

# Diane Pierret

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Citizenship Belgium, born 1986.

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## EDUCATION

**Université Catholique de Louvain**, Louvain School of Statistics, Biostatistics and Actuarial sciences, Louvain-la-Neuve, Belgium

PhD. Statistics (Econometrics), 2014 (expected)

Advisors: Professor Luc Bauwens, Professor Christian M. Hafner

**New York University**, Leonard N. Stern School of Business, New York, NY

Visiting PhD, January 2012 – Present

Advisors: Professor Robert F. Engle (supervisor), Professor Viral V. Acharya

### **CEMS Global Alliance in Management Education**

M.Sc. International Management CEMS MIM, 2009

Host school: University of St Gallen, Sankt Gallen, Switzerland

**Université Catholique de Louvain**, Louvain School of Management, Louvain-la-Neuve, Belgium

M.A. Business Engineering (Major in Finance) *with great honors*, 2009

B.A. Business Engineering *with great honors*, 2007

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## RESEARCH INTERESTS

Financial econometrics, financial intermediation, systemic risk, energy markets

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## PUBLICATIONS AND WORKING PAPERS

**Systemic risk and the solvency-liquidity nexus of banks** (Job market paper), December 2013.

Abstract: This paper shows the empirical interaction between solvency and liquidity risks of banks that make them particularly vulnerable to an aggregate crisis. I find that banks lose their access to short-term funding when markets expect they will be insolvent in a crisis. Conversely, a bank with more short-term debt (with a large exposure to funding liquidity risk) gets a larger capital shortfall estimate. Importantly, the short-term debt of a bank is not sensitive to the risk of the bank failing in isolation but is influenced by its solvency risk when the whole economy is under stress (measured as the expected capital shortfall in a crisis). This solvency-liquidity nexus is found to be strong under many robustness checks and to contain useful information for forecasting the short-term balance sheet of banks. The results suggest that the solvency-liquidity interaction should be accounted for when designing liquidity and capital requirements, in contrast to Basel III regulation where solvency and liquidity risks are treated separately.

**Testing Macroprudential Stress Tests: the Risk of Regulatory Risk Weights** (with V. Acharya and R. Engle), NYU working paper, October 2013, *invited to the Carnegie-Rochester Conference of the Journal of Monetary Economics*.

Abstract: Macroprudential stress tests have been employed by regulators in the United States and Europe to assess and address the solvency condition of financial firms in adverse macroeconomic scenarios. We provide a test of these stress tests by comparing their risk assessments and outcomes to those from a simple methodology that relies on publicly

available market data and forecasts the capital shortfall of financial firms in severe market-wide downturns. We find that: (i) The losses projected on financial firm balance-sheets compare well between actual stress tests and the market-data based assessments, and both relate well to actual realized losses in case of future stress to the economy; (ii) In striking contrast, the required capitalization of financial firms in stress tests is found to be inadequate ex post compared to that implied by market data; (iii) This discrepancy arises due to the reliance on regulatory risk weights in determining required levels of capital once stress-test losses are taken into account. In particular, the continued reliance on regulatory risk weights in stress tests appears to have left financial sectors under-capitalized, especially during the European sovereign debt crisis, and likely also provided perverse incentives to build up exposures to low risk-weight assets.

### **The Systemic Risk of Energy Markets**, CORE discussion paper no. 2013/53, April 2013.

Abstract: This paper investigates the meaning of systemic risk in energy markets and proposes a methodology to measure it. Energy Systemic Risk is defined by the risk of an energy crisis raising the prices of all energy commodities with negative consequences for the real economy. Measures of the total cost (EnSysRISK) and the net impact (Delta MES) of an energy crisis on the rest of the economy are proposed. The measures are derived from the Marginal Expected Shortfall (MES) capturing the tail dependence between the asset and the energy market factor. The adapted MES accounts for causality and dynamic exposure to common latent factors. The methodology is applied to the European Energy Exchange and the DAX industrial index, where a minor decline in industrial productivity is observed from recent energy shocks.

### **Multivariate Volatility Modeling of Electricity Futures** (with L. Bauwens and C. Hafner), *Journal of Applied Econometrics*, 2013, 28:5, pp. 743-761.

Abstract: We model the dynamic volatility and correlation structure of electricity futures of the European Energy Exchange index. We use a new multiplicative dynamic conditional correlation (mDCC) model to separate long-run from short-run components. We allow for smooth changes in the unconditional volatilities and correlations through a multiplicative component that we estimate nonparametrically. For the short-run dynamics, we use a GJR-GARCH model for the conditional variances and augmented DCC models for the conditional correlations. We also introduce exogenous variables to account for congestion and delivery date effects in short-term conditional variances. We find different correlation dynamics for long- and short-term contracts and the new model achieves higher forecasting performance compared to a standard DCC model.

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## ACADEMIC AFFILIATIONS

**New York University**, Leonard N. Stern School of Business, The Volatility Institute

Research assistant; Systemic risk, Oct 2012 – Present

Visiting scholar, January 2012 – August 2012

**Université Catholique de Louvain**, Institute of Statistics, Biostatistics and Actuarial sciences

Research assistant; Econometric analysis and risk management in energy markets, Sept 2010 – Oct 2012

Teaching assistant, Oct 2009 – Sept 2010

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## INVITED SEMINARS AND CONFERENCES

- Sept 2013: Mini-Symposium on "Modeling Multivariate Risks", German Statistical Week, Freie Universität Berlin, Germany
- July 2013: Risk Dynamics, lunch seminar, Brussels, Belgium
- June 2013: Professional Risk Managers International Association (PRMIA) conference on "Macro Stress Testing", New York
- May 2013: The Office of Financial Research, Washington DC
- Jan 2013: Luxembourg School of Finance, Lunch seminar, Luxembourg
- Aug 2012: The FGV/VALE-sponsored conference on the Economics and Econometrics of Commodities Prices (invited keynote speaker), Rio de Janeiro, Brazil
- Aug 2012: The Office of Financial Research, workshop on stress testing (invited participant), Washington, DC
- May 2011: Katholieke Universiteit Leuven, AFI Finance workshop, Leuven, Belgium

## OTHER CONFERENCE PRESENTATIONS

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June 2013: 6th Annual conference of the Society for Financial Econometrics (SoFiE), Singapore Management University, Singapore  
Oct 2012: The International Energy Finance conference, Trondheim, Norway  
June 2012: 32nd Annual International Symposium on Forecasting, Boston, MA  
Sept 2011: 10th OxMetrics User Conference, Maastricht University, Netherlands  
Aug 2011: 65th European Meeting of the Econometric Society (ESEM 2011), Oslo University, Norway  
May 2011: Interdisciplinary workshop on econometric and statistical modeling of multivariate time series, Université Catholique de Louvain, Belgium  
Dec 2010: 4th International conference on Computational and Financial Econometrics (CFE'10), University of London, UK

## FELLOWSHIPS AND AWARDS

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R-square RiskLab best PhD paper award (for “The Systemic Risk of Energy Markets”) at the 2012 International Energy Finance conference  
Laureate of the 2012 travel grant competition of the French-speaking community of Belgium  
Université Catholique de Louvain FSR fellowship, 2012-2014  
Université Catholique de Louvain ARC fellowship, 2010-2012  
Finalist at the 2010 Econometric Game, University of Amsterdam, Netherlands

## TEACHING EXPERIENCE

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Université Catholique de Louvain, Teaching assistant, Feb – June 2008 and Oct 2009 – Sept 2010  
Econometrics, Multivariate Statistical Analysis, Statistics for Economics and Management

## REFEREE

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*Journal of Financial Econometrics, Energy Economics, Operations Research, Applied Stochastic Models in Business and Industry, Computational Statistics*

## INDUSTRY EXPERIENCE

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Aug – Oct 2009: DuPont International Operations SARL (Switzerland) – Conducting market assessment of Oil & Gas segment for DuPont Protection Technology (including estimation of potential for Chemical Protective Clothing in up and downstream activities) – Elaborating a scenario calculator for the launch of a new product in the low-end chemical protection clothing segment – DuPont Safety Resources: consultants performance measurement: metrics, dashboard, analysis.

Feb – June 2009: PricewaterhouseCoopers (Luxembourg) – Conducting a European research project about the impact of the financial crisis on retail investors (European survey and quantitative data analysis). PWC and Caceis Investor Services published results of the study in their report “Ideal Advice - A step-change in the industry’s relationship with the individual investor.” June 2010.

Feb – June 2009: e-Xstream engineering SA (Belgium, Luxembourg) – Defining the optimal international distribution strategy for the software of a fast growing spin-off from UCL active in the Computer-Aided Engineering industry (market analysis of 21 countries, customer survey, entry mode strategy by region and financial plan).

## MUSIC

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2012 – Present: Second violin, One World Symphony Orchestra, New York  
2004 – Present: First violin, UCL symphonic orchestra (OSEL), Belgium  
Fall 2008: First violin, orchestra of the University of St Gallen, Switzerland  
(Detailed musical CV available upon request)

## REFERENCES

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Professor Viral V. Acharya  
NYU Stern School of Business  
44 West Fourth Street – KMC 9-84  
New York, NY 10012  
Phone: +1 212-998-0354  
E-mail: [vacharya@stern.nyu.edu](mailto:vacharya@stern.nyu.edu)

Professor Robert F. Engle  
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