

QUANTVALLEY /FDR RESEARCH INITIATIVE



2014

Activities and Events organized by the Research Initiative (QMI) – ANNUAL REPORT

This document describes the activities organized by the Quantitative Management Research Initiative (QMI) during its third year of existence.

Draft January 2015

Table of Contents

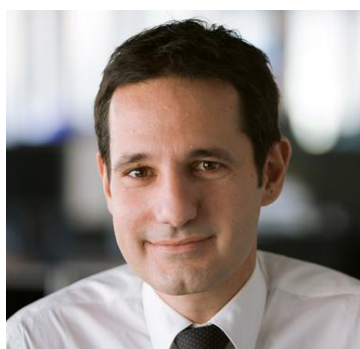
1. INTRODUCTION	5
1.1. The objectives of the QMI	6
1.2. Research axes of the QMI.....	6
1.3. The QMI's organization	8
The steering committee	8
The Advisory Board	8
The secretariat	8
The QMI's researchers	8
The QMI's associate researchers	11
3. RESEARCH ACTIVITIES	13
3.1. Research Publications	13
3.1.1. Working papers	13
3.1.2. Published Papers	15
3.1.3. Books and books' chapters	15
3.2. QUANTVALLEY/Wiley Monographs.....	17
3.2.3. Contagion phenomena with applications in finance	17
3.3. Call for projects	18
3.4. Completed projects	18
4. RESEARCH EXPOSURE AND DIFFUSION	20
4.1. Conference and seminar participation	20
4.1.1. Institutional Management FORUM, PARIS, 20 March 2014	20
4.1.2. 7th CSDA International Conference (CFE 2014).....	20
4.1.3. Seminar and conference participations	21
4.3. Annual Conference	22
4.4. Seminars & workshops	25
4.4.1. Liquidity risk & tick size, December 16, 2013, NYSE-Euronext London.	25
4.4.2. Diversification & Risk, May 16, 2014, University of Venice	26
4.6. Website	27

QUANTVALLEY /FDR RESEARCH INITIATIVE

"QUANTITATIVE MANAGEMENT INITIATIVE (QMI)"

1. INTRODUCTION

Hosted within the Fondation du Risque (FdR) and with the support of the Institut Louis Bachelier (ILB), the work conducted within the framework of this Research Initiative is principally carried out by teams from the University Paris-Dauphine and the ENSAE (Ecole Nationale de la statistique et de l'administration économique). It benefits from partnerships with GFI, UBS and QUANTVALLEY.



From left to right : Gaëlle Le Fol (Dauphine and CREST, Scientific Director of the QMI), Serge Darolles (Dauphine and CREST), Christian Gouriéroux (CREST), Fabrice Riva (IAE de Lille, General Secretary of the QMI), Jean-Michel Beacco (Fondation du Risque), Arnaud Chrétien (QUANTVALLEY), Marc Souffir (GFI), Patrice Lacourarie (UBS)

1.1. The objectives of the QMI

In the post-financial-crisis context, Quantitative Management professionals from the French Financial sector came together in 2010 to create QuantValley in order to promote Quantitative Finance and its benefits in terms of research, risk management and value creation for investors. Today, the association has been joined by two important partners, GFI and UBS, and is investing even more in the promotion of research and the development of interactions between the academic world and the Professional world of Quantitative management. Thanks to its support, the Quantitative Management Initiative (QMI) was born in early 2012 and is structured around the following themes:

- Developing quantitative research applied to asset management;
- Facilitating knowledge transfer between academic environments and asset management agents;
- Responding to the research issues of various private partners;
- Encouraging collaboration with one or more companies that are leaders in fields relating to quantitative management;
- Promoting the image of asset management based on quantitative approaches;
- Increasing and consolidating the high level of excellence of the partnerships by organising reflexion, research and training activities on an international scale relating to one or more themes of general interest;
- Reflecting on the evolution of regulation pertaining to asset management.

1.2. Research axes of the QMI

Amongst the research areas of most interest to the QMI are:

Statistical Signal Processing

Application of signal treatment to the estimation of factorial models, the detection of outliers, the filtering of trends and the robust estimation of Kalman models is an active research field of the IdR QMI. A « Statistical signal processing in asset management » session including Nick Baltas, Imperial College, UBS, Associate researcher of the QMI and Mathieu Rosenbaum, UPMC, Member of the QMI has been organised by the QMI for the Computational Financial Econometrics (CFE) conference in Pisa on the 4, 5 and 6 December (page 20).

Listed market liquidity

Serge Darolles Gaëlle Le Fol and Gulden Mero have been presenting a research paper entitled “Measuring the liquidity part of volume” on behalf of the QMI at several conferences during 2014. This paper will be published in “Journal of Banking and Finance” in 2015 (page 15).

Serge Darolles Gaëlle Le Fol and Gulden Mero are also working on dynamics measures of short-term and long-term liquidity measures based on the autocorrelation of return, volume and volatility. This research has been presented for the first time at the second QuantValley/QMI Annual Research Conference in Paris in November (page 25), then at the 6th French Econometrics Conference in Paris and finally at the Computational Financial Econometrics (CFE) conference in Pisa, Italy, in December.

Serge Darolles, Gaëlle Le Fol and Jean Michel Zakoian continue to work on liquidity adjusted conditional risk measure. A new version of this research was presented in February at the Risk Seminar, ESSEC. Fabrice Riva is for his part, with two co-authors, working on ETF liquidity. He has presented a research paper on behalf of the QMI at several conferences during 2014 (pages 21-22).

A QMI workshop in London, and special sessions at the Computational Financial Econometrics (CFE) conference in Pisa, Italy, in December and at the Institutional Management FORUM, PARIS, 20 March 2014 (page 20).

Algo and/or High frequency trading

Optimisation of the VWAP (Volume Weighted Average Price) price replication algorithms, link between the speed of placing orders on the market and the arrival of information, liquidity trade-offs, maximum trading capacity.

Vincent van Kervel and Albert Menkveld, from VU University of Amsterdam have received in 2013 funding of 5,000 for their project untitled *Predatory trading in equity markets* (page 19). This research has been presented at the second QuantValley/QMI Annual Research Conference in Paris in November 2014.

Algo and High frequency trading defenders say that they provide liquidity and improve price efficiency. Serge Darolles, Gaëlle Le Fol and Gulten Mero, in their liquidity paper, show that investors are acting strategically – by slicing their orders - to avoid being picked-off by HFTs. Doing so, they slow down the propagation of information in the prices. Again, this research has been presented for the first time at the 6th French Econometrics Conference in Paris and finally at the Computational Financial Econometrics (CFE) conference in Pisa, Italy, in December. QMI organised a workshop on “Liquidity and the tick size” in London with Euronext (page 26).

Contagion and funds flows

A measure of liquidity comovements between the currencies of various emerging economies, link between currency liquidity and liquidity of dollar debt markets, impact of hedge fund flows on contagion phenomena between countries.

Several teams are working on this theme. Christian Gouriéroux and Patrick Gagliardini are working on modelling hedge fund default due to contagion effects. The article has been presented at the Conference on Asset Management, Cologne, in April 2014. Serge Darolles, Simon Dubecq and Christian Gouriéroux are working on project on the Contagion analysis in the banking sector, presented several times in 2014. Serge Darolles and Christian Gouriéroux will publish in 2015 with Wiley the second volume of the QuantValley collection (page 17). Mardi Dungey and Eric Renault have also received funding of 10,000 euros by the QMI for their project on contagion modelling (page 18).

Risk disaggregation and portfolio allocation

Decomposition of a portfolio's asset's risk contribution into systematic risk contribution and idiosyncratic risk contribution, method of allocation controlling the relative proportion of either contribution. Application to index and market-neutral portfolio creation.

Christian Gouriéroux and Emmanuelle Jay take a new look at a well-known approach: risk parity. Parity is obtained for any form of risk measure (not only volatility) and by identifying the common and specific components of risk. This research was presented during the Venice QMI workshop. Emmanuel Jurczenko and Jérôme Teiletche are working on the second volume of the QuantValley collection, published with Wiley, the theme of which is also risk parity (page 17). These two research papers were presented during the Venice QMI workshop (page 26).

Directly Related to this subject, Dong Lou and Christopher Polk, from London School of Economics have presented their work on the booms and busts of beta arbitrage: measuring the extent of the low-beta crowd (page 18) during the QMI Annual Conference in November.

Trend Following Strategies

Nick Baltas from Imperial College have presented their work on Momentum strategies in futures markets and trend-following funds (page 18) during the QMI Annual Conference in November.

Machine learning & Classification techniques with application to trading systems

A research team from the University of Rotterdam headed by Professor Micheal McAleer funded by QMI in 2013 have presented the corresponding work on Artificial Intelligence approaches applied to the analysis of information diffused through traditional channels (Reuters news) during the QMI Annual Conference. This information is analysed so as to rank assets from various investment universes from best to worst (page 19).

Impact of quantitative trading on the economy

A senior research team from the University of Cergy-Pontoise funded in 2013 for a research project on a model of mortgage default risk (page 19) have presented the corresponding work during the QMI Annual Conference

New sources of information (Google, Twitter, ...)

The University of Rotterdam's project (mentioned above) also relates to this theme.

1.3. The QMI's organization

The steering committee_____

The steering committee reviews, monitors and prioritizes major QMI projects.

Scientifique Director

Gaëlle Le Fol, Professor, Université Paris-Dauphine and CREST

General Secretary

Fabrice Riva, Professor, IAE de Lille

Researchers from l'ENSAE and Université Paris-Dauphine

Serge Darolles, Professor, Université Paris -Dauphine

Christian Gouriéroux, Professor, CREST-ENSAE ParisTech and Université de Toronto

Elyès Jouini, Professor, Université Paris-Dauphine

Other Members

Emmanuel Bacry, CNRS and Ecole Polytechnique

Emmanuel Jurczenko, Professeur associé, ESCP Paris

Mathieu Rosenbaum, Professeur, Université Paris VI

The Advisory Board_____

The Advisory board assists the Steering Committee in its supervising tasks over the activities of the project. The advisory Board members are:

Representing UBS : Patrice Lacourarie

Representing GFI : Marc Souffir

Representing QUANTVALLEY : Arnaud Chrétien and Serge Darolles

Representing ENSAE : Antoine Frachot

Representing the Université Paris-Dauphine : Laurent Batsch

Representing the Louis Bachelier Institut: Stéphane Buttigieg

Representing the Risk Fondation: Jean-Michel Beacco

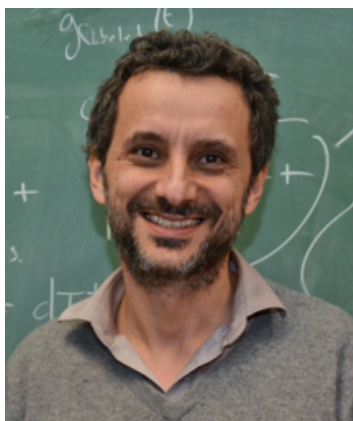
Qualified Person: Michel Crouhy (Natixis)

International Experts: René Garcia (Edhec), Michael Rockinger (University of Lausanne), and Ronnie Sadka (Boston College)

The secretariat_____

Pauline de Saint Quentin, the secretary of QMI can be contacted at contact@qminitiative.org or pauline.desaintquentin@dauphine.fr or by telephone: +33 1 41 16 76 19.

The QMI's researchers_____



E. Bacry, CNRS and Ecole Polytechnique



P. Duvaut, Telecom Paristech



C. Gouriéroux, CREST and Toronto University



J. Dudek, CREST and Université Paris-Dauphine



S. Darolles, Université Paris - Dauphine



J.-M. Zakoïan, CREST and University Lille 3.



E. Jay, QamLab



E. Jurczenko, ESCP Europe



F. Riva, IAE de Lille

G. Mero, Université de Cergy-Pontoise



E. Jouini, Université Paris - Dauphine



M. Rosenbaum, UMPC and Ecole Polytechnique



G. Le Fol, Université Paris - Dauphine and
CREST

The QMI's associate researchers



Akindynos-
Nikolaos Baltas,
Visiting
Researcher,
Imperial College,
Quantitative
Analyst at UBS
Investment Bank



D.E. Allen, Econometric
Institute, Erasmus School
of Economics, Erasmus
University Rotterdam,
The Netherlands.



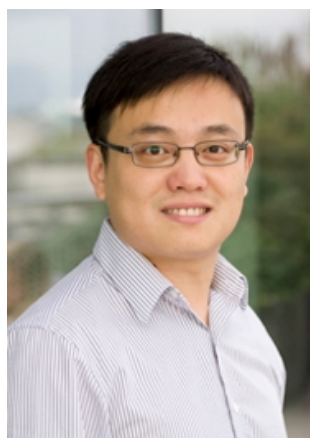
Mardi Dungey, School of
Economics and Finance,
University of Tasmania,
Australia



D. Keenan, Professor
of Finance,
Université de Cergy-
Pontoise



Robert Kosowski,
Professor, Center for
Hedge Fund Research
& Risk Management
Laboratory at Imperial
College Business School



Dong Lou, Financial
Markets Group,
London School of
Economics



M. McAleer, Professor of
Quantitative Finance,
Econometric Institute,
Erasmus School of
Economics, Erasmus
University Rotterdam



Albert Menkveld,
Professor, VU University
of Amsterdam



Christopher Polk,
Professor, Financial
Markets Group, London
School of Economics



D. Rosenthal, Assistant
Professor, Department of
Finance, University of
Illinois at Chicago, USA



Eric Renault, Professor,
Brown University, USA



Abhay Kumar Singh,
PhD (Finance),
MBA, B. Tech (I T)



Vincent L. van
Kervel, VU
University of
Amsterdam

3. RESEARCH ACTIVITIES

This research initiative aims to be a means of exchange and reflexion where research themes emerge naturally, and become the starting point of research articles in the best international journals. The QMI must also be able to create a research community around themes of interest to management companies by calling for research projects nationally and internationally and by reinforcing the QMI member teams by recruiting research assistants and publishing doctoral contracts.

3.1. Research Publications

- Date: 2014
- Themes: Quantitative Management

3.1.1. Working papers

Allen, D.E., McAleer, M. and Singh A.K., An entropy based analysis of the relationship between the DOW JONES Index and the TRNA Sentiment series. Working paper.

Allen, D.E., McAleer, M. and Singh A.K., Daily Market News Sentiment and Stock Prices. Working Paper.

Auray, S., and C., Gouriéroux: Procyclicite des regulations Financieres, CREST Working Paper.

Bacry E., and J.-F. Muzy, Hawkes model for price and trades high-frequency dynamics, Working paper, submitted to SIAM Journal of Financial Mathematics.

Baltas A.-K., and R. Kosowski, Momentum Strategies in Futures Markets and Trend-following Funds. Mimeo.

Becam, A., Darolles. S. and Le Fol, G., Smoothed Returns and Managers' skills, Working paper.

Borgy, V., Idier, J. and Le Fol, G., Liquidity Problems in the FX market: Ask for the BIL, Working paper SSRN.

Cai, J., M. Fukasawa, M. Rosenbaum and P. Tankov, Optimal discretization of hedging strategies with directional views, Working Paper.

Calamia, A., Deville L. and Riva, F., Liquidity in ETFs: What really Matters?, Working Paper.

Dayri, K. and Rosenbaum, M., Large tick assets: implicit spread and optimal tick size, Working paper.

Darolles, S., Dubecq, S., and C., Gouriéroux. Contagion analysis in the banking sector. Working paper.

Darolles, S. Dudek, J. and Le Fol, G., MLiq a Meta Liquidity Measure, working paper Université Paris - Dauphine.

Darolles, S., Francq, C., Le Fol, G. and J.M. Zakoian. Liquidity risk estimation in conditional volatility models. Working paper.

Darolles, S., Gagliardini, P., and C., Gouriéroux: Survival of Hedge Funds: Frailty vs Contagion.

Darolles, S. and C., Gouriéroux. The effect of management and provision accounts on hedge fund returns, submitted to The International Journal of Approximate Reasoning.

Darolles, S., Gouriéroux, C. and Jay, E., Robust Portfolio Allocation with Systematic Risk Contribution Restrictions. Working paper SSRN.

Darolles S., G. Le Fol, and Mero G., Financial Market Liquidity: Who is acting strategically. Working paper SSRN.

Darolles, S. and Vaissié, M., The Benefits of Dynamic Risk Management: Mitigating Downside Risk Without Compromising Long-Term Growth Prospects, Working paper SSRN.

Dungey, M. and E. Renault, Identifying Contagion. Mimeo.

Duvaut, P. and Jay, E., ODERIM (Outlier Detection for Risk Management), Mimeo.

Gagliardini, P., Gouriéroux, C., and M., Rubin, Positional Portfolio Management, Mimeo.

Gatheral J., T. Jaisson, and M., Rosenbaum, Volatility is rough, Working paper.

Gagliardini, P., and C., Gouriéroux, Correlated Risks vs Contagion in Stochastic Transition Models, Working paper.

Gagliardini, P., and C., Gouriéroux, Identification by Laplace Transform in Nonlinear Panel or Time Series Models with Unobserved Stochastic Dynamic Effects, CREST DP.

Gagliardini, P., and C., Gouriéroux, Double Instrumental Variable Estimation of Interaction Models with Big Data, CREST DP.

Gagliardini, P., Gouriéroux, C., and M., Rubin, Positional Portfolio Management, CREST DP.

Gouriéroux, C., and J.C., Heam, Funding Liquidity Risk in a Regulatory Perspective, submitted Journal of Banking and Finance.

Gouriéroux, C., and J., Jasiak, Filtering, Prediction and Estimation of Noncausal Processes, under revision Journal of Time Series Analysis.

Gouriéroux, C., and J., Jasiak, Misspecification of Causal and Noncausal Orders in Autoregressive Processes, submitted Journal of Econometrics.

Gouriéroux, C., Jasiak, J., and P., Xu, Non tradable S&P 500 Index and the Prices of its Traded Derivatives, CREST DP 2013-05

Gouriéroux, C., and Y., Lu, Long Term Care and Longevity, submitted Review of Economic Studies.

Gouriéroux, C. and Monfort A., Allocating Systemic Risk in a Regulatory Perspective, Working paper. In revision for International Journal of Theoretical and Applied Finance.

Gouriéroux, C., and A., Monfort, Revisiting Identification and Estimation in Structural VARMA Models, CREST DP.

Gouriéroux, C., and A., Monfort, Statistical Inference for Independent Component Analysis", CREST DP.

Gouriéroux, C., and J.M., Zakoian, Explosive Bubble Modelling by Noncausal Process, under revision *Econometrica*

Gouriéroux, C., and J.M., Zakoian, On uniqueness of moving average representations of heavy-tailed stationary processes, MPRA paper 54907, submitted

Huang W., C.-A. Lehalle, and M. Rosenbaum: Simulating and analyzing order book data: The queue-reactive model, Working Paper.

Heinen, A., Keenan, D. and Kim M.-L., Contagious Defaults: Evidence from Subprime Mortgages, Mimeo.

Jurczenko E., T. Michel and J. Teiletche, "Generalized Risk-Based Investing", Working Paper SSRN.

Lou D., and C. Polk, The Booms and Busts of Beta Arbitrage: Measuring the extent of the Low-Beta Crowd. Mimeo.

Menkveld, A. and V. van Kervel, Predatory Trading in Equity Markets. Mimeo.

Mero G, 2015. "Measuring Hedge Fund Performances: A Markov Regime Switching with False Discoveries Approach", Working Paper.

Rosenthal D. W. R., Trading-Related Skill Across Investment Funds, Mimeo.

3.1.2. Published Papers

Bacry E., and J.F. Muzy, Second order statistics characterization of Hawkes processes and non-parametric estimation. arXiv:1401.0903, 2014.

Bacry E., A. Luga, M. Lasnier, and C-A. Lehalle, Market impacts and the life cycle of investors orders. arXiv:1412.0217, 2014.

Darolles S., and Le Fol, G., Trading Volume and Arbitrage. International Journal on Business Review (GBR) Vol.3 No.3, June 2014, 30-39.

Darolles S., Le Fol, G. and Mero G., Measuring the liquidity Part of Volume. Journal of Banking and Finance, 50, 92-105, 2015.

Darolles, S., Evaluating UCITS Compliant Hedge Fund Performance. Bankers, Markets and Investors, 133, 2014.

Franco, C. and J.M. Zakoïan, Risk-parameter estimation in volatility models. Forthcoming in the Journal of Econometrics, 2015.

Gagliardini, P., and C., Gouriéroux, Efficiency in Large Dynamic Panel Models with Common Factors, Econometric Theory, 30, 961-1020, 2014.

Gouriéroux, C., and Y., Lu, Love and Death: A Freund Model with Frailty, forthcoming Insurance: Mathematics and Economics, 2015.

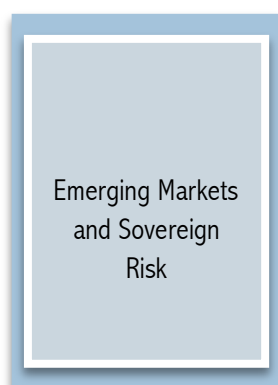
Gouriéroux, C., and A., Monfort, Pricing with Finite Dimensional Dependence. Forthcoming in Journal of Econometrics, 2015.

Gouriéroux, C., Monfort, A., Pegoraro, F., and J.P., Renne, Regime Switching and Bond Pricing, Journal of Financial Econometrics, 12, 37-77, 2014.

Gouriéroux, C., Monfort, A., and J.P., Renne, Pricing Default Events: Surprise, Exogeneity and Contagion, Journal of Econometrics, 182, 397-411, 2014.

3.1.3. Books and books' chapters

EMERGING MARKETS AND SOVEREIGN RISK



Contagion in Emerging Markets, forthcoming in N. Finch (ed), « Emerging Markets & Sovereign Risk », Elsevier.

S. Darolles, Université Paris – Dauphine, Member of QMI

J. Dudek, CREST and Université Paris – Dauphine, Member of QMI

G. Le Fol, Université Paris – Dauphine and CREST, Head of QMI

Abstract: Although an extensive literature exists on financial contagion, there is no consensual method for the identification of contagion episodes. By only considering the financial contagion as an increase of correlations between countries during crises, one indeed faces two well-known problems: (i) the consequence of returns heteroscedasticity on correlations, and (ii) the exogenous definition of the crisis periods' dates. As a consequence, we propose a methodology that tackles simultaneously these two problems and allows to studying the dynamic of the contagion and thus, identifying contagion episodes. Our application concerns

the emerging sovereign debt market. We highlight the simultaneous increase of individual sovereign risks and identify strong contagion episodes since the end of 2008.

MODELING DEPENDENCE IN ECONOMETRICS

The effect of management and provision accounts on hedge fund returns, Part I: The High Water Mark scheme, in Modeling Dependence in Econometrics, Advances in Intelligent Systems and Computing 251, Springer International Publishing, 2014, 23-45.

S. Darolles, Université Paris – Dauphine, Member of QMI

C. Gouriéroux, University of Toronto and CREST, Member of QMI

Abstract: A characteristic of hedge funds is not only an active portfolio management, but also the allocation of portfolio performance between different accounts, which are the accounts for the external investors and an account for the management firm, respectively. Despite a lack of transparency in hedge fund market, the strategy of performance allocation is publicly available. This paper shows that, for the High Water Mark Scheme, these complex performance allocation strategies might explain empirical facts observed in hedge fund returns, such as return persistence, skewed return distribution, bias ratio, or implied increasing risk appetite.

The effect of management and provision accounts on hedge fund returns, Part II: The Loss Carry Forward scheme, in Modeling Dependence in Econometrics, Advances in Intelligent Systems and Computing 251, Springer International Publishing, 2014, 47-62.

S. Darolles, Université Paris – Dauphine, Member of QMI

C. Gouriéroux, University of Toronto and CREST, Member of QMI

Abstract: In addition to active portfolio management, hedge funds are characterized by the allocation of portfolio performance between the external investors and the management firm accounts. This allocation can take different forms, such as the Loss Carry Forward scheme, and some of them can be coupled with performance smoothing techniques. This paper shows that this additional smoothing component might explain some empirical facts observed on the distribution and the dynamics of hedge fund returns.

ECONOMETRICS OF RISK

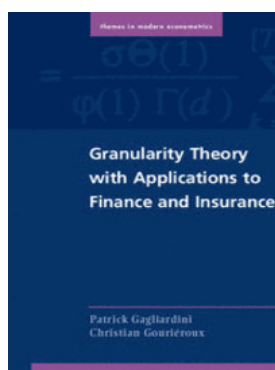
The dynamics of Hedge Fund Performance, in Econometrics of Risk, Springer International Publishing, forthcoming.

S. Darolles, Université Paris – Dauphine, Member of QMI

C. Gouriéroux, University of Toronto and CREST, Member of QMI

J. Teiletche, Unigestion

Abstract: The ratings of fund managers based on past performances of the funds and the rating dynamics are crucial information for investors. This paper proposes a stochastic migration model to investigate the dynamics of performance-based ratings of funds, for a given risk-adjusted measure of performance. We distinguish the absolute and relative ratings and explain how to identify their idiosyncratic and systematically persistent (resp. amplifying cycles) components. The methodology is illustrated by the analysis of hedge fund returns extracted from the TASS database for the period 1994-2008.



GRANULARITY THEORY WITH APPLICATION TO FINANCE AND INSURANCE, BOOK

Granularity Theory with Application to Finance and Insurance, 400p, Cambridge University Press, October 2014.

P. Gagliardini, University of Lugano and Swiss Finance Institute.

C. Gouriéroux, University of Toronto and CREST, Member of QMI.

Abstract: The risk analysis in portfolios of credits, or life insurance contracts, is made difficult by the nonlinearities of risk models, the dependencies between the individual risks, and the large size of the portfolios, which can include several thousands of contracts. The granularity principle has been introduced in the Basel 2 regulation for credit risk to solve these difficulties when computing the reserves. The principle requires three steps. First, the modeling step considers a Risk Factor Model (RFM), which distinguishes the systematic risks from the unsystematic risks. Second, this model is applied to a virtual portfolio of infinite size, leading to the so-called Asymptotic Risk Factor Model (ARFM). This gives in general explicit formulas for the Value-at-Risk and other risk measures, and thus for the required capital. Third, for a portfolio of large but finite size, closed form approximations are derived from an expansion around the ARFM. This provides the granularity adjustment for the required capital. Very often the third step is omitted in the computation of regulatory reserves, which can induce a significant underestimation of the required capital

The granularity principle can be applied to a variety of related problems. It can be applied for instance for efficient estimation in panel factor models with micro- and macro-dynamics, for improving macro-predictions from micro-data, or for pricing derivatives written on large portfolios. The aim of this book is to provide a first overview of granularity theory by following a progressive pedagogical approach.

SPECIAL ISSUE ON HEDGE FUNDS, SPECIAL ISSUE BANKERS, MARKETS AND INVESTORS



Special issue on hedge funds, guest editor for Bankers, Markets and Investors, March-April 2014

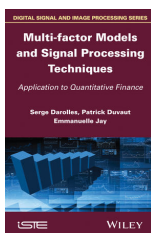
S. Darolles, Université Paris – Dauphine, Member of QMI

3.2. QUANTVALLEY/Wiley Monographs

- Date: 2013 - 2014
- Themes: Quantitative Management

The QUANTVALLEY collection, published by Wiley, aims to bring together a set of monographs, short and related to the themes of interest to quantitative management. The target audience is management company employees as well as Masters students specialising in Finance.

3.2.1. Multi-factor Models and Signal Processing Techniques: Application to Quantitative Finance



S. Darolles, Université Paris-Dauphine and CREST, QMI

P. Duvaut, ENSEA-ETIS, QMI

E. Jay, Chairman, QamLab, QMI

August 2013

3.2.2. Risk Parity

E. Jurczenko, ESCP Europe, Member of QMI, Editor

Forthcoming in 2015

3.2.3. Contagion phenomena with applications in finance

S. Darolles, Université Paris – Dauphine, Member of QMI

C. Gourieroux, University of Toronto and CREST, Member of QMI.

Forthcoming in 2015

3.3. Call for projects

No call in 2014. The project “Identification Contagion” received from the call for project 2013, will finally be launched in 2015.

Identifying Contagion, Professor M.Dungey, School of Economics and Finance, University of Tasmania, Australia and Professor E. Renault, Brown University, USA

3.4. Completed projects

1. **Momentum strategies in futures markets and trend-following funds**, Professor R. Kosowski, Center for Hedge Fund Research & Risk Management Laboratory at Imperial College Business School and A.-K. Baltas, Visiting Researcher, Imperial College, Quantitative Analyst at UBS Investment Bank.

In this paper, we rigorously establish a relationship between time-series momentum strategies in futures markets and commodity trading advisors (CTAs) and examine the question of capacity constraints in trend-following investing. First, we construct a very comprehensive set of time-series momentum benchmark portfolios. Second, we provide evidence that CTAs follow time-series momentum strategies, by showing that such benchmark strategies have high explanatory power in the time-series of CTA index returns. Third, we do not find evidence of statistically significant capacity constraints based on two different methodologies and several robustness tests. Our results have important implications for hedge fund studies and investors.

On-line working paper presentation: “Momentum strategies in futures markets and trend-following funds”. This paper has been presented at the QMI annual conference, Paris, November 2014.

2. **The booms and busts of beta arbitrage: measuring the extent of the low-beta crowd**, D. Lou, Financial Markets Group, London School of Economics and Professor C. Polk, Financial Markets Group, London School of Economics

Historically, low-beta stocks deliver high average returns and low risk relative to high-beta stocks, offering a potentially profitable investment opportunity for professional money managers to “arbitrage” away. We argue that beta-arbitrage activity in turn generates booms and busts in the strategy’s abnormal trading profits. In times of relatively little activity, the beta-arbitrage strategy exhibits delayed correction, taking up to three years for abnormal returns to be realized. In stark contrast, in times of relatively-high activity, short-run abnormal returns are much larger and then revert in the long run. Importantly, we document a novel positive-feedback channel operating through firm-level leverage that facilitates these boom and bust cycles. Namely, when arbitrage activity is relatively high and beta-arbitrage stocks are relatively more levered, the cross-sectional spread in betas widens, resulting in stocks remaining in beta-arbitrage positions significantly longer. Our findings are exclusively in stocks with relatively low limits to arbitrage (large, liquid stocks with low idiosyncratic risk), consistent with excessive arbitrage activity destabilizing prices.

On-line working paper: “The booms and busts of beta arbitrage”. This paper has been presented at the QMI annual conference, Paris, November 2014.

3. ***Predatory trading in equity markets***, V. van Kervel, VU University of Amsterdam and Professor A. Menkveld, VU University of Amsterdam.

This paper tests whether High-Frequency Traders (HFTs) follow market making or predatory trading strategies around the execution of institutional parent orders. For large institutional orders we observe that the net inventory positions of the HFTs follow the predatory trading pattern of Brunnermeier and Pedersen (2005). That is, with a delay, the HFTs increase their inventory positions when the institutions are buying and decrease them when the institutions are selling. We observe HFT market making for parent orders that are relatively small and last a short period of time. A matched samples analysis reveals that the HFTs always follow market making strategies on trading days with similar characteristics but without an active institution. Finally, in the cross-section of institutional parent orders, a proxy of predatory trading is strongly correlated with execution costs, after controlling for common characteristics that affect execution costs.

V. Ven Kervel has presented a preliminary version of the paper “Do High-Frequency Traders Engage in Predatory Trading?” at the QMI annual conference, Paris, November 2014.

4. ***Machine Learning, Sentiment indices and Stock Market Prices***, Professor M. McAleer, Professor D.E. Allen and Dr. A.K. Singh, Econometric Institute, Erasmus School of Economics, Erasmus University Rotterdam, The Netherlands.

Abstract : The focus of this study is to develop theories that can underpin information mining on the web to produce reliable information and to assess the impact of existing methods on the behaviour of market prices using techniques that are based upon the concept of entropy.

The framework for the analysis will be provided by information theory. The major metrics will be constructed on the application of concepts related to Shannon entropy and cross entropy. The data for the study will be drawn from Thomson Reuters market data provided by The Securities Industry Research Centre of the Asia Pacific (SIRCA).

Two working papers are online

- a. “An entropy based analysis of the relationship between the DOW JONES Index and the TRNA Sentiment series”,
- b. “Daily Market News Sentiment and Stock Prices”.

5. ***Contagious Defaults: Evidence from Subprime Mortgages***, Professor D. Keenan, Professor A. Heinen, and M.-L. Kim, Université de Cergy Pontoise, France.

Abstract: The object of this project is to study default dependence and contagion amongst nonagency securitized mortgages in the US over the period 1998-2011. We will use a Cox proportional hazard model in a competing risk framework for default (and prepayment) and a copula model for the dependence amongst individual hazards. Dependence between defaults can occur because of geographical proximity, common economic conditions, which may be of either a local or economy-wide nature, the business cycle, interest rates, etc. We want to quantify the amount of this default dependence and investigate the reasons why such dependence occurs.

Online working paper: “Contagion in Subprime Mortgage Defaults: a Composite Likelihood Approach”

4. RESEARCH EXPOSURE AND DIFFUSION

Over and above research production, the QMI aims to distribute quantitative management academic research throughout the scientific community but also towards quantitative management professionals (knowledge diffusion). To this end, the QMI's research will be presented in international conferences, within the framework of an annual conference addressed to academics and professionals. Furthermore, training (research applications) will be developed and the website will propose research articles and webinars than put that research into practice.

4.1. Conference and seminar participation

4.1.1. Institutional Management FORUM, PARIS, 20 March 2014

In collaboration with the Institut Louis Bachelier (ILB), Morningstar ran the Financial Research and Innovation forum. The aim of this forum was to offer a point of contact between academia, technological innovation and practical applications, so as to encourage experts and practitioners to think about financial mechanisms in a new way. Four members of the RI participated in this initiative.

- Liquidité(s) et gestion d'actifs: Quels nouveaux challenges ?
S. Darolles, Université Paris – Dauphine and Member of the QMI
- Market Making et liquidité des ETFs
F. Riva, IAE Lille and Member of the QMI
- Méthode de construction de portefeuille basée sur le risque: Quels risques ?
E. Jurczenko, E., ESCP Paris and Member of the QMI.
- La liquidité des actifs financiers : Analyse à court et long terme
G. Mero, Université Cergy-Ponthoise, THEMA and Member of the QMI.

4.1.2. 7th CSDA International Conference (CFE 2014)

Organization of sessions at the Computational and Financial Econometrics, Pisa, Italy, December 2014

- Liquidity and contagion, session CS17.
S. Darolles, Organizer, Université Paris-Dauphine, Member of the QMI
G. Le Fol, Chairman and organizer, Université Paris – Dauphine, CREST, Scientific Director of the QMI
- Tracking illiquidities in daily and intradaily characteristics
G. Mero, CNRS, Ecole Polytechnique and Member of the QMI
- Non-synchronous market impact and hedge fund portfolio construction
S. Darolles, Université Paris-Dauphine, Member of the QMI
- Statistical signal processing in asset management, session CS18.
S. Darolles, Chairman and organizer, Université Paris-Dauphine, Member of the QMI
- Trend-following meets Risk-Parity
N. Baltas, Imperial College , UBS, Associate researcher of the QMI

- Simulating and analyzing order book data: the queue-reactive model
- M. Rosenbaum**, UPMC, Member of the QMI

4.1.3. Seminar and conference participations

QMI's researchers have presented their work at several conferences and seminars:

"Active Risk-Based Investing", Jurczenko E. and J. Teiletche (2014), QMI WP

- Deutsche Bank QS Conference, 2014, London, October 8-9, 2014,
- CQA Asia Conference 2014, Hong Kong, November 5-6, 2014.

"Clarifying the ambiguous role of HFT in liquidity provision", S. Darolles, G. Le Fol and G. Mero

- 6th Financial Econometrics Conference, Paris, December, 4-5

"Contagion analysis in the banking sector", S. Darolles, S. Dubecq and C. Gouriéroux

- Risk Forum, Paris, March 2014
- AFFI Conference, Aix en Provence, May 2014
- SOFIE Conference, Toronto, June 2014
- ACPR Conference, Paris, 3-4 July 2014
- CFE Conference, Pisa, December 2014

"Double Instrumental Variable Estimation of Interaction Models", P. Gagliardini and C. Gouriéroux

- 6th French Econometrics Conference, Paris, December 2014

"Explosive Bubble Modelling by non-causal Process." C. Gouriéroux and J-M. Zakoïan

- Computational and Financial Econometrics (CFE'14), Pisa, Italy, December 2014.
- 5th Meeting on Statistics and Data Mining, Djerba, Tunisia, March 13-14, 2014.

"Financial market liquidity: Who is acting strategically? ", S Darolles, G Le Fol and G Mero

- 8th International Conference on Computational and Financial Econometrics (CFE 2014), Pisa, Italy, 6-8 December 2014.
- 2nd Annual QUANTVALLEY/QMI conference, November 25, 2014.

"Generalized Risk-Based Investing", Jurczenko E., T. Michel and J. Teiletche, (2014), QMI WP, (submitted to Journal of Investment Strategies).

- QMI Ca'Foscari Diversification and Risk Workshop, 2014, Venice May 16, 2014.

"Limit theorems for nearly unstable Hawkes processes", T. Jaisson and M. Rosenbaum, forthcoming in The Annals of Applied Probability.

- Workshop Statistics, Jump Processes and Malliavin Calculus, Barcelona, June 26, 2014.
- Joint IMU-AMS conference, Tel Aviv, June 16, 2014.
- Asymptotic statistics and computations, ISM and University of Tokyo, March 12, 2014.

"Liquidity risk and contagion for liquid funds", S. Darolles, J. Dudek and G. Le Fol

- 23rd European Financial Management Association, Rome, Italy, June 25-28, 2014.
- 31th French Finance Association Conference, IAE Aix, May 20 2014.

"Liquidity risk estimation in conditional volatility models", S. Darolles, C. Francq, G. Le Fol and J.M. Zakoïan

- ESSEC Risk Seminar, Paris, 19 February 2014.

Positional Portfolio Management, P. Gagliardini, C. Gouriéroux and M. Rubin

- 7th Annual SOFIE Conference, Toronto, June 2014
- Econometrics Seminar Ryerson Univ., Toronto, October 2014

"Risk-parameter estimation in volatility models." C.Francq, J-M. Zakoïan

- GSBE - Econometrics seminar, Maastricht, Netherlands, February 2014.
- 10th BMRC-DEMS Conference, London, UK, May 2014.

"Robust portfolio allocation with risk contribution restrictions", S. Darolles, E. Jay and C. Gouriéroux

- QMI/QuantValley Workshop, Venice, 16 May 2014 .

"Survival of hedge funds: Frailty vs contagion", S. Darolles, P. Gagliardini and C. Gouriéroux

- Conference on Asset Management, Cologne, 7 April 2014.

"Simulating and analyzing order book data: the queue-reactive model ", M. Rosenbaum, W. Huang, and C. Lehalle, forthcoming in Journal of the American Statistical Association.

- CFE conference, Pisa, Italy, December 2014.
- SIAM conference on financial mathematics and engineering, Chicago, November 14, 2014.
- Cornell-Manhattan Finance Seminar, June 4, 2014.

" The determinants of ETF liquidity: Theory and evidence from European markets", A. Calamia, L. Deville and F. Riva, QMI WP,

- Seminari di Dipartimento Banca e Finanza Università Cattolica del Sacro Cuore, January 24, 2014
- Forum GI, agora Morningstar, March 20 2014
- Journée du LEM (Lille Economie et Management), Lille, March 27 2014
- EFMA Rome, June 28, 2014
- International University of Monaco, November 13, 2014
- CFE Pisa, December 6, 2014.

" Trading Volume and Arbitrage ", Darolles S., and G. Le Fol, QMI WP, published in International Journal on Business Review

- 4th Annual International Conference on Accounting and Finance, Phuket, Thailand, April 28-29, 2014

" Tracking illiquidities in daily and intradaily characteristics", Darolles S., G. Le Fol and, G. Mero, QMI WP

- CFE Pisa, December 6, 2014.

" Volatility is rough", Gatheral J., Thibault J., and M. Rosenbaum

- Conference Market Microstructure Confronting Many Viewpoint 3, Paris, December 10, 2014.
- CFE conference, Pisa, December 6, 2014
- Workshop on Stochastic and Quantitative Finance, Imperial college London, November 29, 2014.
- Workshop on Recent Advances in High-Frequency Statistics, Humbolt Universitat Berlin, November 21, 2014

4.3. Annual Conference

Every year, the QMI organises a conference in the autumn. Intended for quantitative management experts – academics, professionals and journalists – it will aim to combine the research undertaken by members of the QMI, projects financed by the QMI and research by internationally renowned researchers, by organising a

guest session and presentation sessions for research articles. A roundtable has also been organised in which academics, journalists and professionals will be invited to take part in a debate.

Date, location: November 2014 (Paris)

- Themes: Quantitative Management

The QuantValley/Quantitative Management Initiative (QMI)'s first objective is to favor synergies between quantitative management firms, academia and market authorities in order to achieve excellence in research. To optimize the cooperation between professionals and researchers, the initiative organizes workshops and conferences with the support of its academic partners, Université Paris-Dauphine and ENSAE- the French National School of Statistics and Administration. The first QuantValley/QMI Annual Research Conference will explore and present new findings on the following topics: Statistical Signal Processing, Market Liquidity, High Frequency Trading, Contagion and Systemic Risk, Risk Parity, and more generally all subjects dealing with Portfolio and Risk Management.

Venue :

Université Paris – Dauphine

Place du Maréchal de Lattre de Tassigny, 75016 Paris



235 persons were registered: 80 for the research papers' sessions and 234 for the panel session.

Program 2014

November 25, 2014

10 : 30 am Registration

10 : 50 am Opening address by A. Chretien (QUANTVALLEY, Aequam)

11 : 00 – 12 : 30 am Investment Strategies Session

– "Momentum Strategies in Futures Markets and Trend-following Funds", N. Baltas (UBS & Imperial College Business School) and R. Kosowski.

Discussant: E. Passari (Université Paris-Dauphine).

– "[The Booms and Busts of Beta Arbitrage](#)", S. Huang, D. Lou (London School of Economics) and C. Polk.

Discussant: E. Jurczenko (ESCP Europe & QMI).

12 : 30 – 2 : 00 pm Lunch break

2 : 00 – 3 : 30 pm Predatory and Toxic Trading Session

– "Do High-Frequency Traders Engage in Predatory Trading?", V. Van Kervel (VU Univ. Amsterdam).

Discussant: C.-A. Lehalle (CFM).

– "[Toxic Arbitrage](#)", T. Foucault (HEC Paris), R. Kozhan and W. Wah Tham.
Discussant: F. Riva (Université Paris–Dauphine & QMI).

3 : 30 – 5 : 00 pm Liquidity and Contagion Session

– "[Clarifying the Ambiguous Role of High Frequency Trading in Liquidity Provision](#)", S. Darolles, G. Le Fol (Université Paris–Dauphine & QMI), and G. Mero.
Discussant: E. Arisoy (Université Paris–Dauphine).

– "[Contagion in Subprime Mortgage Defaults: a Composite Likelihood Approach](#)", A. Heinen (Cergy Pontoise University), J. B. Kau, D. C. Keenan, M. Lim Kim, and C. Slawson.
Discussant: S. Darolles (Université Paris–Dauphine & QMI).

5 : 00 – 5 : 30 pm Coffee break

5 : 30 – 7 : 00 pm Big data and Machine Learning Session

– "[Daily Market News Sentiment and Stock Prices](#)", D. Allen, M. McAleer and A. Singh (Edith Cowan University).
Discussant: Rucong Zhang (Exane)

– "[Do Google Trend Data Contain More Predictability than Price Returns?](#)", D. Challet (Ecole Centrale de Paris) and A. Bel Hadj Ayed.
Discussant: Gulten Mero (Université de Cergy–Pontoise & QMI)

7 : 30 – 9 : 00 pm Panel Session, co-organized by the CFA France and the [Master 203 – Financial Markets](#), (in French) "Could aversion to risk impede long term investing?", with the participation of :

- P. Blanqué, (Global CIO, Amundi)
- P. Desfossés (CEO, ERAFP)
- F. de Varenne (CEO, SCOR Global Investments)

9 : 00 pm Cocktail





4.4. Seminars & workshops

Over and above research production, the QMI aims to distribute quantitative management academic research throughout the scientific community but also towards quantitative management professionals (knowledge diffusion). To this end, QMI organizes seminars to present new, effective investment techniques being developed by academicians and practitioners. After the success of the Geneva' Risk-based Portfolio Construction workshop, we organized the following workshops.

4.4.1. Liquidity risk & tick size, December 16, 2013, NYSE-Euronext London.



The discussions about liquidity risk per se and/or the price impact of the tick size, show that the liquidity issue is at the heart of today's preoccupations. The liquidity issue has been taken up by the presentation of four recent academic papers on this theme and discussed during the panel session that will follow.

This event is organized by the QMI/Quantvalley Research Project and Imperial College London Business School, with the support of NYSE Euronext.

60 registered persons.

1.45pm – 2.00pm: Registration

2.00pm–4.00pm: Academic Presentations

Chair: Gaelle Le Fol (Université Paris-Dauphine & QMI)

- Robert Kosowski (Imperial College Business School): Geography, Liquidity and Fund Performance: New Evidence from UCITS Hedge Funds
- Serge Darolles (Université Paris-Dauphine & QMI): Liquidity Risk Estimation in Conditional Volatility Models

- Kevin Sheppard (University of Oxford): Measuring Market Speed
- Mathieu Rosenbaum (UPMC & QMI): Large Tick Assets: Implicit Spread and Optimal Tick Size

4.00pm – 4.30pm: Coffee Break

4.30pm – 6.00pm: Panel Session

Moderator: Laurent Fournier (Head of Business Statistics & Data Intelligence European Markets, NYSE Euronext)

- Jean-René Giraud (CEO, Koris International)
- Mathieu Rosenbaum (Professor, UPMC & QMI)
- Giovanni Beliossi (Managing Partner & CEO, FGS Capital)
- Kee-Meng Tan (Head of the Electronic Trading Group, KCG Europe Limited)

6.00pm – 7.00pm: Cocktail

4.4.2. Diversification & Risk, May 16, 2014, University of Venice



At the heart of the asset management industry, diversification and risk management has been taken up by the presentation of four recent academic papers on this theme and discussed during the panel session that will follow.

This event was organized by the QMI/QuantValley Research Project and the International Center for Economics and Finance (ICEF) of the Ca' Foscari University of Venice, with the support of Euronext and CFA Society Italy.

1.45pm – 2.00pm: Registration

2.00pm–4.00pm: Academic Presentations

Chair: Arnaud Chretien (Founder & CIO, Aequam & President, QuantValley)

- Monica Billio (University of Venice): Diversification and Systemic Risk
- Serge Darolles (Université Paris-Dauphine & QMI): The Hidden Risks of Smart Indices
- Emmanuel Jurczenko (ESCP Europe & QMI): Generalized Risk Based Investing
- Attilio Meucci (KKR & SYMMYS): (Re)Defining and Managing Diversification

4.00pm – 4.30pm: Coffee Break

4.30pm – 5.15pm: Keynote Speech

Robert Fernholz (Founder and Chairman of the Investment Committee, INTECH), Diversification, Volatility and "Surprising Alpha"

5.30pm – 6.00pm: Panel Session

Moderator: Christian Gouriéroux (CREST, University of Toronto & QMI)


- Daniele Bernardi (Owner, Diaman SCF)
- Yves Choueifaty (CEO, TOBAM)
- Gianluca Oderda (Head of Quantitative Investments, Ersel Asset Management SGR S.p.A.)
- Vassilios Papathanakos (Deputy Chief Investment Officer, INTECH)

6.30pm – 7.30pm: Cocktail

4.6. Website

The goal of the website is to become a showcase for the QMI and to encourage exchange between research and professionals by becoming for example a public library of research articles and computer code relating to quantitative management themes. Address: QMinitiative.org.


The website is a way to manage the annual conference and workshops registrations. Moreover, it is continuously updated.



Quantitative
Management
Initiative

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[Contacts](#) [Events Registrations](#)



Annual Conference

Every year, QuantValley and the Quantitative Management Initiative (QMI) organizes a conference. Intended for quantitative management experts – academics, professionals and journalists – it will aim to combine the research undertaken by members of

ABOUT QMI

Hosted within the [Fondation du Risque](#) and with the support of the [Institut Louis Bachelier](#), the work conducted within the framework of this Research initiative is principally carried out by teams from the [University Paris-Dauphine](#) and the [ENSAE \(École Nationale de la statistique et de l'administration économique\)](#).

It benefits from partnerships with [GFI](#), [UBS](#) and [QUANTVALLEY](#).

[More information](#)



QMI News & Events

Venice Workshop

Ca' Foscari University of Venice, Auditorium Santa Margherita, Campo Santa Margherita, Dorsoduro 3689, Venezia from 2014/05/16 to 2014/05/16

London Workshop

NYSE Euronext, Cannon Bridge House, 1 Cousin Lane, LONDON from 2013/12/16 to 2013/12/16

7th CSDA International Conference on Computational and Financial Econometrics (CFE 2013)

Senate House, University of London, London from 2013/12/14 to 2013/12/16

Geneva Workshop

Fédération des Entreprises Romandes Genève, 98 Rue de Saint Jean, Geneva from 2013/09/26 to 2013/09/26

First QMI Annual Research Conference

New-York, USA. from 2013/06/25 to 2013/06/26

RESEARCH ACTIVITY

This research initiative aims to be a means of exchange and reflexion where research themes emerge naturally, and become the starting point of research articles in the best international journals.

[Read more](#)

RESOURCES

The QMI aims to distribute quantitative management academic research throughout the scientific community but also towards quantitative management professionals. To this end, training (research applications) will be developed and the website will propose research articles and webinars that put that research into practice.

[Read more](#)



Annual Conference

INFOS & REGISTRATION



