CURRICULUM VITAE

NAME	:	RACHIDI, KOTCHONI
ADDRESS	:	6001 Côte St-Luc, #410 Hampstead QC H3X 2G4 Canada
Phone number	:	+1-514-343-6111 #15283 (office), +1-514-825-9467 (cell), +1-514-341-9365 (home)
Fax	:	+1-514-343-7221
E-Mail	:	rachidi.kotchoni@umontreal.ca
Web Site	:	www.rkotchoni.webs.com

CITIZENSHIP		:	Benin
PERMANENT RESIDENCE		:	Canada
FIELDS OF SPECIALIZATION		:	Econometrics and Financial Economics
Ph.D. THESIS	Title	:	Efficient Estimation of Multivariate and Non Markov Models Using the Characteristic Function: Theory and Applications with High Frequency Data
	Thesis supervisor	:	Marine, CARRASCO
	Date of completion	:	Summer 2010
EDUCATION	2005-2010	:	Ph.D. in Economics, Université de Montréal, CANADA (expected completion date)
	2004-2005	:	M.Sc. in Mathematical and Computational Finance, Université de Montréal, CANADA
	1999-2003	:	BA in Statistics, École Nationale d'Économie Appliquée, Dakar, SENEGAL
	1998-1999	:	Certificate in Economics, Université d'Abomey-Calavy, BENIN
	1996-1998	:	Certificate in International Commerce, ISTA Agadir, MOROCCO
FELLOWSHIPS	2007-2009	:	Banque Laurentienne
	2005-2010	:	Faculté des études supérieures, Université de Montréal
	2004-2005	:	Agence Universitaire de la Francophonie, Bureau Afrique de l'Ouest
	1999-2003	:	COMSTAT Program, European Union Grant
	1996-1998	:	Benin-Morocco Cooperation
TEACHING EXPERIENCE	Fall 2008	:	Lecturer in Econometrics (Bachelor), Université de Montréal
	Winter 2008	:	Teaching assistance, Financial Economics, (Master) Université de Montréal
	Fall 2007	:	Lecturer in Econometrics (Bachelor), Université de Montréal
	Winter 2007	:	Teaching assistance in Econometric (Bachelor), Université de Montréal

OTHER ROFESSIONAL ACTIVITIES

- May - December 2005, and May - August 2006: Desjardins Gestion d'Actif
  Risk-Return Trade-off analysis, Value at Risk
  Nonparametric density modeling for Index Replication purpose
  Hedge Fund Classification and Performance Replication
- May - August, 2004: CIRANO, 2020 University, Montreal, QC, Canada
  Research assistantship: Real option analysis in investment opportunities. Simulation-based valuation of Real Options
- March - October, 2003: CONFEMEN, Dakar, Senegal
  Hierarchical Linear modeling to analyze the efficiency educational policies in Guinea and Mali
- August - October, 2001: Institut National de la Statistique, Cotonou, Benin
  Team supervisor for the survey about employment and informal sector in Benin
  Dissertation on food importation trend in Benin from 1990 to 2001

REFEREE FOR ACADEMIC JOURNALS

Journal of Financial Econometrics

RESEARCH INTERESTS

My research interests are twofold. In the first part of my works, I am interested in using the Generalized Method of Moments with a Continuum of Moment Condition (CGMM) to estimate multivariate and non Markov models. A continuum of moment condition arises for example when one tries to estimate the parameter of a model using moment conditions based on the empirical characteristic function. I discuss the theoretical aspects of the CGMM as well as the recipes that are useful for the efficient implementation in various contexts.

In the second part of my research, I focus on the volatility estimation and forecasting based on high frequency data. I discuss the estimation of the integrated volatility in the presence of dependent microstructure noise. I also propose shrinkage-type estimator of the integrated volatility that have good properties at moderate frequency as well as at large frequency. Finally, I use the CGMM to fit a multivariate Wishart autoregressive process to a series of realized covariance matrices for the purpose of forecasting.

PAPERS

[1] «Efficient Estimation Using the Characteristic Function» (joint with Marine Carrasco) (2008).

[2] «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (joint with Marine Carrasco) **[Job Market Paper**, S*ubmitted*] (2009). Now circulating under the title «Shrinkage Realized Kernels».

[3] «Applications of the Characteristic Function Based Continuum GMM in Finance» (2009).

[4] «Bootstrapping in the Frequency Domain: A Solution to the Curse of Dimensionality» (2009).

[5] «Hedge Fund Classification and Performance Replication» (2005) [*Master dissertation*].

WORK IN PROGRESS

[1] «Filtration of the Integrated Volatility Under Autocovariance Structure Restrictions» (2009).

[2] «Duration Based Prediction of the Integrated Volatility» (2009).

CONFERENCE PRESENTATIONS

- 64th European Meeting of the Econometric Society, Barcelona, August 23-27, 2009. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- 2009 North American Summer Meeting of the Econometric Society, Boston University, MA, June 4-7, 2009. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (paper presented by co-author Marine Carrasco).
- 43th CEA Meeting, Toronto, ON, May 28-31, 2009. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- 5th CIREQ Ph.D. Students' Conference, Montreal, May 26, 2009. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- 7th CIREQ-CIRANO Financial Econometrics Conference, Montreal, April 24-25, 2009. Organized by Eric Jacquier (HEC Montréal, CIREQ, CIRANO). Comments on: «Realized Volatility Forecasting in the Presence of Time-Varying Noise» by Bandi, Russel and Yang, 2007.
- 3th Annual Student Conference on Business Research, HEC Montréal, April 3-4, 2009. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- 4th CIREQ Ph.D. Students' Conference, Montreal, May 31, 2008. Presentation title: «Efficient Estimation Using the Empirical Characteristic Function» (co-author: Marine Carrasco).
- 2008 North American Summer Meeting of the Econometric Society, Pittsburgh, PA, June 21, 2008. Presentation title: «Efficient Estimation Using the Empirical Characteristic Function» (co-author: Marine Carrasco).
- 42th CEA Meeting, Vancouver, BC, June 7, 2008. Presentation title: «Efficient Estimation Using the Empirical Characteristic Function» (co-author: Marine Carrasco). Commented by Atsushi Inoue (University of British Columbia).
- 48th congrès annuel de la Société canadienne de science économique, Château Montebello, QC, May 15, 2008. Presentation title: «Efficient Estimation Using the Empirical Characteristic Function» (co-author: Marine Carrasco).

POSTER SESSIONS

- 26th Canadian Econometrics Study Group, Ottawa, September 19-20, 2009. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- 3rd Time Series Conference, Montreal, May 22-23, 2009. Organized by Marine Carrasco and Silvia Gonçalves (Université de Montréal, CIREQ). Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- 25th Canadian Econometrics Study Group, Montreal, September 26-28, 2008. Presentation title: «Assessing the Nature of Pricing Inefficiencies via Realized Measures» (co-author: Marine Carrasco).
- CIREQ Conference on Generalized Method of Moments, Montreal, November 16-17, 2007. Organized by Marine Carrasco (Université de Montréal, CIREQ). Presentation title: «Optimal Choice of the Regularization Parameter for GMM Estimation Based on the Characteristic Function» (co-author: Marine Carrasco). Title now becomes: «Efficient Estimation Using the Empirical Characteristic Function».

STATISTICAL AND MATHEMATICAL SOFTWARES

EVIEWS, HLM, MATLAB, SCIENTIFIC WORK PLACE, SPSS, STATA

LANGUAGES

Fluent in French, English and Yoruba

REFERENCES

CARRASCO, Marine	:	Université de Montréal	Phone: +1-514-343-2394	Email: marine.carrasco@umontreal.ca
GONÇALVES, Sílvia	:	Université de Montréal	Phone: +1-514-343-6556	Email: silvia.goncalves@umontreal.ca
PERRON, Benoit	:	Université de Montréal	Phone: +1-514-343-2126	Email: benoit.perron@umontreal.ca

KOTCHONI, RACHIDI

SUMMARY OF THE THESIS

In the financial econometrics literature, many models admit close form expression for their characteristic functions although their likelihoods functions are not known. For example, the stable distribution and the discretely observed continuous time models fall in this category. In these situations, one can estimate the parameter of interest by specifying moments conditions based on the difference between the theoretical characteristic function and its empirical counterpart. The challenge here is to exploit the whole continuum of moment condition hence specified to achieve the maximum likelihood efficiency. This topic is covered in paper [1], [3] and [4]. Another body of the financial econometrics literature focuses on the nonparametric estimation of the volatility of assets using noisy high frequency data. The properties assumes for the noise are important for the choice of a volatility estimator. In paper [2], we propose a general model for the microstructure noise contaminating assets prices and use that framework to derive a new estimator for the integrated volatility.

The CGMM procedure proposed by Carrasco and Florens (2000) permits to fully exploit the information contained in the characteristic function and yields an estimator which is asymptotically as efficient as the maximum likelihood estimator. However, this estimation procedure depends on a regularization parameter α that needs to be selected. The aim of the first paper [1] is to provide a way to optimally choose α by minimizing the approximate mean square error (MSE) of the estimator. Following an approach similar to Newey and Smith (2004), we derive a higher-order expansion of the estimator from which we characterize the finite sample dependence of the MSE on α. We provide two data-driven methods for selecting the regularization parameter in practice. The first one relies on the higher-order expansion of the MSE whereas the second one uses only simulations. We show that our simulation technique delivers a root T consistent estimator of α, hence it is optimal and adaptive. Our Monte Carlo simulations confirm the importance of the optimal selection of α.

In the second paper [2], we use a parametric microstructure model specified at the highest frequency as a starting point to derive a new realized kernels estimator of the integrated volatility. The proposed estimator makes an optimal trade-off between the size of the discretization error and that of the microstructure noise. It also makes an efficient use of the data: the samples available at all periods are used to estimate the integrated volatility of each period. We suggest a method-of-moment approach to estimate the parameters of the specified model for the latent noise process. An empirical study carried out on the 15 stocks of the Dow Jones Industrials confirms that the microstructure noise is usually far from being IID and is possibly correlated with the latent returns.

The goal of the third paper [3] is to illustrate how to efficiently implement the CGMM. We start with a review of the theoretical properties of the CGMM. Next we suggest some numerical recipes for its implementation. Finally, we carry out a simulation study with the stable distribution to confirm the accuracy of the CGMM as an inference method. For the empirical application, we use a series of high frequency returns on the ALCOA index to estimate the integrated volatility. We then fit an autoregressive Gamma process by CGMM to the series of estimators of the integrated volatility in order to construct proxies for the expected risk and the unexpected risk. Next, we model the daily return as a linear combination of the expected risk, the unexpected risk and an idiosyncratic shock and find that investors require a positive premium for bearing the expected risk while a negative premium is attached to the unexpected risk.

In implementing the characteristic function based CGMM with multivariate and non Markov models, a major difficulty lies in the evaluation of the multiple integrals embedded in the objective function. Numerical quadratures are among the most accurate methods that can be used in the present context. Unfortunately, the number of quadrature points grows exponentially with the dimensionality of the data. When the data generating process is Markov or dependent, the accurate implementation of the CGMM becomes roughly unfeasible for dimensionalities as low as three. In the paper [4], I propose a strategy that consists in working with univariate samples obtained by taking the linear combinations of the elements of the original vector process. Each univariate sample generated in this way is called a frequency domain bootstrap sample, and can be used to compute an estimator of the parameter of interest under some identification assumptions. Finally, all the possible estimators obtained in this fashion can be aggregated to obtain what we called a frequency domain bootstrap estimator. The optimal aggregation rule is discussed in the paper. The overall method is illustrated by simulation with the Autoregressive Factor Gamma model. In the empirical application, the Wishart Autoregressive model is fitted to a series of realized covariance. The output of such a model can be used to forecast the realized variance.