Peter Martey Addo

General Information

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Research Interest

Econometrics, Macro-financial linkages, Financial Networks & Systemic Risk Analysis, Nonlinear Time Series Analysis, Interdisciplinary Research (Statistical Physics & Econometrics), Machine & Deep Learning (Data Mining & Knowledge discovery), Applied Statistics & Computational finance

Current Position

Data Scientist

SNCF Mobilité - Departement Performance Maintenance (MM), Direction du Matériel, France Jan 2016 - Present

- Innovation, Data Mining & Knowledge discovery, BigData Projects (USE CASES)

Researcher

LabEx ReFi - European Laboratory on Financial Regulation, France

- Research Department: Systemic Risk, Resolution and Growth

Research Assistant

Systemic Risk Hub global team

Education

Diplôme de Docteur en Mathématiques (Ph.D in Mathematics)

Université Paris 1 Panthéon Sorbonne, France Sept 2011 - May 2014

Dottore di Ricerca in Economia (Ph.D in Economics)

University Cá Foscari of Venice, Italy (`Joint PhD degree (Erasmus Mundus) with Univ. of Paris 1`)

Master Mathematiques Appliquees a l'Economie et a la Finance

spécialité Modelisation et Methodes Mathmatiques en Economie et Finance, **mention**: *Trés Bien.*

Université Paris 1 Panthéon Sorbonne, France Sept 2009 - July 2011

Laurea Magistrale in Economia (Master in Economics), **mention**: *110/110 Cum Laude*

University Cá Foscari of Venice, Italy Sept 2009 - June 2011

Bachelor of Science in Mathematics, **Class of Degree:** *First Class Honors*

Kwame Nkrumah University of Science and Technology, Ghana. Aug 2004 - June 2008.

Publications

1. *"Nonlinear Dynamics and Recurrence Plots for Detecting Financial Crisis"*, The North-American Journal of Economics and Finance, Volume 26, December **2013**, Pages 416–435. http://dx.doi.org/10.1016/j.najef.2013.02.014. (joint with Billio, M., Guégan, D.)

2. *"The Univariate MT-STAR Model and a new linearity and unit root test procedure"*. Computational Statistics & Data Analysis (CSDA), Volume 76, August **2014**, Pages 4–19. http://dx.doi.org/10.1016/j.csda.2013.12.009. (joint with Billio, M., Guégan, D.)

3. *"Turning point chronology for the Euro–Zone: A Distance Plot Approach"*. Journal of Business Cycle Measurement & Analysis, Vol. **2014**/1, No. 8, pages 1–14. http://dx.doi.org/10.1787/jbcma-2014-5jxwz80d73q8. (joint with Billio, M., Guégan, D.)

4. *"Nonlinear Dynamics and Wavelets for Business Cycle Analysis"*. In Marco Gallegati and Willi Semmler (Eds.), "Wavelets Applications in Economics and Finance", Dynamic Modeling and Econometrics in Economics and Finance Volume 20, **2014**, pages 73–100. Springer Series. http://dx.doi.org/10.1007/978-3-319-07061-2_4. (joint with Billio, M., Guégan, D.)

5. *"Understanding exchange rate dynamics"*, In A. Colubi, K. Fokianos, & E. J. Kontoghiorghes (Eds.), Proceedings of the 20th International Conference on Computational Statistics, pp. 1–14, **2012**. Curran Associates, Inc. ISBN: 978-1-62748-321-6. (joint with Billio, M., Guégan, D.)

Selected Working Papers

1. "Coupling direction of the European Banking and Insurance sectors using inter-system recurrence networks", CES Working paper, **2015**. (`submitted`)

2. "Insights to the European debt crisis using recurrence quantification and network analysis", CES Working paper 2015.35, **2015**. (`submitted`)

3. "The kiss of information theory that captures systemic risk", CES Working paper no. 14069R, **2015**. (joint with de Peretti P., Runge J., Gatfaoui H.) (`submitted`)

4. *"Multivariate Self–Exciting Threshold Autoregressive Models with eXogenous Input"*. Papers 1407.7738, arXiv.org (**2014**)

5. "Change-Point Detection and Bayesian Graphical Models for Vector Signals". (joint with Ahelegbey, D. F.).

Previous Position

Postdoctoral Research Fellow (CNRS–UMR8174)

Centre National de la Recherche Scientifique (CNRS) Sept 2014 - Dec 2015

– Part of a research team tasked on some working packages of the European Union Systemic risk project: "SYstemic Risk TOmography: Signals, Measurements, Transmission Channels, and Policy Interventions" (SYRTO) Project.
– Understanding the risks of Sovereigns, banks and other financial intermediaries and corporate
– Exploring the bi-variate risk connections among the system Sovereigns-Banks and other Intermediaries-Corporates.
– Proposing new measurement approaches and indicators for systemic risks.

- Exploring the multidimensional risk connections among Sovereigns, Banks and other Intermediaries and Corporates.
- Preparing research manuscripts for journal submission.
- Representing the team in international conferences, and invited seminar presentations

Research Fellow

Erasmus Mundus - EACEA Sept 2011 - Aug 2014

- Worked on a project aimed at the analysis of nonlinearity in business cycles. Special attention was centred on the introduction of modern nonlinear approaches for the analysis of economic & financial time series.
- I was affiliated with the Centre d'Économie de la Sorbonne (CES) – Université Paris 1, Panthéon-Sorbonne, France, and the Dipartimento di Economia, Università Cà Foscari di Venezia, Italy.

Visits

1. The *Center for Operations Research and Econometrics* (CORE), Université Catholique de Louvain (UCL), Louvain-La-Neuve, Belgium.
   - Research Group: Econometrics Team. Short visit: 29 May, 2012 - 2 June, **2012**.
   - Purpose: Seminar and discussion with Econometrics Team. Pr. Sébastien Van Bellegem
2. Visiting Scholar, International Doctorate in Economic Analysis (IDEA), Universitat Autonoma de Barcelona, Spain, August–December, **2009**.

Teaching

1. **Instructor, Université Paris 1, Panthéon-Sorbonne, France**

   R for Statistical Modelling in Finance, *Summer School on Statistical and Numerical Finance*, June–July, **2012** & **2013**.
2. **Teaching Assistant, Department of Mathematics, KNUST, Ghana**

   Probability and Statistics II, Design of Experiments, Statistics for Computer Science I, Biological Sciences, Spring **2009**. Regression Analysis, Probability and Statistics I, Fall **2008**.

Selected Conference and Seminar Presentations

1. Systemic Risk Group, Frankfurt Institute for Advanced Studies (FIAS) , June 12th **2015**, Frankfurt, Germany,.
2. Meeting of the Consortium for Systemic Risk Analytics (CSRA), Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts on May 27 th **2015**, USA.
3. 2015 Annual Doctoral Conference of the Association for the Development of Research in Economics and Statistics (ADRES 2015), Centre d'Economie de la Sorbonne, Paris, February 27–28, **2015**. (`French Job Market`)
4. Meeting of the Consortium for Systemic Risk Analytics (CSRA), Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts on December 15 th **2014**, USA.
5. 34th International Symposium on Forecasting (ISF 2014), Rotterdam, Netherlands, June 29 – July 2, **2014**.

6. 7th CSDA International Conference on Computational and Financial Econometrics (CFE 2013), Senate House, University of London, UK, 14–16 December **2013**.
7. EBIM-EDEEM-Paris1 Doctoral School Jamboree at the Center for Operations Research and Econometrics (CORE), Université Catholique de Louvain (UCL), Louvain-La-Neuve, Belgium, 8–10 July **2013**.
8. 6th CSDA International Conference on Computational and Financial Econometrics (CFE 2012), Conference Centre Oviedo, Spain, 1–3 December **2012**.
9. 20th International Conference on Computational Statistics (COMPSTAT 2012), Amathus Beach Hotel, Limassol, Cyprus, 27–31 August **2012**.
10. EBIM-EDEEM-Paris1 Doctoral School Jamboree, Université Paris 1 Panthéon-Sorbonne, 11–12 July, **2012**.
11. Econometrics Internal Seminar at the *Center for Operations Research and Econometrics* (CORE), Université Catholique de Louvain (UCL), Louvain-La-Neuve, Belgium, 30 May, **2012**.
12. Fifth International MAF 2012 Conference – Mathematical and Statistical Methods for Actuarial Sciences and Finance, Venice, Italy, 10–12 April, **2012**.
13. Second International Symposium in Computational Economics and Finance (ISCEF 2012), El Mouradi Gammarth, Tunis, Tunisia, March 15–17, **2012**.
14. 5th CSDA International Conference on Computational and Financial Econometrics (CFE 2011), Senate House, University of London, UK, 17–19 December **2011**.
15. Université Paris 1, Panthéon Sorbonne, Maison des Sciences Economiques (MSE), MMEF-QEM-EDEEM Graduation Ceremony (2011), Chaired by Edward C. Prescott, July 8, **2011**.

Selected Conferences and Workshops Attended

1. 8th Financial Risks International Forum: Scenarios, Stress, and Forcasts in Finance, Paris, March 30–31, **2015**, France
2. Syrto Project Research team meeting, Massachusetts Institute of Technology (MIT), Boston, December 15-16, **2014**, USA
3. 6th International Conference of the ERCIM (European Research Consortium for Informatics and Mathematics) Working Group on Computing & Statistics (ERCIM 2013), Senate House, University of London, UK, 14–16 December **2013**.
4. 12th International Conference on Credit Risk Evaluation Designed for Institutional Targeting in finance, Scuola Grande di San Giovanni Evangelista, Venice, Italy, 26–27 September, **2013**.
5. Workshop on "Statistical modeling, financial data analysis and applications", Istituto Veneto di Scienze Lettere ed Arti, Palazzo Franchetti, Venice, Italy, 11–14 September **2013**.
6. 5th International Conference of the ERCIM Working Group on Computing & Statistics (ERCIM 2012), Conference Centre Oviedo, Spain, 1–3 December **2012**.
7. Summer Workshop in Economic Theory (SWET 2012), Paris School of Economics (PSE) – Université Paris 1 Panthéon-Sorbonne, Paris, France, 9–10 July, **2012**.
8. The *Center for Operations Research and Econometrics* (CORE), Université Catholique de Louvain (UCL), Louvain-La-Neuve, Belgium.

- Research Group: Econometrics Team. Short visit: 29 May, 2012 - 2 June, **2012**.
- Purpose: Seminar and discussion with Econometrics Team. Pr. Sébastien Van Bellegem

9. 4th International Conference of the ERCIM (European Research Consortium for Informatics and Mathematics) Working Group on Computing & Statistics (ERCIM 2011), Senate House, University of London, UK, 17–19 December **2011**.
10. Visiting Scholar, International Doctorate in Economic Analysis (IDEA), Universitat Autonoma de Barcelona, Spain, August–December, **2009**.
11. International Conference on Mathematics and Its Applications (NIMS-Ghana), University of Ghana, Department of Mathematics, Legon, Accra, Ghana, June 16–20, **2009**.

Professional Activities & Networks

- **Reviewer** for *Economic Modelling*, *Studies in Nonlinear Dynamics & Econometrics*, *Journal of Business Cycle Measurement & Analysis*, *Computational Economics*. *South African Journal of Economics.*
- **Co-organiser of PhD student lunch seminars**, Axe Finance at CES, Université Paris 1, Panthéon-Sorbonne, France
- **Professional Networks**: *Member, International Institute of Forecasters (IIF), April 2014–Present. Member, Euro Area Business Cycle Network (EABCN), 2013–Present. Member, ERCIM WG on Computational and Methodological Statistics (CMStatistics), 2013–Present. Member, Computational and Financial Econometrics Network (CFEnetwork), 2013–Present. Member, The Statistics and Probability African Society (SPAS), 2012–Present. Member, Erasmus Mundus Students and Alumni Association (EMA), 2009–Present. Member, Systemic Risk Hub global team, April 2015–Present.*
- EMA **Course Representative**: European Doctorate in Economics–Erasmus Mundus (EDEEM), 2012–2013, 2014–2015.
- **Co-Initiator** and Management team member of the EMA PhD Network, 2012–Present.
- **Vice-President**, QEM Erasmus Mundus Students and Alumni Association, 2012–2013.
- **President**, QEM Erasmus Mundus Students and Alumni Association, 2013–2014, 2015–2016.

Honors, Awards, & Fellowships

- "Qualifiés 2015 aux fonctions de maître de conférences":
  Section 05 (Economics) and Section 26 (Applied Mathematics), CNU, France — 2015
- CNRS, SYRTO Postdoctoral Fellowship — 2014 - 2015
- Erasmus Mundus Doctoral Fellowship — 2011 - 2014
- Erasmus Mundus Scholarship for QEM Master — 2009 - 2011
- First Class Honors, BSc. Mathematics KNUST — June, 2008
- Best Students Award, College of Science KNUST — June, 2007
- Leadership Awards, Church of Christ KNUST — 2006, 2007, and 2008

Miscellaneous

- Scientific Applications : R, H2O, Python, Spark, SPSS, Stata, Matlab, Tableau, Talend, Gretl, LaTeX (Kile on Linux)
- Languages : English (Native), French (Intermediate), Italian (Intermediate), Spanish (basic).
- Skills :
  - Ability to analyse and synthesize large amounts of information and data
  - Ability to solve complex problems and find creative solutions
  - Strong sense of urgency and ability to work under pressure
  - Ability to cope with unexpected results and to bring new perspectives to move ahead
  - Communicate complex information to a range of audiences
  - Outstanding work ethics and team work skills
  - Curious, innovative and open-minded
  - Work independently with minimal supervision and ability to make decisions

References

Prof. Monica Billio
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Prof. Bernard Cornet
Department of Economics
University of Kansas
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Phone: (+1) 785 864 1449

Prof. Philippe De Peretti
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Last updated: January 24, 2017