

1st Annual Conference on Econometrics of Hedge Funds

Institut Louis Bachelier –Centre d’Innovation Financière
Palais Brongniart
28 Place de la Bourse
75002 Paris

22-23 January 2009

Organizers: Serge Darolles (SGAM AI and CREST)
Christian Gouriéroux (CREST and University of Toronto)

22 January 2009

16.30-17.00 Registration

17.00-19.00 **Panel Session: Where do we go from now?**

Chair: **Sophie van Straelen** (Asterias)

Melissa Hill, *Managing Principal*, SABRE Fund Management Ltd
Louis-Armand de Rougé, *Managing Director*, Richcourt Fund Advisors
Alain Reinhold, *Director*, Reinhold Partners
Arié Assayag, *Global Head of Hedge Funds Program*, SGAM AI

20.00-22.00 Conference Dinner at Le Palais Brongniart

23 January 2009

8.45-10.30 **Session 1: Hedge Funds Performance Measures**

Chair: Olivier Toutain (Moody’s)

Hedge Fund Performance: Sources and Measures

Dilip Madan (University of Maryland)

Discussant: Jean-Michel Zakoian (CREST et University of Lille 3)

L-Performance with an Application to Hedge Funds

Christian Gouriéroux (CREST and University of Toronto)

Discussant: Thierry Michel (LODH)

Empirical Likelihood Estimators for Stochastic Discount Factors

René Garcia (Edhec Business School)

Discussant: Nour Meddahi (TSE)

10.30-11.00 Tea/Coffee

11.00-12.45 Session 2: Switching Models and Durations

Chair: Olivier Garnier (SGAM)

The Dynamics of Hedge Fund Performances

Jérôme Teiletche (Dauphine University and LODH)

Discussant: Fulvio Pegoraro (Banque de France and CREST)

Hedge Funds Durations: Endogeneity of Performance and AUM

Jean-Pierre Florens (TSE)

Discussant: Olivier Scaillet (HEC Genève)

Crises and Hedge Fund Risk

Monica Billio (University of Venice)

Discussant: Alain Monfort (CNAM and CREST)

12.45-14.15 Lunch

14.15-16.00 Session 3: Cross Section Analysis of Hedge Funds Returns

Chair:

Dynamic Investment Opportunities and the Cross-Section of Hedge Fund Returns: Implications of Higher-Moment Risks for Performance

Vikas Agarwal (Georgia State University)

Discussant: Raphael Douady (RiskData)

When there is No Place to Hide: Correlation Risk and the Cross-Section of Hedge Fund Returns

Robert Kosowski (Imperial College London)

Discussant: Jean-Paul Laurent (ISFA Actuarial School)

When Diversification Increases Risk: Feedback Effects and Endogenous Correlation in Fund Returns

Rama Cont (Columbia University)

Discussant: Alfred Galichon (Ecole Polytechnique)

16.00-16.30 Tea/Coffee

16.30-18.15 **Session 4: Liquidity and Survivorship**

Chair: Laurent Clerc (Banque de France)

Time-Varying Liquidity in Hedge Fund Returns

Andrew Patton (University of Oxford)

Discussant: Gaëlle Le Fol (Université d'Evry et CREST)

Locked Up by a Lockup: Valuing Liquidity as a Real Option

Nicolas Bollen (Vanderbilt University)

Discussant: Guillaume Simon (TSE and SGAM AI)

Limits of Limits of Arbitrage: Theory and Evidence

David Thesmar (HEC Paris)

Discussant: Gideon Ozik (SGAM AI)

For further information, please contact: guillaume.simon@sgam.com

ABSTRACTS

Eberlein and Madan - '*Hedge Fund Performance: Sources and Measures*'

The concept of the gamma of a financed return as the highest level of stress that a return distribution can withstand is introduced. Stress is measured by positive expectation under a concave distortion of the return distribution accessed. Four distortions introduced in Cherny and Madan (2008) are employed in studying the distribution of returns available in the hedge fund universe. Cherny and Madan (2008) characterizes performance measures satisfying a set of proposed axioms. They develop four new measures consistent with the axioms and show that they improve on the economic properties of the Sharpe Ratio and the Gain-Loss Ratio. In our treatment, the performance measures, or the indices of acceptability, are linked to positive expectations resulting from a stressed sampling of the cash flow distribution. It is shown that the skewness, peakedness and tailweightness of the standardized investment return significantly aspects the Sharpe ratios required to reach a target gamma level.

Darolles, Gouriéroux and Jasiak - '*L-Performance with an Application to Hedge Funds*'

This paper introduces a new fund performance measure, called the L-performance. It is proposed as an alternative to the Sharpe performance measure that is commonly used for fund performance valuation despite its inability to account for the skewness and thick tails of fund return distributions. The L-performance improves upon the Sharpe measure in this respect. Technically, the L-performance is based on sample statistics, called L-moments, which are conceptually close to the conventional power moments, but provide more detailed information about the extremes. For this reason, the L-moments are used for prediction and assessment of extreme events, such as floods and earthquakes. In this paper, the new L-performance measure is calculated for a variety of hedge funds and is used to derive a fund ranking.

Almeida and Garcia - '*Empirical Likelihood Estimators for Stochastic Discount Factors*'

Hansen and Jagannathan (HJ, 1991) provided bounds on the volatility of Stochastic Discount Factors (SDF) to diagnose and test asset pricing models. These non-parametric bounds reflect a duality between mean-variance frontiers for SDFs and for portfolios of asset returns. We propose information bounds that minimize general convex functions of SDFs taking into account higher moments of returns. These bounds reflect a duality with finding optimal portfolios of asset returns with general HARA utility functions. We use these information bounds to diagnose consumption-based asset pricing models, to analyze the pricing of size portfolios, and to assess the performance of hedge funds.

Darolles, Florens and Simon - '*Hedge Funds Durations: Endogeneity of Performance and Assets under Management*'

The reporting of Hedge Fund performances in databases is based on voluntary publication. This induces difficulties in measuring their true probability to leave the database, or to be in default. A lot of studies have already tried to incorporate fund characteristics to explain this probability. The aim of this paper is to underline the importance of performance and assets under management, taking into account their endogenous and dynamic nature, in the analysis of survivorship.

Billio, Getmansky and Pelizzon - '*Crises and Hedge Fund Risk*'

We study the effect of financial crises on hedge fund risk. Using a regime-switching beta model, we separate systematic and idiosyncratic components of hedge fund exposure. The systematic exposure to various risk factors is conditional on market volatility conditions. We find that in the high-volatility regime (when the market is rolling-down and is likely to be in a

crisis state) most strategies are negatively and significantly exposed to the Large-Small and Credit Spread risk factors. This suggests that liquidity risk and credit risk are potentially common factors for different hedge fund strategies in the down-state of the market, when volatility is high and returns are very low. We further explore the possibility that all hedge fund strategies exhibit a high volatility regime of the idiosyncratic risk, which could be attributed to contagion among hedge fund strategies. In our sample this event happened only during the Long-Term Capital Management (LTCM) crisis of 1998. Other crises including the recent subprime mortgage crisis affected hedge funds only through systematic risk factors, and did not cause contagion among hedge funds.

Darolles, Gouriéroux and Teiletche - ***'The Dynamics of Hedge Fund Performance'***

The ratings of funds based on past performance and the rating dynamics are crucial informations for investors. This paper proposes an econometric framework to investigate the dynamics of performance based ratings of funds, for any risk adjusted measure of performance. We reformulate the questions related to rating persistence at different horizons in terms of Markov Chain analysis, both for individual and joint rating trajectories. The methodology is illustrated by the analysis of hedge fund returns extracted from the TASS database for the period 1994-2008.

Agarwal, Bakshi and Huij - ***'Dynamic Investment Opportunities and the Cross-Section of Hedge Fund Returns: Implications of Higher-Moment Risks for Performance'***

This paper examines higher-moment market risks in the cross-section of hedge fund returns to make several contributions. First, it is shown that hedge funds, but not mutual funds, are substantially exposed to volatility, skewness, and kurtosis risks. We find significant cross-sectional variation in the intensity of higher-moment exposures across hedge fund styles and across hedge funds within a particular style, suggesting potential for neutralizing higher-moment risks. Corroborating this result, when funds of hedge funds are investigated as a separate investment category they do not show aggressive loading on higher-moment risks. Second, we provide evidence on economically significant premiums being embedded in hedge fund returns on account of their exposures to higher-moment risks. Third, we uncover a set of higher-moment factors that are not strongly associated with factors in benchmark models that are currently used for evaluating hedge fund performance. Finally, the addition of higher-moment factors to benchmark models can better explain the behaviour of hedge fund returns. Bearing on issues of practical consequence, benchmark models augmented with higher-moment factors can considerably alter the hedge funds' alpha-based rankings.

Buraschi, Kosowski and Trojani - ***'When there is No Place to Hide: Correlation Risk and the Cross-Section of Hedge Fund Returns'***

This paper investigates the importance of correlation risk exposure in explaining cross-sectional differences in hedge funds performance and risk. A hedge fund's ability to enter long-short positions can reduce a fund's equity market beta, but it exposes the fund to unexpected changes in correlations. We find that high correlation risk exposure explains a statistically and economically significant percentage of hedge funds' absolute returns. We find that funds with negative loadings on the correlation risk premium have maximum drawdowns that are half as large as those of funds that sell protection against increases in correlation. Failure to account for correlation risk exposures leads to an overestimation of funds' risk-adjusted performance.

Cont - ‘When Diversification Increases Risk: Feedback Effects and Endogenous Correlation in Fund Returns’

Fund returns have been traditionally modelled using linear or nonlinear factor models where correlations among factors are given, static and exogenous parameters. The events of August 2007 and fall 2008, when correlations across factors and strategies peaked during periods of liquidation, are difficult to explain with such models. We propose a model of liquidity effects in fund returns in which price impact leads to a feedback cycle which in turn generates endogenous correlation in fund returns. We show that such effects lead to dynamically changing cross-sectional correlations in fund returns which rise when a large position is liquidated. This endogenous correlation among factors can dominate the "structural" correlations. Our model casts a new light on the modelling of correlation in fund returns by linking it to measures of market depth.

Li and Patton - ‘Time-Varying Liquidity in Hedge Fund Returns’

The liquidity of hedge funds' investments is of great interest both to hedge fund investors and to market regulators. We propose a method for determining the factors that affect the (unobservable) liquidity of hedge fund investments. Our method exploits the link between illiquidity and serial correlation in hedge fund returns established by Getmansky, Lo and Makarov (Journal of Financial Economics 2004), and does not require information on the actual positions taken by the hedge fund, nor even the "style" of the hedge fund; we use only the returns reported by the hedge fund and other easily observed information. Using a panel of monthly returns on over 600 individual hedge funds, we find significant evidence of time variation in the degree of liquidity of hedge fund investments. Broadly stated, hedge funds in equity-based styles, such as equity market neutral and equity hedge or non-hedge, exhibit decreases in liquidity when stock market returns are low and bond market returns are high. In contrast, hedge funds in fixed income styles, such as convertible arbitrage or fixed income, exhibit lower liquidity when equity market volatility is high, and when the fund experiences in-flows or out-flows of funds.

Ang and Bollen - ‘Locked Up by a Lockup: Valuing Liquidity as a Real Option’

Hedge funds often impose lockups and notice periods to limit the ability of investors to withdraw capital. We model the investor's decision to withdraw capital as a real option and treat lockups and notice periods as exercise restrictions. Our methodology incorporates time-varying probabilities of hedge fund failure, optimal early exercise, and learning about expected returns. We estimate a two-year lockup with a three-month notice period costs investors at most 1.5% of their initial investment. The magnitude is sensitive to a variety of inputs, including a fund's age, expected return, and the liquidation cost upon failure.

Hombert and Thesmar - ‘Limits of Limits of Arbitrage: Theory and Evidence’

We present a model where competitive investors entrust funds to a large number of asset managers. These asset managers purchase the same asset, so that prices and returns are endogenous. There is one important contractual friction: when the fund underperforms, it is not possible to know the manager's skill. We solve for the optimal contract and asset market equilibrium. The model has two predictions: first, in equilibrium, some funds still receive funding even when they underperform, while others are liquidated. Second, funds in which investment is "locked in" tend to overperform following bad performance. We test these two predictions on a sample of hedge funds, some of which impose impediments to withdrawal to their investors.