97 ***	0,26 ***	-0,02	0,08 **	-0,44 ***	0,34 **	0,06	-0,01	-0,01	0,05	0,915	6%	89%	3%
Short Sales	0,40%	-1,00 ***	-0,21 **	0,19 *	-0,13 ***	0,38 **	-0,39 *	-0,05	0,09	0,66	0,11 **	0,900	0%	90%	9%
No category	-0,05%	0,18	0,12	0,00	0,12 ***	-0,05	0,13	0,03	0,04	0,11	-0,05	0,427	0%	100%	0%
Ind. Funds Total	*0,03%*	*0,32* ***	*0,14* ***	*0,02*	*0,02*	*-0,09* *	*0,06*	*0,03*	*0,12* ***	*0,24*	*-0,01*	*0,947*	*13%*	*82%*	*4%*
Funds of Funds															
Niche	-0,05%	0,19 ***	0,08 ***	0,05 *	0,02 *	-0,11 **	0,08	-0,01	0,08 **	0,04	0,01	0,761	14%	80%	4%
Diversified	-0,13%	0,19 ***	0,12 ***	0,02	0,04 ***	-0,06	0,10 *	0,01	0,10 ***	0,09	0,00	0,889	10%	81%	7%
Other A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
F. of Funds Total	*-0,12%*	*0,19* ***	*0,11* ***	*0,03*	*0,04* ***	*-0,07*	*0,10* *	*0,00*	*0,09* ***	*0,08*	*0,00*	*0,883*	*11%*	*81%*	*7%*
Total	**-0,01%**	**0,29** ***	**0,13** ***	**0,02**	**0,03** **	**-0,09** *	**0,07**	**0,02**	**0,12** ***	**0,20**	**0,00**	**0,943**	**13%**	**82%**	**4%**

This Table presents the results of the estimation of our combined model for the 01:1994-03:2000 (Panel A) and the 04:2000-12:2002 (Panel B) sub-periods. We report the OLS estimators for equally weigthed portfolios per investment strategy, per type of funds and for all funds. The last column gives the distribution of individually estimated monthly alphas for all funds with 24 monthly data or more in a specific investment style. In Panel B, results for the US Opportunistics and Other categories are not reported as they have, respectively, 0 and 1 living fund in the second sub-period. We report the percentage of significantly positive alphas (+), significantly negative alphas (-) and alphas insignificantly different from zero (0) at the 5% level. t-stats are heteroskdasticity consistent. *** Significant at the 1% level, ** Significant at the 5% level and * Significant at the 10% level.

Table 8 : Hedge funds persistence based on 12 month lagged returns

Portfolio	Exc. return	St. dev	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj
D1a	1,12% *	6,63%	0,17%	0,64 ***	0,63 ***	-0,04	0,36 ***	0,14	-0,56 **	0,19 **	0,07	0,51	0,13 **	0,768
D1b	1,10% **	4,75%	0,38%	0,57 ***	0,40 ***	0,03	0,29 ***	0,05	-0,19	0,11 *	0,16	-0,06	0,07	0,768
D1c	0,97% **	3,97%	0,47% **	0,43 ***	0,35 ***	-0,02	0,20 ***	0,07	-0,15	0,08 *	0,15	0,03	0,04	0,776
D1	1,07% **	5,00%	0,34%	0,55 ***	0,46 ***	-0,01	0,28 ***	0,08	-0,29 *	0,12 **	0,12	0,15	0,07 *	0,802
D2	0,86% ***	3,27%	0,32% *	0,48 ***	0,28 ***	0,04	0,20 ***	-0,04	-0,02	0,06	0,08	-0,20	0,04	0,813
D3	0,78% ***	2,42%	0,31% **	0,37 ***	0,19 ***	0,07 **	0,11 ***	0,01	-0,07	0,07 **	0,05	0,12	0,03	0,787
D4	0,71% ***	2,10%	0,36% ***	0,31 ***	0,13 ***	0,07 **	0,08 ***	0,04	-0,13 *	0,06 **	0,05	0,05	0,04 *	0,750
D5	0,61% ***	1,69%	0,35% ***	0,26 ***	0,09 ***	0,05 *	0,05 ***	0,01	-0,05	0,05 **	0,09	-0,05	0,02	0,700
D6	0,50% ***	1,33%	0,28% ***	0,20 ***	0,09 ***	0,07 ***	0,03 **	0,02	-0,09 **	0,05 ***	0,08 *	0,07	0,02	0,773
D7	0,45% ***	1,37%	0,30% ***	0,17 ***	0,08 ***	0,03	0,01	0,04	-0,10 **	0,04 ***	0,05	0,05	0,03 *	0,744
D8	0,46% ***	1,67%	0,40% ***	0,11 ***	0,09 ***	-0,01	-0,02	0,11 ***	-0,18 ***	0,06 **	0,08	0,15	0,05 **	0,698
D9	0,31%	2,34%	0,34% **	0,18 ***	0,08 ***	0,02	-0,10 ***	0,19 ***	-0,23 ***	0,05	0,05	0,12	0,04	0,733
D10	0,44%	3,95%	0,72% **	0,22 *	0,05	-0,04	-0,19 ***	0,28 **	-0,29	0,04	0,12	-0,15	0,08	0,558
D10a	0,54%	3,36%	0,53% **	0,28 ***	0,09 *	0,00	-0,13 ***	0,22 **	-0,02	0,09 *	0,04	0,14	0,03	0,602
D10b	0,03%	4,03%	0,29%	0,27 **	0,04	-0,01	-0,14 ***	0,29 **	-0,32 *	0,03	0,09	-0,41	0,07	0,556
D10C	1,07% *	5,65%	1,77% ***	0,07	0,03	-0,13	-0,32 ***	0,35 *	-0,53 *	-0,02	0,25	-0,26	0,10	0,359
1-10 spread	0,63%	5,03%	-0,38%	0,33 **	0,41 ***	0,03	0,47 ***	-0,20	0,00	0,08	0,00	0,30	0,00	0,515
1a-10c spread	0,05%	7,71%	-1,60% **	0,58 **	0,60 ***	0,09	0,67 ***	-0,21	-0,03	0,21	-0,19	0,76	0,03	0,481
1-2 spread	0,21%	2,12%	0,02%	0,07	0,18 ***	-0,04	0,08 ***	0,12 *	-0,27 ***	0,07 *	0,04	0,35	0,03	0,539
9-10 spread	-0,13%	2,17%	-0,38%	-0,04	0,03	0,06	0,09 **	-0,09	0,06	0,01	-0,07	0,27	-0,04	0,182

This Table reports the result of the estimation of our combined model for the 01:1994-12:2002 period. Each year, all funds are ranked based on their previous year's return. Portfolios are equally weighted and weights are readjusted whenever a fund disappears. Funds with the highest previous year's return go into portfolio D1 and funds with the lowest go into portfolio D10. Monthly Exc Return is the Monthly Excess Return of the portfolio, Std. Dev. is the Standard Deviation of the Monthly Excess Return.. All numbers in the Table are monthly percentage. *** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level.

Table 9 : Hedge funds persistence during the bullish and bearish sub-periods

Panel A : 01:1994-03:2000

Portfolio	Exc. return	St. dev	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj
D1a	2,09% **	6,85%	0,17%	0,69 ***	0,70 ***	-0,07	0,34 ***	0,25	-0,94 ***	0,15	-0,56	1,18	0,27 ***	0,779
D1b	1,87% ***	4,46%	0,46%	0,62 ***	0,41 ***	0,19 **	0,28 ***	0,18 *	-0,40 **	0,05	-0,28	-0,03	0,15 ***	0,835
D1c	1,68% ***	3,97%	0,55% **	0,48 ***	0,41 ***	-0,01	0,17 **	0,16 *	-0,43 ***	0,05	-0,18	0,41	0,10 **	0,812
D1	1,89% ***	4,97%	0,40%	0,60 ***	0,51 ***	0,04	0,26 ***	0,19 *	-0,58 ***	0,08	-0,35	0,51	0,17 ***	0,837
D2	1,44% ***	3,27%	0,41% **	0,57 ***	0,32 ***	0,13 **	0,13 ***	0,06	-0,21 **	0,02	-0,05	-0,32	0,06 *	0,885
D3	1,15% ***	2,56%	0,30% **	0,46 ***	0,21 ***	0,15 ***	0,06 *	0,06	-0,21 ***	0,05 **	0,11	-0,16	0,04	0,889
D4	1,08% ***	2,35%	0,31% **	0,39 ***	0,14 ***	0,09 **	0,05	0,05	-0,22 ***	0,05 **	0,29 ***	-0,29	0,06 **	0,879
D5	0,90% ***	1,89%	0,28% **	0,35 ***	0,09 ***	0,09 ***	0,03	0,00	-0,07	0,05 **	0,35 ***	-0,50 ***	0,01	0,831
D6	0,75% ***	1,45%	0,27% ***	0,24 ***	0,10 ***	0,07 ***	0,02	0,02	-0,10 *	0,05 ***	0,20 ***	-0,07	0,02	0,845
D7	0,76% ***	1,45%	0,36% ***	0,21 ***	0,11 ***	0,03	-0,02	0,05	-0,14 **	0,05 ***	0,16 **	0,00	0,01	0,835
D8	0,76% ***	1,67%	0,42% ***	0,13 **	0,11 ***	-0,05	-0,04	0,12 **	-0,23 ***	0,07 ***	0,06	0,27	0,06 **	0,697
D9	0,67% **	2,08%	0,28%	0,21 ***	0,08 *	-0,08	-0,09 **	0,17 ***	-0,31 ***	0,06 *	-0,01	0,25	0,04	0,672
D10	0,97% **	3,60%	0,41%	0,32 **	0,00	-0,15	-0,06	0,17	-0,24	0,07	0,45	-0,78	0,07	0,458
D10a	1,01% **	3,18%	0,43%	0,35 ***	0,09	-0,12	-0,14 *	0,17	0,05	0,11 *	0,23	-0,23	-0,02	0,569
D10b	0,77% *	3,54%	0,27%	0,25	0,04	-0,11	-0,02	0,23	-0,30	0,05	0,36	-0,63	0,06	0,397
D10C	1,37% **	5,35%	0,75%	0,39	-0,17	-0,24	0,02	0,09	-0,47	0,03	0,75	-1,78	0,17	0,264
1-10 spread	0,92% *	4,32%	-0,01%	0,28	0,51 ***	0,19	0,33 ***	0,03	-0,33	0,01	-0,79 **	1,29 *	0,10	0,539
1a-10c spread	0,71%	7,11%	-0,59%	0,30	0,87 ***	0,17	0,32	0,16	-0,47	0,12	-1,30 *	2,97 **	0,10	0,412
1-2 spread	0,45%	2,19%	-0,01%	0,03	0,19 ***	-0,08	0,13 **	0,14 *	-0,37 ***	0,06	-0,30	0,83 **	0,11 ***	0,549
9-10 spread	-0,30%	2,22%	-0,13%	-0,11	0,08	0,07	-0,03	0,00	-0,07	0,00	-0,46	1,03 *	-0,03	0,088

Table 9 (continued)

Panel B : 04:2000-12:2002

Portfolio	Exc. return	St. dev	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R² adj
D1a	-0,73%	5,83%	0,16%	0,46 *	0,33 **	-0,29 *	0,40 ***	0,02	-0,15	0,21	0,54 ***	0,40	-0,11	0,848
D1b	-0,37%	5,01%	0,61%	0,28	0,14	-0,36 **	0,38 ***	0,04	-0,15	0,30 **	0,65 ***	0,19	-0,13 **	0,819
D1c	-0,37%	3,67%	0,26%	0,33 *	0,18 **	-0,19 *	0,21 ***	-0,09	0,20	0,09	0,43 ***	-0,16	-0,10 **	0,811
D1	-0,49%	4,74%	0,34%	0,36 *	0,22 **	-0,28 **	0,33 ***	-0,01	-0,03	0,20 *	0,54 ***	0,14	-0,12 **	0,862
D2	-0,25%	3,03%	0,05%	0,37 ***	0,14 **	-0,15 **	0,22 ***	-0,19	0,17	0,12 *	0,33 ***	0,03	-0,07 **	0,879
D3	0,05%	1,95%	0,12%	0,30 ***	0,12 ***	-0,04	0,11 ***	-0,16 *	0,14	0,03	0,19 ***	0,14	-0,04 *	0,847
D4	0,02%	1,30%	-0,02%	0,27 ***	0,11 ***	0,05	0,05 ***	-0,12 **	0,11 *	0,02	0,07	0,10	-0,03 *	0,855
D5	0,06%	1,03%	0,08%	0,20 ***	0,09 ***	0,03	0,02 *	-0,10 **	0,07	-0,01	0,09 **	0,00	-0,01	0,846
D6	0,03%	0,93%	0,04%	0,15 ***	0,08 ***	0,06 **	0,01	-0,04	-0,02	-0,02	0,09 ***	0,05	0,00	0,838
D7	-0,12%	0,97%	0,01%	0,14 **	0,06 **	0,03	-0,02	-0,03	0,01	-0,02	0,06	-0,02	0,02	0,772
D8	-0,13%	1,55%	0,06%	0,14	0,12 **	0,04	-0,05 **	0,00	-0,04	-0,04	0,08	0,01	0,03	0,705
D9	-0,38%	2,68%	-0,31%	0,38 ***	0,19 ***	0,23 ***	-0,17 ***	0,01	0,03	-0,05	-0,08	0,30	0,05	0,839
D10	-0,56%	4,42%	-0,91% *	0,72 ***	0,23 **	0,42 ***	-0,43 ***	-0,13	0,23	-0,07	-0,32 **	1,09 *	0,16 ***	0,835
D10a	-0,34%	3,56%	-0,88% *	0,69 ***	0,28 ***	0,40 ***	-0,28 ***	-0,12	0,16	-0,03	-0,27 *	1,25 **	0,11 **	0,771
D10b	-1,40% *	4,56%	-1,36% **	0,89 ***	0,14	0,42 ***	-0,36 ***	-0,20	0,26	-0,07	-0,33 *	0,54	0,18 **	0,778
D10C	0,50%	6,23%	-0,13%	0,50	0,33 *	0,46 **	-0,71 ***	-0,02	0,27	-0,12	-0,33	1,61	0,17 *	0,760
1-10 spread	0,07%	6,20%	1,25%	-0,36	-0,02	-0,70 ***	0,76 ***	0,11	-0,26	0,27	0,85 ***	-0,95	-0,28 ***	0,730
1a-10c spread	-1,22%	8,71%	0,30%	-0,04	0,00	-0,75 ***	1,10 ***	0,04	-0,42	0,34	0,87 **	-1,22	-0,28 **	0,749
1-2 spread	-0,24%	1,93%	0,29%	-0,01	0,07	-0,13 *	0,11 ***	0,18	-0,20	0,08	0,21 **	0,11	-0,05	0,660
9-10 spread	0,18%	2,07%	0,60% *	-0,33 ***	-0,04	-0,19 ***	0,26 ***	0,13	-0,20	0,02	0,24 **	-0,79 **	-0,11 ***	0,741

This Table reports the result of the estimation of our combined model for the 01:1994-03:2000 (Panel A) and the 04:2000-12:2002 (Panel B) sub-periods. Each year, all funds are ranked based on their previous year's return. Portfolios are equally weighted and weights are readjusted whenever a fund disappears. Funds with the highest previous year's return go into portfolio D1 and funds with the lowest go into portfolio D10. Monthly Exc Return is the Monthly Excess Return of the portfolio, Std. Dev. is the Standard Deviation of the Monthly Excess Return.. All numbers in the Table are monthly percentage. *** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level.

Table 10 : Hedge funds persistence for the Market Neutral strategy

Panel A : 01:1994-12:2002

Portfolio	Exc. return	St. dev	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj
D1a	1,44% ***	3,75%	0,93% **	0,28 *	0,25 ***	0,14	0,17 ***	0,04	-0,16	-0,04	0,16	0,36	0,01	0,284
D1b	1,43% ***	3,50%	1,08% ***	0,40 ***	0,11	0,12	0,10	-0,21	0,21	0,12	0,18	-0,92 *	0,06	0,129
D1c	1,30% ***	2,55%	0,92% ***	0,24 ***	0,17 ***	0,03	0,19 ***	0,02	-0,08	0,02	0,05	-0,02	0,03	0,521
D1	1,37% ***	2,59%	0,97% ***	0,30 ***	0,17 ***	0,09	0,16 ***	-0,05	-0,01	0,03	0,13	-0,22	0,03	0,436
D2	1,16% ***	1,74%	1,01% ***	0,16 **	0,13 ***	0,14 ***	0,03	0,07	-0,11	-0,02	-0,04	-0,05	0,03	0,330
D3	0,81% ***	1,12%	0,61% ***	0,17 ***	0,06 ***	0,06 **	0,03 *	-0,05	-0,03	0,06 ***	0,06	-0,08	0,00	0,437
D4	0,66% ***	1,30%	0,54% ***	0,05	0,09 ***	0,03	0,00	-0,02	-0,17 **	0,02	0,17 **	0,17	0,00	0,273
D5	0,54% ***	0,99%	0,44% ***	0,04	0,06 ***	0,03	0,00	0,02	-0,09	0,07 ***	0,06	0,11	0,00	0,333
D6	0,45% ***	0,80%	0,33% ***	0,08 ***	0,04 **	0,04 **	0,00	0,02	-0,07	0,05 ***	0,01	0,08	0,00	0,433
D7	0,31% ***	0,74%	0,25% ***	0,03	0,04 ***	0,01	-0,02	0,02	-0,11 ***	0,03 **	0,07 *	0,16 *	0,00	0,403
D8	0,41% ***	0,86%	0,42% ***	-0,01	0,02	0,00	-0,01	0,08 ***	-0,13 ***	0,03 **	0,08 *	0,07	0,02	0,383
D9	0,50% ***	1,44%	0,48% ***	0,00	0,01	0,00	-0,03	0,12 **	-0,10	0,05	0,10	0,22	0,05 *	0,269
D10	0,69% ***	2,40%	0,64% ***	0,05	0,10 **	-0,02	-0,12 ***	0,16 **	-0,12	0,06	0,15	0,64 **	0,01	0,424
D10a	0,56% **	2,51%	0,58% ***	-0,15 *	0,07	-0,09	-0,07 **	0,33 ***	-0,21	0,19 ***	0,21 *	0,65 **	-0,01	0,484
D10b	0,45%	3,00%	0,43%	0,06	0,14 **	0,04	-0,16 ***	0,18 *	-0,26	0,10	0,16	0,63	-0,04	0,366
D10C	1,14% ***	4,18%	0,84% *	0,37 **	0,10	0,07	-0,20 ***	-0,13	0,24	-0,11	0,04	0,89	0,08	0,196
1-10 spread	0,69% **	3,18%	0,34%	0,25 *	0,07	0,10	0,28 ***	-0,21 *	0,11	-0,03	-0,02	-0,86 *	0,02	0,233
1a-10c spread	0,30%	5,30%	0,08%	-0,09	0,15	0,07	0,36 ***	0,17	-0,40	0,08	0,12	-0,53	-0,07	0,141
1-2 spread	0,21%	2,31%	-0,04%	0,14	0,04	-0,06	0,13 ***	-0,12	0,10	0,05	0,17	-0,17	0,00	0,103
9-10 spread	-0,19%	1,97%	-0,16%	-0,06	-0,10 **	0,02	0,09 **	-0,04	0,01	-0,01	-0,04	-0,42	0,03	0,144

Table 10 (continued)

Panel B : 01:1994-03:2000

Portfolio	Exc. return	St. dev	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R² adj
D1a	2,17% ***	3,58%	1,41% ***	0,22	0,32 ***	0,04	0,27 **	0,02	-0,18	-0,10	-0,46	1,08	0,14 *	0,391
D1b	2,01% ***	3,23%	1,67% ***	0,37 **	0,19 *	0,06	-0,11	-0,07	-0,07	0,04	-0,33	-0,06	0,11	0,106
D1c	1,79% ***	2,62%	1,01% ***	0,31 ***	0,19 ***	0,02	0,23 ***	0,07	-0,25	-0,01	-0,31	0,19	0,08	0,605
D1	1,97% ***	2,45%	1,34% ***	0,30 ***	0,23 ***	0,04	0,13 *	0,00	-0,17	-0,03	-0,38	0,35	0,10 **	0,501
D2	1,30% ***	2,07%	0,99% ***	0,28 ***	0,15 ***	0,22 ***	-0,01	0,10	-0,21	-0,04	-0,07	-0,36	0,01	0,472
D3	0,97% ***	1,27%	0,54% ***	0,25 ***	0,07 **	0,11 ***	0,04	-0,09 **	0,02	0,07 ***	0,23 **	-0,41 **	-0,01	0,590
D4	0,79% ***	1,50%	0,59% ***	0,07	0,08 *	0,12 **	0,04	-0,07	-0,13	0,03	0,51 ***	-0,23	-0,01	0,338
D5	0,62% ***	1,14%	0,40% ***	0,04	0,06 *	0,04	0,03	-0,01	-0,02	0,08 ***	0,29 **	-0,07	0,01	0,387
D6	0,55% ***	0,89%	0,35% ***	0,11 ***	0,06 ***	0,06 **	-0,02	0,03	-0,08	0,05 ***	0,05	0,01	0,00	0,509
D7	0,38% ***	0,72%	0,27% ***	0,01	0,04 **	0,02	-0,01	0,01	-0,06	0,04 ***	0,23 ***	0,12	0,01	0,520
D8	0,58% ***	0,88%	0,46% ***	0,00	0,02	-0,03	-0,01	0,06	-0,11 *	0,05 **	0,20 **	0,00	0,04 **	0,477
D9	0,64% ***	1,52%	0,47% ***	0,03	-0,01	-0,04	-0,05	0,09	-0,11	0,05	0,38 **	-0,13	0,07 **	0,420
D10	0,86% ***	2,24%	0,63% *	-0,01	0,04	-0,03	-0,05	0,13	0,05	0,08	0,44	0,22	0,03	0,153
D10a	0,70% **	2,41%	0,50% *	-0,14	-0,01	-0,10	-0,03	0,27 ***	-0,11	0,22 ***	0,39	0,14	0,01	0,425
D10b	0,68% **	2,65%	0,34%	-0,07	0,08	-0,07	0,01	0,09	0,14	0,14 **	0,58 *	0,47	-0,01	0,163
D10C	1,31% **	4,30%	1,10% *	0,28	0,01	0,25	-0,17	-0,07	0,29	-0,14	0,41	0,03	0,08	0,042
1-10 spread	1,11% ***	3,04%	0,71% *	0,31 **	0,19 **	0,07	0,18 *	-0,13	-0,22	-0,10	-0,81 **	0,13	0,07	0,243
1a-10c spread	0,86%	5,43%	0,31%	-0,07	0,31 *	-0,20	0,44 **	0,09	-0,47	0,04	-0,87	1,05	0,06	0,182
1-2 spread	0,67% **	2,24%	0,36%	0,02	0,08	-0,18 *	0,14 *	-0,09	0,04	0,01	-0,31	0,71	0,09	0,074
9-10 spread	-0,22%	1,94%	-0,16%	0,04	-0,05	-0,01	0,00	-0,04	-0,16	-0,03	-0,06	-0,35	0,04	-0,105

Table 10 (continued)

Panel C : 03:2000-12:2002

Portfolio	Exc. return	St. dev	Alpha	Mkt	SMB	HML	PR1YR	W x US	W Gv Bd	Em. Bd	High Y.	Mortg.	Comm.	R^2 adj
D1a	0,05%	3,71%	0,05%	-0,16	0,01	0,00	0,16 *	0,55	-0,48	0,36 *	0,40	1,74 *	-0,12	0,299
D1b	0,32%	3,78%	0,79%	-0,06	0,09	-0,09	0,23 **	0,03	-0,04	0,38 *	0,50	-1,08	-0,13	0,129
D1c	0,37%	2,15%	-0,02%	0,23	0,12	0,01	0,12 **	-0,14	0,18	0,11	0,19	0,56	-0,05	0,427
D1	0,24%	2,51%	0,25%	0,01	0,07	-0,03	0,17 ***	0,13	-0,10	0,27 **	0,36 **	0,40	-0,10 *	0,460
D2	0,91% ***	0,78%	0,72% ***	0,07	0,04	0,04	0,00	-0,04	0,03	-0,01	0,10	0,29	0,01	0,192
D3	0,51% ***	0,64%	0,62% ***	0,00	-0,01	-0,02	0,01	0,01	-0,07	0,01	0,12 **	-0,02	0,00	0,130
D4	0,42% ***	0,73%	0,49% ***	-0,05	0,03	-0,03	-0,02	0,04	-0,10	-0,03	0,13 ***	0,17	0,02	0,585
D5	0,38% ***	0,57%	0,51% ***	0,01	0,01	0,01	-0,01	0,04	-0,09 *	-0,02	0,04	-0,01	0,00	0,491
D6	0,25% ***	0,55%	0,35% **	0,00	0,00	-0,01	0,01	0,04	-0,08	0,01	0,07	0,05	-0,01	0,160
D7	0,17%	0,77%	0,31% *	0,02	0,03	0,00	-0,01	0,00	-0,12	-0,05	0,07	-0,08	-0,02	0,353
D8	0,07%	0,73%	0,05%	-0,02	0,05	0,04	-0,03 *	0,06	-0,12	-0,07 **	0,06	0,18	-0,02	0,439
D9	0,23%	1,24%	-0,22%	0,11	0,10	0,15 **	-0,08 **	0,00	0,03	-0,04	-0,03	0,70 *	0,00	0,164
D10	0,36%	2,68%	-0,25%	0,49 ***	0,28 ***	0,25 ***	-0,18 ***	-0,13	-0,06	-0,06	-0,12	1,37 ***	0,03	0,844
D10a	0,29%	2,71%	-0,19%	0,17	0,28 ***	0,16	-0,11 **	0,15	-0,20	0,04	0,01	1,51 ***	-0,01	0,600
D10b	0,02%	3,58%	-0,27%	0,44 **	0,36 ***	0,38 ***	-0,26 ***	0,02	-0,39 *	-0,03	-0,24 *	0,83	0,07	0,794
D10C	0,83%	3,98%	-0,49%	1,04 ***	0,26	0,25	-0,24 ***	-0,71 **	0,52	-0,15	-0,19	2,16 **	0,05	0,505
1-10 spread	-0,12%	3,33%	0,50%	-0,48 *	-0,21	-0,28 *	0,35 ***	0,26	-0,04	0,33 **	0,47 **	-0,97	-0,13 *	0,527
1a-10c spread	-0,78%	4,95%	0,54%	-1,21 **	-0,26	-0,25	0,39 ***	1,26 **	-1,00 *	0,51 *	0,58	-0,42	-0,17	0,224
1-2 spread	-0,67% *	2,23%	-0,47%	-0,06	0,03	-0,07	0,17 ***	0,17	-0,12	0,29 **	0,26	0,11	-0,11 *	0,362
9-10 spread	-0,12%	2,06%	0,03%	-0,38 ***	-0,18 ***	-0,10	0,11 ***	0,13	0,09	0,02	0,09	-0,67 **	-0,04	0,784

This Table reports the result of the estimation of our combined model for the Market Neutral strategy 01:1994-03:2002 (Panel A) period, and the 01:1994-03:2000 (Panel B) and 04:2000-12:2002 (Panel C) sub-periods. Each year, all funds are ranked based on their previous year's return. Portfolios are equally weighted and weights are readjusted whenever a fund disappears. Funds with the highest previous year's return go into portfolio D1 and funds with the lowest go into portfolio D10. Monthly Exc Return is the Monthly Excess Return of the portfolio, Std. Dev. is the Standard Deviation of the Monthly Excess Return.. All numbers in the Table are monthly percentage. *** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level.