

CURRICULUM VITAE

NAME Jean-Michel Zakoian January 2018

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<http://www.crest.fr/pagesperso.php?user=3078>

EDUCATION

1997 HDR in Statistics (a 2nd Thesis required to supervise PhDs), Univ. Lille 1.
1990 PhD, Applied Mathematics (Statistics), Univ. Paris 9.
1985 ENSAE diploma (National School of Statistics & Economic Admin.), Paris.

ACADEMIC POSITIONS

2007- CREST, Co-director of the Finance-Insurance Lab. since 2006
2000- Full Professor in Applied Math., Exc. class (CNU 2014), 1st class (CNU 2008), Univ. Lille 3
1993-2000 Associate Professor, Department of Mathematics, University Lille 1
1992-1993 CORE post-doc Fellowship, Louvain-la-Neuve
1991-1992 ATER, Department of Mathematics, University Paris 9

EDITORIAL POSITIONS

Journal of Time Series Analysis	Associate Editor (2013-)
Econometric Theory	Associate Editor (2012-)
Stat	Associate Editor (2012-2014)
Annals of CFE (CSDA)	Guest Associate Editor (2011-2015)

AWARD

Econometric Theory Award Multa Scripsit (2013).

GRANTS

1 Coordinator for CREST of the ANR project "MultiRisk", 2016-2020.
2 Member of the ANR project 180403 "ECONOM&RISK", 2010-2013

RESEARCH INTERESTS

1. Risk measures. Estimation risk
2. Volatility modeling (GARCH and stochastic volatility)
3. Non stationarity: unit roots, bubbles and explosive processes
4. Probability properties (stationarity, mixing) of non linear time series models
5. Asymptotic properties of estimators

PUBLISHED WORKS

Books:

1. FRANCQ, C. AND J.M. ZAKOÏAN (2009) : *Modèles GARCH : structure, inférence statistique et applications financières*. Economica, 605 pages.
2. FRANCQ, C. AND J.M. ZAKOÏAN (2010) : *GARCH Models: Structure, Statistical Inference and Financial Applications*. John Wiley, 503 pages¹.

Refereed Journal Articles:

3. GOURIÉROUX, C. AND J.M. ZAKOÏAN (2017): "Local explosion modelling by noncausal process". *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 79, 737–756.
4. FRANCQ, C., WINTENBERGER, O. AND J.M. ZAKOÏAN (2017) "Goodness-of-fit tests for Log-GARCH and EGARCH models." Forthcoming in *Test*.
5. FRANCQ, C. AND J.M. ZAKOÏAN (2016): "Estimating multivariate GARCH models equation by equation." *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 78, 613–635.
6. DAROLLES, S., FRANCQ, C., LEFOL, G. AND J.M. ZAKOÏAN (2016): "Intrinsic liquidity in conditional volatility Models." *Annals of Economics and Statistics* 123-124, 225–246.
7. FRANCQ, C. AND J.M. ZAKOÏAN (2016): "Looking for efficient QML estimation of conditional VaRs at multiple risk levels." *Annals of Economics and Statistics* 123-124, 9–28.
8. FRANCQ, C., HORVATH L. AND J.M. ZAKOÏAN (2016): "Variance targeting estimation of multivariate GARCH models", *Journal of Financial Econometrics* 14, 353–382.
9. GOURIÉROUX, C. AND J.M. ZAKOÏAN (2015): "On uniqueness of moving average representations of heavy-tailed stationary processes." *Journal of Time Series Analysis* 36, 876–887
10. FRANCQ, C. AND J.M. ZAKOÏAN (2015): "Risk-parameter estimation in volatility models." *Journal of Econometrics* 184, 158–173.
11. LI, D., LING, S. AND J.M. ZAKOÏAN (2015): "Asymptotic inference in multiple-threshold double autoregressive models". *Journal of Econometrics* 189 , 415–427.
12. FRANCQ, C. ET J.M. ZAKOÏAN (2014): "Comment on "Quasi-Maximum Likelihood Estimation of GARCH Models with Heavy Tailed Likelihoods" by J. Fan, L. Qi et D. Xiu." *Journal of Business & Economic Statistics* 32, 198–201.
13. FRANCQ, C. AND J.M. ZAKOÏAN (2013): "Inference in non stationary asymmetric GARCH models." *Annals of Statistics* 41, 1970–1998.
14. FRANCQ, C., WINTENBERGER, O. AND J.M. ZAKOÏAN (2013) : "GARCH models without positivity constraints: Exponential or Log GARCH?" *Journal of Econometrics* 177, 34–46.

¹Book review by J. Huang in *JASA*, June 2012, p. 847–849.

15. FRANCQ, C. AND J.M. ZAKOĀN (2013): "Estimating the Marginal Law of a Time Series with Applications to Heavy Tailed Distributions." *Journal of Business & Economic Statistics* 31, 412–425.
16. GOURIÉROUX, C. AND J.M. ZAKOĀN (2013) : "Estimation adjusted VaR." *Econometric Theory* 29, 735–770.
17. FRANCQ, C. AND J.M. ZAKOĀN (2013) : "Optimal predictions of powers of conditionally heteroskedastic processes." *Journal of the Royal Statistical Society - Series B*, 75, 345–367.
18. FRANCQ, C. AND J.M. ZAKOĀN (2012) : "Strict stationarity testing and estimation of explosive and stationary GARCH models", *Econometrica*, 80, 821–861.
19. FRANCQ, C. AND J.M. ZAKOĀN (2012) : "QML estimation of a class of multivariate asymmetric GARCH models", *Econometric Theory*, 28, 179–206.
20. FRANCQ, C., LEPAGE G. AND J.M. ZAKOĀN (2011) : " Two-stage non Gaussian QML estimation of GARCH Models and testing the efficiency of the Gaussian QMLE", *Journal of Econometrics*, 165, 246–257.
21. FRANCQ, C., HORVATH L. AND J.M. ZAKOĀN (2011) : "Merits and Drawbacks of Variance Targeting in GARCH Models", *Journal of Financial Econometrics*, 9, 619–656.
22. REGNARD, N. AND J.M. ZAKOĀN (2011) : "A conditionally heteroskedastic model with time-varying coefficients for daily gas spot prices", *Energy Economics*, 33, 1240–1251.
23. HAMADEH, T., AND J.M. ZAKOĀN (2011): "Asymptotic properties of LS and QML estimators for a class of nonlinear GARCH Processes", *Journal of Statistical Planning and Inference*, 141, 488–507.
24. DABO-NIANG, S., C. FRANCQ AND J.M. ZAKOĀN (2010) : "Combining nonparametric and optimal linear time series predictions", *Journal of the American Statistical Association*, 105, 1554–1565.
25. FRANCQ, C. AND J.M. ZAKOĀN (2010) : "Inconsistency of the MLE and inference based on weighted LS for LARCH models", *Journal of Econometrics* 159, 151–165.
26. REGNARD, N. AND J.M. ZAKOĀN (2010) : "Structure and estimation of a class of nonstationary yet nonexplosive GARCH models", *Journal of Time Series Analysis* 31, 348–364.
27. FRANCQ, C., L. HORVATH AND J.M. ZAKOĀN (2010) : "Sup-tests for linearity in a general nonlinear AR(1) model", *Econometric Theory* 26, 965–993.
28. FRANCQ, C. AND J.M. ZAKOĀN (2009) : "Testing the nullity of GARCH coefficients : correction of the standard tests and relative efficiency comparisons", *Journal of the American Statistical Association*, 104, 313–324.
29. FRANCQ, C. AND J.M. ZAKOĀN (2009) : "Bartlett's formula for a general class of non linear processes", *Journal of Time Series Analysis*, 30, 449–465.
30. FRANCQ, C. AND J.M. ZAKOĀN (2008) : "Estimating ARCH Models When the Coefficients are Allowed to be Equal to Zero", *Austrian Journal of Statistics*, 37, 31–40.

31. FRANCO, C. AND J.M. ZAKOĀIAN (2008) : "Deriving the autocovariances of powers of Markov-switching GARCH models, with applications to statistical inference", *Computational Statistics and Data Analysis*, 52, 3027–3046.
32. FRANCO, C., S. MAKAROVA AND J.M. ZAKOĀIAN (2007) : "A class of stochastic unit-root bilinear processes. Mixing properties and unit-root test", *Journal of Econometrics*, 142, 312-326.
33. FRANCO C. AND J.M. ZAKOĀIAN (2007) : "Quasi-Maximum Likelihood Estimation in GARCH Processes when some coefficients are equal to zero", *Stochastic Processes and their Applications*, 117, 1265-1284.
34. FRANCO, C. AND J.M. ZAKOĀIAN (2007) : "HAC estimation and strong linearity testing in weak ARMA models", *Journal of Multivariate Analysis*, 98, 114-144.
35. SAĀDI, Y., AND J.M. ZAKOĀIAN (2006) : "Stationarity and geometric ergodicity of a class of non-linear ARCH models", *Annals of Applied Probability*, 16, 2256-2271.
36. FRANCO, C., AND J.M. ZAKOĀIAN (2006) : "Linear-representation based estimation of stochastic volatility models", *Scandinavian Journal of Statistics*, 33, 785-806.
37. FRANCO, C., AND J.M. ZAKOĀIAN (2006) : "Mixing properties of a general class of GARCH(1,1) models without moment assumptions on the observed process", *Econometric Theory*, 22, 815-834.
38. FRANCO, C., AND J.M. ZAKOĀIAN (2005) : "The L^2 -Structures of Standard and Switching-regime GARCH models", *Stochastic Processes and their Applications*, 115, 1557-1582.
39. FRANCO, C., AND J.M. ZAKOĀIAN (2005) : "A central limit theorem for mixing triangular arrays of variables whose dependence is allowed to grow with the sample size", *Econometric Theory*, 21, 1165-1171.
40. FRANCO, C., R. ROY AND J.M. ZAKOĀIAN (2005) : "Diagnostic checking in ARMA models with uncorrelated errors", *Journal of the American Statistical Association*, 13, 532-544.
41. FRANCO, C., AND J.M. ZAKOĀIAN (2004) : "Maximum Likelihood Estimation of Pure GARCH and ARMA-GARCH Processes", *Bernoulli*, 10, 605-637.
42. FRANCO, C., AND J.M. ZAKOĀIAN (2002) : "Autocovariance structure of powers of switching-regime ARMA Processes", *ESAIM: Probability & Statistics*, 6, 259-270.
43. FRANCO, C., AND J.M. ZAKOĀIAN (2002) : "Comments on the paper by Minxian Yang: 'Some properties of vector Autoregressive processes with Markov-Switching coefficients'", *Econometric Theory*, 18, 815-818.
44. L. BROZE, C. FRANCO AND J.M. ZAKOĀIAN (2002) : "Efficient Use of High Order Autocorrelations for Estimating Autoregressive Processes", *Journal of Time Series Analysis*, 23, 287-312.
45. FRANCO, C., AND J.M. ZAKOĀIAN (2001) : "Stationarity of Multivariate Markov-switching ARMA Models", *Journal of Econometrics*, 102, 339-364.
46. L. BROZE, C. FRANCO AND J.M. ZAKOĀIAN (2001) : "Non redundancy of high order moment conditions for efficient GMM estimation of weak AR processes", *Economic Letters*, 71, 317-322.
47. EL BABSIRI, M., AND J.M. ZAKOĀIAN (2001) : "Contemporaneous Asymmetry in GARCH Processes," *Journal of Econometrics*, 101, 257-294.

48. FRANCO, C., ROUSSIGNOL, M. AND ZAKOIAN, J.M. (2001) : "Conditional Heteroskedasticity driven by Hidden Markov Chains," *Journal of Time Series Analysis*, 22, 197-220.
49. FRANCO, C. AND J.M. ZAKOIAN (2000) : "Stationnarité des modèles ARMA à changement de régime markovien," *C.R.A.S*, t.330, 1031-1034.
50. FRANCO, C., ROUSSIGNOL, M. AND ZAKOIAN, J.M. (2000) : "Modèles ARCH avec changement de régime markovien," *C.R.A.S*, t.330, 921-924.
51. FRANCO, C., AND J.M. ZAKOIAN (2000) : "Estimating Weak GARCH Representations," *Econometric Theory*, 16, 692-728.
52. FRANCO, C., AND J.M. ZAKOIAN (2000) : "Covariance Matrix Estimation for Estimators of Mixing Weak ARMA Models," *Journal of Statistical Planning and Inference*, 83, 369-394.
53. FRANCO, C., AND J.M. ZAKOIAN (2000) : "Multivariate ARMA Models with Generalized Autoregressive Linear Innovation," *Stochastic Analysis and Applications*, Vol. 18 n° 2, 231-260.
54. FRANCO, C., AND J.M. ZAKOIAN (1998) : "Estimation de représentations GARCH faibles", *C.R.A.S.*, t.326, 495-498.
55. FRANCO, C., AND J.M. ZAKOIAN (1998) : "Estimation de la précision asymptotique dans l'estimation de modèles ARMA faibles", *C.R.A.S.*, t.326, 377-380.
56. FRANCO, C., AND J.M. ZAKOIAN (1998) : "Estimating Linear Representations of Nonlinear Processes," *Journal of Statistical Planning and Inference*, 68, 145-165.
57. BROZE L., O. SCAILLET AND J.M. ZAKOIAN (1997) : "Quasi Indirect Inference for Diffusion Processes", *Econometric Theory*, 14, 161-186.
58. FRANCO, C., AND J.M. ZAKOIAN (1996) : "Estimation de représentations ARMA faibles sous hypothèses de mélange", *C.R.A.S.*, t. 323, Série 1, 297-300.
59. BROZE L., O. SCAILLET AND J.M. ZAKOIAN (1995) : "Testing for Continuous-Time Models of the Short Term Interest Rate", *Journal of Empirical Finance*, 2, 199-223.
60. ZAKOIAN J.M. (1994) : "Modèles autorégressifs à seuils multiples", *Annales d'économie and de statistique*, 36, 23-56.
61. ZAKOIAN J.M. (1994) : "Threshold Heteroskedastic Models", *Journal of Economic Dynamics and Control*, 18, 931-955.
62. BROZE L., O. SCAILLET AND J.M. ZAKOIAN (1994) : "Estimation d'équations de diffusion à partir d'observations discrètes and de méthodes fondées sur des simulations", *Cahiers du Centre d'Etude de Recherche Opérationnelle*, 36, 43-55.
63. ZAKOIAN J.M. (1994) : "Modèles autorégressifs à seuil", *Publications de l'Institut de Statistique de l'Université de Paris*, 85-114.
64. RABEMANANJARA R. AND J.M. ZAKOIAN (1993) : "Threshold ARCH Models and Asymmetries in Volatility", *Journal of Applied Econometrics*, 8, 31-49.

Papers in Edited Volumes:

65. FRANCO, C. ET J.M. ZAKOĀIAN (2014) : "Multi-level conditional VaR estimation in dynamic models", in *Modeling Dependence in Econometrics. Advances in Intelligent Systems and Computing Volume 251*. Edts: V-N. Huynh et al., Springer.
66. FRANCO, C. AND J.M. ZAKOĀIAN (2009) : "A tour in the asymptotic theory of GARCH estimation". in "Handbook of Financial Time Series", Edts: T. G. Andersen, R.A. Davis, J-P. Kreiss, T. Mikosch. Springer Statistics.
67. FRANCO, C., AND J.M. ZAKOĀIAN (2006) : "On Efficient Inference in GARCH Processes", p. 305–327 in *Dependence in Probability and Statistics*, Springer, edited by P. Bertail, P. Doukhan and P. Soulier.
68. FRANCO, C., AND J.M. ZAKOĀIAN (2005) : "Recent Results for Linear Time Series Models with Non Independent Innovations", p. 241–266 in *Statistical Modeling and Analysis for Complex Data Problems*, P. Duchesne and B. Rémillard Editors, Kluwer.
69. RABEMANANJARA R. AND J.M. ZAKOĀIAN (1993) : "Threshold ARCH Models and Asymmetries in Volatility", p. 179-198 in *Nonlinear dynamics, chaos and econometrics*, M.H. Pesaran and S.M. Potter Editors, John Wiley, New-York, 1993.

Other scientific publications :

70. BROZE L., O. SCAILLET AND J.M. ZAKOĀIAN (1996) : "Estimation de la structure par terme des taux d'intérêt", *Revue Economique*, 47, 511–519.
71. ZAKOĀIAN J.M. (1992) : "Les Modèles ARCH: une revue de la littérature", *Journal de la Société Statistique de Paris*, 40–57.

Proceedings :

72. FRANCO, C. AND ZAKOĀIAN, J-M. (2010) Optimal predictions of powers of conditionally heteroskedastic processes. *Proceedings of the ninth international conference Computer Data Analysis and Modeling*, Minsk.
73. FRANCO, C. AND J-M. ZAKOĀIAN (2008) Autocovariance Structure of Markov- Switching ARMA and GARCH Processes. In : *Mathematisches Forschungsinstitut Oberwolfach Report No. 12/2008: Mini-Workshop on "Time Series with Sudden Structural Changes"*, 577–579, Oberwolfach, Germany.
74. FRANCO, C. AND J-M. ZAKOĀIAN (2007) : "Testing that some GARCH coefficients are equal to zero," *Proceedings of the eighth international conference Computer Data Analysis and Modeling*, Minsk, 1, 54–59.
75. FRANCO, C., AND J.M. ZAKOĀIAN (1999) : "Linear Representations based Estimation of Switching Regime GARCH Models," *NBER Time Series Conference Proceedings*.
76. FRANCO, C., AND J.M. ZAKOĀIAN (1998) : "Estimating the Order of Weak ARMA Models," *Prague Stochastics'98 Proceedings*, Editors: M. Huskova, P. Lachout & J.A. Visek, 165–168.

Non-scientific papers, vulgarization :

77. GOURIÉROUX, C. AND J.M. ZAKOÏAN (2010) : "L'organisation de la recherche en finance et assurance," *Variances*, 38, 20–25.
78. GOURIÉROUX, C. AND J.M. ZAKOÏAN (2010) : "De la recherche au développement en finance," *Variances*, 38, 26–29.
79. AURAY, S., FRANCO, C. ET J.M. ZAKOÏAN (2012) : "Nobel 2011 d'économie – Quelques remarques sur les prix Nobel 2011 d'économie et la modélisation des séries économiques," *Images des Mathématiques*, CNRS.

Unpublished manuscripts :

80. CEROVECKI, C., HÖRMANN S., FRANCO, C. AND J.M. ZAKOÏAN (2018): Functional GARCH models: the quasi-likelihood approach and its applications. Submitted.
81. FRIES, S. AND J.M. ZAKOÏAN (2017): Mixed Causal-Noncausal AR Processes and the Modelling of Explosive Bubbles. MPRA paper: <https://mpra.ub.uni-muenchen.de/id/eprint/81345>. Submitted.
82. GOURIÉROUX, C., MONFORT, A. AND J.M. ZAKOÏAN (2017): "Consistent Pseudo-Maximum Likelihood Estimators and Groups of Transformations." Submitted.
83. GOURIÉROUX, C., MONFORT, A. AND J.M. ZAKOÏAN (2017): "Pseudo-maximum likelihood and Lie groups of linear transformations." MPRA paper: <https://mpra.ub.uni-muenchen.de/id/eprint/79623>.
84. FRANCO, C. AND J.M. ZAKOÏAN (2016): "Joint inference on market and estimation risks in dynamic portfolios." Submitted.
85. FRANCO, C. AND J.M. ZAKOÏAN (2016): "Expected-Shortfall estimation in volatility models".
86. FRANCO, C. AND J.M. ZAKOÏAN (2008): "Can one really estimate nonstationary GARCH models?" CREST DP 2008-06.
87. FRANCO, C., AND J.M. ZAKOÏAN (1999): "Linear-representation based estimation of Markov-switching GARCH Models", CREST DP No. 9957.
88. EL BABSIRI, M., AND J.M. ZAKOÏAN (1990): "Approximation en temps continu d'un modèle GARCH à seuil," *DP N° 9011*, CREST.

PhD SUPERVISION

Completed PhD (Applied Mathematics)

1. A. Ahmad (joint with C. Franco) : *Contributions to the econometrics of integer-valued time series*. Univ. Lille 3, December 5, 2016.
2. G. Lepage (joint with C. Franco) : *Statistical inference of conditionally heteroskedastic models with stable innovations, non Gaussian contrast and misspecified volatility*. Univ. Lille 3, December 13, 2012.

3. N. Regnard: *GARCH models with coefficients functions of an exogenous process*. Univ. Lille 3, September 15, 2011. Post-doc at Montréal University since January 2012.
4. T. Hamadeh (joint with C. Francq): *Statistical inference in non linear GARCH models*. Univ. Lille 3, June 11, 2010.
5. Y.B. Mainassara (joint with C. Francq): *Estimation, validation and identification of weak vector ARMA models*. Univ. Lille 3, November 28, 2009.
6. A. Elghini (joint with C. Francq): *Specification tests based on inverse autocorrelations. Asymptotic properties of inverse empirical autocorrelations*. Univ. Lille 3, December 6, 2008. Qualified to the functions of Assistant professor, 26th section.
7. A. Raissi (joint with C. Francq): *Contributions to the statistical inference of vector autoregressive and error-correction models*. Univ. Lille 3, November 29, 2007. Assistant professor at INSA, Rennes since september 2008.
8. A. Gautier (joint with C. Francq): *Time-dependent coefficients time series models*. Univ. Lille 3, December 7, 2004. Assistant Professor at Rouen (2005-2007) and Lille 3 (2007-.)
9. Y. Saidi (joint with L. Broze): *Probabilist and statistical study of non linear conditionally heteroscedastic models*. Univ. Lille 3, December 12, 2003. Professor at Univ. Rabat (Maroc).

Current PhD Advisees

1. S. Fries: *Heavy-tailed noncausal autoregressive models and the modelling of speculative bubbles*. Univ. Paris-Saclay.

PAPERS PRESENTED/INVITED LECTURES/MEETINGS/WORKSHOPS

NB : This list refers to my own presentations, since 1998, excluding those of co-autors.

December 2017, London (UK), Computational and Financial Econometrics (CFE'17).

Consistent Pseudo-Maximum Likelihood Estimators and Groups of Transformations.

October 2017, Recent Advances in Econometrics: International Conference in Honor of Luc Bauwens. Keynote speaker.

Estimation risk for the VaR of portfolios driven by semi-parametric multivariate models.

September 2017, Heidelberg (Germany), Financial Econometrics Conference.

Noncausal heavy-tailed autoregressive process and the modeling of bubbles.

May 2017, Southampton (UK), Southampton Finance and Econometrics Workshop.

Estimation risk for the VaR of portfolios driven by semi-parametric multivariate models.

March 2017, Vienna (Austria), Vienna-Copenhagen Conference on Financial Econometrics.

Noncausal heavy-tailed autoregressive process and the modeling of bubbles.

December 2016, Sevilla (Spain), Computational and Financial Econometrics (CFE'16).

Joint inference on market and estimation risks in dynamic portfolios.

November 2016, Troisièmes journées d'économétrie de la finance (JEF'2016), Rabat (Morocco). Keynote speaker.

Bubble Modelling by non-causal Processes.

November 2016, Statistics and Econometrics Seminar, GREQAM (Marseille, France).
Estimation risk for the VaR of portfolios driven by semi-parametric multivariate models.

October 2016, Groupe de travail dépendance (IHP)
Conditional VaR estimation for dynamic portfolios driven by multivariate GARCH models.

October 2016, Conference in honor of Lajos Horváth, Graz University of Technology (Austria).
Conditional VaR estimation for dynamic portfolios driven by multivariate GARCH models.

October 2016, Department of Economics seminar, University of Copenhagen (Denmark).
Local Explosion Modelling by Non-causal Process.

September 2016, International Conference on Applied and Business Economics (ICABE), Université Paris Ouest-Nanterre.
Explosion Modelling by Non-causal Process.

August 2016, Econometrics and Financial Statistics Workshop, Valparaíso (Chili).
Noncausal heavy-tailed autoregressive process and the modeling of speculative bubbles.

June 2016, 3rd conference of the International Society for Nonparametric statistics (ISNPS), Avignon (France).
Joint Inference on Market and Estimation Risks in Dynamic Portfolios.

May 2016, Financial Econometrics Conference, Toulouse (France).
Joint Inference on Market and Estimation Risks in Dynamic Portfolios.

January 2016, Chiang Mai (Thailand), 9th International Conference of the Thailand Econometric Society. Invited speaker.
Explosive Bubble Modelling by non-causal Process.

December 2015, Londres (UK), Computational and Financial Econometrics (CFE'15).
Two step estimation of multivariate GARCH and stochastic correlation models.

November 2015, Paris (France), "Advances in Time Series and Forecasting", ESSEC Business School.
Explosive Bubble Modelling by non-causal Process.

September 2015, Seminar at BI Norwegian Business School, Economics Department, Oslo (Norway).
Estimating multivariate GARCH and Stochastic Correlation models equation by equation.

August 2015, Montreal (Canada), Econometric Society World Conference.
Estimating multivariate GARCH and Stochastic Correlation models equation by equation.

June 2015, Rutgers University (USA), IMS Finance, Insurance, Probability and Statistics workshop.
Estimating multivariate GARCH and Stochastic Correlation models equation by equation.

June 2015, Beijing (China), Workshop "Risk Measure and Optimization in Finance and Insurance".
 Mini-course on
Dynamic risk measures: models and statistical inference.

May 2015, Marseille (France), Workshop "Nouveaux développements dans la modélisation et la prévision des risques extrêmes en finance".
Explosive Bubble Modelling by non-causal Process.

April 2015, Seminar at CREATES, Aarhus University (Denmark).
Estimating multivariate GARCH and Stochastic Correlation models equation by equation.

February 2015, Coimbra (Portugal), Workshop on Statistics and Inference. Invited speaker.
Explosive Bubble Modelling by non-causal Process.

January 2015, Chiang Mai (Thailand), 8th International Conference of the Thailand Econometric Society. Invited speaker.
Estimating the conditional VaR of a portfolio of multivariate GARCH returns.

December 2014, Pisa (Italy), Computational and Financial Econometrics (CFE'14).
Explosive Bubble Modelling by non-causal Process.

June 2014, Cambridge University (UK), Econometrics Seminar.
Estimating MGARCH models equation-by-equation.

May 2014, London (UK), 10th BMRC-DEMS Conference at Brunel University.
Risk-parameter estimation in volatility models.

March 13–14 2014, 5th Meeting on Statistics and Data Mining, Djerba, Tunisia.
Explosive Bubble Modelling by Noncausal Processes.

February 2014, Maastricht (Netherlands), GSBE - Econometrics seminar.
Risk-parameter estimation in volatility models.

January 2014, Chiang Mai (Thailand), 7th International Conference of the Thailand Econometric Society. Keynote speaker.
Multi-level conditional VaR estimation in dynamic models.

December 2013, London, Computational and Financial Econometrics (CFE'13).
Multi-level conditional VaR estimation in dynamic models.

September 2013, Namur (Belgium), "Methods in International Finance Network" Workshop.
Explosive Bubble Modelling by non-causal Process.

September 2013, Montreal (Canada), Montreal Econometrics Seminar.
Risk-parameter estimation in volatility models.

March 2013, Berlin (Germany), 3rd Humboldt-Copenhagen Conference on Financial Econometrics.
Risk-parameter estimation in volatility models.

December 2012, Oviedo (Spain), Computational and Financial Econometrics (CFE'12).
GARCH models without positivity constraints: Exponential or Log GARCH ?

November 2012, ENSAI Rennes, 4th French Econometrics Conference.
Risk-parameter estimation in volatility models.

August 2012, Malaga (Spain), Econometric Society European Meeting (ESEM 12).
Risk-parameter estimation in volatility models.

July 2012, Tsukuba (Japan), 2nd IMS - Asia Pacific Rim Meeting. Invited speaker.
Risk-parameter estimation in volatility models.

June 2012, Hong-Kong (China), Seminar of the Department of Statistics and Actuarial Science, Honk-Kong University.
Risk-parameter estimation in volatility models.

June 2012, Séminaire Parisien de Statistique.
Estimation du paramètre de risque dans les modèles conditionnellement hétéroscédastiques.

May 2012, Graz (Austria), "Statistical Models for Financial Data III". Invited speaker.
Risk-parameter estimation in volatility models.

March 2012, Paris, seminar of the Chaire "Finance and Sustainable Development" and FIME.
Risk-parameter estimation in volatility models.

February 2012, Paris, "Prediction of Time Series and Non Stationary Time Series" workshop.
Testing strict stationarity in GARCH Models.

December 2011, London (UK), Computational and Financial Econometrics (CFE'11). Invited session.
Testing strict stationarity in GARCH Models.

Octobre 2011, Orléans (France), ANR Econom&Risk Workshop.
Strict stationarity testing and estimation of explosive and stationary GARCH models.

August 2011, Oslo (Norway), Econometric Society European Meeting (ESEM 11).
Testing strict stationarity in GARCH Models.

May 2011, Tunis (Tunisia), SFdS (French Statistical Society) congress.
Strict stationarity testing and estimation of explosive GARCH models.

March 2011, Joint Economics and Econometrics Statistics seminar, GREQAM, Marseille.
Reparameterizations in GARCH models with applications to optimal prediction and estimation.

March 2011, One-Day Conf. on Latest Developments in Fin. Econometrics, Brussels. Invited talk.
Reparameterizing GARCH models with applications to predictions and Value-at-Risk.

December 2010, Computational and Financial Econometrics (CFE'10), London.
Prediction in GARCH models under heavy-tailed errors.

August 2010, Prague Stochastics. Invited talk.
Reparameterizations in GARCH models with applications to optimal prediction and more efficient QML estimation.

August 2010, Econometric Society World Conference, Shanghai.
Strict stationarity testing and estimation of explosive ARCH models

June 2010, Jouy-en-Josas, Conference of FIME.
A class of nonstationary GARCH models with application to gas prices.

April 2010, Statistics Seminar at Brussels Free University (Belgium)
Optimal Predictions of Powers of Conditionally Heteroskedastic Processes.

March 2010, Paris, Conference on Large Portfolio, Concentration and Granularity.
Estimation Adjusted VaR.

October 2009, Limassol (Chypre), Conference on Computational and Financial Econometrics (CFE'09)
A class of nonstationary yet nonexplosive GARCH models with application to energy prices.

October 2009, seminar of the statistics department, University Carlos III, Madrid (Espagne)
Optimal Predictions of Powers of Conditionally Heteroskedastic Processes.

August 2009, Barcelone (Spain), Econometric Society European Meeting (ESEM 09).
Optimal Predictions of Powers of Conditionally Heteroskedastic Processes.

June 2009, Journées de Statistique du Sud, Porquerolles. Invited speaker.
Recent results on the estimation and prediction of conditionally heteroskedastic models.

June 2009, Time series and financial statistics (4th Brussels-Waseda seminar), Ensai (Rennes).
QML estimation and prediction in GARCH models.

May 2009, Seminar of the Finance Institute, Lugano (Suisse).
Merits and drawbacks of variance targeting in GARCH models.

August 2008, Milan (Italie), Econometric Society European Meeting (ESEM 08).
Inconsistency of the QMLE and asymptotic normality of the weighted LSE for a class of conditionally heteroscedastic models.

June 2008, Neuchâtel (Suisse) Computational and Financial Econometrics workshop .
Testing the nullity of GARCH coefficients : correction of the standard tests and relative efficiency comparisons.

May 2008, Ottawa (Canada), Congrès conjoint SSC-SFdS. Invited speaker.
Relative efficiencies of tests on GARCH coefficients.

March 2008, Journée Chaire CREST-Dauphine-EDF-Calyon, Finance et Développement Durable.
Modélisation GARCH des prix spots de l'électricité.

August 2007, Budapest (Hungary), Econometric Society European Meeting (ESEM 07).
Deriving the autocovariances of powers of MS GARCH, with applications to statistical inference.

May 2007, Graz (Austria), Statistical Models for Financial Data II. Invited speaker.
A class of stochastic unit-root bilinear processes.

December 2006, Séminaire Parisien de Statistique.
Propriétés asymptotiques de l'estimateur du quasi-maximum de vraisemblance dans les modèles GARCH et application aux tests d'hypothèses.

December 2006, Time Series Conference, CIREQ, Montréal (Canada). Invited speaker.
Estimating and Testing GARCH Processes when the Parameter is on a Boundary.

November 2006, INTAS meeting, Warsaw (Poland).
A class of stochastic unit-root bilinear processes: estimation and unit-root test.

August 2006, Vienna (Austria) Econometric Society European Meeting (ESEM 06).
Quasi-likelihood inference in GARCH processes when some coefficients are equal to zero.

June 2006, Limassol (Cyprus), International Conference on Computing in Economics and Finance.
Quasi-likelihood inference in GARCH processes when some coefficients are equal to zero.

April 2006, Xiamen (China), International Symposium on Econometric Theory and Application.
Estimating and testing GARCH Processes when the parameter is on a boundary.

April 2006, Joint statistical seminar, HKUST (Hong-Kong).
Estimating and testing GARCH Processes when the parameter is on a boundary.

February 2006, Séminaire à l'Institut de Statistique, UC Louvain (Belgium).
Estimating and testing GARCH Processes when the parameter is on a boundary

January 2006, Journées mathématiques pour l'économie, Lille 1. Invited speaker.
Modèles GARCH et à volatilité stochastique : propriétés probabilistes.

Octobre 2005, Limassol (Cyprus), Computational Statistics & Data Analysis. Invited speaker.
QML Estimation of GARCH Processes when the parameter is on a boundary of the parameter space.

September 2005, Angers, Colloque Statistique des processus, applications au traitement du signal et de l'image (SSIA 2005). Conférencier invité.
Estimation et tests de modèles GARCH avec paramètres sur le bord.

August 2005, Londres (Royaume-Uni) World Congress of the Econometric Society (WCES 05).
Mixing properties of a general class of GARCH(1,1) models without moment assumptions.

March 2005, GREQAM Marseille, séminaire d'économétrie et statistique.
QML estimation of GARCH processes when the parameter is on a boundary of the parameter space,

March 2005, Paris 6, séminaire de statistique non-paramétrique et semi-paramétrique.
Estimation et tests dans les modèles GARCH avec problèmes de bord.

August 2004, Madrid (Espagne), 59th European Meeting of the Econometric Society (ESEM 04).
Goodness-of-fit tests for ARMA models with uncorrelated errors.

June 2004, Montpellier, 36èmes journées de statistique de la SFDS.
Estimation par maximum de vraisemblance de processus GARCH purs et ARMA GARCH

August 2002, Prague, Joint session of the 24th European Meeting of Statisticians - 14th Conference on Information Theory, Statistical Decision Functions and Random Processes.
L² Structures of Switching-Regime GARCH Models.

May 2002, Bruxelles (Belgique), 34èmes journées de statistique de la SFDS.
Structures L² des processus GARCH à changement de régime markovien et applications statistiques.

August 2001, Atlanta (USA), Joint Statistical Meetings (ASA, IMS).
Testing Strong Linearity in Weak ARMA Models.

April 2001, CIRM, Marseille, Colloque "Nouvelles directions en séries temporelles", Invited talk.
Linear Representations based Estimation of Switching Regime GARCH Models.

October 2000, Lille 3, séminaire du GREMARS.
Stationnarité des modèles ARMA à changement de régime markovien.

June 2000, CORE Louvain-La-Neuve (Belgique), econometrics seminar.
Linear Representations based Estimation of Switching Regime GARCH Models.

May 2000, Fès (Maroc), 32èmes journées de statistique de la SFDS.
Estimation de modèles à volatilité stochastique.

April 2000, University of Tilburg (Pays-Bas), econometrics seminar.
Linear Representations based Estimation of Switching Regime GARCH Models,

September 1999, Columbia University, New-York (USA), econometrics and statistics seminar.
Linear Representations based Estimation of Switching Regime GARCH Models.

September 1999, Université de Montréal (Canada), econometrics seminar.
Linear Representations based Estimation of Switching Regime GARCH Models.

September 1999, Université de Montréal (Canada), statistics seminar.
Least-squares and Autocorrelations based Estimators of Weak ARMA Models.

August 1999, Taipei (Taiwan), National Bureau of Economic Research (NBER) Time Series Seminar.
Linear Representations based Estimation of Switching Regime GARCH Models.

August 1999, St-Jacques de Compostelle (Spain), Econometric Society European Meeting (ESEM 99).
Linear Representations based Estimation of Switching Regime GARCH Models.

May 1999, Grenoble, 31èmes journées de statistique de la SFDS.
Estimation de processus ARMA par des méthodes de moments généralisées.

September 1998, Chicago, NBER/NSF Time Series Seminar, Graduate School of Business, University of Chicago.

August 1995, Tokyo (Japan), World Congress of the Econometric Society (WCES 95).
Asymmetric GARCH with Asymmetric Volatilities.

SABBATICAL

Hong-Kong University, Visiting Professor, Spring 2006.

SHORT VISITS

Université de Coimbra, Department of Mathematics, February 2015.
Cambridge University, Department of Economics, UK, June 2014.
Newton Institute, Cambridge University, UK, January 2014.
University McGill, Montreal (Canada), CIREQ, September 2013.
Honk-Kong University, Department of Statistics and Actuarial Science, May 2012.
Université de Montréal (Canada), département de mathématiques, March 2007.
University of Science and Technology (Hong-Kong), March-April 2006.
CentER, University of Tilburg (Pays-Bas), May 2000.
Columbia University, New-York (USA), September 1999.
Université de Montréal, département d'économie, September 1999.
Uniersité Ca'Foscari, dép. d'économie, Venise (Italie), May 2000, 2001.
CORE, Louvain-la-Neuve (Belgique), 1990, 1991, 1995, 1996.
Université de Coimbra, département de mathématiques, December 1992.

PROFESSIONAL ACTIVITIES

Manuscript Refereeing

Annales d'économie et de statistique (7 papers), Annals of Statistics (4 papers), Annals of the Institute of Statistical Mathematics, Applied Mathematical Modelling, Bernoulli (4 papers), Comptes Rendus de l'Académie des Sciences de Paris (CRAS) (5 papers), Computational Statistics, Computational Statistics & Data Analysis (9 papers), Econometrica (4 papers), Econometric Reviews (2 papers), Econometrics and Statistics (3 papers), Econometric Theory (29 papers), Economic Modelling, Economics Letters, Economie et prévisions, Electronic Journal of Probability (2 papers), Electronic Journal of Statistics, ESAIM : Probability & Statistics (2 papers), European Journal of Finance, International Economic Review, International Journal of forecasting (3 papers), Journal of the American Statistical Association (3 papers), Journal of Applied Econometrics (2 papers), Journal of Applied Mathematics, Journal of Business and Economic Statistics (8 papers), Journal of Econometrics (19 papers), Journal of Economic Dynamics and Control (2 papers), Journal of Economics and Business, Journal of Empirical Finance, Journal of Financial Econometrics (8 papers), Journal of Money, Credit and Banking, Journal of Nonparametric Statistics, Journal of Multivariate Analysis (4 papers), Journal of

the Royal Statistical Society-B, Journal of Statistical Planning and Inference (4 papers), Journal of Statistics and Applications, Journal of Time Series Analysis (9 papers), Management Science, Metrika (3 papers), Quantitative Finance, Revue Maghrébine de mathématiques, Recherches économiques de Louvain, Review of Economics and Statistics, Review of Economic Studies, Revstat (2 papers), Scandinavian Journal of Statistics, Statistical Inference for Stochastic Processes (4 papers), Statistics and Probability Letters (10 papers), Statistics (2 papers), Statistics and Computing, Stochastic Processes and their Applications, Test (2 papers), The Econometrics Journal (4 papers), The Journal of Futures Market, The Manchester School.

Participation in PhD/HDR committees (external member)

Michel Beine, 1998 Université Libre de Bruxelles, Belgique; Ali Alami, 1999 Université Paris 9; Christelle Lecourt, 2000 Université Lille 2; Alain Hecq, 2000 Université de Maastricht, Pays-Bas; Ivana Komunjer, 2002 HEC; Abdelouahab Bibi, 2002 Université de Constantine, Algérie; Sébastien Laurent, 2002 Université de Maastricht, Pays-Bas; Massimiliano Caporin, 2003 Université Cà Foscari, Venise; Amor Keziou, 2003 Université Paris 6; Mathieu Brezovski, 2005 Université de Strasbourg; Olivier Wintemberger, 2007 Université Paris 1; Rim Khemiri, 2008 Université Aix-Marseille; Sessi Tokpavi, 2008 Université d'Orléans; Lionel Truquet, 2008 Université Paris 1; Sophie Dabo-Niang (HDR), 2009 Université Lille 3; Benjamin Hamidi, 2010 Université Paris 1; Francesco Violante, 2010 Namur University; Guillaume Coqueret, 2012 Université Lille 1; Hui Jun Zhang, 2013 McGill University, Montreal; Hassan Malongo Elouai, 2014 Université Paris-Dauphine; Abdelhakim Aknouche (HDR), 2014 Université Lille 3; Lorenza Campagnolo, Maddalena Cavicchioli, Ayokunle Osuntuyi, Martin Siyaranamual, 2014 Université Ca'Foscari, Venise; Olivier Lopez (HDR), 2014 Université Paris 6; Hamdi Raïssi (HDR), 2014 INSA Rennes; Fedya Telmoudi, 2014 Université Lille 3; Jean-Cyprien Héam, 2015 Université Paris-Dauphine; Tepmony Sim, 2016 Télécom ParisTech; Thomas Chuffart, 2016 Université d'Aix-Marseille; Benjamin Poignard, 2017 Université Paris-Dauphine; Sean Telg, 2017 Maastricht University.

Grant refereeing

ANR (evaluation of 1 proposal); Research Grants Council, Hong Kong (evaluation of 5 proposals); Netherlands Organisation for Scientific Research (NWO)(evaluation of 1 proposal); ERC Advanced Grant 6th Call - 2013 (evaluation of 1 proposal).

Other scientific activities

Associate researcher, Chaire ACPR (Autorité de contrôle prudentiel et de résolution), Initiative de recherche "Régulation et risques systémiques", 2013-.

Member of the scientific committee *47èmes Journées de Statistique de la SFDS*, Lille, June 2015.

Member of the Programme Committee of the Humboldt-Copenhagen Conference "Recent Developments in Financial Econometrics", March 2013, Berlin.

Member of the Programme Committee of the 6th CSDA International Conference on Computational and Financial Econometrics (CFE 12), December 2012, Spain.

Member of the Programme Committee of the 5th CSDA International Conference on Computational and Financial Econometrics (CFE 11), December 2011, London.

Co-organizer (with P. Barriau, C. Gouriéroux, S. Loisel and C.Y. Robert) of the Conference on Longevity and Pension Funds (semestre thématique Institut Louis Bachelier) Feb 3-4, 2011, Paris.

Guest Editor of the Annals of CFE, 2011.

Member of the Programme Committee of the 4th CSDA International Conference on Computational and Financial Econometrics (CFE 10), December 2010, London.

Member of the scientific committee *42èmes Journées de Statistique de la SFDS*, Marseille, May 2010.
 Co-organizer (with P. Gagliardini and C. Gouriéroux) of the Conference on Large Portfolio, Concentration and Granularity 15-16 Mars 2010, Paris.
 Organisation of the session "Model selection and volatility models in time series", *3rd International Conference on Computational and Financial Econometrics (CFE'09)* 29-31 octobre 2009, Limassol, Chypre.
 Member of the scientific committee of the workshop *STATDEP2008 : Statistiques pour données dépendantes*, juin 2008.
 Organisation of the session "Non linear Time Series" at the *1st Workshop of the ERCIM Working Group on Computing & Statistics* 19-21 June 2008, Neuchâtel, Switzerland.
 Co-organisation of the session *Développements récents en séries temporelles non linéaires* journées MAS de la SMAI, 4-6 septembre 2006, Lille 1.
 Organisation of the session "Time series I" of the congress *STATDEP, Statistics for dependent data*, CREST, Paris, janvier 2005.
 Co-organisation of the Rencontres d'économétrie et statistique Lille 3-Littoral (2000 à 2004).
 Co-organisation of the Workshop on Financial Modeling and Econometric Analysis, U. Lille 3 (1999).
 Co-organisation of the Congrès des jeunes économètres, univ. Lille 3 (1995).

Administrative and organisation activities

2006-	Co-head of the Finance-Insurance lab at CREST
2015	Recruitment committee, professor recrutement, univ. Paris 6
2011	Recruitment committees, univ. Lille 3 and Paris-Diderot.
2009	Recruitment committees, univ. Lille 3, Rennes 2 and Toulouse 1.
2004-2007	Président de la commission de spécialistes des 25-26-27èmes sections, U. Lille 3.
2004-2007	Responsable du parcours Recherche, du MASTER MIASHS, U. Lille 3.
2003-2007	Responsable pour Lille 3 de projet INTAS
2006-2007	Membre élu du conseil de l'UFR MSES, U. Lille 3
2001-2007	Membre A de la Commission de spécialistes de la 26ème section, U. du Littoral
2000-2007	Membre A de la Commission de spécialistes de la 25-26-27èmes section, U. Lille 3
2000-2004	Responsable du DEA MASE, U. Lille 3.
1995-1997	Membre B de la Commission de spécialistes des 25-26èmes sections, U. Lille I.

TEACHING

Courses in foreign universities

- *Advanced Risk Measures*. John von Neumann Institute, Vietnam National University Ho Chi Minh City (April 2012).
- *Modèles GARCH et à volatilité stochastique*. Université de Montréal (march 2007).
- *GARCH and stochastic volatility models*. Università Ca'Foscari da Venezia (1999-2001).
- *Stochastic processes*. ECARES, Université Libre de Bruxelles (2000-2002).

Graduate level (Master 2)

- *Multivariate GARCH and Stochastic Correlation models*, ENSAE - Cours de Formation par la recherche (2016).
- *Non causal autoregressive processes and speculative bubbles modelling*, ENSAE - Cours de Formation par la recherche (2015).

- *Estimation risk and conditional risk measures*, ENSAE - Cours de Formation par la recherche (2014).
- *Financial econometrics*, ENSAE and Master MIDO, Paris 9 (2011-).
- *Risk measures*, ENSAE and Master MIDO, Paris 9 (2008-2011).
- *Dynamical models with latent variables*, ENSAE and Master MIDO, Paris 9 (2007-).
- *Nonlinear time series models*. ENSAI, Rennes (2008).
- *GARCH and stochastic volatility models*, ENSAE and DEA MASE Paris 9 (2000-2007), Master M2 MIASHS Lille 3 (2003-2005 et 2006-2007).
- *Recent results in GARCH models*, Formation par la recherche ENSAE (1996-1997).

Graduate level (Master 1)

- *Asymptotic statistics*, Master MIASHS M1, Lille 3 (2006-2007).
- *Advanced econometrics*, Master MIASHS M1, Lille 3 (2005-2007).
- *Dynamic Models*, Master MIASHS M1, Lille 3 (2005-2007).
- *Econometrics*, Lille 3 (2000-2004).
- *Basic statistics*, Lille I (1995-1998).
- *Dynamic models Econometrics*, Lille I (1994-2001).
- *Time Series*, Lille I (1993-1994 to 1997-1998).
- *Time Series and Applications to Finance*, ECP (1997-1998).
- *Prediction methods*, DESS d'ingénierie statistique, Lille I (1995-1999).

Undergraduate level :

- *Probability*, Lille 3 (2005-2007).
- *Mathematical statistics*, Lille 3 (1993-2003 et 2006-2007).
- *Time series*, Lille 3 (2001-2004).
- *Complements in analysis*, Lille 3 (2005).
- *Analysis*, Lille 3 (2003-2004).
- *Measure and integration*, Lille 3 (2000-2004).
- *Probability and statistics*, Lille I (1998-2000).
- *Algebra*, Lille 3 (2003-2004).