Market efficiency and hedge fund trading strategies

Marie Lambert[a] University of Liège
Nicolas Papageorgiou[b] HEC Montréal
Federico Platania[c] Pôle Universitaire Léonard de Vinci

May 21, 2017

Abstract

Stock and option markets can at times reflect differing information. We identify three reasons for the presence of these periods of 'disagreement' between the cash and derivatives markets: 1) high volatility and noise trading; 2) high level of risk aversion; 3) speculation versus hedging trades. This paper investigates the role that hedge funds, a proxy for sophisticated investors, play in the price discovery process between stock and option markets and the disagreement/agreement periods. We observe that a disparity in information between the two markets is often associated with deleveraging in directional exposures and reversal strategies. Posterior to the event, active tactical asset allocation in small and value factor investing takes place. We investigate four specific macro events which resulted in significant rebalancing by hedge fund managers: the Thai Baht depreciation, the Dot-com bubble, the credit crunch and the Nasdaq correction.

Keywords: hedge funds, price discovery, options, informed trading, asset management

JEL classification: G14, G11

[a]Associate Professor, University of Liège, HEC Liège. Deloitte Chair in Financial Management and Corporate Valuation. Research Associate at EDHEC Business School. Address: Rue Louvrex 14, Bldg. N1, 4000 Liège, Belgium. Phone: +32 4 232 74 32. E-mail: Marie.Lambert@ulg.ac.be

[b]Full Professor, HEC Montréal, and Head of Research, HR Strategies. Mailing address: 3000 Cote Ste Catherine, Montreal, Quebec. E-mail: Nicolas.Papageorgiou@hec.ca

[c]Pôle Universitaire Léonard de Vinci, 92916 Paris-La Défense, France. Ecole de Management Léonard De Vinci (EMLV) - Ecole supérieure d'ingénieurs Léonard De Vinci (ESILV). E-mail: federico.platania@devinci.fr ; platania.federico@gmail.com

[1]Federico Platania and Marie Lambert acknowledge the financial support of the F.R.S. F.N.R.S. in the framework of the research project T0014.14.

1 Introduction

The recent financial crisis delivered a series of shocks to the European and US economy: falling growth rates, rising unemployment, public deficits and debts. The crisis also had far-reaching consequences in terms of public opinion,most notably a significant change in the public's appreciation for financial markets and in particular the big banks. The overall public perception of capital markets, and more specifically the role of derivatives, has become increasingly unfavorable over the last few years. However, well-functioning financial markets play a key role in socio-economic development, particularly during economic recovery periods and derivative securities play a vital role in many risk management strategies. It is vital that markets operate efficiently during periods of distress, and that price consistency is maintained across markets. The law of one price states that identical securities (with regard to risk) should trade at the same price at all times.

Bekaert, Engstrom, and Xing (2009) show that uncertainty and changes in risk aversion might move asset prices away from their fundamental values. Similarly, Chen, Han, Pan (2014) discuss how investor sentiment could create trading noise and limits to arbitrage and renders sensitive stocks more risky. In complete markets, the options market should not transmit any new information. Market frictions might however initiate a price discovery process between option and stock markets (Chakravarty, Gulen and Mayhew, 2004) especially when the trading volumes in options exceed the one in the market of the underlying security. There is a common perception that informed investors might first trade in the options market in order to benefit from the limited downside and the leverage effect (Black, 1975; Mayhew et al., 1995; Easley et al. 1998; Cao et al., 2000; Arnold et al., 2000; Pan and Poteshnan, 2003). A disagreement between the two markets might thus reveal information conveyed by informed traders and that is initially incorporated into the options market. (Chakravarty, Gulen and Mayhew, 2004).

In this paper, we show that periods of high underlying volatility favour noise trading and can create some form of inefficiency between financial markets. Specifically, we show that stock and option markets could transmit different information, i.e. the 'implied prices' as defined by Manaster and Rendleman (1982) and Stephan and Whaley (1990) diverging from the spot prices. Our work finds supports in DeLong, Shleifer, Summers and Waldmann (1990), who show that noise trading can cause stock prices to deviate from their fundamental values. We refer to this situation as a "disagreement/inefficiency" event between the stock and option markets.

We contribute to the literature by investigating the role that hedge funds play in this price discovery process between stock and option prices. We examine their trading behavior around periods of disagreement and agreement between the two markets. We first test whether hedge fund managers are able to anticipate such changes. There is strong evidence supporting the ability of hedge funds to exploit mispricing caused by noise traders. This has been supported recently in

Giannetti and Kahraman (2016) who qualified hedge funds as "rational arbitrageurs" or in Jank and Smajlbegovic (2015) who show that short sellers, especially hedge funds, trade against mispricing. We also address their responsibility with respect to these short-term inefficiencies between the two markets. In reality, do hedge funds exacerbate or help reduce the amplitude of the price disagreement between the two markets? Indeed, there is some evidence that large hedge funds trade on private fundamental information (Irwin and Holt (2004)). If indeed they first trade in options market, as would informed traders, those markets sgould be the first to reflect the information, thereby creating a disagreement. We perform event studies on the asset positions around the dates where there is a disagreement between implied prices between option and stock prices (and therefore a price discovery taking place and a flow of information coming from one market to the other). The analysis is performed for three distinct periods: before, during and after the disagreement period.

The remainder of the paper is organized as follows: Section 2 reviews the literature regarding the connection and information flow between stock and option markets. Section 3 describes the methodology employed to detect times of disagreement between stock and option markets and provides some economic insights regarding those specific periods. Section 4 examines specific times of strong imbalance of information between the two markets and the related activity of hedge fund managers. Section 5 analyses the global impact of all disagreement events. Finally, Section 6 concludes.

2 Literature Review

Recent evidence supports the close connection between the option and stock markets. The levels of the expected market volatility, skewness, and kurtosis for the next 30 trading days could be extracted from a cross-sectional series of out-of-the-money option prices (Bakshi et al., 2003). These parameters are interpreted as follows. Option-implied volatility levels are powerful predictors of future realized volatility, while a decrease (resp. an increase) in the skewness (resp. kurtosis) of the market portfolio suggests an increase in the probability of experiencing strongly negative (resp. extreme) returns. Information about general market conditions could have hence an effect on the expected market risk related to both an investment or a company. On the one hand, these risk estimates have been shown to be able to anticipate asset allocation and thus risk exposures of fund managers (Hübner et al., 2015). Investors with private information will preferably trade in option markets (lower short-selling costs, highly leveraged bets). On the other hand, changes in option prices may therefore reveal information about the underlying asset that are not incorporated in earnings expectation disclosures. Diavatopoulos et al. (2012) have shown the predictive power of changes in expected skewness and kurtosis as implied in option prices on stock returns prior to earnings announcements. These changes in implied moments reflect anticipated information of

informed investors or analysts which, therefore, have predictive power for future returns. Besides, Chang et al. (2012) express their forward-looking measure of beta as a function of the variance and the skewness of the underlying distributions. They demonstrate the ability of option-implied moments to anticipate changes in future betas.

3 Price disagreement and information flows between stock and option markets

In this section we examine the information transmission between stock and option markets and investigate the variables driving the state transition. We consider the S&P 500 to determine those periods of agreement and disagreement. We have access to Optsum[1] data from May 1990 to November 2015. To calculate the option closing prices we follow the methodology recommended by the data supplier.[2]

Since SPX options present no early exercise, that is European-style exercise, we use the Put-Call parity relation to compute daily estimates of the S&P 500 implied stock price:

$$\varepsilon_j = C(K,\tau) - P(K,\tau) - e^{-q\tau} S_{\text{implied},t} + e^{-r\tau} K \tag{1}$$

where we incorporate the dividend yield (q) of the S&P 500 in the call-put parity relation. The dividend yield is obtained from the NYU webpage[3]. This approach has been widely used in the academic literature (see for instance, Muravyev et al (2013)).

Three conditions need to be satisfied for the options to be included in the study.

1) Liquidity condition : There needs to have been at least one transaction for both the call and the put option of corresponding strike and maturity. If trading volume is nil for either, both options are eliminated.

2) Moneyness condition: $|log(S/K)| < 0.10$ where S = Underlying price and K = strike price

[1] Optsum data is an end of day index option summary for CBOE traded options in SPX

[2] To calculate the option closing prices we look at three components, the last bid, last ask and the last sale of an option:

i) If the last sale is between the last bid and last ask the close is on the last sale

ii) If the last sale is less than or equal to the last bid the option series is closed on the last bid and similarly if the last sale is greater than or equal to the last ask, the close is on the last ask

iii) In the case where there is no last sale for an option series the previous day's close is looked at as if it were the last sale and the same rules are applied

iv) In the case of a newly listed series having no last sale the close is on the last ask.

[3] $http://pages.stern.nyu.edu/\ adamodar/New_{H}ome_{P}age/datafile/spearn.htm$

3) Maturity Condition: All options must have a remaining maturity of between 7 days and 90 days.

With daily implied price estimates we define a disagreement day when the S&P 500 index price and the estimated implied price differ by more than 0.2 %. Furthermore, we define a disagreement month when the number of disagreement days in a month exceeds the agreement days, that is:

$$\text{Disagreement rate} = \frac{\text{Disagreement Days}}{\text{Total Days in a month}} > 50\% \tag{2}$$

The agreement/disagreement state or regime between stock and option market is defined as binary variable where

$$\begin{aligned} Y &= 0 \Rightarrow \text{Agreement} \\ Y &= 1 \Rightarrow \text{Disagreement} \end{aligned}$$

Figure 1 shows the regime evolution. In order to understand the drivers of these two regimes, we assume a probit model where $\vec{X}$ represents the vector of independent variables, β the coefficient vector, and $\vec{X}\beta$ the z-value of a normal distribution. Under this specification, a 1% change in the independent variable X_i will increase (decrease) the z-score of Prob(Y = 1) by β_i. The set of independent variables $\vec{X}$ include i) VOL_t: the underlying volatility, that is the S&P 500 index volatility, ii) $LIQ_{PUT^{in},t}$: the amount of in-the-money Put options traded, iii) $LIQ_{PUT^{out},t}$: the amount of out-of-the-money Put options traded, and iv) $BEARISH_t$: the percentage of bearish investors as measure by the AAII Investor Sentiment Survey.[4]

Hence, the probit model is defined as

$$\text{Prob}(Y = 1|\vec{X}) = \Phi\left(\beta_1 \cdot VOL_t + \beta_2 \cdot LIQ_{PUT^{in},t} + \beta_3 \cdot LIQ_{PUT^{out},t} + \beta_4 \cdot BEARISH_t\right)$$

Table 1 presents the estimation results and Figure 2 a visual representation of $\text{Prob}(Y = 1|\vec{X})$ evolution. Some interesting results arise:

- In times of high volatility, noise trading can be important and make stock prices deviate from their fundamental values as shown by DeLong, Shleifer, Summers and Waldmann (1990). This could push informed investors to perform sophisticated investment trades in the option markets in order to benefit from leveraged bets. The information content of their trades will therefore

[4]We also tested the significance of $LIQ_{CALL^{in},t}$, $LIQ_{CALL^{out},t}$, and $BULLISH_t$, that is, the amount of in- and out-of-the-money Call options traded, and the percentage of bullish investors, respectively. These variables turned out to be not statistically significant and excluded from the analysis. Results are available upon request.

be transmitted first into the option prices and create a disagreement event between the two markets. A disagreement day is defined as an event in which the stock and option market disagree about the price of the stock. This evidence is supported by the positive coefficient on volatility into the probit analysis.

- On the contrary, Chakravarty, Gulen and Mayhew (2004) find a positive relation, although not conclusive, between higher underlying volatility and lower price discovery in the option market. We might relate this mixed evidence to times of high risk aversion (bearish markets) which command less price discovery as informed investors actively trade within the spot markets and therefore commands less disagreement between the information content of the two markets.

- The probit analysis shows that $LIQ_{PUT^{in},t}$ and $LIQ_{PUT^{out},t}$ contribute in different direction to the regime determination. An increase in $LIQ_{PUT^{in},t}$ leads to more disagreement between stock and option markets, an increase in $LIQ_{PUT^{out},t}$ indicates higher chances of agreement. Our interpretation is that in-the-money put options contrary to out-of-the-money put options are bought by informed traders to speculate (as also supported by the empirical experiment conducted by de Jong, Koedijk, and Schnitzlein (2001)).

4 Examining hedge fund individual dynamic asset allocation

These new perspectives on stock and option market joint equilibrium have the potential to give insightful explanations about hedge fund dynamic trades. In this section, we examine whether hedge fund managers significantly alter their trades when there is a strong imbalance between the information content of option and stock markets. We study whether there is an unexpected rebalance in the risk exposure toward certain factors when the disagreement rate (defined by equation 2) experiences a shift larger than 45% from one month to another.

$$\text{Strong imbalance} \Rightarrow |\text{Disagreement rate}_t - \text{Disagreement rate}_{t-1}| > 45\% \tag{3}$$

Indeed, we find four different periods satisfying equation 3 which can be related to the following macro events:

i *June 1997:* "Thai Bath depreciation"

ii *December 1999:* "Dot-com bubble"

iii *January 2001:* "Nasdaq downward correction"

iv *August 2007:* "Credit crunch"

Expectation-implied changes in betas could hence be tested for their ability to explain how connected the option and stock markets are.

4.1 Time-varying risk exposure in hedge fund styles

In this section we obtain time-varying exposures toward certain set of risk factors. For this endeavour, we use the set of factors presented in Billio et al. (2010) which has been widely used in the hedge fund literature, see for instance Fung and Hsieh (2002), Agarwal and Naik (2004), among others. Each factor is defined as follows:[5]

1. SP: the S&P500 index, characterizing the US equity market risk factor;[6]
2. SMB: Small minus Big index is computed as the monthly return difference between the MSCI world small minus MSCI world large;[6]
3. HML: High minus Low index is computed as the monthly return difference between the MSCI world value minus MSCI world growth;[6]
4. UMD: the Carhart momentum factor or the relative performance of winner over loser stocks;[7]
5. EM: MSCI Emerging markets;[6]
6. DVIX: first difference in the implied volatility of the US equity market;[8]
7. GSCI: S&P Goldman Sachs Commodity Index;[6]
8. Term: term spread measured as the difference between yields on 10-year and 3-month Treasury bill. It is computed as the difference between the US Citigroup treasury 7-10Y minus US Citigroup 3-month T-bill;[6]
9. DEF: default spread measured by the difference between yields on BBB-rated and AAA/AA-rated corporate bonds and computed as the difference between the Citigroup US big corporate BBB minus Citigroup US big corporate AAA/AA.[6]

We rely on Kalman filter to dynamically estimate the unobservable time-varying risk exposure. In more detail, we assume a state-space representation where the observation equation describes the dynamic evolution of each hedge fund's returns and the state equation defining the unobservable risk exposure evolution is given as a random walk:

[5] All factors range from February 1997 to August 2015

[6] Obtained from Thomson Financial Datastream Inc.

[7] Obtained from K. French's website

[8] Obtained from CBOE website

$$
\begin{aligned}
R_t &= \sum_{i=1}^{N} \beta_{i,t} F_{i,t} + \epsilon_t && (4)\\
\beta_{1,t+1} &= \beta_{1,t} + \varepsilon_{1,t+1} && (5)\\
&\vdots \\
\beta_{N,t+1} &= \beta_{N,t} + \varepsilon_{N,t+1} && (6)
\end{aligned}
$$

Where $\beta_{i,t}$ represents the time series of risk exposure to factor i, $\epsilon_t \sim N\left(0, \sigma_\epsilon^2\right)$, $\varepsilon_{1,t+1} \sim N\left(0, \sigma_{\varepsilon_1}^2\right)$ $\cdots$ $\varepsilon_{N,t+1} \sim N\left(0, \sigma_{\varepsilon_N}^2\right)$. In the same vein as Lobosco and DiBartolomeo (1997), we do not consider an intercept into equation 4, $F_{i,t}$ represents the time series of returns to factor i, and R_t[9] the time series of returns for a given hedge fund strategy. Also, as in Agarwal (2000), since hedge funds exhibit a great deal of flexibility in terms of asset allocation (ie, shortselling, cash holding, etc) we allow for negative exposure to risk factors and relax the constraint that the style weights have to add up to one.

4.2 Hypotheses to be tested and methodology

In section 4.1 we assumed a state-space representation where the unobserved risk exposure to each factor follows a random walk as in equations 5-6, and the filtered coefficients at time $t+1$ are optimally computed by Kalman filter. Such representation provides crucial information about the β's distribution and statistical properties, in particular

$$
\begin{aligned}
\beta_{n,t+1} - \beta_{n,t} &= \varepsilon_{n,t+1}\\
E\left[\varepsilon_{n,t+1}\right] &= 0\\
var\left[\varepsilon_{n,t+1}\right] &= \sigma_{\varepsilon_n}^2\\
E\left[\beta_{n,t+1} | \mathbb{F}_t\right] &= \beta_{n,t}
\end{aligned}
$$

where the variance parameter of the process generator and the time-series of β coefficients are optimally filtered by Kalman filter.

Hence, we define the following set of hypotheses to be tested

Hypothesis 1:

- null hypothesis H_0: A strong imbalance event (as defined in equation 3) has no impact on hedge fund trades the month of the event.

[9] Hedge funds returns have been collected from EDHEC-Risk Institute webpage from February 1997 up to August 2015.

- alternative hypothesis H_a: A strong imbalance event triggers an unexpected reallocation hedge fund trades the month of the event.

Given the state-space model, the abnormal or unexpected allocation to factor n is defined as

$$AA_n = \beta_{n,t} - E\left[\beta_{n,t}\right] = \beta_{n,t} - \beta_{n,t-1}$$

Under the null hypothesis, the abnormal allocation is normally distributed with

$$\begin{aligned} E\left[AA_n\right] &= 0 \\ var\left[AA_n\right] &= \sigma^2_{\varepsilon_N} \\ AA_n &\sim N\left(0, \sigma^2_{\varepsilon_N}\right) \end{aligned}$$

Hypothesis 2:

- null hypothesis H_0: A strong imbalance event is not preceded by an unexpected hedge fund trade reallocation.
- alternative hypothesis H_a: A strong imbalance event is preceded by an unexpected hedge fund trade reallocation.

where the statistical properties are given as

$$\begin{aligned} E\left[AA_n\right] &= \beta_{n,t-1} - E\left[\beta_{n,t-1}\right] = \beta_{n,t-1} - \beta_{n,t-2} = 0 \\ var\left[AA_n\right] &= \sigma^2_{\varepsilon_N} \\ AA_n &\sim N\left(0, \sigma^2_{\varepsilon_N}\right) \end{aligned}$$

Hypothesis 3:

- null hypothesis H_0: A strong imbalance event is not followed by an unexpected hedge fund risk reallocation.
- alternative hypothesis H_a: A strong imbalance event is followed by an unexpected hedge fund risk reallocation.

where the statistical properties are given as

$$
\begin{aligned}
E\left[AA_n\right] &= \beta_{n,t+1} - E\left[\beta_{n,t+1}\right] = \beta_{n,t+1} - \beta_{n,t} = 0 \\
var\left[AA_n\right] &= \sigma^2_{\varepsilon_N} \\
AA_n &\sim N\left(0, \sigma^2_{\varepsilon_N}\right)
\end{aligned}
$$

In every case the null hypothesis H_0 can be tested as follows

$$
t_{\beta_n} = \frac{AA_n}{\sigma_{\varepsilon_N}}
$$

4.3 Results

In this section we present the main findings for each strong imbalance event between the information content of option and stock markets:

4.3.1 Thai Baht depreciation

Table 2 presents the abnormal trade allocation taking place in June 1997 identified as an event of strong imbalance of information between the stock and option market. Panels A, B, and C test hypothesis 1, 2, and 3, respectively. After a long period of slow down in the ASEAN exports volume, June 1997 is characterized by a big imbalance of information between the option and the stock markets (disagreement rate rising from 19% to 71%). On 2 July 1997, the lack of foreign reserves forced the Thai government to allow a floating rate for the Bath. One month before the decision of the depreciation of the Thai Baht by the Thai government, we observe significant abnormal deleveraging towards the Emerging markets for Global Macro (AA = -11.37 %, t_{β_n} = -2.4924) and Distressed Securities funds (AA = -11.06 %, t_{β_n} = -2.0727). More generally, directional exposures were also significantly reduced: Short selling and Global Macro funds substantially reduced their directional bets on the US market by -47.24 % (t_{β_n} = -3.2133) and -7.01 % (t_{β_n} = -2.6410), respectively. We observe commonly for Relative Value and Market Neutral funds a huge surge of credit risk with significant (in both cases $t_{\beta_n} > 3$) exposure reduction toward credit spread.

Distressed securities, L/S equity, and Market neutral funds appear to react with some delay to the information conducted in the option market by significantly decreasing i) momentum exposure by respectively -6.50 % (t_{β_n} = -1.9261), -4.53 % (t_{β_n} = -1.7283), and -8.52 % (t_{β_n} = -1.7247) and, ii) volatility exposure by respectively -7.45 % (t_{β_n} = -1.8963), -6.41 % (t_{β_n} = -1.8009), and -10.43 % (t_{β_n} = -1.9878). Furthermore, posterior to the event Distress securities funds keep reducing the exposure toward emerging markets (AA = -15.48 %, t_{β_n} = -2.9001) whereas L/S funds started to reduce their exposure by -30.15 % (t_{β_n} = -3.7568). Interestingly, we also observe a common pattern

for Market neutral and L/S equity funds, right after the strong information imbalance both of them switched from a Large to a Small cap investment strategy (Market neutral's SMB initial loading = -37.11 %, AA = 46.68 %, t_{β_n} = 2.7259; and L/S equity's SMB initial loading = -28.53 %, AA = 35.49 %, t_{β_n} = 3.1682).

4.3.2 Dot-com bubble

In 19999, the Nasdaq surged by 85.58% as a sign of a financial bubble emerging in the technological and telecommunication sectors. Not surprisingly, the information was already shared by the informed actors of the financial actors as shown by a strong disagreement between the information transferred by the option markets and the stock market in December 1999 (the level of disagreement moved from 0.33 to 0.86 in one month).

Table 3 presents the abnormal hedge fund allocation in December 1999. Panels A, B, and C test hypothesis 1, 2, and 3, respectively. Right before the event took place, convertible arbitrage, market neutral, relative value, and short selling funds started to reduce actively their momentum strategies by -6.91 % (t_{β_n} = -5.0606), -11.16 % (t_{β_n} = -2.2578), -5.85 % (t_{β_n} = -2.6262), and -8.29 % (t_{β_n} = -4.8123), respectively; even shorting more stocks as shown by the abnormal short exposure in implied volatility exhibited by convertible arbitrage (DVIX initial loading = 13.65%, AA = -15.81 %, t_{β_n} = -3.0621) and short selling strategies (DVIX initial loading = 9.45%, AA = -29.68 %, t_{β_n} = -5.9235). L/S equity and merger arbitrage funds seem to react to this information with certain delay through a sharp decrease into value stocks (-48,11% for L/S strategies and -10,78% for M&A strategies) and a sharp decrease of trend-following strategies (-15,12% for LS strategies and -6,49% for M&A strategies). Also after the event, Global macro, L/S equity, and Emerging markets funds reinforced their bet in the emerging market sector by raising their exposure by 16.12 % (t_{β_n} = 3.5330), 16.52 % (t_{β_n} = 2.0586), and 12.90 % (t_{β_n} = 2.1535), respectively.

4.3.3 Nasdaq downward correction

Table 4 presents the findings for the January 2001's event, Panel A, B, and C present the results of hypothesis 1, 2, and 3, respectively. On January 2001, the Nasdaq suffered from a large market correction (-51,07% on January 1st) which brought back a balance with regard to the information content between the option and stocks markets. Nasdaq's correction was mainly reflected by the reversal strategies implemented at the month of the event (Panel A) by convertible arbitrage (AA = -3.82 %, t_{β_n} = -2.7961), CTA global (AA = -13.80 %, t_{β_n} = -7.8839), global macro (AA = -25.33 %, t_{β_n} = -5.7290), L/S equity (AA = -4.84 %, t_{β_n} = -1.8467), merger arbitrage (AA = -6.89 %, t_{β_n} = -3.5790), emerging markets (AA = -2.41 %, t_{β_n} = -3.9699), event driven (AA = -1.56 %, t_{β_n} = -2.3448), and short selling (AA = -5.34 %, t_{β_n} = -3.1016). Interestingly, we observe that some

hedge fund's managers seem to anticipate this correction by taking a short position in volatility one month before the event. Panel B shows that convertible arbitrage, distressed securities, L/S equity, equity market neutral, and relative value started with a long position in volatility and all of them implemented a short selling volatility strategy one month before the event by rebalancing their volatility exposure -15.74 % (initial loading = 10.29 %), -16.25 % (initial loading = 11.29 %), -6.67 % (initial loading = 5.61 %), -10.10 % (initial loading = 6.22 %), and -4.43 % (initial loading = 1.35 %), respectively.

4.3.4 Credit crunch

Table 5 shows the results for the event of August 2007, Panel A, B, and C present the results of hypothesis 1, 2, and 3, respectively. On 9 August 2007, the European Central Bank and the US Federal Reserve injected $90bn the financial market, still not enough to solve the deep credit crunch from which banks suffered. Not surprisingly, our model identifies for this month a significant disagreement between the information conducted by the option markets and stock markets. A post-reaction effect was to intensify reversal strategies as shown by CTA global (initial loading = -6.64 %, AA = -5.50 %, t_{β_n} = -3.1438) and global macro (initial loading = -7.91 %, AA = -10.85 %, t_{β_n} = -2.4546). As a consequence of the event, arbitrage strategies (event driven, fixed income arbitrage, convertible arbitrage) redefined the investment strategy toward credit risk by aggressively reducing the exposure, as shown by the significant and deep negative abnormal allocation in credit spread.

5 Examining hedge fund aggregate dynamic asset allocation

In this section we analyse the global impact of a regime switch in the information content, that is, we test whether a shift in the disagreement (agreement) level significantly alters the hedge fund's risk exposure. Hence, we define periods of increasing (decreasing) disagreement between the stock on option market and evaluate the aggregate impact on the asset allocation.

5.1 Hypotheses to be tested and methodology

According to the disagreement rate level (equation 2), we divide the disagreement/agreement state representation into quintiles ranging from strong agreement up to strong disagreement state. Figure 3 presents a sketch of this state representation where i) a state of strong agreement is defined when the disagreement rate level is contained between 0 and 20%, ii) a weak agreement state ranges from 20 to 40% disagreement level, iii) when the disagreement level interval goes from 40 to 60% is a not well defined state, hence we call it a diffuse state, iv) from 60 to 80% we define a weak disagreement state, and finally v) from 80 to 100% a strong disagreement state.

Considering this state representation we define the following set of events

Event 1: Similarly to section 4.2, these kind of events are defined by a strong imbalance in the information content as in equation 3, that is a monthly change higher than 45% in the disagreement rate level.

Event 2: Switch of state from strong agreement, weak agreement, diffuse, or weak disagreement to a strong disagreement state.

Event 3: Switch of state from strong disagreement to strong agreement, weak agreement, diffuse, or weak disagreement state.

The aggregate abnormal allocation setup for each type of event is defined as follows

$$\overline{AA}_n^j = \frac{1}{N_j}\sum_{i=1}^{N_j}|AA_{n,i}^j| \tag{7}$$

$$\Sigma_n^2 = \frac{1}{N_j^2}\sum_{i=1}^{N_j}\sigma_{\varepsilon_{n,i}}^2 \tag{8}$$

where $j = 1, 2, 3$ represents event type 1, 2, and 3, respectively, and N_j the total number of type j events. For any event, an individual abnormal allocation, $AA_{n,i}^j$, is defined as an unexpected rebalance in the risk exposure toward certain factor, this unexpected rebalance can either be an unexpected reduction or increment in the β coefficient. The objective of this section if to test whether there is an aggregated effect for each event type regardless the sign of rebalancement, it means that there is no preferred direction for the abnormal allocation. Hence, in order to avoid any sort of compensation between unexpected reductions and increments, we consider each individual abnormal allocation in absolute value and define the following hypothesis

Hypothesis 4:

- null hypothesis H_0: Type j event has no impact on the asset allocation
- alternative hypothesis H_a: Type j event triggers an unexpected risk reallocation

where $\overline{AA}_n^j$ defines the aggregated abnormal allocation effect and each individual event in equation 7 is defined as

$$AA_{n,i}^j = \beta_{i,t} - E\left[\beta_{i,t}\right] = \beta_{i,t} - \beta_{i,t-1}$$

We also test whether the significant changes in exposures we attribute to switches in regimes are not simply related to macroeconomic events and not directly to the switch in regimes. Within this

objective, we examine whether there is a significant change occurring before or after the switch in regime. We therefore define two alternative hypotheses

Hypothesis 5:

- null hypothesis H_0: Type j are not preceded by an risk unexpected reallocation
- alternative hypothesis H_a: Type j are preceded by an risk unexpected reallocation

where $\overline{AA}_n^j$ defines the aggregated abnormal allocation effect and each individual event in equation 7 is defined as

$$AA_{n,i}^j = \beta_{i,t-1} - E\left[\beta_{i,t-1}\right] = \beta_{i,t-1} - \beta_{i,t-2}$$

Hypothesis 6:

- null hypothesis H_0: Type j are not followed by an unexpected risk reallocation
- alternative hypothesis H_a: Type j are followed by an unexpected risk reallocation

where $\overline{AA}_n^j$ defines the aggregated abnormal allocation effect and each individual event in equation 7 is defined as

$$AA_{n,i}^j = \beta_{i,t+1} - E\left[\beta_{i,t+1}\right] = \beta_{i,t+1} - \beta_{i,t}$$

Hypotheses 4 to 6 can be tested as follows

$$t_{\beta_n} = \frac{\overline{AA}_n^j}{\Sigma_n}$$

5.2 Results

In this section we present the main results for Events 1 to 3:

5.2.1 Event 1: Strong imbalance

Table 6 presents the aggregate absolute abnormal allocation for event type 1: Panel A, B, and C present the results of hypothesis 4, 5, and 6, respectively. In general terms, we observe higher t_{β_n} related to hypothesis 4 than in the individual event analysis. This supports our previous evidence along which most hedge funds actively rebalance their portfolio when the information imbalance occurs. The information content is asymmetrical and the information flow rate varies across market participants: at time informed traders (sophisticated investors) redefine their investment strategy,

we observe a strong imbalance between the option and spot market. Strong imbalance events might thus be a consequence of unexpected rebalancing in the portfolio of sophisticated investors reflecting the information asymmetry among market participants.

The most significant and active trades across hedge funds occur in momentum strategies, where $t_{\beta_n} > 2$ for 9 out of 13 hedge fund strategies the month of the event (hypothesis 4, Panel A). As expected, we also find evidence of momentum rebalancing after the strong imbalance event. By definition, a strong imbalance refers to a pronounced shift in the disagreement rate (more than 45% shift from one month to another) altering the information content between spot and option market. From our analysis, it appears that the month after the event the disagreement rate tends to remain stable. Since momentum strategies aim to capitalize of market trends, we expect further reallocation as the disagreement/agreement state stabilises.

Value and growth stocks strategies (HML) are also heavily altered in times of strong imbalance, the most intensive trades are found in CTA global, Emerging Markets, and Short Selling funds. Interestingly, we observe four different hedge funds (Convertible arbitrage, Event driven, Long/short equity and Relative value) intensely rebalancing the allocation toward small- and large-sized firms strategy (SMB), and also five others (Convertible arbitrage, CTA global, Distressed securities, Merger arbitrage, and Relative value) heavily redefining the risk exposure toward volatility (DVIX) the month before the event (hypothesis 5, Panel B), which indeed might be considered as a warning signal for this kind of event.

Finally, we observe strong evidence of reallocation toward credit spread (DEF) the month after the event (hypothesis 6, Panel C). The strong imbalance tends to shift the current market conditions to a higher turmoil state, boosting credit distresses. Following a disagreement event, relative value funds, market neutral, arbitrage funds (fixed income, convertible arbitrage), and special situation funds (event driven, distressed funds) are shown to abnormally suffer under a credit squeeze as shown by the significant exposure change towards credit risk. In addition, directional funds such as CTA global, equity L/S, global macro and short selling funds actively rebalance their trades on the US markets before or at event date as well their emerging market risks.

5.2.2 Event 2: Increasing disagreement rate

Table 7 presents the aggregate absolute abnormal allocation for event type 2. As in the previous section, Panels A, B, and C present the results of hypotheses 4, 5, and 6, respectively. This type of event is related to periods of increasing disagreement rate, that is, we observe a switch to a state of strong disagreement. The results are quite conclusive, most hedge funds redefine the risk exposure one month after the shift of state. Indeed, we observe how hedge funds "react" (rather than anticipate) when the information content between the spot and the option market migrates to

a state of strong disagreement (disagreement rate > 80%). The most significant and active trades are found in momentum strategies ($t_{\beta_n} > 2$ for 11 out of 13, and $t_{\beta_n} > 3$ for 8 out of 13 hedge fund strategies), value and growth stocks strategies ($t_{\beta_n} > 2$ for 8 out of 13 hedge fund strategies), and US equity market ($t_{\beta_n} > 2$ for 7 out of 13 hedge fund strategies). Some strategies are shown to anticipate markets disagreement convertible arbitrage, distressed securities, equity L/S, short selling and to a lesser extent equity market neutral and emerging market funds. Some strategies are shown to strongly react to inefficiencies between the two markets such as bond-like strategies, CTA global, special situation funds (distressed securities, event driven and merger arbitrage), global macro, relative value and short selling.

Credit spread factor also experiences significant risk exposure reallocation right after the event. Similarly to type 1 events (i.e. "strong imbalance"), a switch to a state of strong disagreement generates turmoil in the market causing credit distress and as a consequence, provokes an intense reallocation, specially to Convertible arbitrage and Fixed income arbitrage hedge funds. Directional allocation toward emerging markets also presents strong evidence of rebalancing, hardly surprising the most significant trades are found in Global macro ($t_{\beta_n} = 2.9296$) and Emerging markets hedge funds ($t_{\beta_n} = 3.5251$).

5.2.3 Event 3: Decreasing disagreement rate

Table 8 presents the aggregate absolute abnormal allocation for event type 3. As in the previous section, Panels A, B, and C present the results of hypotheses 4, 5, and 6, respectively. This type of event accounts to periods of decreasing disagreement rate, that is, we observe a switch from a state of strong disagreement to a lower state. Although we observe some reallocation toward momentum strategies the month of the event, dynamic exposures to credit and term risk spread before and at event date and value investment therafter, we do not observe commonalities across funds. Most trades occur indeed before or after the event except momentum.

The level of t_{β_n} are significant lower than in event type 1 and 2. Indeed, every time there is a regime change from a state of strong disagreement the outcome state turns out to be a state of weak disagreement, it means that the reduction in the disagreement rate is rather low and hedge funds managers tend to hold a similar risk exposure.

6 Concluding remarks

This paper considers specific events where some kind of inefficiency occurs in the information transmission between option and stocks markets. We identify three reasons for the occurrence of such "disagreement" or "inefficient" events: high volatility and noise trading, high level of investor risk

aversion, increase in speculation versus hedging trades. We show that such events have significant implications in portfolio management by creating big opportunities for traders who implement reversal strategies and tactical style allocation between small, large, value and growth stocks.

We implement both an aggregate analysis of the impact of all events on hedge fund abnormal trades and individual analyses per event type. Both our individual and aggregate event studies show that strong imbalance of information between the stock and option markets, which we qualify of "disagreement events", are contemporaneous with abnormal portfolio rebalancement. Small increase in the disagreement rate is much more followed by a market reaction. Some strategies are shown to anticipate market disagreement events, namely convertible arbitrage, distressed securities, equity L/S, short selling and to a lesser extent equity market neutral and emerging market funds. Some strategies are shown to strongly react to inefficiencies between the two markets such as bond-like strategies, CTA global, special situation funds (distressed securities, event driven and merger arbitrage), global macro, relative value and short selling. Active trading also takes place when going back to an equilibrium between the two markets. We do not however spot any commonalities in abnormal rebalancing across strategies. Tough, the most active trades (at, before and after the event) are to be found for directional strategies (Emerging markets, equity L/S, global macro, CTA global), special situations funds (distressed securities and merger arbitrage), and convertible arbitrage funds.

Hedge funds are shown to actively rebalance their portfolios at times of strong information imbalance between the option and stock markets. Trading on momentum is by far the most dynamic strategy across all hedge fund styles. A reallocation in this strategy mostly occurs at event date, i.e. at times of strong imbalance between the information transmitted between the two markets and posterior to the event. Active trades are also to be found in factor investing (like value/growth and small/large caps), credit spread strategies and directional strategies (US equity and emerging markets). This might suggest that they either anticipate or create the imbalance of information. In case the information imbalance is out of their control, they heavily react using the same strategies.

We further identify four specific macroeconomic events that command or are associated with a strong information imbalance between the two markets: the Thai Baht depreciation, the Dot-com bubble, the credit crunch and the Nasdaq correction. The first three are identified as strong disagreement event while the last one is associated with a rapid transmission of information from one market to another in order to restablish agreement. Short volatility and reversals strategies are associated with the latter. Our results show that the Thai Baht depreciation was highly anticipated into the hedge fund industry and commands huge deleveraging in directional trades. Posterior trades on directional exposures and more allocation to small stocks are observed. The Dot-com bubble commands reversal, reduced allocation to value stocks as well as investments in both growth and small stocks. Among the disagreement event, the credit crunch was followed by hedge fund reactions

but failed to be anticipated. Our work relates to Bernales, Verousis and Voukelatos (2016) who recently demonstrated strong herding behavior in times of high market volatility or macroeconomic events in the underlying stock markets but also in the most sophisticated option markets. Stock price and option prices deviate from fundamental values as all trades are made in the same direction (no heterogeneity in views and liquidity) and options market is not appropriate for hedging or making leveraged positions. In our framework, we show that such events, mostly related to macroeconomic events, cause disagreement between the two markets.

References

Arnold, T., Erwin, G., Nail, L., Bos, T., 2000. Speculation or insider trading: Informed trading in option markets preceding tender offer announcements. Working paper, University of Alabama at Birmingham.

Bakshi, G., Kapadia, N., Madan, D., 2003. Stock Return Characteristics, Skew Laws, and the Differential Pricing of Individual Equity Options. Review of Financial Studies 16, 101-143.

Bekaert, G., Engstrom, E., Xing, Y., 2009. Risk, Uncertainty, and Asset Prices. Journal of Financial Economics, Vol. 91, No. 1, 59-82.

Bernales, A., Verousis, T., Voukelatos, N., 2016. Do investors follow the herd in option markets?. Journal of Banking & Finance (forthcoming)

Black, F., 1975. Fact and fantasy in the use of options, Financial Analysts Journal 31, 36-72.

Bradford De Long, J., Shleifer, A., Summers, L.H., Waldmann, R.J., 1990. Noise Trader Risk in Financial Markets. The Journal of Political Economy, Vol. 98, No. 4, pp. 703-738.

Cao, C., Chen, Z., Griffin, J.M., 2000. The informational content of option volume prior to takeovers. Working paper, Pennsylvania State University.

Chakravarty, S., Gulen, H., Mayhew, S., 2004. Informed Trading in Stock and Option Markets. The Journal of Finance, Volume 59, Issue 3, Pages 1235-1257

Chang, B.Y., Christoffersen, P.,Jacobs, K., Vainberg, G., 2012. Option-Implied Measures of Equity Risk. Review of Finance 16, 385-428.

Chen, Y., Han, B., Pan, J., 2016. Sentiment Risk, Sentiment Timing, and Hedge Fund Returns. working paper.

Diavatopoulos, D., Doran, J.S., Fodor, A., Peterson, D.R., 2012. The Information Content of Implied Skewness and Kurtosis Changes Prior to Earnings Announcements for Stock and Option Returns. Journal of Banking and Finance 36(3), 786-802.

Easley, D., O'Hara, M., Srinivas, P.S., 1998. Option volume and stock prices: Evidence on where informed traders trade. Journal of Finance 53, 431-465.

Giannetti, M., Kahraman, B., 2016. Who Trades Against Mispricing?. Stockholm School of Economics, CEPR, and ECGI. working paper.

Hübner, G., Lambert, M., Papageorgiou, N., 2015. Higher-Moment Risk Exposures in Hedge Funds. European Financial Management, Vol. 21, Issue 2, pp. 236-264.

Irwin, S.H., Holt, B., 2004. The Effect of Large Hedge Fund and CTA Trading on Futures Market Volatility. COMMODITY TRADING ADVISORS: RISK, PERFORMANCE ANALYSIS AND SELECTION, Greg N. Gregoriou, Vassilios N. Karavas, Francois-Serge L'Habitant, Fabrice Rouah, eds., John Wiley and Sons, Inc., 2004

Manaster, S., Rendleman, R.J. Jr., 1982. Option prices as predictors of equilibrium stock prices. Journal of Finance 37, 1043-1057.

Mayhew, S., Sarin, A., Shastri, K., 1995. The allocation of informed trading across related markets: An analysis of the impact of changes in equity-option margin requirements. Journal of Finance 55, 1635-1654.

Muravyev, D., Pearson, N.D., Broussard, J.P., 2013. Is there price discovery in equity options?. Journal of Financial Economics 107, 259-283.

Pan, J., Poteshman, A.M., 2004. The information in option volume for stock prices, Working paper, MIT.

Stephan, J.A., Whaley, R.E., 1990. Intraday price change and trading volume relations in the stock and stock option markets. Journal of Finance 45, 191-220.

Appendix of tables

	Coefficient	(p-value)
VOL_t	2.5215	(< 0.0001)
$LIQ_{PUT_{in},t}$	12.4627	(< 0.0001)
$LIQ_{PUT_{out},t}$	-7.4056	(< 0.0001)
$BEARISH_t$	-4.7508	(< 0.0001)

Table 1: This table presents estimates for the probit model, in parenthesis are p-values.

Abnormal trade and Thai Baht depreciation

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Convertible arbitrage									
Panel A: At event date									
β_{in}	0,0987	-0,0018	0,0362	0,1468	-0,1913	-0,0998	0,0035	0,0917	0,6144
AA	0,0036	0,0086	0,0001	0,0024	0,1880	0,0000	0,0000	0,1699	-0,0191
t_{β_n}	0,3713	0,4053	0,0136	0,1793	1,0398	-0,0004	0,0054	1,2490	-0,3703
Panel B: One month before									
β_{in}	0,0936	-0,0059	0,0358	0,1581	0,4822	-0,0998	0,0035	-0,0529	0,6733
AA	0,0051	0,0042	0,0004	-0,0113	-0,6736	0,0000	0,0000	0,1446	-0,0588
t_{β_n}	0,5318	0,1967	0,1037	-0,8273	*-3,7251*	-0,0156	0,0228	1,0633	-1,1391
Panel C: One month later									
β_{in}	0,1023	0,0068	0,0363	0,1492	-0,0033	-0,0998	0,0035	0,2616	0,5953
AA	-0,0012	-0,0065	0,0002	-0,0026	0,0919	0,0000	0,0000	-0,0642	-0,0192
t_{β_n}	-0,1281	-0,3056	0,0538	-0,1904	0,5081	0,0009	-0,0025	-0,4717	-0,3726
Global macro									
Panel A: At event date									
β_{in}	0,2586	0,5616	0,4977	0,7160	-0,0786	-0,0714	0,0944	-0,0789	-0,5252
AA	-0,0701	-0,1137	-0,0078	-0,0814	-0,1883	0,0000	-0,0001	-0,0019	0,0885
t_{β_n}	*-2,6410*	*-2,4924*	-0,1704	*-1,8415*	*-2,2801*	-0,0004	-0,0669	-0,2126	1,2188
Panel B: One month before									
β_{in}	0,2494	0,5606	0,4821	0,7426	-0,0019	-0,0714	0,0943	-0,0791	-0,4966
AA	0,0092	0,0010	0,0156	-0,0266	-0,0767	0,0000	0,0000	0,0002	-0,0286
t_{β_n}	0,3481	0,0230	0,3397	-0,6014	-0,9294	-0,0007	0,0215	0,0236	-0,3938
Panel C: One month later									
β_{in}	0,1885	0,4479	0,4899	0,6346	-0,2669	-0,0714	0,0943	-0,0809	-0,4368
AA	-0,0108	-0,0301	0,0274	-0,0217	0,0539	0,0000	0,0000	-0,0003	-0,0400
t_{β_n}	-0,4051	-0,6602	0,5973	-0,4917	0,6533	0,0004	-0,0181	-0,0356	-0,5510
CTA global									
Panel A: At event date									
β_{in}	0,3743	0,0138	0,1635	0,0419	0,2691	-0,0859	0,1473	-0,0101	0,6178
AA	-0,1688	0,0000	0,0016	-0,0039	-0,0061	-0,0107	0,0000	0,0000	0,0038
t_{β_n}	-1,3962	-0,0200	0,0544	-0,2241	-0,2307	-0,1591	-0,0010	-0,0005	0,0537
Panel B: One month before									
β_{in}	0,5450	0,0138	0,1716	0,0381	0,2596	-0,1098	0,1473	-0,0101	0,5899
AA	-0,1707	0,0000	-0,0081	0,0038	0,0095	0,0239	0,0000	0,0000	0,0279
t_{β_n}	-1,4114	0,0036	-0,2729	0,2155	0,3577	0,3530	-0,0080	-0,0004	0,3895
Panel C: One month later									
β_{in}	0,2055	0,0138	0,1651	0,0379	0,2629	-0,0967	0,1473	-0,0101	0,6216
AA	-0,0545	0,0000	0,0052	-0,0016	0,0025	0,0039	0,0000	0,0000	-0,0186
t_{β_n}	-0,4510	-0,0112	0,1728	-0,0894	0,0933	0,0582	-0,0016	-0,0002	-0,2603
Long short equity									
Panel A: At event date									
β_{in}	-0,0119	0,7387	0,3002	0,4170	-0,3357	0,0884	0,2531	-0,1195	0,2755
AA	0,0653	0,0387	0,0007	0,0104	0,0503	0,0350	-0,0004	0,0118	-0,0019
t_{β_n}	0,8766	0,4820	0,0379	0,3953	0,4495	0,2367	-0,0234	0,2111	-0,0530
Panel B: One month before									
β_{in}	-0,0742	0,7526	0,2961	0,4259	-0,2028	0,1924	0,2486	-0,1265	0,2829
AA	0,0623	-0,0138	0,0041	-0,0089	-0,1328	-0,1040	0,0045	0,0070	-0,0074
t_{β_n}	0,8366	-0,1722	0,2109	-0,3383	-1,1860	-0,7038	0,2431	0,1245	-0,2079
Panel C: One month later									
β_{in}	0,0535	0,7774	0,3010	0,4274	-0,2853	0,1234	0,2526	-0,1077	0,2736
AA	-0,0996	-0,3015	0,0268	-0,0453	0,3549	0,1209	-0,0066	-0,0216	-0,0641
t_{β_n}	-1,3370	*-3,7568*	1,3638	*-1,7283*	*3,1682*	0,8180	-0,3557	-0,3861	*-1,8009*
Distressed securities									
Panel A: At event date									
β_{in}	0,1390	0,4044	0,3175	0,6153	-0,0374	-0,6206	0,2775	0,3848	0,3561
AA	0,0000	-0,1106	-0,0010	-0,0487	-0,0161	-0,0197	-0,0564	-0,1049	0,0148
t_{β_n}	-0,0296	*-2,0727*	-0,0346	-1,4417	-0,6771	-0,3277	-1,1165	-1,2948	0,3770
Panel B: One month before									
β_{in}	0,1390	0,3979	0,3293	0,5923	-0,0524	-0,6550	0,3215	0,4179	0,3421
AA	0,0000	0,0065	-0,0119	0,0231	0,0150	0,0344	-0,0440	-0,0331	0,0141
t_{β_n}	-0,0092	0,1214	-0,4200	0,6829	0,6300	0,5721	-0,8718	-0,4084	0,3587
Panel C: One month later									
β_{in}	0,1390	0,2938	0,3165	0,5667	-0,0535	-0,6403	0,2211	0,2800	0,3709
AA	0,0000	-0,1548	0,0557	-0,0650	0,0337	0,0552	-0,0868	-0,0907	-0,0745
t_{β_n}	-0,0192	*-2,9001*	*1,9683*	*-1,9261*	1,4146	0,9182	*-1,7187*	-1,1201	*-1,8963*
Merger arbitrage									
Panel A: At event date									
β_{in}	0,1303	0,3801	0,2224	0,3996	-0,3111	0,4368	0,0374	0,0395	0,0272
AA	-0,0001	-0,0061	-0,0002	-0,0004	-0,2645	0,0007	0,0000	0,0000	0,0072
t_{β_n}	-0,0365	-0,1686	-0,0184	-0,0210	-0,4253	0,0214	-0,0061	-0,0002	0,1305
Panel B: One month before									
β_{in}	0,1303	0,3780	0,2222	0,4017	-0,0791	0,4383	0,0374	0,0395	0,0325
AA	0,0001	0,0021	0,0002	-0,0021	-0,2320	-0,0015	0,0000	0,0000	-0,0053
t_{β_n}	0,0174	0,0570	0,0138	-0,1081	-0,3730	-0,0425	0,0069	0,0001	-0,0958
Panel C: One month later									
β_{in}	0,1302	0,3740	0,2222	0,3992	-0,5756	0,4375	0,0374	0,0395	0,0344
AA	-0,0004	-0,0346	0,0020	-0,0086	0,6839	0,0020	0,0000	0,0000	-0,0201
t_{β_n}	-0,1138	-0,9573	0,1796	-0,4449	1,0995	0,0571	-0,0179	-0,0009	-0,3653

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Emerging markets									
	Panel A: At event date								
β_{in}	0,6960	-0,0540	-0,1716	0,0683	0,0929	0,6503	0,0192	0,5580	0,1302
AA	-0,0983	-0,0419	0,0002	-0,0006	0,0000	-0,0216	0,0000	-0,0083	0,0000
t_{β_n}	-1,2686	-0,6992	0,0209	-0,1063	-0,0012	-0,2592	-0,0001	-0,1880	0,0068
	Panel B: One month before								
β_{in}	0,7079	-0,0547	-0,1714	0,0682	0,0929	0,6443	0,0192	0,5589	0,1302
AA	-0,0119	0,0007	-0,0002	0,0001	0,0000	0,0060	0,0000	-0,0009	0,0000
t_{β_n}	-0,1535	0,0117	-0,0171	0,0126	0,0002	0,0718	-0,0001	-0,0194	0,0048
	Panel C: One month later								
β_{in}	0,5977	-0,0959	-0,1713	0,0677	0,0929	0,6287	0,0192	0,5497	0,1303
AA	0,0670	0,0553	-0,0026	0,0006	0,0000	-0,0206	0,0000	0,0072	0,0004
t_{β_n}	0,8639	0,9232	-0,2272	0,1058	-0,0013	-0,2477	0,0003	0,1626	0,0669

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Relative value									
	Panel A: At event date								
β_{in}	0,0747	0,0845	0,0031	0,2842	-0,0280	0,2513	0,0147	2,8261	0,1745
AA	0,0000	0,0000	0,0000	-0,0270	-0,2958	-0,0411	0,0002	-1,8460	-0,0011
t_{β_n}	-0,0030	-0,0035	-0,0007	-1,2124	*-1,8385*	-0,5862	0,0831	*-3,0506*	-0,0553
	Panel B: One month before								
β_{in}	0,0746	0,0853	0,0031	0,3036	0,2679	0,3011	0,0143	1,5166	0,1809
AA	0,0001	-0,0008	0,0000	-0,0194	-0,2960	-0,0498	0,0004	1,3094	-0,0063
t_{β_n}	0,0567	-0,0796	0,0046	-0,8707	*-1,8397*	-0,7108	0,1316	*2,1639*	-0,3337
	Panel C: One month later								
β_{in}	0,0747	0,0845	0,0031	0,2572	-0,3238	0,2102	0,0149	0,9801	0,1735
AA	0,0000	-0,0028	0,0000	-0,0159	0,2475	0,0072	-0,0001	-0,9742	-0,0097
t_{β_n}	-0,0153	-0,2782	0,0056	-0,7124	1,5383	0,1021	-0,0234	-1,6099	-0,5100

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Equity market neutral									
	Panel A: At event date								
β_{in}	0,1335	0,0397	0,1537	0,5572	-0,0923	0,0291	0,3270	2,0567	0,5302
AA	-0,0031	0,0001	-0,0019	-0,0837	-0,2788	-0,0011	0,0087	-1,8747	0,0080
t_{β_n}	-0,1727	0,0134	-0,1750	*-1,6939*	-1,6283	-0,0721	0,2899	*-3,0595*	0,1530
	Panel B: One month before								
β_{in}	0,1329	0,0398	0,1531	0,5644	-0,0519	0,0293	0,3241	1,9608	0,5351
AA	0,0005	-0,0001	0,0006	-0,0072	-0,0403	-0,0002	0,0029	0,0958	-0,0049
t_{β_n}	0,0309	-0,0150	0,0525	-0,1455	-0,2356	-0,0138	0,0969	0,1564	-0,0940
	Panel C: One month later								
β_{in}	0,1304	0,0398	0,1518	0,4735	-0,3711	0,0280	0,3356	0,1820	0,5382
AA	-0,0057	-0,0027	0,0073	-0,0852	0,4668	0,0012	-0,0245	-1,4812	-0,1043
t_{β_n}	-0,3186	-0,3400	0,6628	*-1,7247*	*2,7259*	0,0775	-0,8192	*-2,4174*	*-1,9878*

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Short selling									
	Panel A: At event date								
β_{in}	-0,0938	0,1442	0,0177	0,2852	-0,2067	0,2839	0,1089	-0,0226	0,5655
AA	-0,4724	-0,1151	0,0000	-0,0084	-0,0749	-0,0216	-0,0016	0,0000	0,0028
t_{β_n}	*-3,2133*	-1,3764	0,0001	-0,4884	-1,1494	-0,3346	-0,0311	-0,0147	0,0563
	Panel B: One month before								
β_{in}	-0,1771	0,1492	0,0177	0,2864	-0,1865	0,2914	0,0995	-0,0226	0,5702
AA	0,0834	-0,0049	0,0000	-0,0012	-0,0202	-0,0075	0,0094	0,0000	-0,0047
t_{β_n}	0,5669	-0,0591	0,0001	-0,0704	-0,3105	-0,1163	0,1869	0,0022	-0,0935
	Panel C: One month later								
β_{in}	-0,5662	0,0291	0,0177	0,2768	-0,2816	0,2623	0,1073	-0,0226	0,5683
AA	-0,0480	-0,0237	0,0000	-0,0012	0,0114	0,0025	-0,0035	0,0000	-0,0074
t_{β_n}	-0,3263	-0,2839	0,0002	-0,0691	0,1753	0,0388	-0,0702	-0,0019	-0,1476

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Event driven									
	Panel A: At event date								
β_{in}	0,4246	0,2278	-0,0270	0,0868	-0,2423	1,0300	-0,0036	-0,3153	0,3778
AA	0,0042	0,0015	0,0000	0,0006	0,0807	0,0225	0,0000	0,4382	0,0000
t_{β_n}	0,1386	0,0646	0,0031	0,0835	0,5471	0,2027	-0,0127	0,9301	0,0006
	Panel B: One month before								
β_{in}	0,4023	0,2295	-0,0274	0,0882	0,0242	1,1353	-0,0040	-1,0982	0,3905
AA	0,0222	-0,0016	0,0004	-0,0013	-0,2665	-0,1053	0,0004	0,7829	-0,0127
t_{β_n}	0,7373	-0,0687	0,0954	-0,2027	*-1,8072*	-0,9502	0,1185	*1,6616*	-0,4020
	Panel C: One month later								
β_{in}	0,4288	0,2294	-0,0270	0,0874	-0,1617	1,0524	-0,0037	0,1228	0,3778
AA	-0,0063	-0,0128	0,0006	-0,0013	0,1787	0,0108	-0,0001	-0,6264	-0,0220
t_{β_n}	-0,2103	-0,5342	0,1441	-0,2022	1,2121	0,0973	-0,0153	-1,3295	-0,6941

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Fixed income arbitrage									
	Panel A: At event date								
β_{in}	0,3680	0,0786	0,1293	-0,0045	-0,4982	1,1564	-0,1288	0,0224	0,1010
AA	-0,0026	0,0000	0,0000	0,0000	-0,0020	-0,0047	0,0001	-0,0061	0,0001
t_{β_n}	-0,0428	-0,0038	-0,0028	-0,0004	-0,0215	-0,0217	0,0027	-0,0382	0,0029
	Panel B: One month before								
β_{in}	0,3629	0,0788	0,1287	-0,0045	-0,4800	1,1980	-0,1306	0,0143	0,1021
AA	0,0051	-0,0003	0,0007	0,0000	-0,0181	-0,0415	0,0019	0,0082	-0,0011
t_{β_n}	0,0842	-0,0212	0,0500	-0,0009	-0,1949	-0,1919	0,0641	0,0507	-0,0380
	Panel C: One month later								
β_{in}	0,3654	0,0785	0,1293	-0,0045	-0,5002	1,1518	-0,1287	0,0163	0,1011
AA	-0,0361	-0,0036	0,0058	0,0000	0,0768	0,0670	-0,0063	-0,0892	-0,0168
t_{β_n}	-0,5964	-0,2867	0,4306	-0,0131	0,8259	0,3098	-0,2181	-0,5538	-0,6012

Table 2: This table presents the results for the event of June 1997 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 1, 2, and 3, respectively. The first row of each panel presents the initial loading, that is the initial risk exposure; the second row shows the abnormal allocation defined by each hypothesis; finally the third row presents the t_{β_n} statistic.

Abnormal allocation and Dot-com bubble

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Convertible arbitrage									
Panel A: At event date									
β_{in}	0,0966	0,0345	0,0207	0,1728	0,0216	-0,0999	0,0034	0,8305	0,1365
AA	-0,0019	-0,0777	-0,0024	-0,0691	0,0608	0,0003	0,0000	-0,1917	-0,1581
t_{β_n}	-0,1930	*-3,6733*	-0,6083	*-5,0606*	0,3362	0,2701	-0,0318	-1,4093	*-3,0621*
Panel B: One month before									
β_{in}	0,0968	0,0347	0,0204	0,1671	0,1481	-0,0999	0,0034	0,8308	0,1363
AA	-0,0002	-0,0002	0,0004	0,0057	-0,1265	0,0000	0,0000	-0,0003	0,0002
t_{β_n}	-0,0250	-0,0101	0,0896	0,4163	-0,6995	0,0037	-0,0025	-0,0023	0,0042
Panel C: One month later									
β_{in}	0,0947	-0,0433	0,0183	0,1037	0,0824	-0,0996	0,0034	0,6388	-0,0216
AA	0,0007	-0,0115	0,0001	0,0020	0,0244	0,0001	0,0000	-0,0734	-0,0034
t_{β_n}	0,0761	-0,5437	0,0160	0,1467	0,1349	0,0696	0,0110	-0,5395	-0,0665

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Global macro									
Panel A: At event date									
β_{in}	0,2035	0,1548	-0,0213	0,0809	0,0433	-0,0714	0,0945	-0,0571	0,4022
AA	0,0003	0,0045	0,0003	0,0049	0,0004	0,0000	0,0000	0,0001	0,0069
t_{β_n}	0,0105	0,0983	0,0068	0,1103	0,0050	-0,0006	0,0038	0,0068	0,0947
Panel B: One month before									
β_{in}	0,2030	0,1539	-0,0196	0,0775	0,0532	-0,0714	0,0945	-0,0571	0,4030
AA	0,0005	0,0009	-0,0017	0,0034	-0,0100	0,0000	0,0000	0,0000	-0,0007
t_{β_n}	0,0182	0,0197	-0,0370	0,0770	-0,1207	0,0006	-0,0019	-0,0002	-0,0103
Panel C: One month later									
β_{in}	0,2038	0,1593	-0,0210	0,0857	0,0437	-0,0714	0,0945	-0,0570	0,4091
AA	-0,0135	0,1612	0,0443	-0,0546	-0,0538	0,0000	-0,0002	0,0026	0,0441
t_{β_n}	-0,5088	*3,5330*	0,9668	-1,2359	-0,6520	-0,0391	-0,1537	0,2859	0,6073

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
CTA global									
Panel A: At event date									
β_{in}	-0,0255	0,0130	0,0574	-0,0100	0,1459	0,0114	0,1474	-0,0101	0,1247
AA	0,0716	0,0004	0,0106	0,0160	0,0104	-0,0625	0,0000	0,0000	0,0670
t_{β_n}	0,5925	0,1628	0,3543	0,9144	0,3898	-0,9244	-0,0124	0,0018	0,9356
Panel B: One month before									
β_{in}	0,1635	0,0129	0,0391	0,0188	0,0968	-0,0234	0,1474	-0,0101	0,0785
AA	-0,1890	0,0001	0,0184	-0,0288	0,0492	0,0348	0,0000	0,0000	0,0461
t_{β_n}	-1,5627	0,0308	0,6157	*-1,6482*	*1,8459*	0,5150	0,0102	0,0020	0,6442
Panel C: One month later									
β_{in}	0,0462	0,0133	0,0680	0,0060	0,1563	-0,0511	0,1474	-0,0101	0,1916
AA	0,0456	0,0003	0,0027	-0,0112	0,0069	-0,0560	0,0000	0,0000	0,0160
t_{β_n}	0,3775	0,1188	0,0921	-0,6398	0,2596	-0,8284	-0,0232	0,0022	0,2238

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Long short equity									
Panel A: At event date									
β_{in}	0,0993	0,0942	0,0570	0,3455	-0,1186	0,2692	0,1448	0,6027	0,0144
AA	0,0053	0,0189	-0,0008	0,0014	0,0137	-0,0358	0,0009	0,0099	0,0075
t_{β_n}	0,0712	0,2351	-0,0429	0,0547	0,1219	-0,2426	0,0496	0,1778	0,2097
Panel B: One month before									
β_{in}	0,0003	0,1064	0,0624	0,2753	0,2728	0,3260	0,1538	0,6127	0,0424
AA	0,0990	-0,0123	-0,0055	0,0702	-0,3914	-0,0567	-0,0090	-0,0100	-0,0281
t_{β_n}	1,3287	-0,1530	-0,2790	*2,6775*	*-3,4941*	-0,3841	-0,4862	-0,1795	-0,7894
Panel C: One month later									
β_{in}	0,1046	0,1130	0,0561	0,3469	-0,1049	0,2334	0,1457	0,6127	0,0218
AA	0,0252	0,1652	-0,0015	-0,1512	0,0006	-0,4811	-0,0285	0,0744	-0,0178
t_{β_n}	0,3381	*2,0586*	-0,0761	*-5,7698*	0,0055	*-3,2559*	-1,5436	1,3315	-0,4997

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Distressed securities									
Panel A: At event date									
β_{in}	0,1390	0,1365	-0,0085	0,2073	0,1461	0,1161	-0,1050	0,6381	0,1231
AA	0,0000	-0,0815	0,0012	-0,0393	-0,0174	0,0705	0,0006	-0,0793	-0,0634
t_{β_n}	0,0102	-1,5269	0,0432	-1,1633	-0,7319	1,1720	0,0120	-0,9791	-1,6152
Panel B: One month before									
β_{in}	0,1390	0,1368	-0,0088	0,2081	0,1452	0,1162	-0,1051	0,6377	0,1226
AA	0,0000	-0,0003	0,0003	-0,0008	0,0009	-0,0001	0,0001	0,0004	0,0005
t_{β_n}	-0,0005	-0,0050	0,0106	-0,0227	0,0380	-0,0024	0,0029	0,0048	0,0125
Panel C: One month later									
β_{in}	0,1390	0,0551	-0,0073	0,1680	0,1287	0,1866	-0,1043	0,5588	0,0596
AA	0,0000	0,0436	0,0025	-0,0402	0,0047	-0,0773	-0,0350	0,0435	0,0054
t_{β_n}	-0,0065	0,8173	0,0881	-1,1902	0,1960	-1,2848	-0,6930	0,5372	0,1382

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Merger arbitrage									
Panel A: At event date									
β_{in}	0,1306	-0,0440	0,1351	0,2711	0,0264	0,3520	0,0378	0,0395	-0,1434
AA	0,0001	0,0316	-0,0017	0,0103	-0,0783	-0,0209	0,0000	0,0000	0,0562
t_{β_n}	0,0263	0,8765	-0,1531	0,5332	-0,1259	-0,5967	0,0321	0,0021	1,0208
Panel B: One month before									
β_{in}	0,1307	-0,0381	0,1314	0,2650	0,3184	0,3553	0,0378	0,0395	-0,1463
AA	-0,0001	-0,0059	0,0036	0,0061	-0,2920	-0,0033	0,0000	0,0000	0,0029
t_{β_n}	-0,0295	-0,1626	0,3277	0,3187	-0,4694	-0,0944	0,0014	0,0007	0,0530
Panel C: One month later									
β_{in}	0,1307	-0,0124	0,1334	0,2814	-0,0519	0,3311	0,0379	0,0395	-0,0871
AA	-0,0009	0,0622	-0,0065	-0,0649	-0,5697	-0,1078	-0,0002	0,0000	0,0163
t_{β_n}	-0,2593	*1,7228*	-0,5827	*-3,3712*	-0,9159	*-3,0828*	-0,1945	0,0053	0,2952

	Emerging markets									Relative value								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,1013	0,4692	-0,1119	0,0786	0,0929	-0,0593	0,0192	0,5885	0,1286	0,0738	0,0415	0,0031	0,1201	0,0202	-0,2111	0,0136	0,6005	0,0964
AA	-0,0091	0,0518	0,0012	0,0026	0,0000	-0,0700	0,0000	0,0206	0,0015	-0,0004	-0,0212	0,0000	-0,0585	0,1188	0,1042	0,0003	-1,2990	-0,0306
t_{β_n}	-0,1175	0,8637	0,1007	0,4258	0,0025	-0,8409	0,0001	0,4658	0,2785	-0,1993	*-2,1181*	0,0333	*-2,6262*	0,7383	1,4870	0,1041	*-2,1467*	-1,6118
	Panel B: One month before									Panel B: One month before								
β_{in}	-0,0870	0,4746	-0,1029	0,0728	0,0929	0,0361	0,0192	0,6167	0,1295	0,0739	0,0441	0,0031	0,0943	0,3087	-0,2093	0,0137	0,8162	0,0967
AA	0,1884	-0,0054	-0,0090	0,0058	0,0000	-0,0955	0,0000	-0,0282	-0,0009	-0,0001	-0,0026	0,0000	0,0258	-0,2885	-0,0018	0,0000	-0,2157	-0,0003
t_{β_n}	*2,4306*	-0,0900	-0,7822	0,9536	-0,0136	-1,1460	-0,0019	-0,6372	-0,1649	-0,0287	-0,2588	0,0033	1,1594	*-1,7935*	-0,0256	-0,0034	-0,3565	-0,0147
	Panel C: One month later									Panel C: One month later								
β_{in}	0,0922	0,5209	-0,1108	0,0812	0,0929	-0,1294	0,0192	0,6091	0,1301	0,0734	0,0203	0,0031	0,0616	0,1390	-0,1069	0,0139	-0,6985	0,0658
AA	-0,0169	0,1290	-0,0033	-0,0103	0,0000	-0,1235	0,0000	0,0600	0,0002	-0,0002	-0,0014	0,0000	-0,0297	-0,0604	-0,0552	-0,0009	0,7246	-0,0027
t_{β_n}	-0,2179	*2,1535*	-0,2883	*-1,6915*	0,0018	-1,4823	-0,0021	1,3539	0,0472	-0,0827	-0,1361	-0,0063	-1,3335	-0,3754	-0,7878	-0,3363	1,1974	-0,1424
	Equity market neutral									Short selling								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,1028	0,0291	0,0698	0,1966	-0,0058	0,0116	-0,0174	0,7634	0,0313	-0,8887	0,1210	0,0177	0,2509	-0,5380	0,3232	-0,1031	-0,0228	0,0945
AA	-0,0344	-0,0146	0,0167	-0,1116	0,0641	0,0047	0,0343	-1,0559	-0,0859	-0,1197	-0,5221	0,0000	-0,0829	-0,1155	0,3853	-0,0179	-0,0003	-0,2968
t_{β_n}	*-1,9352*	*-1,8351*	1,5153	*-2,2578*	0,3743	0,3035	1,1467	*-1,7232*	-1,6370	-0,8142	*-6,2420*	-0,0035	*-4,8123*	*-1,7731*	*5,9600*	-0,3576	-0,1342	*-5,9235*
	Panel B: One month before									Panel B: One month before								
β_{in}	0,1023	0,0298	0,0720	0,1760	0,1454	0,0090	-0,0133	0,8062	0,0322	-0,7779	0,1172	0,0177	0,2654	-0,6185	0,3150	-0,1126	-0,0228	0,0812
AA	0,0005	-0,0007	-0,0022	0,0206	-0,1511	0,0025	-0,0042	-0,0428	-0,0009	-0,1107	0,0038	0,0000	-0,0144	0,0805	0,0082	0,0095	0,0000	0,0133
t_{β_n}	0,0288	-0,0930	-0,1982	0,4170	-0,8825	0,1647	-0,1394	-0,0699	-0,0173	-0,7532	0,0452	0,0002	-0,8376	1,2358	0,1267	0,1895	0,0164	0,2647
	Panel C: One month later									Panel C: One month later								
β_{in}	0,0684	0,0145	0,0865	0,0850	0,0583	0,0163	0,0169	-0,2925	-0,0545	-1,0084	-0,4011	0,0177	0,1680	-0,6535	0,7085	-0,1210	-0,0231	-0,2023
AA	-0,0105	0,0015	0,0054	-0,0350	-0,1033	-0,0185	-0,0146	0,9357	-0,0050	0,0068	0,0612	0,0000	-0,0131	0,0032	-0,0390	-0,0162	0,0000	0,0060
t_{β_n}	-0,5920	0,1933	0,4887	-0,7089	-0,6035	-1,1946	-0,4882	1,5270	-0,0951	0,0465	0,7319	-0,0003	-0,7582	0,0484	-0,6025	-0,3235	0,0199	0,1202
	Event driven									Fixed income arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,2370	0,0682	-0,0300	0,0882	0,1862	-0,3834	-0,0072	1,2193	0,0945	0,0179	-0,0007	-0,0051	-0,0045	-0,1554	-0,4490	-0,1413	0,9993	0,1375
AA	-0,0198	-0,0396	0,0030	-0,0056	0,0307	0,2329	0,0003	-0,7146	-0,0505	-0,0633	-0,0091	0,0094	0,0000	-0,0918	0,3931	0,0034	-0,1656	-0,0317
t_{β_n}	-0,6576	*-1,6528*	0,7113	-0,8410	0,2083	*2,1012*	0,1022	-1,5167	-1,5943	-1,0453	-0,7236	0,6957	0,0118	-0,9876	*1,8172*	0,1173	-1,0281	-1,1355
	Panel B: One month before									Panel B: One month before								
β_{in}	0,2280	0,0755	-0,0300	0,0795	0,6008	-0,3192	-0,0063	1,5374	0,0983	-0,0065	0,0019	-0,0049	-0,0045	-0,0592	-0,3650	-0,1288	1,0174	0,1393
AA	0,0090	-0,0073	0,0000	0,0087	-0,4147	-0,0642	-0,0009	-0,3181	-0,0038	0,0244	-0,0026	-0,0002	0,0000	-0,0962	-0,0840	-0,0125	-0,0180	-0,0018
t_{β_n}	0,2978	-0,3035	-0,0006	1,3115	*-2,8120*	-0,5793	-0,2797	-0,6751	-0,1192	0,4034	-0,2064	-0,0122	0,0432	-1,0349	-0,3881	-0,4306	-0,1120	-0,0640
	Panel C: One month later									Panel C: One month later								
β_{in}	0,2172	0,0286	-0,0269	0,0827	0,2169	-0,1505	-0,0069	0,5047	0,0440	-0,0454	-0,0098	0,0044	-0,0045	-0,2472	-0,0558	-0,1379	0,8338	0,1058
AA	0,0014	-0,0014	0,0002	0,0014	0,0101	0,0104	0,0002	-0,1136	0,0030	-0,0009	-0,0022	0,0015	0,0000	0,0129	0,1596	0,0111	-0,1199	0,0108
t_{β_n}	0,0458	-0,0584	0,0392	0,2064	0,0685	0,0939	0,0482	-0,2411	0,0942	-0,0155	-0,1785	0,1136	0,0919	0,1390	0,7376	0,3835	-0,7444	0,3888

Table 3: This table presents the results for the event of December 1999 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 1, 2, and 3, respectively. The first row of each panel presents the initial loading, that is the initial risk exposure; the second row shows the abnormal allocation defined by each hypothesis; finally the third row presents the t_{β_n} statistic.

Abnormal allocation and Nasdaq downward correction

	Convertible arbitrage									Global macro								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,1263	-0,1444	0,0239	0,0480	-0,0757	-0,0992	0,0034	-0,0297	-0,0546	0,2469	0,1175	0,0402	0,1068	0,3318	-0,0714	0,0950	-0,0321	0,3372
AA	-0,0062	0,0021	-0,0006	-0,0382	0,1870	0,0003	0,0000	-0,0287	-0,0589	-0,0471	-0,0157	0,0438	-0,2533	0,0972	0,0000	0,0010	0,0047	-0,0610
t_{β_n}	-0,6432	0,0991	-0,1543	*-2,7961*	1,0341	0,2727	0,0335	-0,2111	-1,1403	*-1,7748*	-0,3452	0,9565	*-5,7290*	1,1771	0,0509	0,6636	0,5172	-0,8404
	Panel B: One month before									Panel B: One month before								
β_{in}	0,1217	-0,1447	0,0250	0,0768	0,4284	-0,0994	0,0034	-0,0475	0,1029	0,2481	0,1184	0,0373	0,1022	0,3266	-0,0714	0,0949	-0,0323	0,3270
AA	0,0046	0,0003	-0,0011	-0,0288	-0,5041	0,0001	0,0000	0,0179	-0,1574	-0,0011	-0,0010	0,0029	0,0046	0,0053	0,0000	0,0000	0,0002	0,0103
t_{β_n}	0,4766	0,0122	-0,2787	*-2,1094*	*-2,7880*	0,1467	-0,1427	0,1313	*-3,0492*	-0,0420	-0,0210	0,0644	0,1044	0,0639	-0,0009	0,0234	0,0265	0,1414
	Panel C: One month later									Panel C: One month later								
β_{in}	0,1201	-0,1423	0,0233	0,0098	0,1113	-0,0990	0,0034	-0,0584	-0,1135	0,1998	0,1017	0,0840	-0,1465	0,4290	-0,0714	0,0960	-0,0273	0,2762
AA	-0,0002	0,0202	-0,0023	0,0077	0,1332	0,0001	0,0000	0,2630	-0,0271	0,0052	0,0736	-0,0208	0,0381	0,1340	0,0000	0,0005	0,0011	-0,0591
t_{β_n}	-0,0168	0,9521	-0,5816	0,5623	0,7367	0,0940	0,0166	*1,9339*	-0,5242	0,1948	1,6139	-0,4534	0,8626	1,6227	0,0341	0,2893	0,1194	-0,8137
	CTA global									Long short equity								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,0467	0,0149	0,0855	0,0866	0,0881	-0,1024	0,1473	-0,0101	0,3382	0,4952	-0,1801	0,0044	0,0219	0,1488	-0,1490	0,1169	0,0554	-0,0106
AA	-0,0285	0,0016	0,0067	-0,1380	0,0408	0,3075	0,0001	0,0000	-0,2742	-0,0014	0,0784	0,0002	-0,0484	0,0589	0,2349	0,0154	0,0027	-0,0252
t_{β_n}	-0,2355	0,6784	0,2235	*-7,8839*	1,5321	*4,5510*	0,1189	0,0114	*-3,8306*	-0,0185	0,9762	0,0105	*-1,8467*	0,5254	1,5901	0,8336	0,0482	-0,7090
	Panel B: One month before									Panel B: One month before								
β_{in}	0,1987	0,0151	0,0559	0,0744	0,0866	-0,0895	0,1473	-0,0101	0,2567	0,3695	-0,3014	0,0250	0,0598	0,2222	-0,1885	0,1462	0,0702	0,0561
AA	-0,1520	-0,0002	0,0296	0,0123	0,0015	-0,0129	0,0001	0,0000	0,0815	0,1256	0,1213	-0,0206	-0,0379	-0,0734	0,0395	-0,0293	-0,0148	-0,0667
t_{β_n}	-1,2570	-0,0939	0,9925	0,6999	0,0557	-0,1913	0,0895	0,0074	1,1385	*1,6860*	1,5108	-1,0482	-1,4448	-0,6554	0,2674	-1,5875	-0,2640	*-1,8745*
	Panel C: One month later									Panel C: One month later								
β_{in}	0,0182	0,0165	0,0921	-0,0514	0,1289	0,2051	0,1474	-0,0101	0,0640	0,4938	-0,1017	0,0046	-0,0264	0,2077	0,0860	0,1323	0,0581	-0,0358
AA	0,0446	0,0003	-0,0102	0,0122	0,0155	0,0111	0,0000	0,0000	-0,0413	-0,0003	-0,0022	0,0001	-0,0005	-0,0017	-0,0008	-0,0002	-0,0005	-0,0002
t_{β_n}	0,3686	0,1509	-0,3435	0,6985	0,5833	0,1641	0,0261	0,0161	-0,5774	-0,0045	-0,0278	0,0059	-0,0188	-0,0150	-0,0054	-0,0098	-0,0081	-0,0050
	Distressed securities									Merger arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,1391	0,0648	-0,0428	-0,0727	0,1890	-0,0264	0,0909	0,0209	-0,0495	0,1308	-0,1670	0,0966	0,0552	-0,4264	-0,0112	0,0371	0,0395	0,1182
AA	0,0000	-0,0352	0,0009	0,0638	-0,0125	-0,0776	-0,0605	-0,0051	0,0169	0,0001	0,0282	0,0035	-0,0689	0,6213	0,0831	0,0002	0,0000	-0,0999
t_{β_n}	0,0399	-0,6594	0,0327	*1,8907*	-0,5234	-1,2907	-1,1983	-0,0630	0,4303	0,0427	0,7808	0,3103	*-3,5790*	0,9988	*2,3769*	0,1734	-0,0215	*-1,8125*
	Panel B: One month before									Panel B: One month before								
β_{in}	0,1390	-0,0286	-0,0195	0,0034	0,1990	-0,0698	0,2199	0,0531	0,1129	0,1309	-0,1815	0,1014	0,0651	0,0039	-0,0181	0,0372	0,0395	0,1738
AA	0,0000	0,0935	-0,0233	-0,0761	-0,0100	0,0434	-0,1291	-0,0322	-0,1625	-0,0001	0,0145	-0,0047	-0,0098	-0,4303	0,0069	-0,0001	0,0000	-0,0557
t_{β_n}	0,0935	*1,7514*	-0,8233	*-2,2543*	-0,4199	0,7217	*-2,5556*	-0,3977	*-4,1362*	-0,0377	0,4016	-0,4223	-0,5108	-0,6918	0,1988	-0,1119	0,0212	-1,0103
	Panel C: One month later									Panel C: One month later								
β_{in}	0,1391	0,0297	-0,0419	-0,0088	0,1766	-0,1040	0,0303	0,0158	-0,0326	0,1309	-0,1388	0,1001	-0,0137	0,1949	0,0719	0,0373	0,0395	0,0183
AA	0,0000	0,0377	-0,0039	0,0128	0,0076	0,0205	0,0151	0,0378	-0,0023	0,0001	0,0360	-0,0058	0,0199	0,5165	0,0038	0,0000	0,0000	-0,0138
t_{β_n}	-0,0049	0,7059	-0,1367	0,3784	0,3190	0,3413	0,2993	0,4666	-0,0594	0,0371	0,9981	-0,5245	1,0345	0,8303	0,1090	-0,0077	-0,0093	-0,2497

	Emerging markets									Relative value								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,5462	0,0494	-0,0501	0,0602	0,0929	-0,1638	0,0192	0,1159	0,1341	0,0765	-0,0047	0,0031	0,0485	0,0258	0,0768	0,0181	-0,0197	-0,0308
AA	0,0048	0,1208	0,0065	-0,0241	0,0000	0,2826	0,0000	0,0015	-0,0030	-0,0001	0,0043	0,0000	-0,0296	0,0375	0,0488	0,0005	-0,0959	-0,0093
t_{β_n}	0,0615	*2,0159*	0,5643	*-3,9699*	0,0100	*3,3927*	0,0080	0,0345	-0,5640	-0,0291	0,4303	-0,0015	-1,3269	0,2330	0,6963	0,1723	-0,1585	-0,4882
	Panel B: One month before									Panel B: One month before								
β_{in}	0,5778	0,0743	-0,0529	0,0587	0,0929	-0,1575	0,0192	0,1122	0,1335	0,0758	-0,0079	0,0031	0,0735	0,2863	0,1031	0,0193	-0,0125	0,0135
AA	-0,0316	-0,0248	0,0028	0,0015	0,0000	-0,0063	0,0000	0,0037	0,0006	0,0006	0,0032	0,0000	-0,0250	-0,2604	-0,0263	-0,0012	-0,0073	-0,0443
t_{β_n}	-0,4082	-0,4147	0,2401	0,2501	-0,0004	-0,0760	0,0019	0,0836	0,1093	0,3193	0,3194	0,0220	-1,1237	-1,6189	-0,3754	-0,4257	-0,0120	*-2,3341*
	Panel C: One month later									Panel C: One month later								
β_{in}	0,5510	0,1702	-0,0436	0,0361	0,0929	0,1187	0,0192	0,1175	0,1311	0,0764	-0,0004	0,0031	0,0189	0,0633	0,1256	0,0186	-0,1157	-0,0401
AA	0,0005	0,0065	-0,0001	0,0005	0,0000	0,0017	0,0000	0,0031	0,0000	0,0000	0,0011	0,0000	-0,0024	0,0068	0,0047	0,0001	0,3246	-0,0018
t_{β_n}	0,0066	0,1088	-0,0047	0,0753	0,0003	0,0210	0,0003	0,0706	0,0041	0,0015	0,1086	-0,0013	-0,1069	0,0424	0,0670	0,0234	0,5364	-0,0945
	Equity market neutral									Short selling								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,1115	-0,0192	0,0670	0,0335	-0,1209	0,0519	0,1445	-0,0178	-0,0388	-1,5725	-0,3811	0,0177	0,1155	-0,9141	0,5154	-0,2273	-0,0265	0,0883
AA	-0,0048	0,0018	-0,0026	-0,0410	0,0406	0,0067	0,0186	-0,0487	-0,0074	-0,0349	0,1057	0,0000	-0,0534	0,0208	0,1597	0,0820	-0,0002	-0,0537
t_{β_n}	-0,2679	0,2287	-0,2359	-0,8291	0,2368	0,4352	0,6205	-0,0794	-0,1414	-0,2375	1,2633	0,0003	*-3,1016*	0,3191	*2,4697*	1,6348	-0,0631	-1,0712
	Panel B: One month before									Panel B: One month before								
β_{in}	0,1000	-0,0128	0,0681	0,0862	0,0760	0,0391	0,1695	-0,0132	0,0622	-1,2898	-0,3166	0,0177	0,0898	-0,9407	0,5675	-0,3482	-0,0270	0,0217
AA	0,0114	-0,0064	-0,0012	-0,0527	-0,1969	0,0128	-0,0251	-0,0047	-0,1010	-0,2828	-0,0645	0,0000	0,0257	0,0266	-0,0521	0,1209	0,0005	0,0666
t_{β_n}	0,6424	-0,8023	-0,1048	-1,0664	-1,1501	0,8238	-0,8379	-0,0076	*-1,9260*	*-1,9233*	-0,7713	0,0046	1,4893	0,4088	-0,8053	*2,4091*	0,1829	1,3285
	Panel C: One month later									Panel C: One month later								
β_{in}	0,1067	-0,0174	0,0644	-0,0075	-0,0804	0,0586	0,1630	-0,0665	-0,0462	-1,6074	-0,2754	0,0177	0,0621	-0,8933	0,6751	-0,1453	-0,0267	0,0346
AA	-0,0001	0,0002	-0,0003	-0,0007	0,0037	0,0004	0,0008	0,1154	-0,0016	0,0994	0,4919	0,0000	0,0687	0,1037	0,0997	0,1297	0,0014	0,0140
t_{β_n}	-0,0040	0,0281	-0,0284	-0,0150	0,0214	0,0241	0,0258	0,1884	-0,0296	0,6761	*5,8804*	-0,0079	*3,9852*	1,5922	1,5415	*2,5836*	0,5666	0,2790
	Event driven									Fixed income arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,3677	-0,0630	-0,0311	0,0554	0,1566	0,0603	-0,0041	0,0249	0,0108	0,1120	-0,0385	0,0400	-0,0044	0,1634	0,0960	-0,0284	0,0023	0,0354
AA	0,0050	0,0421	-0,0019	-0,0156	0,0490	0,1947	0,0008	-0,1116	-0,0410	-0,0054	-0,0016	0,0012	0,0000	0,0013	-0,0326	0,0001	-0,0004	0,0038
t_{β_n}	0,1668	*1,7544*	-0,4547	*-2,3448*	0,3321	*1,7566*	0,2368	-0,2369	-1,2952	-0,0890	-0,1281	0,0879	0,0219	0,0139	-0,1505	0,0043	-0,0023	0,1357
	Panel B: One month before									Panel B: One month before								
β_{in}	0,3406	-0,0776	-0,0305	0,0598	0,3139	0,0775	-0,0023	0,0292	0,0506	0,1253	-0,0381	0,0383	-0,0044	0,1537	0,0758	-0,0352	-0,0002	0,0298
AA	0,0271	0,0147	-0,0007	-0,0044	-0,1572	-0,0173	-0,0017	-0,0043	-0,0398	-0,0132	-0,0004	0,0017	0,0000	0,0097	0,0202	0,0067	0,0025	0,0056
t_{β_n}	0,9000	0,6110	-0,1533	-0,6658	-1,0662	-0,1557	-0,5219	-0,0090	-1,2563	-0,2187	-0,0292	0,1254	0,0175	0,1040	0,0932	0,2325	0,0156	0,2003
	Panel C: One month later									Panel C: One month later								
β_{in}	0,3728	-0,0209	-0,0331	0,0398	0,2056	0,2550	-0,0033	-0,0867	-0,0303	0,1067	-0,0401	0,0412	-0,0044	0,1647	0,0634	-0,0283	0,0019	0,0391
AA	0,0007	0,0031	-0,0002	-0,0002	0,0064	0,0052	0,0001	0,1714	-0,0016	0,0099	0,0053	-0,0027	0,0000	0,0191	-0,0146	0,0042	0,1240	-0,0017
t_{β_n}	0,0216	0,1272	-0,0417	-0,0249	0,0434	0,0466	0,0214	0,3639	-0,0498	0,1628	0,4201	-0,1992	0,0311	0,2051	-0,0673	0,1450	0,7701	-0,0596

Table 4: This table presents the results for the event of January 2001 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 1, 2, and 3, respectively. The first row of each panel presents the initial loading, that is the initial risk exposure; the second row shows the abnormal allocation defined by each hypothesis; finally the third row presents the t_{β_n} statistic.

Abnormal allocation and Credit crunch

	Convertible arbitrage									Global macro								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,0643	0,0359	-0,0157	-0,0182	0,1560	-0,0983	0,0034	0,7110	0,0510	0,1233	0,2331	-0,0150	-0,0901	0,0393	-0,0714	0,0908	0,0229	0,2151
AA	0,0072	0,0019	-0,0009	0,0069	0,2472	0,0002	0,0000	-0,1386	-0,0671	0,0026	-0,0015	-0,0030	0,0110	0,0243	0,0000	-0,0001	-0,0002	-0,0339
t_{β_n}	0,7450	0,0902	-0,2162	0,5019	1,3672	0,1739	-0,0557	-1,0192	-1,2989	0,0976	-0,0321	-0,0653	0,2492	0,2947	0,0072	-0,0659	-0,0273	-0,4666
	Panel B: One month before									Panel B: One month before								
β_{in}	0,0619	0,0506	-0,0158	-0,0132	0,1547	-0,0984	0,0033	0,6846	0,0938	0,1221	0,2355	-0,0143	-0,0875	0,0377	-0,0714	0,0908	0,0228	0,2198
AA	0,0024	-0,0146	0,0001	-0,0050	0,0014	0,0001	0,0000	0,0264	-0,0427	0,0012	-0,0024	-0,0007	-0,0026	0,0016	0,0000	0,0000	0,0001	-0,0047
t_{β_n}	0,2483	-0,6917	0,0275	-0,3639	0,0076	0,0809	0,0352	0,1942	-0,8279	0,0448	-0,0533	-0,0147	-0,0578	0,0195	0,0010	0,0153	0,0099	-0,0652
	Panel C: One month later									Panel C: One month later								
β_{in}	0,0715	0,0378	-0,0166	-0,0113	0,4033	-0,0982	0,0033	0,5723	-0,0161	0,1259	0,2316	-0,0180	-0,0791	0,0636	-0,0714	0,0907	0,0226	0,1812
AA	0,0056	0,0143	-0,0010	0,0042	-0,1314	0,0000	0,0000	-0,3726	0,0332	-0,0001	-0,0061	0,0289	-0,1085	0,1251	0,0000	-0,0007	0,0143	0,0251
t_{β_n}	0,5810	0,6740	-0,2389	0,3100	-0,7268	-0,0327	0,1142	*-2,7398*	0,6436	-0,0044	-0,1330	0,6316	*-2,4546*	1,5153	0,0081	-0,4261	1,5706	0,3459
	CTA global									Long short equity								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,6247	0,0227	0,0813	-0,0760	0,1493	-0,1455	0,1469	-0,0100	0,2589	0,3735	0,1661	0,0038	0,0266	0,4060	0,2836	-0,0329	0,2535	0,1666
AA	0,0395	-0,0009	-0,0020	0,0097	0,0224	0,0703	0,0000	0,0000	-0,0969	-0,0419	-0,0146	-0,0018	-0,0236	-0,1645	-0,1961	0,0085	0,0560	0,0376
t_{β_n}	0,3264	-0,4029	-0,0680	0,5519	0,8408	1,0398	-0,0713	-0,0116	-1,3532	-0,5625	-0,1817	-0,0903	-0,8989	-1,4690	-1,3272	0,4634	1,0016	1,0574
	Panel B: One month before									Panel B: One month before								
β_{in}	0,6366	0,0198	0,0666	-0,0932	0,1654	-0,0323	0,1471	-0,0100	0,0968	0,3962	0,1488	0,0052	0,0214	0,4295	0,3446	-0,0314	0,2521	0,1531
AA	-0,0119	0,0029	0,0147	0,0172	-0,0160	-0,1132	-0,0001	0,0000	0,1621	-0,0227	0,0173	-0,0015	0,0051	-0,0235	-0,0610	-0,0015	0,0014	0,0135
t_{β_n}	-0,0986	1,2429	0,4917	0,9804	-0,6015	*-1,6752*	-0,1529	0,0006	*2,2651*	-0,3045	0,2159	-0,0740	0,1964	-0,2102	-0,4127	-0,0802	0,0252	0,3796
	Panel C: One month later									Panel C: One month later								
β_{in}	0,6642	0,0218	0,0793	-0,0664	0,1717	-0,0753	0,1469	-0,0100	0,1621	0,3316	0,1515	0,0020	0,0030	0,2414	0,0875	-0,0243	0,3095	0,2042
AA	-0,0414	-0,0014	0,0292	-0,0550	0,0641	0,0993	-0,0002	0,0000	0,0114	0,0101	0,0048	-0,0024	0,0087	-0,0237	-0,0242	0,0075	-0,0699	0,0037
t_{β_n}	-0,3427	-0,5882	0,9788	*-3,1438*	*2,4048*	1,4694	-0,3062	0,1037	0,1599	0,1351	0,0597	-0,1228	0,3315	-0,2119	-0,1636	0,4052	-1,2508	0,1027
	Distressed securities									Merger arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,1392	0,1391	-0,0275	0,0020	0,2813	0,3146	-0,0452	0,6722	0,1112	0,1360	0,1558	-0,0287	-0,0205	-0,1546	0,3359	0,0350	0,0395	-0,0410
AA	0,0000	-0,0013	-0,0001	0,0105	0,0104	0,0303	-0,0125	-0,0124	-0,0212	-0,0002	0,0000	0,0000	-0,0017	-0,1458	-0,0048	0,0000	0,0000	0,0076
t_{β_n}	0,0250	-0,0248	-0,0028	0,3120	0,4360	0,5040	-0,2474	-0,1532	-0,5397	-0,0704	0,0011	0,0020	-0,0899	-0,2344	-0,1374	0,0062	0,0011	0,1374
	Panel B: One month before									Panel B: One month before								
β_{in}	0,1392	0,1675	-0,0209	0,0287	0,2649	0,2575	-0,0622	0,6468	0,1712	0,1311	0,2174	-0,0278	0,0092	0,0390	0,2022	0,0347	0,0395	0,1836
AA	0,0000	-0,0284	-0,0066	-0,0266	0,0163	0,0570	0,0170	0,0254	-0,0599	0,0048	-0,0616	-0,0009	-0,0298	-0,1936	0,1337	0,0003	0,0000	-0,2246
t_{β_n}	0,0890	-0,5320	-0,2339	-0,7888	0,6863	0,9484	0,3362	0,3140	-1,5260	1,4186	*-1,7072*	-0,0823	-1,5456	-0,3113	*3,8242*	0,3326	-0,0015	*-4,0761*
	Panel C: One month later									Panel C: One month later								
β_{in}	0,1392	0,1378	-0,0276	0,0126	0,2916	0,3449	-0,0577	0,6598	0,0900	0,1357	0,1558	-0,0287	-0,0223	-0,3003	0,3311	0,0350	0,0395	-0,0334
AA	0,0000	0,0552	-0,0214	0,0364	-0,0138	-0,0234	0,1013	-0,4220	0,0207	0,0002	-0,0015	0,0005	-0,0142	0,2237	-0,0047	0,0000	0,0000	0,0205
t_{β_n}	0,0535	1,0344	-0,7565	1,0786	-0,5785	-0,3886	*2,0068*	*-5,2106*	0,5271	0,0465	-0,0407	0,0437	-0,7393	0,3597	-0,1354	0,0316	0,0166	0,3719

	Emerging markets									Relative value								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,0338	0,4543	0,0054	0,0208	0,0929	0,3644	0,0192	0,2221	0,1255	0,0766	0,0975	0,0030	0,0753	-0,0389	0,0045	-0,0176	1,4815	0,0307
AA	-0,1621	0,0317	-0,0042	-0,0050	0,0000	-0,1985	0,0000	0,0842	0,0106	0,0020	0,0121	0,0000	0,0247	0,1597	0,0457	-0,0019	-1,0085	-0,0178
t_{β_n}	*-2,0911*	0,5284	-0,3665	-0,8192	-0,0431	*-2,3834*	0,0162	*1,9008*	*2,0284*	1,0281	1,2110	-0,0109	1,1061	0,9930	0,6521	-0,6898	*-1,6666*	-0,9378
	Panel B: One month before									Panel B: One month before								
β_{in}	0,0891	0,4111	0,0068	0,0193	0,0929	0,4047	0,0192	0,2204	0,1228	0,0777	0,0865	0,0030	0,0492	-0,0246	0,1038	-0,0162	1,4742	-0,0009
AA	-0,0553	0,0432	-0,0013	0,0015	0,0000	-0,0403	0,0000	0,0017	0,0026	-0,0011	0,0110	0,0000	0,0261	-0,0144	-0,0994	-0,0014	0,0073	0,0316
t_{β_n}	-0,7138	0,7211	-0,1159	0,2428	-0,0056	-0,4836	-0,0014	0,0393	0,5003	-0,5328	1,0982	0,0064	1,1724	-0,0893	-1,4177	-0,4889	0,0121	*1,6627*
	Panel C: One month later									Panel C: One month later								
β_{in}	-0,1283	0,4860	0,0012	0,0158	0,0929	0,1659	0,0192	0,3063	0,1361	0,0786	0,1097	0,0030	0,1000	0,1208	0,0502	-0,0195	0,4730	0,0129
AA	0,0060	-0,0181	0,0031	-0,0027	0,0000	0,0312	0,0000	0,1224	-0,0027	-0,0001	0,0020	0,0000	-0,0005	-0,0679	-0,0277	0,0003	-0,2770	0,0060
t_{β_n}	0,0773	-0,3013	0,2688	-0,4410	0,0098	0,3751	-0,0094	*2,7634*	-0,5149	-0,0705	0,1954	0,0094	-0,0203	-0,4223	-0,3948	0,1107	-0,4578	0,3140
	Equity market neutral									Short selling								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	-0,0154	0,0536	0,0153	0,0919	-0,1538	0,0474	-0,1418	1,2095	-0,0377	-0,8293	0,1122	0,0177	0,0515	-0,5007	0,1429	-0,1297	-0,0306	-0,0059
AA	0,0118	0,0009	0,0008	0,0257	0,0433	0,0025	-0,0007	-0,3796	-0,0106	-0,0760	0,0231	0,0000	-0,0064	-0,0653	-0,0709	0,0287	0,0003	0,0521
t_{β_n}	0,6609	0,1115	0,0762	0,5205	0,2528	0,1604	-0,0226	-0,6196	-0,2029	-0,5171	0,2767	0,0006	-0,3740	-1,0017	-1,0970	0,5711	0,1271	1,0395
	Panel B: One month before									Panel B: One month before								
β_{in}	-0,0084	0,0492	0,0139	0,0572	-0,1437	0,0664	-0,1350	1,1381	-0,0854	-0,7256	0,0338	0,0177	0,0442	-0,4686	0,1971	-0,1146	-0,0307	-0,0559
AA	-0,0069	0,0045	0,0014	0,0347	-0,0101	-0,0190	-0,0068	0,0714	0,0476	-0,1037	0,0784	0,0000	0,0073	-0,0320	-0,0542	-0,0151	0,0000	0,0500
t_{β_n}	-0,3901	0,5605	0,1277	0,7019	-0,0591	-1,2297	-0,2280	0,1165	0,9083	-0,7050	0,9374	-0,0023	0,4234	-0,4916	-0,8380	-0,3019	0,0131	0,9975
	Panel C: One month later									Panel C: One month later								
β_{in}	-0,0036	0,0545	0,0162	0,1176	-0,1105	0,0498	-0,1425	0,8299	-0,0484	-0,9053	0,1354	0,0177	0,0450	-0,5659	0,0720	-0,1011	-0,0303	0,0462
AA	0,0015	0,0048	0,0024	-0,0082	-0,1466	-0,0133	-0,0001	-0,6069	0,0210	0,0025	0,0023	0,0000	0,0019	-0,0058	-0,0030	0,0046	-0,0001	-0,0021
t_{β_n}	0,0824	0,6045	0,2202	-0,1664	-0,8560	-0,8567	-0,0036	-0,9904	0,3998	0,0170	0,0280	-0,0003	0,1126	-0,0891	-0,0464	0,0913	-0,0473	-0,0414
	Event driven									Fixed income arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
β_{in}	0,2948	0,0536	-0,0004	0,0398	0,2893	0,3181	-0,0171	1,7029	0,0303	0,0090	0,0306	-0,0033	-0,0036	-0,0583	0,0275	-0,0549	0,8555	0,0654
AA	0,0148	0,0034	0,0003	0,0017	0,0753	0,0410	-0,0001	-0,2400	-0,0027	0,0533	0,0042	0,0023	0,0001	0,1786	0,2129	-0,0156	-0,2820	0,0060
t_{β_n}	0,4904	0,1398	0,0631	0,2497	0,5104	0,3697	-0,0362	-0,5094	-0,0843	0,8808	0,3326	0,1693	0,1877	*1,9209*	0,9842	-0,5379	*-1,7512*	0,2150
	Panel B: One month before									Panel B: One month before								
β_{in}	0,2668	0,0789	-0,0016	0,0427	0,2426	0,1701	-0,0185	1,7025	0,0768	-0,0043	0,0348	-0,0039	-0,0036	-0,0794	-0,0566	-0,0580	0,8597	0,0774
AA	0,0280	-0,0253	0,0012	-0,0029	0,0467	0,1480	0,0015	0,0004	-0,0466	0,0133	-0,0043	0,0007	0,0000	0,0212	0,0841	0,0031	-0,0042	-0,0120
t_{β_n}	0,9290	-1,0541	0,2708	-0,4341	0,3169	1,3347	0,4417	0,0009	-1,4695	0,2190	-0,3414	0,0483	-0,0222	0,2279	0,3886	0,1052	-0,0261	-0,4309
	Panel C: One month later									Panel C: One month later								
β_{in}	0,3096	0,0569	-0,0001	0,0414	0,3646	0,3591	-0,0172	1,4629	0,0276	0,0623	0,0347	-0,0010	-0,0035	0,1203	0,2404	-0,0705	0,5735	0,0714
AA	-0,0013	0,0139	0,0004	-0,0011	-0,2591	-0,1729	0,0028	-1,2202	0,0487	0,0369	0,0066	-0,0028	0,0000	-0,0456	-0,2088	0,0420	-0,5264	0,0241
t_{β_n}	-0,0432	0,5786	0,0998	-0,1599	*-1,7573*	-1,5592	0,8507	*-2,5898*	1,5358	0,6103	0,5266	-0,2054	-0,0249	-0,4903	-0,9652	1,4476	*-3,2692*	0,8634

Table 5: This table presents the results for the event of August 2007 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 1, 2, and 3, respectively. The first row of each panel presents the initial loading, that is the initial risk exposure; the second row shows the abnormal allocation defined by each hypothesis; finally the third row presents the t_{β_n} statistic.

Aggregate event analysis: strong imbalance

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Convertible arbitrage									
Panel A: At event date									
$\overline{AA}$	0,0047	0,0226	0,0010	0,0292	0,1707	0,0002	0,0000	0,1322	0,0758
t_{β_n}	0,9763	*2,1339*	0,4962	*4,2690*	*1,8886*	0,3585	0,0632	*1,9443*	*2,9359*
Panel B: One month before									
$\overline{AA}$	0,0031	0,0048	0,0005	0,0127	0,3264	0,0001	0,0000	0,0473	0,0648
t_{β_n}	0,6408	0,4554	0,2497	*1,8584*	*3,6101*	0,1235	0,1016	0,6956	*2,5102*
Panel C: One month later									
$\overline{AA}$	0,0019	0,0131	0,0009	0,0041	0,0952	0,0000	0,0000	0,1933	0,0207
t_{β_n}	0,4010	1,2377	0,4451	0,6047	1,0533	0,0986	0,0722	*2,8424*	0,8034
Global macro									
Panel A: At event date									
$\overline{AA}$	0,0300	0,0339	0,0137	0,0877	0,0775	0,0000	0,0003	0,0017	0,0476
t_{β_n}	*2,2620*	1,4840	0,5995	*3,9650*	*1,8785*	0,0296	0,4001	0,3819	1,3103
Panel B: One month before									
$\overline{AA}$	0,0030	0,0013	0,0052	0,0093	0,0234	0,0000	0,0000	0,0001	0,0111
t_{β_n}	0,2266	0,0585	0,2279	0,4203	0,5667	0,0016	0,0310	0,0301	0,3053
Panel C: One month later									
$\overline{AA}$	0,0074	0,0678	0,0303	0,0558	0,0917	0,0000	0,0003	0,0046	0,0421
t_{β_n}	0,5566	*2,9701*	1,3245	*2,5224*	*2,2216*	0,0409	0,4436	1,0058	1,1589
CTA global									
Panel A: At event date									
$\overline{AA}$	0,0771	0,0007	0,0052	0,0419	0,0199	0,1127	0,0000	0,0000	0,1105
t_{β_n}	1,2753	0,6320	0,3501	*4,7872*	1,4967	*3,3371*	0,1018	0,0127	*3,0865*
Panel B: One month before									
$\overline{AA}$	0,1309	0,0008	0,0177	0,0155	0,0190	0,0462	0,0000	0,0000	0,0794
t_{β_n}	*2,1649*	0,6856	1,1864	*1,7719*	1,4304	1,3673	0,1303	0,0053	*2,2186*
Panel C: One month later									
$\overline{AA}$	0,0466	0,0005	0,0118	0,0200	0,0222	0,0426	0,0001	0,0000	0,0219
t_{β_n}	0,7699	0,4346	0,7936	*2,2857*	*1,6705*	1,2601	0,1786	0,0611	0,6107
Long short equity									
Panel A: At event date									
$\overline{AA}$	0,0285	0,0376	0,0009	0,0209	0,0718	0,1255	0,0063	0,0201	0,0180
t_{β_n}	0,7644	0,9375	0,0908	1,5978	1,2829	*1,6982*	0,6850	0,7193	1,0145
Panel B: One month before									
$\overline{AA}$	0,0774	0,0412	0,0079	0,0305	0,1553	0,0653	0,0111	0,0083	0,0289
t_{β_n}	*2,0779*	1,0260	0,8060	*2,3284*	*2,7729*	0,8840	1,1985	0,2966	1,6257
Panel C: One month later									
$\overline{AA}$	0,0338	0,1185	0,0077	0,0514	0,0952	0,1567	0,0107	0,0416	0,0214
t_{β_n}	0,9074	*2,9515*	0,7843	*3,9242*	*1,7003*	*2,1214*	1,1572	1,4883	1,2041
Distressed securities									
Panel A: At event date									
$\overline{AA}$	0,0000	0,0572	0,0008	0,0406	0,0141	0,0495	0,0325	0,0504	0,0291
t_{β_n}	0,0524	*2,1419*	0,0566	*2,4039*	1,1842	*1,6472*	1,2871	1,2451	1,4811
Panel B: One month before									
$\overline{AA}$	0,0000	0,0322	0,0105	0,0316	0,0106	0,0338	0,0476	0,0228	0,0592
t_{β_n}	0,0961	1,2049	0,7439	*1,8743*	0,8871	1,1223	*1,8832*	0,5624	*3,0167*
Panel C: One month later									
$\overline{AA}$	0,0000	0,0728	0,0209	0,0386	0,0149	0,0441	0,0596	0,1485	0,0257
t_{β_n}	0,0421	*2,7288*	1,4748	*2,2867*	1,2541	1,4664	*2,3589*	*3,6673*	1,3105
Merger arbitrage									
Panel A: At event date									
$\overline{AA}$	0,0002	0,0165	0,0013	0,0203	0,2775	0,0274	0,0001	0,0000	0,0427
t_{β_n}	0,0879	0,9135	0,2419	*2,1116*	0,8922	1,5663	0,1089	0,0124	1,5507
Panel B: One month before									
$\overline{AA}$	0,0013	0,0210	0,0024	0,0120	0,2870	0,0364	0,0001	0,0000	0,0721
t_{β_n}	0,7516	1,1642	0,4231	1,2416	0,9228	*2,0800*	0,2264	0,0117	*2,6176*
Panel C: One month later									
$\overline{AA}$	0,0004	0,0336	0,0037	0,0269	0,4985	0,0296	0,0001	0,0000	0,0177
t_{β_n}	0,2284	*1,8595*	0,6653	*2,7950*	1,6027	*1,6921*	0,1259	0,0161	0,6411
Emerging markets									
Panel A: At event date									
$\overline{AA}$	0,0686	0,0615	0,0030	0,0081	0,0000	0,1432	0,0000	0,0287	0,0038
t_{β_n}	*1,7693*	*2,0536*	0,5261	*2,6606*	0,0284	*3,4381*	0,0122	1,2945	1,4389
Panel B: One month before									
$\overline{AA}$	0,0718	0,0185	0,0033	0,0022	0,0000	0,0370	0,0000	0,0086	0,0010
t_{β_n}	*1,8531*	0,6188	0,5777	0,7296	0,0099	0,8887	0,0026	0,3897	0,3897
Panel C: One month later									
$\overline{AA}$	0,0226	0,0522	0,0023	0,0035	0,0000	0,0443	0,0000	0,0482	0,0008
t_{β_n}	0,5829	*1,7434*	0,3945	1,1568	0,0066	1,0631	0,0060	*2,1753*	0,3166
Relative value									
Panel A: At event date									
$\overline{AA}$	0,0006	0,0094	0,0000	0,0349	0,1529	0,0599	0,0007	1,0624	0,0147
t_{β_n}	0,6298	*1,8815*	0,0232	*3,1359*	*1,9014*	*1,7108*	0,5246	*3,5112*	1,5465
Panel B: One month before									
$\overline{AA}$	0,0005	0,0044	0,0000	0,0241	0,2148	0,0443	0,0007	0,3849	0,0206
t_{β_n}	0,4687	0,8780	0,0181	*2,1631*	*2,6707*	1,2648	0,5248	1,2722	*2,1726*
Panel C: One month later									
$\overline{AA}$	0,0001	0,0018	0,0000	0,0121	0,0957	0,0237	0,0003	0,5751	0,0050
t_{β_n}	0,0850	0,3591	0,0113	1,0866	1,1892	0,6758	0,2469	*1,9007*	0,5304

	Equity market neutral									Short selling								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0135	0,0043	0,0055	0,0655	0,1067	0,0038	0,0156	0,8397	0,0280	0,1758	0,1915	0,0000	0,0378	0,0691	0,1594	0,0326	0,0002	0,1014
t_{β_n}	1,5184	1,0944	1,0012	*2,6506*	1,2461	0,4856	1,0399	*2,7408*	1,0672	*2,3911*	*4,5792*	0,0022	*4,3881*	*2,1217*	*4,9306*	1,2973	0,1696	*4,0453*
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0049	0,0029	0,0013	0,0288	0,0996	0,0086	0,0097	0,0537	0,0386	0,1451	0,0379	0,0000	0,0122	0,0399	0,0305	0,0387	0,0001	0,0336
t_{β_n}	0,5461	0,7354	0,2416	1,1654	1,1637	1,1160	0,6511	0,1752	1,4728	*1,9742*	0,9065	0,0036	1,4104	1,2233	0,9431	1,5437	0,1074	1,3422
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0044	0,0023	0,0039	0,0323	0,1801	0,0083	0,0100	0,7848	0,0329	0,0392	0,1448	0,0000	0,0212	0,0310	0,0360	0,0385	0,0004	0,0074
t_{β_n}	0,4985	0,5829	0,7001	1,3074	*2,1034*	1,0764	0,6684	*2,5616*	1,2561	0,5329	*3,4621*	0,0043	*2,4625*	0,9525	1,1146	1,5343	0,3179	0,2941
	Event driven									Fixed income arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0110	0,0217	0,0013	0,0058	0,0589	0,1228	0,0003	0,3761	0,0236	0,0311	0,0037	0,0032	0,0000	0,0684	0,1608	0,0048	0,1135	0,0104
t_{β_n}	0,7267	*1,8058*	0,6161	*1,7595*	0,7989	*2,2151*	0,1939	1,5965	1,4872	1,0290	0,5940	0,4778	0,1109	1,4720	1,4867	0,3311	1,4099	0,7445
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0216	0,0122	0,0006	0,0043	0,2213	0,0837	0,0011	0,2764	0,0257	0,0140	0,0019	0,0008	0,0000	0,0363	0,0574	0,0060	0,0082	0,0051
t_{β_n}	1,4321	1,0186	0,2601	1,3071	*3,0011*	1,5099	0,6809	1,1733	1,6235	0,4626	0,2991	0,1179	0,0419	0,7808	0,5309	0,4162	0,1022	0,3665
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0024	0,0078	0,0003	0,0010	0,1136	0,0498	0,0008	0,5329	0,0188	0,0210	0,0044	0,0032	0,0000	0,0386	0,1125	0,0159	0,2149	0,0133
t_{β_n}	0,1605	0,6492	0,1624	0,2967	1,5407	0,8984	0,4678	*2,2621*	1,1870	0,6925	0,7059	0,4744	0,0805	0,8301	1,0400	1,0971	*2,6687*	0,9564

Table 6: This table presents the results for the aggregate of events 1 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 4, 5, and 6, respectively. The first row of each panel presents the abnormal allocation defined by each hypothesis; and the second row presents the t_{β_n} statistic.

Aggregate event: increasing disagreement rate

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Convertible arbitrage									Global macro								
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0068	0,0168	0,0026	0,0217	0,1314	0,0002	0,0000	0,0445	0,0567	0,0072	0,0121	0,0144	0,0159	0,0435	0,0000	0,0001	0,0010	0,0251
t_{β_n}	*1,7178*	*1,9423*	1,6132	*3,8988*	*1,7798*	0,4179	0,1151	0,8020	*2,6882*	0,6681	0,6518	0,7696	0,8833	1,2912	0,0175	0,1512	0,2816	0,8466
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0064	0,0097	0,0026	0,0103	0,0918	0,0000	0,0000	0,0395	0,0224	0,0087	0,0285	0,0139	0,0264	0,0368	0,0000	0,0001	0,0025	0,0205
t_{β_n}	1,6317	1,1228	1,5755	*1,8514*	1,2436	0,1197	0,1306	0,7118	1,0606	0,7997	1,5298	0,7440	1,4619	1,0919	0,0194	0,2011	0,6782	0,6915
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0102	0,0162	0,0054	0,0292	0,1975	0,0003	0,0000	0,1994	0,0859	0,0205	0,0546	0,0252	0,0662	0,0449	0,0000	0,0004	0,0045	0,0344
t_{β_n}	*2,5963*	*1,8695*	*3,3096*	*5,2363*	*2,6755*	0,7398	0,3065	*3,5916*	*4,0741*	*1,8935*	*2,9296*	1,3504	*3,6678*	1,3307	0,0526	0,6581	1,2062	1,1598
	CTA global									Long short equity								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0913	0,0004	0,0223	0,0133	0,0154	0,0557	0,0000	0,0000	0,0501	0,0583	0,0565	0,0108	0,0277	0,0966	0,1015	0,0084	0,0214	0,0242
t_{β_n}	*1,8502*	0,3838	*1,8318*	*1,8667*	1,4142	*2,0209*	0,1138	0,0162	*1,7143*	*1,9176*	*1,7234*	1,3515	*2,5888*	*2,1126*	*1,6830*	1,1201	0,9367	*1,6633*
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,1221	0,0005	0,0117	0,0223	0,0199	0,0518	0,0000	0,0000	0,0261	0,0365	0,0306	0,0080	0,0269	0,0956	0,0691	0,0074	0,0429	0,0143
t_{β_n}	*2,4732*	0,5557	0,9615	*3,1187*	*1,8299*	*1,8769*	0,1568	0,0114	0,8931	1,1992	0,9350	1,0002	*2,5154*	*2,0915*	1,1448	0,9846	*1,8781*	0,9854
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,1227	0,0008	0,0066	0,0376	0,0110	0,1114	0,0001	0,0000	0,0618	0,0809	0,0669	0,0071	0,0404	0,0219	0,1618	0,0153	0,0326	0,0110
t_{β_n}	*2,4858*	0,8359	0,5395	*5,2681*	1,0149	*4,0377*	0,2110	0,0154	*2,1156*	*2,6587*	*2,0419*	0,8866	*3,7746*	0,4789	*2,6824*	*2,0270*	1,4285	0,7604
	Distressed securities									Merger arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0000	0,0397	0,0194	0,0392	0,0298	0,0568	0,0391	0,0503	0,0580	0,0006	0,0108	0,0057	0,0122	0,3855	0,0280	0,0000	0,0000	0,0253
t_{β_n}	0,1187	*1,8229*	*1,6837*	*2,8466*	*3,0708*	*2,3121*	*1,8968*	1,5201	*3,6175*	0,4482	0,7343	1,2480	1,5492	1,5180	*1,9628*	0,1190	0,0168	1,1225
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0000	0,0168	0,0108	0,0219	0,0102	0,0295	0,0215	0,0091	0,0087	0,0016	0,0179	0,0063	0,0090	0,3698	0,0129	0,0002	0,0000	0,0242
t_{β_n}	0,0531	0,7693	0,9317	1,5901	1,0488	1,2020	1,0418	0,2750	0,5443	1,1649	1,2120	1,3923	1,1504	1,4563	0,9064	0,3811	0,0300	1,0772
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0000	0,0398	0,0113	0,0331	0,0203	0,0781	0,0769	0,0638	0,0303	0,0004	0,0285	0,0043	0,0269	0,3683	0,0351	0,0001	0,0000	0,0307
t_{β_n}	0,1132	*1,8258*	0,9771	*2,4009*	*2,0903*	*3,1809*	*3,7303*	*1,9302*	*1,8878*	0,3016	*1,9349*	0,9487	*3,4241*	1,4501	*2,4574*	0,3552	0,0192	1,3650
	Emerging markets									Relative value								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0467	0,0350	0,0070	0,0073	0,0000	0,0668	0,0000	0,0309	0,0015	0,0002	0,0049	0,0000	0,0169	0,0825	0,0316	0,0004	0,2682	0,0133
t_{β_n}	1,4753	1,4297	1,4946	*2,9479*	0,0159	*1,9634*	0,0069	*1,7101*	0,7184	0,2585	1,1953	0,0458	*1,8623*	1,2569	1,1058	0,3350	1,0857	*1,7217*
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0705	0,0239	0,0072	0,0042	0,0000	0,0640	0,0000	0,0490	0,0019	0,0001	0,0019	0,0000	0,0123	0,0829	0,0113	0,0003	0,0927	0,0021
t_{β_n}	*2,2279*	0,9758	1,5197	*1,6943*	0,0220	*1,8817*	0,0108	*2,7099*	0,8984	0,1227	0,4559	0,0202	1,3520	1,2627	0,3965	0,2317	0,3751	0,2719
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,1555	0,0862	0,0094	0,0109	0,0000	0,1394	0,0000	0,0357	0,0035	0,0005	0,0034	0,0000	0,0241	0,0710	0,0423	0,0012	0,5406	0,0107
t_{β_n}	*4,9138*	*3,5251*	*1,9897*	*4,4078*	0,0248	*4,0995*	0,0199	*1,9737*	1,6286	0,6121	0,8347	0,0310	*2,6487*	1,0811	1,4769	1,0491	*2,1882*	1,3739

	Equity market neutral									Short selling								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0114	0,0042	0,0070	0,0406	0,0895	0,0083	0,0172	0,3349	0,0381	0,0995	0,1196	0,0000	0,0239	0,0518	0,1005	0,0324	0,0003	0,0728
t_{β_n}	1,5648	1,2922	1,5564	*2,0129*	1,2807	1,3085	1,4085	1,3389	*1,7802*	*1,6581*	*3,5015*	0,0057	*3,3908*	*1,9481*	*3,8067*	1,5838	0,3231	*3,5578*
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0038	0,0010	0,0018	0,0121	0,0625	0,0049	0,0022	0,1886	0,0128	0,0397	0,0258	0,0000	0,0086	0,0421	0,0217	0,0220	0,0005	0,0171
t_{β_n}	0,5224	0,3093	0,4008	0,6001	0,8946	0,7784	0,1797	0,7539	0,5996	0,6612	0,7557	0,0048	1,2243	1,5845	0,8234	1,0730	0,5214	0,8370
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0107	0,0027	0,0048	0,0284	0,0681	0,0082	0,0149	0,4448	0,0188	0,1320	0,0685	0,0000	0,0223	0,0321	0,0762	0,0589	0,0004	0,0462
t_{β_n}	1,4766	0,8174	1,0706	1,4060	0,9749	1,2948	1,2236	*1,7783*	0,8773	*2,1988*	*2,0074*	0,0106	*3,1691*	1,2070	*2,8882*	*2,8760*	0,4113	*2,2577*
	Event driven									Fixed income arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0141	0,0137	0,0014	0,0037	0,0594	0,0793	0,0007	0,1951	0,0203	0,0258	0,0051	0,0055	0,0000	0,0410	0,1463	0,0092	0,0590	0,0103
t_{β_n}	1,1483	1,3978	0,8035	1,3782	0,9865	*1,7529*	0,5090	1,0143	1,5676	1,0458	0,9908	0,9976	0,2075	1,0809	*1,6561*	0,7760	0,8982	0,9053
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0080	0,0048	0,0006	0,0036	0,1011	0,0276	0,0004	0,1689	0,0053	0,0355	0,0030	0,0071	0,0000	0,0537	0,1021	0,0180	0,0409	0,0048
t_{β_n}	0,6501	0,4871	0,3364	1,3231	*1,6798*	0,6095	0,2765	0,8779	0,4089	1,4353	0,5828	1,2795	0,2409	1,4151	1,1555	1,5206	0,6220	0,4183
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0201	0,0121	0,0007	0,0069	0,0343	0,0516	0,0010	0,2914	0,0131	0,0654	0,0048	0,0077	0,0002	0,0324	0,2283	0,0380	0,2162	0,0194
t_{β_n}	1,6324	1,2350	0,4150	*2,5444*	0,5704	1,1391	0,7365	1,5150	1,0098	*2,6466*	0,9312	1,3914	1,0227	0,8549	*2,5845*	*3,2068*	*3,2893*	*1,6995*

Table 7: This table presents the results for the aggregate of events 2 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 4, 5, and 6, respectively. The first row of each panel presents the abnormal allocation defined by each hypothesis; and the second row presents the t_{β_n} statistic.

Aggregate event: switch from strong disagreement to agreement

	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
Convertible arbitrage									
Panel A: At event date									
$\overline{AA}$	0,0116	0,0115	0,0030	0,0144	0,1212	0,0001	0,0000	0,0421	0,0397
t_{β_n}	*2,9418*	1,3275	*1,8443*	*2,5819*	1,6414	0,2389	0,1707	0,7579	*1,8824*
Panel B: One month before									
$\overline{AA}$	0,0014	0,0141	0,0013	0,0084	0,1477	0,0001	0,0000	0,0605	0,0521
t_{β_n}	0,3562	1,6352	0,7671	1,5075	*2,0005*	0,2531	0,0974	1,0898	*2,4729*
Panel C: One month later									
$\overline{AA}$	0,0065	0,0081	0,0032	0,0113	0,1763	0,0002	0,0000	0,0931	0,0449
t_{β_n}	*1,6574*	0,9426	*1,9377*	*2,0350*	*2,3883*	0,4506	0,1983	*1,6761*	*2,1293*
Global macro									
Panel A: At event date									
$\overline{AA}$	0,0222	0,0252	0,0217	0,0565	0,0471	0,0000	0,0003	0,0037	0,0310
t_{β_n}	*2,0484*	1,3534	1,1612	*3,1304*	1,3972	0,0369	0,5399	0,9896	1,0449
Panel B: One month before									
$\overline{AA}$	0,0134	0,0494	0,0278	0,0198	0,0349	0,0000	0,0004	0,0163	0,0272
t_{β_n}	1,2396	*2,6542*	1,4852	1,0975	1,0359	0,0464	0,5889	*4,3842*	0,9181
Panel C: One month later									
$\overline{AA}$	0,0092	0,0250	0,0192	0,0211	0,0683	0,0000	0,0002	0,0018	0,0376
t_{β_n}	0,8450	1,3419	1,0286	1,1684	*2,0272*	0,0321	0,3181	0,4779	1,2678
CTA global									
Panel A: At event date									
$\overline{AA}$	0,0898	0,0007	0,0075	0,0352	0,0114	0,0930	0,0000	0,0000	0,0578
t_{β_n}	*1,8189*	0,7233	0,6154	*4,9299*	1,0490	*3,3726*	0,1502	0,0182	*1,9788*
Panel B: One month before									
$\overline{AA}$	0,0894	0,0004	0,0232	0,0085	0,0080	0,0632	0,0000	0,0000	0,0270
t_{β_n}	*1,8102*	0,4149	*1,9095*	1,1837	0,7395	*2,2926*	0,1235	0,1214	0,9246
Panel C: One month later									
$\overline{AA}$	0,1147	0,0005	0,0340	0,0133	0,0183	0,0479	0,0001	0,0000	0,0713
t_{β_n}	*2,3232*	0,4974	*2,7916*	*1,8624*	*1,6813*	*1,7363*	0,2381	0,1124	*2,4399*
Long short equity									
Panel A: At event date									
$\overline{AA}$	0,0526	0,0384	0,0092	0,0187	0,0550	0,0866	0,0161	0,0466	0,0311
t_{β_n}	*1,7293*	1,1728	1,1513	*1,7519*	1,2033	1,4358	*2,1442*	*2,0398*	*2,1385*
Panel B: One month before									
$\overline{AA}$	0,0368	0,0757	0,0108	0,0465	0,0453	0,1426	0,0141	0,0580	0,0163
t_{β_n}	1,2081	*2,3102*	1,3502	*4,3480*	0,9898	*2,3647*	*1,8706*	*2,5398*	1,1217
Panel C: One month later									
$\overline{AA}$	0,0551	0,0535	0,0076	0,0167	0,0878	0,0856	0,0094	0,0139	0,0250
t_{β_n}	*1,8101*	1,6320	0,9506	1,5597	*1,9208*	1,4194	1,2491	0,6087	*1,7191*
Distressed securities									
Panel A: At event date									
$\overline{AA}$	0,0000	0,0184	0,0127	0,0252	0,0111	0,0377	0,0344	0,0062	0,0126
t_{β_n}	0,1576	0,8440	1,0959	*1,8303*	1,1421	1,5363	*1,6693*	0,1884	0,7877
Panel B: One month before									
$\overline{AA}$	0,0000	0,0495	0,0155	0,0394	0,0111	0,0452	0,0337	0,0524	0,0339
t_{β_n}	0,0845	*2,2723*	1,3397	*2,8604*	1,1428	*1,8409*	1,6347	1,5853	*2,1131*
Panel C: One month later									
$\overline{AA}$	0,0000	0,0433	0,0152	0,0269	0,0294	0,0569	0,0542	0,0524	0,0531
t_{β_n}	0,2185	*1,9874*	1,3191	*1,9479*	*3,0221*	*2,3189*	*2,6292*	1,5852	*3,3144*
Merger arbitrage									
Panel A: At event date									
$\overline{AA}$	0,0013	0,0216	0,0059	0,0181	0,2971	0,0162	0,0001	0,0000	0,0350
t_{β_n}	0,9513	1,4668	1,2958	*2,3043*	1,1699	1,1337	0,3137	0,0386	1,5574
Panel B: One month before									
$\overline{AA}$	0,0008	0,0328	0,0082	0,0143	0,3810	0,0582	0,0003	0,0000	0,0312
t_{β_n}	0,5835	*2,2225*	*1,8045*	*1,8223*	1,5003	*4,0810*	0,6532	0,1572	1,3868
Panel C: One month later									
$\overline{AA}$	0,0010	0,0124	0,0076	0,0135	0,5187	0,0269	0,0001	0,0000	0,0257
t_{β_n}	0,7290	0,8387	*1,6750*	*1,7121*	*2,0425*	*1,8818*	0,2063	0,0467	1,1422
Emerging markets									
Panel A: At event date									
$\overline{AA}$	0,0685	0,0384	0,0101	0,0078	0,0000	0,0939	0,0000	0,0518	0,0057
t_{β_n}	*2,1664*	1,5692	*2,1376*	*3,1528*	0,0172	*2,7611*	0,0249	*2,8624*	*2,6744*
Panel B: One month before									
$\overline{AA}$	0,0284	0,0466	0,0074	0,0085	0,0000	0,0634	0,0000	0,0585	0,0005
t_{β_n}	0,8973	*1,9031*	1,5787	*3,4444*	0,0070	*1,8633*	0,0103	*3,2334*	0,2264
Panel C: One month later									
$\overline{AA}$	0,0406	0,0258	0,0036	0,0018	0,0000	0,0357	0,0000	0,0138	0,0021
t_{β_n}	1,2844	1,0533	0,7558	0,7380	0,0127	1,0488	0,0103	0,7603	0,9655
Relative value									
Panel A: At event date									
$\overline{AA}$	0,0008	0,0046	0,0000	0,0135	0,0908	0,0207	0,0010	0,1216	0,0115
t_{β_n}	1,0121	1,1234	0,0799	1,4850	1,3829	0,7220	0,8818	0,4924	1,4798
Panel B: One month before									
$\overline{AA}$	0,0002	0,0056	0,0000	0,0205	0,0910	0,0546	0,0007	0,2624	0,0150
t_{β_n}	0,2790	1,3787	0,0414	*2,2477*	1,3860	*1,9075*	0,6438	1,0622	*1,9382*
Panel C: One month later									
$\overline{AA}$	0,0003	0,0021	0,0000	0,0072	0,0772	0,0156	0,0004	0,1618	0,0096
t_{β_n}	0,3173	0,5039	0,0446	0,7888	1,1754	0,5446	0,3183	0,6549	1,2377

	Equity market neutral									Short selling								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0121	0,0011	0,0033	0,0151	0,0791	0,0072	0,0092	0,1997	0,0246	0,0668	0,0338	0,0000	0,0114	0,0183	0,0466	0,0431	0,0011	0,0450
t_{β_n}	*1,6701*	0,3366	0,7244	0,7502	1,1311	1,1363	0,7554	0,7981	1,1501	1,1137	0,9904	0,0036	1,6143	0,6896	*1,7648*	*2,1059*	1,0883	*2,1996*
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0101	0,0073	0,0078	0,0343	0,1028	0,0182	0,0186	0,4145	0,0577	0,0626	0,0312	0,0000	0,0099	0,0128	0,0272	0,0256	0,0004	0,0155
t_{β_n}	1,3969	*2,2565*	*1,7284*	*1,7007*	1,4702	*2,8739*	1,5248	*1,6570*	*2,6947*	1,0424	0,9148	0,0072	1,4063	0,4795	1,0292	1,2478	0,4180	0,7584
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0062	0,0018	0,0040	0,0178	0,0793	0,0078	0,0101	0,1612	0,0237	0,1162	0,1166	0,0000	0,0205	0,0559	0,0532	0,0645	0,0015	0,0332
t_{β_n}	0,8506	0,5698	0,8883	0,8827	1,1342	1,2285	0,8288	0,6443	1,1058	*1,9357*	*3,4146*	0,0159	*2,9072*	*2,1003*	*2,0170*	*3,1487*	1,4848	1,6226
	Event driven									Fixed income arbitrage								
	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX	SP	EM	GSCI	UMD	SMB	HLM	Term	DEF	DVIX
	Panel A: At event date									Panel A: At event date								
$\overline{AA}$	0,0276	0,0109	0,0021	0,0047	0,0832	0,0480	0,0007	0,1442	0,0308	0,0362	0,0028	0,0075	0,0000	0,0347	0,0895	0,0170	0,0366	0,0068
t_{β_n}	*2,2390*	1,1127	1,2078	*1,7293*	1,3816	1,0614	0,5312	0,7496	*2,3775*	1,4659	0,5437	1,3548	0,1985	0,9142	1,0139	1,4345	0,5561	0,6013
	Panel B: One month before									Panel B: One month before								
$\overline{AA}$	0,0074	0,0089	0,0006	0,0040	0,0505	0,0334	0,0006	0,0819	0,0145	0,0117	0,0035	0,0028	0,0001	0,0185	0,0630	0,0055	0,0487	0,0085
t_{β_n}	0,5989	0,9132	0,3173	1,4900	0,8389	0,7374	0,4632	0,4259	1,1245	0,4719	0,6897	0,5080	0,3251	0,4876	0,7134	0,4606	0,7404	0,7462
	Panel C: One month later									Panel C: One month later								
$\overline{AA}$	0,0119	0,0080	0,0010	0,0025	0,0632	0,0427	0,0007	0,1388	0,0120	0,0179	0,0043	0,0039	0,0000	0,0305	0,0846	0,0096	0,0488	0,0059
t_{β_n}	0,9676	0,8213	0,5529	0,9293	1,0499	0,9427	0,5166	0,7214	0,9313	0,7264	0,8343	0,6969	0,1593	0,8047	0,9573	0,8129	0,7419	0,5154

Table 8: This table presents the results for the aggregate of events 3 and for each hedge fund strategy. Panel A, B, and C summarised Hypothesis 4, 5, and 6, respectively. The first row of each panel presents the abnormal allocation defined by each hypothesis; and the second row presents the t_{β_n} statistic.

Appendix of figures

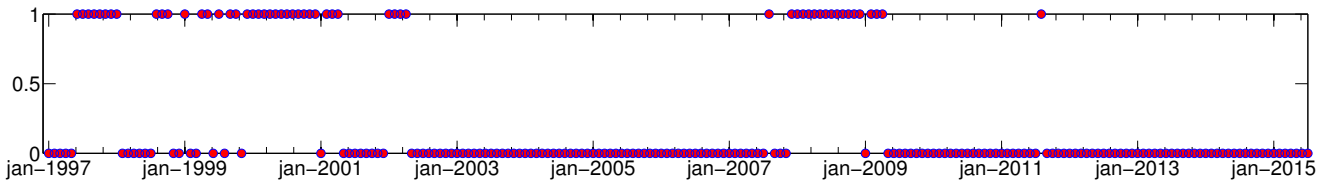

Figure 1: This figure presents a time line with those periods of agreement and disagreement

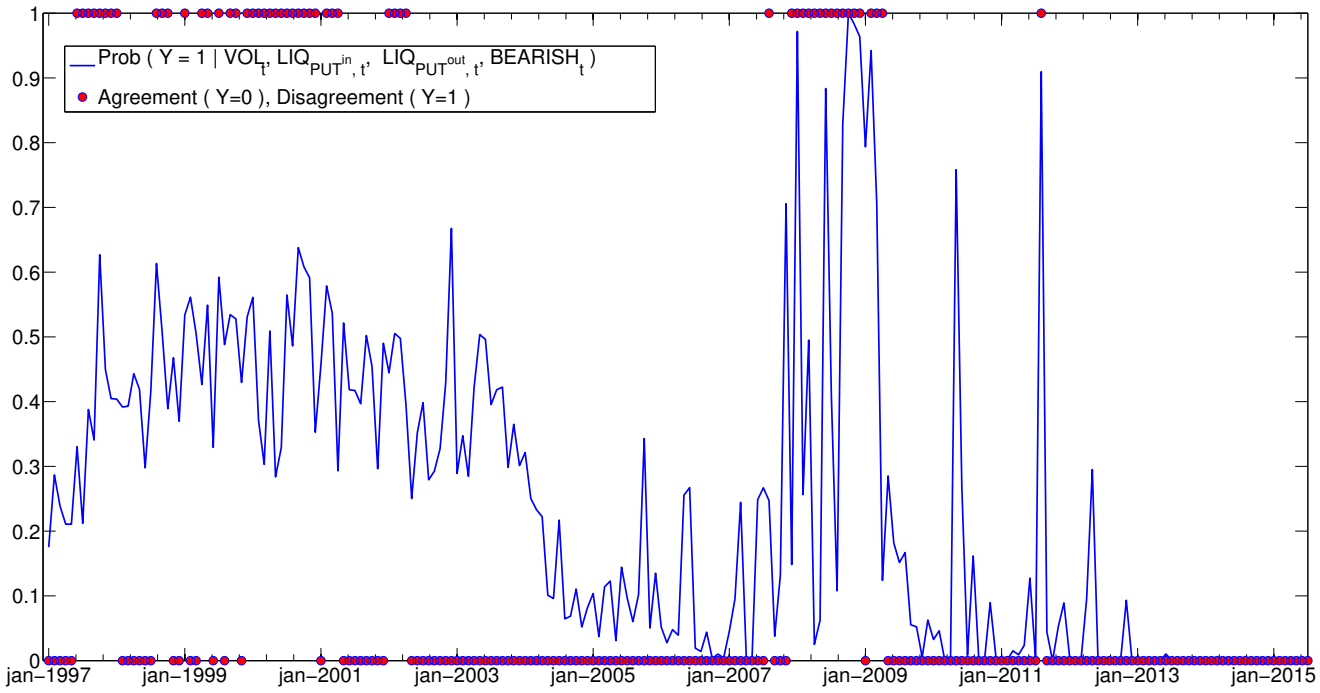

Figure 2: This figure presents the probability of a disagreement event, $\text{Prob}(Y = 1|\vec{X})$, as extracted from the probit regression

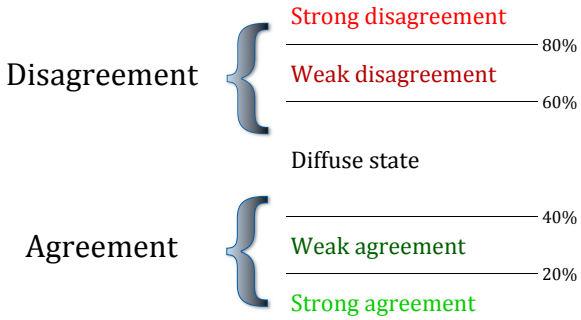

Figure 3: This figure presents the disagreement/agreement state representation into quintiles