Christian FRANCQ

CREST-ENSAE and University Lille 3
Address : CREST, Laboratory Finance-Insurance
15 Boulevard Gabriel Péri
92245 Malakoff Cedex, France
E-mail : `christian.francq@ensae.fr` or `christian.francq@univ-lille3.fr`
Web page : `http://perso.univ-lille3.fr/~cfrancq/`
`http://www.crest.fr/pagesperso.php?user=3210`
Date of birth : January 23, 1962.

DEGREE

- 1989 "Thèse de Doctorat" (PhD) in Mathematics (Montpellier, Advisor : A. Berlinet)
- 1997 "Habilitation à Diriger des Recherches" (tenure) (Lille I ; Examining board : A. Berlinet, D. Bosq, Y. Davydov, C. Gouriéroux, B. Massé, G. Mélard, X. Milhaud ; M.-C. Viano)

POSITION

- Assistant Professor at the University Lille I, Laboratory of Statistic and Probability, from 1990 to September 1998
- Full Professor of Mathematics at the University Littoral–Côte d'Opale, Laboratory LMPA Joseph Liouville, from September 1998 to September 2002, and at the University Charles-de-Gaulle Lille3, Laboratory EQUIPPE-GREMARS, since September 2002
- In 2010-2011, CNRS delegation at the laboratory GRECSTA, UMR2773 located at CREST, Paris.
- Since September 2011, on secondment at ENSAE-CREST, Paris.

TEACHING Data analysis, econometrics, probability, statistics, time series, risk measure (see my web page `http://perso.univ-lille3.fr/~cfrancq/` for details).

RESEARCH

Research interests : Time Series Analysis, Statistics, Econometrics and Finance.

PUBLICATIONS

1. **Main publications**
   - Francq, C. and Zakoïan, J-M. Inference in non stationary asymmetric GARCH models, *Annals of Statistics* 41, 70-98, 2013.
   - Francq, C., Wintenberger, O. and and Zakoïan, J-M. Garch models without positivity constraints : exponential or log garch ? *Journal of Econometrics* 177, 34-46, 2013.
   - Francq, C. and Zakoïan, J-M. Estimating the marginal law of a time series with applications to heavy tailed distributions *Journal of Business & Economic Statistics* 31, 412-425, 2013.
   - Francq, C. and Zakoïan, J-M. Optimal predictions of powers of conditionally heteroskedastic processes, *Journal of the Royal Statistical Society - Series B* 75, 345–367 2013.

- Francq, C. and Zakoïan, J-M. Strict stationarity testing and estimation of explosive and stationary GARCH models, *Econometrica* 80, 821–861, 2012.
- Boubacar Mainassara, Y., Carbon, M. and Francq, C. Computing and estimating information matrices of weak ARMA models, *Computational Statistics and Data Analysis* 56, 345–361, 2012.
- Francq, C., Lepage, G. and Zakoïan, J-M. Two-stage non Gaussian QML estimation of GARCH models and testing the efficiency of the Gaussian QMLE, *Journal of Econometrics* 165, 246–257, 2011
- Francq, C., Horváth L. and Zakoïan, J-M. Merits and drawbacks of variance targeting in GARCH models, *Journal of Financial Econometrics* 9, 619–656, 2011.
- Carbon, M. and Francq, C. Portmanteau Goodness-of-Fit Test for Asymmetric Power GARCH Models, *Austrian Journal of Statistics* 40, 55–64, 2011.
- Francq, C., Roy, R. and Saidi, A. Asymptotic Properties of Weighted Least Squares Estimation in Weak PARMA Models, *Journal of Time Series Analysis* 32, 699–723, 2011.
- Francq, C. and Zakoïan, J-M. QML estimation of a class of multivariate asymmetric GARCH models, *Econometric Theory* 28, 1–28, 2011.
- Boubacar Mainassara, Y. and Francq, C. Estimating structural VARMA models with uncorrelated but non-independent error terms, *Journal of Multivariate Analysis* 102, 496–505, 2011.
- Dabo-Niang, S., Francq, C. and Zakoïan, J-M. Combining Nonparametric and Optimal Linear Time Series Prediction, *Journal of the American Statistical Association* 105, 1554–1565, 2010.
- Francq, C. and Zakoïan, J-M. Inconsistency of the MLE and inference based on weighted LS for LARCH models, *Journal of Econometrics* 159, 151–165, 2010.
- Carbon, M., Francq, C. and Tran, L.T. Asymptotic normality of frequency polygons for random fields, *Journal of Statistical Planning and Inference* 140, 502–514, 2010.
- Francq, C., Horváth L. and Zakoïan, J-M. Sup-tests for linearity in a general nonlinear AR(1) model, *Econometric Theory* 26, 965–993, 2009.
- Francq, C. and Zakoïan, J-M. Bartlett's formula for a general class of non linear processes, *Journal of Time Series Analysis* 30, 449–465, 2009.
- Francq, C. and Zakoïan, J-M. Testing the nullity of GARCH coefficients : correction of the standard tests and relative efficiency comparisons, *Journal of the American Statistical Association* 104, 313–324, 2009.
- Francq, C. and Zakoïan, J-M. Estimating ARCH Models When the Coefficients are Allowed to be Equal to Zero, *Austrian Journal of Statistics* 37, 31–40, 2008.
- Francq, C., Makarova, S. and Zakoïan, J-M. A class of stochastic unit-root bilinear processes : mixing properties and unit-root test, *Journal of Econometrics* 142, 312–326, 2008.
- Francq, C. and Zakoïan, J-M. Deriving the autocovariances of powers of Markov-switching GARCH models, with applications to statistical inference, *Computational Statistics and Data Analysis* 52, 3027–3046, 2008.

- Francq, C. and Zakoïan, J-M. Quasi-maximum likelihood estimation in GARCH processes when some coefficients are equal to zero, *Stochastic Processes and their Applications* 117, 1265–1284, 2007.
- Francq, C. and Raïssi, H. Multivariate Portmanteau Test for Autoregressive Models with Uncorrelated but Nonindependent Errors, *Journal of Time Series Analysis* 28, 454–470, 2007.
- Francq, C. and Zakoïan, J-M. HAC estimation and strong linearity testing in weak ARMA models, *Journal of Multivariate Analysis* 98, 114–144, 2007.
- Carbon, M., Francq, C. and Tran, L.T. Kernel Regression Estimation for Random Fields, *Journal of Statistical Planning and Inference* 137, 778–798, 2007.
- El Ghini, A. and Francq, C. Asymptotic Relative Efficiency of Goodness-of-Fit Tests Based on Inverse and Ordinary Autocorrelations, *Journal of Time Series Analysis* 27, 843–855, 2006.
- Francq, C. and Zakoïan, J-M. Linear-representation Based Estimation of Stochastic Volatility Models, *Scandinavian Journal of Statistics* 33, 785–806, 2006.
- Francq, C. and Zakoïan, J-M. Mixing properties of a general class of GARCH(1,1) models without moment assumptions on the observed process, *Econometric Theory* 22, 815–834, 2006.
- Francq, C., Roy, R. and Zakoïan, J-M. Diagnostic Checking in ARMA Models with Uncorrelated Errors, *Journal of the American Statistical Association* 100, 532–544, 2005.
- Francq, C. and Zakoïan, J-M. The L2 Structures of Standard and Switching-Regime GARCH Models, *Stochastic Processes and Their Applications* 115, 1557–1582, 2005.
- Francq, C. and Zakoïan, J-M. 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, 2005.
- Francq, C. and Zakoïan, J-M. Maximum Likelihood Estimation of Pure GARCH and ARMA-GARCH Processes, *Bernoulli* 10, 605–637, 2004.
- Francq, C. and Gautier, A. Large Sample Properties of Parameter Least Squares Estimates for Time-Varying ARMA Models, *Journal of Time Series Analysis* 25, 765–783, 2004.
- Francq, C. and Gautier, A. Estimation of Time-Varying ARMA Models with Markovian Changes in Regime, *Statistics and Probability Letters* 70, 243–251, 2004.
- Bibi, A. and Francq, C. Consistent and Asymptotically Normal Estimators for Time-Dependent Linear Models, *Annals of the Institute of Statistical Mathematics* 55, 41–68, 2003.
- Francq, C. and Tran, L. T. Nonparametric Estimation of Density, Regression And Dependence Coefficients, *Nonparametric Statistics* 14, 729–747, 2002.
- Francq, C. and Zakoïan, J-M. Autocovariance Structure of Powers of Switching-Regime ARMA Processes, *ESAIM P&S* 6, 259–270, 2002.

- FRANCQ, C. and ZAKOÏAN, J-M. Comments on the paper by Minxian Yang "Some properties of vector Autoregressive processes with Markov-Switching coefficients, *Econometric Theory* 18, 815–818, 2002.
- BROZE, L., FRANCQ, C. and ZAKOÏAN, J-M. Efficient use of higher-lag autocorrelations for estimating autoregressive processes, *Journal of Time Series Analysis* 23, 287–312, 2002.
- BROZE, L., FRANCQ, C. and ZAKOÏAN, J-M. Non redundancy of high order moment conditions for efficient GMM estimation of weak AR processes, *Economics Letters* 71, 317–322, 2001.
- FRANCQ, C. and ZAKOÏAN, J-M. Stationarity of multivariate Markov-switching ARMA models, *Journal of Econometrics* 102, 339–364, 2001.
- FRANCQ, C., ROUSSIGNOL, M. and ZAKOÏAN, J-M. Conditional heteroskedasticity driven by hidden markov chains, *Journal of Time Series Analysis* 22, 197–220, 2001.
- FRANCQ, C. and ZAKOÏAN, J-M. Estimating weak GARCH representations, *Econometric Theory* 16, 692–728, 2000.
- FRANCQ, C. and ZAKOÏAN, J-M. Covariance matrix estimation for estimators of mixing weak ARMA models, *Journal of Statistical Planning and Inference* 83, 369–394, 2000.
- FRANCQ, C. and ZAKOÏAN, J-M. Multivariate ARMA models with generalized autoregressive linear innovation, *Stochastic Analysis and Applications* 18, 231–260, 2000.
- BERLINET, A. and FRANCQ, C. Estimation des covariances entre autocovariances empiriques de processus multivariés non linéaires, *La revue Canadienne de Statistique* 27, 525–546, 1999.
- CARBON, M. and FRANCQ, C. Estimación no paramétrica de la densidad y de la regresión–Previsión no paramétrica, *Revista de Matemática : Teoría y Aplicaciones* 6, 1–26, 1999.
- FRANCQ, C. ARMA models with bilinear innovations, *Stochastic Models* 15, 29–52, 1999.
- BERLINET, A. and FRANCQ, C. On the identification of minimal VARMA representations, *Statistical Inference for Stochastic Processes* 1, 1–15, 1998.
- FRANCQ, C. and ROUSSIGNOL, M. Ergodicity of autoregressive models with Markov-switching and consistency of the maximum-likelihood estimator, *Statistics* 32, 151–173, 1998.
- FRANCQ, C. and ZAKOÏAN, J-M. Estimating linear representations of nonlinear processes, *Journal of Statistical Planning and Inference* 68, 145–165, 1998.
- FRANCQ, C. and ROUSSIGNOL, M. On white noises driven by hidden Markov chains, *Journal of Time Series Analysis* 18, 553–578, 1997.
- BERLINET, A. and FRANCQ, C. On Bartlett's formula for nonlinear processes, *Journal of Time Series Analysis* 18, 535–552, 1997.
- FRANCQ, C. and MENVIELLE, M. A model for the *am (Km)* planetary geomagnetic activity index and application to prediction, *Geophys. J. Int.* 125, 729–746, 1996.

- Berlinet, A. and Francq, C. Identification of a univariate ARMA model, *Computational Statistics* 9, 117–133, 1994.
- Berlinet, A. and Francq, C. Stationnarité et identification d'un processus purement bilinéaire et strictement superdiagonal, *Statistique et Analyse des Données* 15, 1–24, 1990.

2. **Chapters of books and Handbooks**

- Francq, C. and Zakoïan, J-M. Multi-level Conditional VaR Estimation in Dynamic Models, in *Modeling Dependence in Econometrics*, Advances in Intelligent Systems and Computing. Edts : Huynh, Van-Nam and Kreinovich, Vladik and Sriboonchitta, Songsak. Springer International Publishing 251, 3–19, 2014.
- Amendola, A. and Francq, C. Concepts of and tools for nonlinear time series modelling. *Handbook of Computational Econometrics*, Edts : D. Belsley and E. Kontoghiorghes, Wiley, 2009.
- Francq, C. and Zakoïan, J-M. A tour in the asymptotic theory of GARCH estimation. *Handbook of Financial Time Series*, Edts : T. G. Andersen, R.A. Davis, J-P. Kreiss, T. Mikosch. Springer Statistics, 2009.
- Francq, C. and Zakoïan, J.M. On Efficient Inference in GARCH Processes, *Dependence in Probability and Statistics*, Ed. by P. Bertail, P. Doukhan and P. Soulier, Lecture Notes in Statistics 187, Springer-Verlag New York, 305–377, 2006.
- Francq, C. and Zakoïan, J-M. Recent results for linear time series models with non independent innovations, in *Statistical Modeling and Analysis for Complex Data Problems*, Duchesne, P. et Rémillard, B., Éditeurs, Springer, 241–266, 2005.

3. **Comptes Rendus de l'Académie des Sciences**

- Francq, C. and Gautier, A. Estimation de modèles ARMA à changements de régime récurrents, *C. R. Acad. Sci. Paris*, 339, 55-58, 2004.
- Francq, C., Roussignol, M. and Zakoïan, J-M. Modèles ARCH avec changement de régime markovien, *C. R. Acad. Sci. Paris*, 330, 1031–1034, 2000.
- Francq, C. and Zakoïan, J-M. Stationnarité des modèles ARMA à changement de régime markovien, *C. R. Acad. Sci. Paris*, 330, 921–924, 2000.
- Francq, C. and Zakoïan, J-M. Estimation de représentations GARCH faibles, *C. R. Acad. Sci. Paris*, 326, 495–498, 1998.
- Francq, C. and Zakoïan, J-M. Estimation de la précision asymptotique dans l'estimation de modèles ARMA faibles, *C. R. Acad. Sci. Paris*, 326, 377–380, 1998.
- Francq, C. and Zakoïan, J-M. Estimation de représentations ARMA faibles sous hypothèses de mélange, *C. R. Acad. Sci. Paris*, 323, 297–300, 1996.

4. **Proceedings**

- Francq, C. and Meintanis, S.G. Fourier–type estimation of the power GARCH model with stable–Paretian innovations, *Proceedings of the 10th international conference Computer Data Analysis and Modeling*, Minsk, 2013.
- Francq, C. and Zakoïan, J-M. Optimal predictions of powers of conditionally heteroskedastic processes, *Proceedings of the ninth international conference Computer Data Analysis and Modeling*, Minsk, 2010.

- Duchesne, P. and Francq, C. On diagnostic checking time series models with portmanteau test statistics based on generalized inverses and {2}-inverses, *COMPSTAT 2008*, Proceedings in Computational Statistics, 143–154, 2008.
- Francq, C. and Zakoïan, J-M. 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, 2008, Oberwolfach, Germany.
- Francq, C. and Zakoïan, J-M. Testing that some GARCH coefficients are equal to zero, *Proceedings of the eighth international conference Computer Data Analysis and Modeling*, Minsk, 1, 54–59, 2007.
- Francq, C. and Zakoïan, J-M. Linear Representations based Estimation of Switching Regime GARCH Models, *NBER Time Series Conference Proceedings*, 1999.
- Francq, C. and Zakoïan, J-M. Estimating the order of weak ARMA models, *Prague Stochastic'98 Proceedings*, 1, 165–168, 1998.
- Berlinet, A. and Francq, C. Estimating the covariance between two sample autocovariances, *Transactions of the 12th Prague Conference,* Academy of Science of the Czech Republic, Prague, 35–38, 1994.

5. **Other publications**
   - S. Auray, C. Francq et J.-M. Zakoian Nobel 2011 d'économie – Quelques remarques sur les prix Nobel 2011 d'économie et la modélisation des séries économiques. *Images des Mathématiques, CNRS, 2012. En ligne, URL :* `http://images.math.cnrs.fr/Nobel-2011-d-economie.html`
   - D.A. Belsley, C.W.S. Chen, C. Francq, G. Gallo, L. Khalaf, E.J. Kontoghiorghes and H.K. van Dijk The sixth special issue on computational econometrics, *Editorial*, Computational Statistics and Data Analysis, 56, 3307-3308, 2012.
   - Amendola, A., Francq, C. and Koopman, S.J. Special Issue on Nonlinear Modelling and Financial Econometrics, *Editorial*, Computational Statistics and Data Analysis, 51, 2115–2117, 2006.
   - Carbon, M. and Francq, C. Estimation non paramétrique de la densité et de la régression, *Revue Modulad*, 15, 1–25, 1995.

6. **Book**
   - Francq, C. and Zakoïan, J-M. *Modèles GARCH : structure, inférence statistique et applications financières.* Economica, collection "économie et statistiques avancées", 2009, 605 pages.
   - Francq, C. and Zakoïan, J-M. *GARCH Models : structure, statistical inference and financial applications.* John Wiley, 2010, ISBN 978-0-470-68391-0.

7. **Preprint**
   - El Ghourabi, M., Francq, C and Telmoudi, F. Consistent estimation of the Value-at-Risk when the error distribution of the volatility model is misspecified, MPRA Paper 51150

- Francq, C. and Sucarrat, G. An Exponential Chi-Squared QMLE for Log-GARCH Models Via the ARMA Representation, MPRA Paper 51783
- Francq, C. and Meintanis, S. Fourier-type estimation of the power garch model with stable-paretian innovations, MPRA Paper 41667
- Francq, C. and Zakoïan, J-M. Risk-parameter estimation in volatility models, MPRA Paper 41713
- Francq, C., Horváth, L. and Zakoïan, J-M. Variance targeting estimation of multivariate GARCH models
- Duchesne, P. and Francq, C. On testing for the mean vector of a multivariate distribution with generalized and {2}-inverses. MPRA working paper 19740

CONFERENCES, SEMINARS

- Estimating MGARCH models equation-by-equation, CFE, 14 December 2013, London.
- Fourier–type Estimation of GARCH Models with Stable–Paretian Innovations, JISTA, 26 November 2013, Alger.
- Fourier–type Estimation of GARCH Models with Stable–Paretian Innovations, Mathematics and Statistics Seminar, Department of Mathematics and Statistics, University of Cyprus, 15 November 2013, Nicosia.
- Fourier–type Estimation of GARCH Models with Stable–Paretian Innovations, 7th Annual Methods in International Finance Network Workshop, September 23-24, 2013, Namur.
- Fourier–type Estimation of GARCH Models with Stable–Paretian Innovations, CDAM 2013, 11 September 2013, Minsk.
- Risk-parameter estimation in volatility models, JdS-SFDS, 29 May 2013, Toulouse.
- GARCH models without positivity constraints : Exponential or Log GARCH ? 4th Meeting on Statistics and Data Mining (MSDM), March 14-15, 2013, Hammamet.
- Risk-parameter estimation in volatility models, London School of Economics, Joint Econometrics and Statistics Seminar Series, 15 February 2013, London.
- Risk-parameter estimation in volatility models, BI Seminar series, 30 Jan 2013, Oslo.
- Risk-parameter estimation in volatility models, CFE 2012, December 1, Oviedo.
- Risk-parameter estimation in volatility models, JSTAR 2012, October 25-26, 2012, Rennes
- GARCH models without positivity constraints : Exponential or Log GARCH ? ESEM, August 27, 2012, Malaga.
- Comments on the paper "Forecasting GDP over the business cycle in a multi-frequency and data-rich environment" by M. Bessec and O. Bouabdallah, discussion, BdF seminar, June 6, 2012.
- GARCH models without positivity constraints : Exponential or Log GARCH ? Statistical Models for Financial Data III, May 23, 2012, Graz
- Risk-parameter estimation in volatility models 3rd Meeting on Statistics and Data Mining (MSDM), March 15-16, 2012, Hammamet.
- Estimating the marginal distribution of heavy tailed time series, La 3e Journée d'Economie de l'Ensai, 26 janvier 2012, Rennes.

– Strict stationarity testing and estimation of explosive and stationary GARCH models, Workshop "Time Series : Models, Breaks and Applications", Karlsruhe Institute of Technology, February 2, 2012.

– Estimating the marginal distribution of heavy tailed time series, CFE'11, December 18, 2011, London.

– Estimating the marginal distribution of heavy tailed time series, ESEM/EEA meeting, 28 August 2011, Oslo.

– Reparameterizations in GARCH models with applications to optimal prediction and estimation, June 10 2011, Conference in honor of Guy Mélard, Université Libre de Bruxelles.

– Estimating the marginal distribution of heavy tailed time series, JSD 2011, May 24 2011, Tunis.

– Testing strict stationarity of GARCH, 19 mai 2011, 5ème Journée Math- Eco, Lille.

– Testing strict stationarity of GARCH, April 5, 2011, Sémimaine de Finance, CREST.

– Testing strict stationarity in GARCH models, 10 mars 2011, University College London, Londres.

– Optimal predictions of powers of conditionally heteroscedastic processes, 14 décembre 2010, Second French Econometrics Conference, ENSAE, Paris.
– Optimal predictions of powers of conditionally heteroscedastic processes, 9th International Conference Computer Data Analysis and Modeling : Complex Stochastic Data and Systems, 9 September 2010, Minsk, Belarus.
– Optimal predictions of powers of conditionally heteroscedastic processes, August 2010, Econometric Society World Conference, Shanghai.
– Strict stationarity testing and estimation of explosive ARCH models, 14 May 2010, ECARES seminar, ULB, Brussels.
– Optimal predictions of powers of conditionally heteroscedastic processes, 23 April 2010, Tinbergen Institute, Amsterdam.
– Optimal predictions of powers of conditionally heteroscedastic processes, JISTA, Avril 2010, Sidi Bel Abbes, Algeria.
– Merits and drawbacks of variance targeting in GARCH models, (CFE'09), Chypre, 30 October 2009.
– Merits and drawbacks of variance targeting in GARCH models, ESEM/EEA meeting, 27 August 2009, Barcelone.
– Résultat récents sur l'estimation des modèles GARCH, Cours de formation par la recherche donné à la faculté de mathématiques USTHB, 11 et 12 May 2009, Alger.
– Merits and drawbacks of variance targeting in GARCH models, Séminaire de la faculté de mathématiques USTHB, 11 May 2009, Alger.
– Merits and drawbacks of variance targeting in GARCH models, GERAD Seminar, 5 March 2009, Montréal.
– Testing the nullity of GARCH coefficients : correction of the standard tests and relative efficiency comparisons, Journées JSTAR, 5 December 2008, Rennes.
– Testing the nullity of GARCH coefficients : correction of the standard tests and relative efficiency comparisons, ESEM/EEA meeting, 27 August 2008, Milan.
– Inconsistency of the QMLE and asymptotic normality of the weighted LSE for a class of conditionally heteroscedastic models, First Workshop of the ERCIM Working Group on Computing & Statistics June 20th, 2008, Neuchâtel, Suisse.
– Inconsistency of the QMLE and asymptotic normality of the weighted LSE for a class of conditionally heteroscedastic models, STATDEP 2008, Statistiques pour Données Dépendantes, Paris/Malakoff, 5 June 2008.

- Autocovariance Structure of Markov-Switching ARMA and GARCH Processes, *Mini-Workshop : Time Series with Sudden Structural Changes* Organised by Richard Davis and Jürgen Franke, Mathematisches Forschungsinstitut Oberwolfach, February 24th - March 1st, 2008.
- Quasi-likelihood inference in GARCH Processes when some coefficients are equal to zero, 8th International Conference Computer Data Analysis and Modeling : Complex Stochastic Data and Systems, 13 September 2007, Minsk, Biélorussie.
- Combining parametric and nonparametric approaches for time series prediction, Congrès ESEM, 30 August 2007, Budapest, Hungary.
- Quasi-likelihood inference in GARCH Processes when some coefficients are equal to zero, Statistical models for financial data II, 25 May 2007, Graz, Autriche.
- Combining parametric and nonparametric approaches for time series prediction, International Workshop on Computational And Financial Econometrics, 20 April 2007, Genève, Suisse.
- Mini-cours sur les modèles GARCH et à volatilité stochastique, laboratoire de statistique du CRM, Université de Montréal, 14 March 2007.
- Estimating and testing GARCH processes when the parameter is on a boundary, colloque CRM-ISM-GERAD de statistique, Concordia, Montréal, 9 March 2007.

- Participation au meeting "Nonstationary multivariate and nonlinear econometrics models : theory and application" du projet INTAS 03-51-3714, Varsovie, November 2006.
- Estimating and testing GARCH processes when the parameter is on a boundary, Séminaire ULB, 3 November 2006.
- Stochastic unit-root bilinear processes, Congrès Computing in Economics and Finance, Limassol, Chypre, 22-24 June 2006.
- A class of stochastic unit-root bilinear processes : mixing properties and unit-root test, Congrès ESEM, Vienne, 27 August 2006.
- Utilisation des modèles GARCH dans la modélisation des séries financières (2ème partie), Journées mathématiques pour l'économie, Lille 1, 26-27 January 2006.
- A class of stochastic unit-root bilinear processes : mixing properties and unit-root test, meeting "Nonstationary multivariate and nonlinear econometrics models : theory and application" du projet INTAS 03-51-3714, Lille 3, 30 September 2005. [4]
- Estimation de modèles GARCH par quasi-maximum de vraisemblance avec paramètre sur le bord, Séminaire de Statistique, Rennes 2, 20 May 2005.
- Maximum likelihood estimation of GARCH processes when the parameter is on the boundary of the parameter space, STATDEP 2005, Statistiques pour Données Dépendantes, Paris/Malakoff, 26 January 2005.
- Maximum Likelihood Estimation of Pure GARCH and ARMA-GARCH Processes, 59th European Meeting of the Econometric Society (ESEM), Madrid, 21 August 2004.
- Participation au meeting "Nonstationary multivariate and nonlinear econometrics models : theory and application" du projet INTAS 03-51-3714, St Peterbourg, 20-21 March 2004.
- Maximum Likelihood Estimation of Pure GARCH and ARMA-GARCH Processes *Seminar ECARES*, Bruxelles, 10 December 2003.
- Modèles ARMA avec innovations linéaires non indépendantes. *Université de Montréal, Groupe de travail, 17, 19 and 24 March 2003.*
- L2 Structures of Standard and Switching-Regime GARCH Models and their Implications for Statistical Inference *Colloque de statistique de Montréal, 21 March 2003.*
- Test d'adéquation de modèles ARMA avec erreurs non indépendantes. *Département de mathématiques et de statistique, Université Laval, Québec, 20 March 2003.*
- L2 Structures of Standard and Switching-Regime GARCH Models and their Implications for Statistical Inference *GREMARS, Lille 3, November 2002.*
- Linear-representation based estimation of Switching-regime GARCH models. *Joint meeting, Atlanta, USA, August 2001.*
- ARMA fort contre ARMA faible. *Deuxième Rencontre d'Econométrie et Statistique Lille 3 - Littoral, Villeneuve d'Ascq, June 2001.*

- Test de l'hypothèse ARMA fort contre ARMA faible. *XXXIII Journées de Statistique, Nantes, May 2001.*
- Stationnarité et structure des autocovariances des ARMA à changement de régime markovien. *Séminaire de Statistique, Montpellier, November 2001.*
- Estimation des modèles GARCH à changement de régime markovien à l'aide de représentations linéaires faibles. *Journées MAS, Rennes, September 2000.*
- Estimation de modèles à volatilité stochastique : une approche fondée sur des représentations ARMA (avec J-M. Zakoïan). *XXXII Journées de Statistique, Fès, Maroc, May 2000.*
- An alternative estimation procedure for dynamic factor models. *Rencontre Franco-Belge de Statisticiens, Bruxelles, November 1999.*
- Stationarity of multivariate Markov-switching ARMA models. *ESEM, Santiago De Compostela, September 1999.*
- Linear-representation based estimation of Switching-regime GARCH models (avec J-M. Zakoïan). *NBER Time Series Seminar, Taïwan, August 1999.*
- Processus conditionnellement hétéroscédastiques avec changement de régime markovien. *Séminaire du LMPA Joseph Liouville, December 1998*
- Stationnarité des modèles ARMA à changement de régime markovien. *Journées de l'ASU, Grenoble, May 1998.*
- Processus conditionnellement hétéroscédastiques avec changement de régime markovien. *Séminaire de Statistique du CREST, June 1998.*
- Estimating the autocovariances of multivariate nonlinear processes. *Workshop on Time Series Analysis, Montréal, March 1998.*
- Processus conditionnellement hétéroscédastiques avec changement de régime markovien. *XVIIIème rencontre Franco-Belge de statisticiens, Louvain-la-Neuve, November 1997.*
- Précision asymptotique dans l'estimation de modèles ARMA faibles. *Journées de l'ASU, Carcassonne, May 1997.*
- Estimation de représentations ARMA faibles (avec J-M. Zakoïan). *Exposé au séminaire de Statistique et Probabilités de Lille I, 5 March 1997.*
- Discussion sur un papier de Billio, Monfort et Robert au *séminaire Malinvaud, CREST, February 1997.*
- Estimation de modèles de Markov cachés. *Exposé au séminaire de l'ENSAI à Rennes, February 1997.*
- Estimation de modèles de Markov cachés. *Exposé au séminaire GREMARS-Lille3, February 1997.*
- Covariance de l'autocovariance empirique d'un processus multivarié. *Journées de l'ASU, Québec, May 1996.*
- Sur des modèles de Markov cachés. *Exposé au séminaire de Statistique et Probabilités de Montpellier, February 1996.*
- Sur des modèles de Markov cachés. *Exposé au séminaire de Statistique et Probabilités de Lille I, 20 December 1995.*
- Estimation des représentations linéaires de processus non linéaires. *XVIème rencontre Franco-Belge de statisticiens, Bruxelles, November 1995.*
- ARMA multivarié avec innovation linéaire autorégressive généralisée. *Journées de l'ASU, Jouy-en-Josas, May 1995.*
- Estimating the covariance between two sample autocovariances. *Twelfth Prague conference, Czech republic, 31 August 1994.*
- Estimation non paramétrique des covariances entre les autocovariances empiriques d'un processus stationnaire. *Exposé à la deuxième Journée de Statistique et Probabilités de Dunkerque, 1994.*
- Estimation non paramétrique des covariances entre les autocovariances empiriques d'un processus stationnaire. *Exposé à l'institut de Statistique de l'université libre de Bruxelles, 6 May 1994.*

- Modélisation d'une série chronologique ; application aux indices magnétiques. *Exposé à l'observatoire du parc Saint Maur - CRPE, 10 February 1994.*
- Modélisation bilinéaire des innovations linéaires d'un ARMA. *Exposé aux Journées EDF-Université, Marne la Vallée, 3 December 1993.*
- Une classe de modèles non linéaires en séries temporelles. *Exposé lors d'une invitation à l'université de Coimbra, Portugal, 3 September 1993.*
- Modèles ARMA uni ou multivariés avec innovation bilinéaire. *Exposé à la première Journée de Statistique et Probabilités de Dunkerque, 1993.*
- A Statistical Study of the *am* Indices ; Search for Forecasting Possibilities (avec M. Menvielle). *Exposé au congrés IAGA, Buenos Aires, 1993.*
- Modèles ARMA avec innovation bilinéaire. *Exposé aux Journées de l'ASU à Vannes, 1993.*
- Modélisation bilinéaire d'une série chronologique. *Exposé au séminaire de Statistique et Probabilités de Lille I, 15 April 1992.*
- Identification des modèles ARMA multivariés. *Exposé aux Journées de l'ASU à Tours, 1990.*
- Stationnarité et identification d'un processus purement bilinéaire et strictement superdiagonal. *Poster présenté aux Journées de l'ASU à Tours, 1990.*
- Identification des modèles ARMA multivariés. *Exposé au séminaire de Statistique et Probabilités de Lille I, 10 January 1990.*

OTHER RESEARCH ACTIVITIES

1. **PHD Supervision**

   - Completed PHD

     G. Lepage, *Modèles de la volatilité mal spécifiés : problèmes d'estimation et conséquences pour la mesure du risque.* PhD thesis from Lille III (co-supervised with J-M. Zakoïan), December 13, 2012.

     T. Hamadeh, *Inférence statistique de modèles GARCH non lin04éaires.* PhD thesis from Lille III (co-supervised with J-M. Zakoïan), June 11, 2010.

     Y. Boubacar Mainassara, *Estimation, validation et identification des modèles ARMA faibles multivariés.* PhD thesis from Lille III (co-supervised with J-M. Zakoïan), November 28, 2009.

     A. El Ghini, *Contribution à l'identification de modèles de séries temporelles.* PhD thesis from Lille III (co-supervised with J-M. Zakoïan), December 6, 2008.

     H. Raïssi, *Contribution à l'inférence statistique des modèles vectoriels autorégressifs et à correction d'erreurs.* PhD thesis from Lille III (co-supervised with J-M. Zakoïan), November 29, 2007.

     A. Gautier, *Modèles de séries temporelles à coefficients dépendant du temps.* PhD thesis from Lille III (co-supervised with J-M. Zakoïan), December 7, 2004.

     A. Bibi, *Quelques contributions à l'analyse des modèles bilinéaires à coefficients dépendant du temps.* PhD thesis from the university of Constantine, Algeria, October 27, 2002.

   - Current PhD

     Fedya Telmoudi, *Financial Risk Estimation Based on Value at Risk Modeling* (PhD thesis started in September 2011, co-supervised with M. Limam, at the University of Tunis and Lille 3).

Ali Ahmad, *Modèlisation des séries chronologiques à valeurs entières* (PhD thesis started in September 2012, co-supervised with J-M. Zakoïan).

Le Quyen Thieu, *Modèles temporels avec variables exogènes.* (PhD thesis started in September 2013, co-supervised with D. Bosq).

2. Editorial activities

- Associate Editor of the revue *Journal of Time Series Analysis*
- Associate Editor of the revue *Computational Statistics and Data Analysis* and Guest Associate Editor for *The Annals of Computational and Financial Econometrics (CFE)*
- Member of the Editorial Board of the revue *Statistical Inference for Stochastic Processes.*
- With Boswijk, P., Hallin, M., Taylor, R. invited editor for the special issue *Time Series Econometrics* of the review *Computational Statistics and Data Analysis*, 2014.
- With Belsley, D.A., Chen, C.W.S., Gallo, G., Khalaf, L., Kontoghiorghes E.J. and Van Dijk, H.K., invited editor for the special issue *Computational Econometrics* of the review *Computational Statistics and Data Analysis*, en cours.
- With Amendola, A. and S.J. Koopman, I was invited editor for the special issue *Nonlinear Modelling and Financial Econometrics* of the review *Computational Statistics & Data Analysis* 51, 2006.

3. Member of Scientific Program Committees

- Conference *Computational and Financial Econometrics* (CFE'14), University of Pisa, Italy, from Saturday 6th of December to Monday 8th of December.
- Member of Scientific Advisory Committee for the Programme *Inference for Change-Point and Related Processes*, 13 Jan-7 Feb 2014, Isaac Newton Institute for Mathematical Sciences.
- *Meeting on Statistics and Data Mining* (MSDM 2013), Hammamet, Tunisia, March 14-15, 2013.
- Conference *Computational and Financial Econometrics* (CFE'13), London, December 14-16, 2013.
- Conference *Computational and Financial Econometrics* (CFE'12), Oviedo, Spain, December 1-3, 2012.
- *Third Meeting on Statistics and Data Mining* (MSDM 2012), Hammamet, Tunisia, March 15-16, 2012.
- Co-Chair of the 5th CSDA International Conference on *Computational and Financial Econometrics* (CFE'11), 17-19 December 2011, Senate House, University of London
- SFdS Congress, Tunis, 23-27 May 2011.
- Conference *Computational and Financial Econometrics* (CFE'10), 10-12 December 2010, Senate House, University of London
- Conference COMPSTAT 2010, August 22-27, Paris

- *Computational and Financial Econometrics* (CFE'09) October 29-31, 2009, Cyprus
- *International Symposium on Operational Research* (ISOR'08), November 02-06, 2008, Alger.
- workshop *Computational and Financial Econometrics* (CFE'08), June 19-21, 2008, Neuchâtel.
- workshop *Computational and Financial Econometrics*, April 20-22, 2007, Geneva.
- 3rd World Conference *Computational Statistics and Data Analysis*, Octobre, 28-31 2005, Cyprus.

4. **Conference and session (co-)organization**

- session *"Multiple risks management"*, for the congress *Computational and Financial Econometrics* (CFE'13), 15 December 2013, London.
- session *"New developments in GARCH models and financial series modelling "*, for the congress *Computational and Financial Econometrics* (CFE'12), 1 December 2012, Oviedo, Spain.
- invited session *"Financial Time Series Modelling"*, for the congress *Computational and Financial Econometrics* (CFE'11), 17-19 December 2011, University of London.
- session *"Heavy-tailed time series"*, for the congress *Computational and Financial Econometrics* (CFE'10), 10-12 December 2010, University of London.
- 3 sessions *"Time series analysis and economic applications"*, *"Forecasting and applied econometrics"* and *"Economic and financial time series analysis"* for the congress *Computational and Financial Econometrics* (CFE'09), 29-31 October 2009, Cyprus.
- session *Time Series and Financial Econometrics*, for the workshop *Computational and Financial Econometrics* (CFE'08), June 19-21, 2008, Neuchâtel.
- session *Time Series*, for the joint-meeting *Société Statistique du Canada* and *Société Française de Statistique*, May 25-29, 2008, Ottawa.
- session *Nonlinear time series analysis & financial econometrics*, for the workshop *Computational and Financial Econometrics*, April 20-22, 2007, Geneva.
- co-organization of a session for the meeting *Journées MAS de la SMAI*, September 4-6, 2006, Lille 1.
- co-organization of a session for the *3rd World Conference Computational Statistics & Data Analysis*, October 28-31, 2005, Cyprus.
- co-organization of the meeting *Nonstationary multivariate and nonlinear econometrics models : theory and application* for the project INTAS 03-51-3714, September 29-30, 2005, Lille 3.
- in 2000, 2001, 2002, 2003 and 2004, co-organization of the meeting *Rencontres d'économétrie et de statistique Lille 3-Littoral*, Calais and Lille 3.
- session *Modèles à changement de régime markovien* for the congress *Nouvelles directions en analyse des séries temporelles*, Avril 2001, Marseille.

5. **Refereeing**

- Manuscript refereeing for *Annals of Statistics, Canadian Journal of Statistics, Communications in Statistics - Theory and Methods, Comptes Rendus de l'Académie des Sciences, Computational Statistics, Computational Statistics and Data Analysis, Economics Letters, Econometric Theory, Econometrics Journal, Empirical Economics, International Statistical Review, Journal of Applied Operational Research, Journal of Business and Economic Statistic, Journal of Inequalities and Applications, Journal of the Korean Statistical Society, Journal of Multivariate Analysis, Journal of Statistical Planning and Inference, Journal of the American Statistical Association, Journal of the Royal Statistical Society B, Journal of Time Series Analysis, La revue Canadienne de Statistique, Model Assisted Statistics and Applications, Numerical Algorithms, Revue de Statistique Appliquée, Revue Maghrébine de Mathématiques, Statistica Sinica, Statistical Inference for Stochastic Processes, Statistics, Studies in Nonlinear Dynamics & Econometrics, several books.*
- Project research refereeing for the agency *National Fund for Scientific & Technological Development (Fondecyt)* in 2007, for the agency *Austrian Science Fund* in 2008, and for *the NSA Mathematical Sciences Grant Program* in 2012, for *the Research Grant Council (RGC)* of Hong Kong in 2013, for *NSA Math. Sci. Grant Prog.* in 2014.
- Member of an expert committee for the evaluation of a laboratory, for the agency *Agence d'Evalution de la Recherche et de l'Enseignement Supérieur (AERES)* in 2008.

6. **Invitations** University of Coimbra (1993), Université de Montréal (2003, 2007 and 2009), University USTHB at Alger (2009), University of Athens (2013), Isaac Newton Institute (2014).

Villeneuve d'Ascq, February 2, 2014.