

Labex EcoDec
Axis 2: Financial Market Failures and Regulation
Activity report, October 2014

1 Main research areas

The axis “Financial Market Failures and Regulation” is directed by J. Hombert (Principal Investigator, HEC – replacement of D. Thesmar in 2013), E. Challe (co-Principal investigator, Polytechnique) and B. Bouchard (co-Principal investigator, ENSAE-ParisTech).

This axis is built on three observations: Systemic risks have been essentially ignored up to the point that they nowadays threaten the overall economy; the extreme complexity and opacity of our financial systems can lead to uncontrolled behaviors that may reinforce these risks; while financial markets should in principle serve as a financing tool for the industries and the hedging of risks, many innovative firms have no access to them and many important risks are still borne to individuals. Our aim is to study these different aspects, not only from a pure technical point of view, but importantly, also with a view towards their impact on the general economy and public policies.

More precisely, we concentrate on the following topics:

1. Regulating systemic risk, designing more adapted risk measures.
2. Mastering complexity and opacity inherent to modern finance.
3. Financing innovation and encouraging financial innovations.

These aspects will be studied from several point of views, as our team is composed of both economists and applied mathematicians/statisticians.

2 Composition of the team

Our team is composed of economists, applied mathematicians and statisticians of Ecole Polytechnique, HEC Paris and ENSAE-ParisTech.



Campus Paris Saclay
FONDATION DE COOPÉRATION SCIENTIFIQUE



HEC
PARIS



Researcher		Institution
ALISSA	Walid	HEC
ALLAZ	Blaise	HEC
BOUCHARD-DENIZE	Bruno	CREST-ENSAE
CAHUC	Pierre	CREST-ENSAE
CALVET	Laurent	HEC
CAPKUN	Vedran	HEC
CHALLE	Edouard	ECOLE POLYTECHNIQUE
COLLIARD	Jean-Edouard	HEC
CREPON	Bruno	CREST-ENSAE
CRIFO	Patricia	ECOLE POLYTECHNIQUE
DERRIEN	François	HEC
FERMANIAN	Jean-David	CREST-ENSAE
FOUCAULT	Thierry	HEC
FRANCQ	Christian	CREST-ENSAE
GOSSNER	Olivier	ECOLE POLYTECHNIQUE
GOURIEROUX	Christian	CREST-ENSAE
HEGE	Ulrich	HEC
HOMBERT	Johan	HEC
LANGLOIS	Hugues	HEC
LESAGE	Cédric	HEC
LOISEL	Olivier	CREST-ENSAE
LOVO	Stefano	HEC
OLIVIER	Jacques	HEC
ÖRS	Evren	HEC
OTTO	Clemens	HEC
PERIGNON	Christophe	HEC
PONSSARD	Jean-Pierre	ECOLE POLYTECHNIQUE
PICARD	Pierre	ECOLE POLYTECHNIQUE
ROSU	Ioanid	HEC
SAUVAGNAT	Julien	CREST-ENSAE
SCHMIDT	Daniel	HEC
SPAENJERS	Christophe	HEC
STOLOWY	Hervé	HEC
THESMAR	David	HEC
ZAKOIAN	Jean-Michel	CREST-ENSAE

Awards

- 1) Patricia Crifo has been appointed Chevalier de l'Ordre National du Mérite in November 2013.
- 2) Bruno Bouchard-Denize and François Derrien, received in 2013 the Award for the "Best Young Researcher in finance" awarded by the l'Institut Louis-Bachelier and l'Institut Europlace de finance.
- 3) Christophe Pérignon, Associate Professor in Finance at HEC Paris and Specialist in Financial Risk Management, received the prize for the "Best Young Researcher" in Finance 2014, awarded by the Institut Europlace de Finance at the 7th Financial Risks International Forum.
- 4) Christian Gouriéroux, received the Award Pierre-Simon de Laplace 2013.
- 5) Pierre Picard, Jean Pinquet, have received the best Paper Award for the best paper published in the Geneva Risk and Insurance Review- Year 2013 for « Optimal risk financing in large corporations through insurance captives », 2013, Geneva Risk and Insurance Review, 38, 1, 48-86.
- 6) Johan Hombert received the prize of the "Best Young Researcher" by the Fondation Banque de France in September 2014.

3 Publications

In Subsections 1 and 2 we display a selection of published papers and working papers produced by the team within the axis topics. The papers In Subsections 3 and 4 have been specifically funded by the Labex Ecodec.

1) Published and accepted papers

B. Bouchard, E. Lépinette and E. Taflin , "Robust no-free lunch with vanishing risk, a continuum of assets and proportional transaction costs", [Stochastic Processes and their Applications](#), 2014, 124, 3231-3259.

B. Bouchard, M. Nutz, "Arbitrage and duality in nondominated discrete-time models", to appear in [Annals of Applied Probability](#).

B. Bouchard, L. Moreau and M. Nut, "Stochastic Target Games with Controlled Loss", ([pdf](#), [slides](#)), [Annals of Applied Probability](#), 2014, 24(3), 899-934.

B. Bouchard, E. Taflin, "No-arbitrage of second kind in countable markets with proportional transaction costs", [Annals of Applied Probability](#), 2013, 23(2), 427-454.

H. Dellas, B. Diba, O. Loisel, "Liquidity Shocks, Equity-Market Frictions, and Optimal Policy," *Macroeconomic Dynamics*, forthcoming

O. Loisel, "Discussion of 'Monetary and Macroprudential Policy in an Estimated DSGE Model of the Euro Area', *International Journal of Central Banking*, June 2014, Vol. 10, No. 2, pp. 237-247

P. Picard and J. Pinquet, "Optimal risk financing in large corporations through insurance captives", 2013, *Geneva Risk and Insurance Review*, 38, 1, 48-86.

P. Picard and J-M. Bourgeon, "Fraudulent claims and nitpicky insurers", 2014, *American Economic Review*, 104 (9), 2900-2917.

P. Picard "Participating insurance contracts and the Rothschild-Stiglitz equilibrium puzzle", *Geneva Risk and Insurance Review*, forthcoming, 2014.

2) Working Papers and papers in revision

B. Bouchard, M. Nutz, "Consistent Price Systems under Model Uncertainty".

B. Bouchard, L. Moreau and M. Soner, "Hedging under an expected loss constraint with small transaction costs".

B. Bouchard, M. Nutz., "Stochastic Target Games and Dynamic Programming via Regularized Viscosity Solutions".

P. Picard « Participating insurance contracts and the Rothschild-Stiglitz equilibrium puzzle: the n type case », mimeo, 2009 (revised version in progress).

3) Labex Ecodec published and accepted papers

A. Gervais, G.O. Karame, and S. Capkun, "Is Bitcoin a Decentralized Currency" 2014, *IEEE Security & Privacy*, Vol. 12 No 3, pp 54-60. in coll.

W. Alissa, V. Capkun, T. Jeanjean, N. Suca, "An Empirical Investigation of the Impact of Audit and Auditor Characteristics on Audit Performance", forthcoming, *Accounting Organizations and Society*.

E. Challe, X. Ragot "Precautionary saving over the business cycle", forthcoming, *Economic Journal*.

P. Crifo, V. Forget, V.D. (2014). « Pourquoi s'engager volontairement dans la transition énergétique ? Enseignements de la littérature sur la responsabilité sociale et environnementale des entreprises », forthcoming, *Revue d'Economie Industrielle*.

J-D. Fermanian, (2014). "The limits of Granularity Adjustments". *Journal of Banking and Finance*. In press. September 2013)

C. Francq and J-M. Zakoian « Risk parameter estimation in volatility models » forthcoming, *Journal of Econometrics*.

4) Labex Ecodec Working papers

E. Challe, J. Matheron, X. Ragot and J. Rubio Ramirez. "Precautionary saving and aggregate demand",

J-D. Fermanian, H. Malongo (2013). "On the stationarity of Dynamic Conditional Correlation Models", in revision for *Econometric Theory*.

J-D. Fermanian, H. Malongo (2014), "On the link between volatilities, regime switching probabilities and correlation dynamics".

J-N. Barrot, J. Sauvagnat, "Input Specificity and the Propagation of Idiosyncratic Shocks in Production Networks", June 2014

A.Dufays, "Infinite-State Markov-switching for Dynamic Volatility Models", March 2014

J-M. Bourgeon "Fraudulent claims and nitpicky insurers", 2014, *American Economic Review*, 104 (9), 2900-2917.

C. Spaenjers "The Price of Wine". This working paper can be downloaded here: <http://ssrn.com/abstract=2321573>

C. Spaenjers, "Unique Durable Assets". This working paper can be downloaded here: <http://ssrn.com/abstract=2404339>.

P. Picard with P. Martinon and A. Raj, "On the design of optimal health insurance contracts under ex post moral hazard", mimeo, 2014.

P. Picard with Kili C. Wang "Insurance fraud through collusion between policyholders and car dealers: theory and empirical evidence", mimeo, 2014

C. Francq, L. Horvath and J-M. Zakoian, "Variance targeting estimation of multivariate GARCH models", under revision in *Journal of Financial Econometrics*.

C. Francq and J-M. Zakoian "Multi-level conditional VaR estimation in dynamic models", *CREST Preprint 2014-01*.

C. Francq and G. Sucarrat « An Exponential Chi-Squared QMLE for Log-GARCH Models Via the ARMA representation », *preprint MPRA* <http://mpra.ub.uni-muenchen.de/51783/>

P. Gagliardini, C. Gouriéroux, M. Rubin, "Positional Portfolio Management", *Swiss Finance Institute Research Paper*, No. 14-20.

J-P. Ponssard, "Strategic approaches to CO2 emissions: The case of the cement industry and of the chemical industry"

Extention to an article published with Diane Laure Arjalies (HEC) and Cécile Goubet (MEED)

G. Meunier, J-P. Ponssard, C. Thomas (LSE), "Capacity Investment under Demand Uncertainty: the Role of Imports in the US cement Industry". To revise and resubmit, *Journal of Economics and Management Strategy*

G. Meunier & J-P. Ponssard. April 2013, "Capacity decisions with demand fluctuations and carbon leakage", *Resource and Energy Economics* 36 (2014) pp 436-454

G. Meunier, J-P. Ponssard and P. Quirion (CIRED), "Carbon Leakage and capacity-Based Allocations. Is the EU right?", *Journal of Environmental Economics and Management*, Volume 68, Issue 2, September 2014, Pages 262–279

G. Meunier, J-P. Ponssard, Francisco Ruiz Aliseda, « Antitrust issues, environmental regulation and endogenous market structure ».

J-P. Ponssard, P. Quirion (CIRED), O. Sartor (Iddri), M. Sato (LSE), "Free Allocation and Activity Thresholds for EITE in the EU-ETS"

P. Crifo, V.D. Forget, S. Teyssier, (2014). "The price of unsustainability: an experiment with professional private equity investor".

L. Frésard, P.Valta, "How Does Corporate Investment Respond to Increased Entry Threat?" Under revision, *Journal of Financial Economics*.

I. Rosu, A. Bester, V. Martinez, "Cash Mergers and the Volatility Smile", under revision at the *Review of Asset Pricing Studies* (RAPS), to be re-submitted in January or February 2015.

D.Thesmar, A. Landier, David Sraer, "Bank Exposure to Interest Rate Risk and Monetary Policy", under revision for the *Journal of Finance*.

T. Michalski, E. Ors "U.S. Banking Integration and State-Level Exports"

T. Michalski, B. Hill "Ambiguity vs. risk and international security design" (also published as HEC Paris Research Paper No. ECO/SCD-2014-1032)

T. Michalski, C. Amat and G. Stoltz. "Forecasting exchange rates better than the random walk thanks to machine learning techniques" (also published as HEC Paris Research Paper No. ECO/SCD-2014-1049).

T. Michalski, B. Demir and E. Ors “Risk-Based Capital Requirements for Banks and International Trade: Evidence from Basel 2 Implementation in Turkey”.

T. Michalski, N. Dincbas and E. Ors, “Is Industry Structure Affected by Financial Integration? Evidence from US Inter-State Banking Deregulation”

T. Michalski, B. Demir, E. Ors and S. Sayek, “Risk and payments in international trade: Evidence from Turkish transaction-level data”.

Reports

Research Initiative: Regulation and Systemic Risks, Activity report 2013

L'évaluation économique du risque nucléaire. Rapport pour l'Autorité de Sûreté Nucléaire, 2013.

Think tanks

Jean Pierre Ponssard is involved since 2013 in two think tanks :

- Carbon leakage: options for the EU Centre for European Policy Studies, Brussels, Expert for the report le <http://www.ceps.eu/book/carbon-leakage-options-eu>
Participation in several workshops Paris (May, 15), Berlin (May, 21), Den Haag (Oct 1)
- Carbon Control and Competitiveness Post 2020 in Energy Intensive Industries, Climate Strategies, Berlin

Co-author of report:

<http://www.climatestrategies.org/research/our-reports/category/61/384.html>

4 Grants allocated to research projects

Each year, a number of grants are provided to finance research projects of the members of the team. They can propose a research subject. Their demands are examined by the Principal Investigator and the two co-Principal Investigators who evaluate them and decide whether or not to fund the projects. A total of 30 grants of 6.000 euros each have been allocated in 2012-2013 and 2013-2014. These grants can be used for travelling expenses, conferences, invitations, etc... related to the project. A report explaining how the grant has been used and what is the output (publications, conferences, etc) of the project must be written after one year.

Year 2013

Principal Investigator		Project title
Bouchard	Bruno	On the impact of aggressive high frequency traders on slow agents
Capkun	Vedran	Secure Credit Externalities
Derrien	François	Understanding managerial investment decisions
Fermanian	Jean-David	Do the volatilities of asset returns drive their correlations?
Francq	Christian	Multivariate risk parameters in conditional volatility models
Gourieroux	Christian	Positional Dynamic Factor Model with Applications to Funds of Funds Management
Hombert	Johan	Does banking deregulation promote innovation?
Loisel	Olivier	Risk Taking and Unconventional Monetary Policy
Lovo	Stefano	Belief-free price formation
Ors	Evren	Does Banking Integration Influence Real-Economy Convergence? Evidence from the States' Industrial Portfolios
Otto	Clemens	The Allocation of Biased Managers in the Economy: Determinants and Implications
Picard	Pierre	Optimal health insurance under ex post moral hazard
Rosu	Ioanid	Cash Mergers and the Volatility Smile
Sauvagnat	Julien	Understanding Firms' investment Behaviour
Spaenjers	Christophe	Wine as a long term investment
Thesmar	David	Bank Exposure to Interest Rate Risk and Monetary Policy
Valta	Philip	Trade liberalization and mergers and acquisitions
Zakoian	Jean-Michel	Variance targeting in multivariate GARCH models: merits and drawbacks

Year 2014

Principal Investigator		Project title
Capkun	Vedran	Smoothing, Comparability and Analyst Forecasts
Crifo	Patricia	Corporate Responsibility in the Private Equity
Derrien	François	Sovereign crises, central bank intervention and the repo market: Evidence from the crisis
Fermanian	Jean-David	Portfolio modelling based on vines
Gourieroux	Christian	Modelling speculative bubbles
Loisel	Olivier	Risk taking and optimal policy
Lou	Yun	The Access of Institutional Syndicated Loan Investors to Private Information
Ors	Evran	Risk-based Capital requirements for Banks and International Trade - Evidence from Basel 2 implementation in Turkey
Picard	Pierre	Insurance fraud: on collusive mechanisms in Taiwan. Theoretical and empirical analysis
Ponssard	Jean Pierre	Carbon control
Schmidt	Daniel	Limited Attention and Institutional Investors' Trades
Spaenjers	Christophe	A Model of Trading in the Art Market

Project Descriptions

Title of the project: Hedging under uncertainty or against adverse players

Principal Investigator: Bruno Bouchard (CREST-ENSAE)

Co-authors: Marcel Nutz (Columbia University), Miklos Rasonyi (Edinburgh University), Jean-François Chassagneux (Imperial College)

The initial motivation was the study the impact of high-frequency traders or model uncertainty on the hedging of risks by slow (or regular) traders. Both can be modeled as a game in which a trader tries to reach a target (hedging his risk) while adverse players play against him. In mathematical terms, this is a stochastic target game problem. Such problems are new and difficult to treat from the technical point of view. The main difficulty consists in establishing a dynamic programming principle. Basically, we do not know how measurable selection theorems can be used in this context. This is an open question. A first partial result in this direction has been obtained with Marcel Nutz in the paper « Stochastic Target Games and Dynamic Programming via Regularized Viscosity Solutions », which is now under minor revision for MOR. In this paper, we show how measurable selection arguments can be surrounded by using smoothing technics. However, this technic can only be employed in a quite restrictive setting. Sill, it covers many application in the hedging of risk under uncertainty on the model. Intense discussions are still ongoing with Miklos Rasonyi and Jean-François Chassagneux to generalize this.

How the funds were used: Nearly 2000 euros have been spend to invite Jean-François Chassagneux and Miklos Rasonyi in Paris. I also used these fund to go to a conference in Beijin at which I was invited by Shige Peng. This conference was named « New developments in Stochastic Analysis », it was essentially focusing on the modeling of uncertainty in finance. There, I also worked with Marcel Nutz, we started to work on the above mentioned paper.

Output: Stochastic Target Games and Dynamic Programming via Regularized Viscosity Solutions, with Marcel Nutz, under minor revision for MOR.

Project: Smoothing, Comparability, and Analyst Forecasts

Principal Investigator: Vedran Capkun (HEC Paris)

Co-authors: Byung Hun Chung, Daniel Collins and Michelle Nessa

In this project we use the transition to IFRS and the concurrent improvement in enforcement as exogenous shocks to test the causal relationship between smoothing and informativeness of financial statements. We test if the comparability of financial statements and analyst forecast accuracy increase with the increase in smoothing, all following the transition to IFRS. We test if in those countries where enforcement was strengthened, IFRS transition has a less pronounced impact on smoothing, and consequently less or no impact on comparability and analyst forecasts accuracy. Our results will have important implications for future research on the role of reporting quality, as well as the success of the transition to IFRS.

In the second project (more advanced) Vedran Capkun, Daniel Collins, and Thomas Jeanjean also examine the transition to IFRS. The study is named “The Effects of IFRS Adoption on Observed Earnings Smoothing Properties: The Confounding Effects of Changes in Timely Gain and Loss Recognition”. The current version of the abstract is as follows: This study sheds new light on the effects of mandatory IFRS adoption on firms’ earnings smoothing properties by demonstrating the importance of taking into account changes in timely gain and loss recognition that occurred concurrent with IFRS adoption. The observed smoothing of earnings is the joint product of the role of accruals in smoothing out transitory fluctuations in operating cash flows (noise reduction role) and the role of accruals for timely gain and loss recognition (contracting role). These two roles of accruals have opposite effects on earnings smoothing properties. We demonstrate that failing to control for changes in timely gain and loss recognition as firms shift to IFRS can lead to erroneous inferences regarding the effects of IFRS adoption on earnings smoothing. We find that IFRS adoption resulted in a decrease in timely loss recognition, an increase in timely gain recognition, and a net decrease in *asymmetric* timely loss recognition. The combined impact of these changes explains nearly all of the change in firms’ earnings smoothing behavior documented in prior research. Concurrent increases in enforcement mitigate the decrease in timely loss recognition and asymmetric timely loss recognition, but has little effect on the increase in timely gain recognition, which we hypothesize occurs because of the broader use of fair value accounting under IFRS.

The first goal of the visit by Daniel Collins is to work finalize the second and advance the first project during the visit in July of 2014. The second goal is to develop projects with other faculty at HEC, exchange with PhD students

Title of the project: An Empirical Investigation of the Impact of Audit and Auditor Characteristics on Audit Performance

Principal Investigator: Vedran Capkun (HEC Paris)

Co-authors: Walid Alissa (HEC) Thomas Jeanjean (ESSEC), Nadja Suca (Faculty of Economics, Croatia)

We use a unique and confidential database of 15,392 tax audits performed by the Croatian Tax Administration during the 2002-2006 period to examine the impact of task complexity, auditor experience, and auditor effort on audit performance. We provide external validation to prior experimental and analytical research showing that task complexity decreases while auditor experience and effort increase audit performance. We also extend this literature by examining the roles of task complexity and experience in moderating the impact of the effort on audit performance. We find that task complexity mitigates, while experience enhances the positive relationship between auditor effort and performance. However, we also find that auditor experience reinforces the positive effect of auditor effort on performance to a greater degree when complexity is high. Taken together, our findings provide new evidence on how audit and auditor characteristics impact audit performance, and new insight into how task complexity and auditor experience separately and jointly moderate the impact of auditor effort on performance.

Title of the project: Precautionary saving and aggregate demand

Principal Investigator: Edouard Challe (Ecole Polytechnique)

Co-authors: Julien Matheron (Banque de France), Xavier Ragot (Paris School of Economics), Juan Rubio-Ramirez (Duke University)

My current research studies the ways in which precautionary savings interacts with the business cycle. In a typical recession, households face greater individual income risk, chiefly a greater risk of falling into unemployment or to remain unemployed. In the face of this risk, they are likely to raise their "buffer-stock" of wealth to provide for future rainy days, i.e., they raise precautionary savings. Whilst this reaction is optimal at the individual level, economywide this is likely to translate into a significantly lower level of aggregate consumption demand. This lower level of aggregate consumption in turn worsens the initial contraction and further deteriorates labour market conditions. My research aims at constructing and empirically estimating macroeconomic models where this amplification mechanism is at work. This is acknowledged to be a challenging task, because the current models that incorporate the precautionary motive are typically not "tractable", i.e., they are too complicated to be estimated. My current work aims to construct tractable versions of precautionary savings models that can be taken to the data, so that the role of precautionary saving as a propagator of the business-cycle can be quantitatively evaluated. This investigation suggests, for example, that the precautionary motive amplifies the fall in aggregate consumption in a typical recession by about 35% (relative to an economy where the precautionary motive would be shut down)

Project title: CORESPE

CORporate RESponsibility in the Private Equity

Principal Investigator: Patricia Crifo (Ecole Polytechnique)

Co-author: Vanina Forget, (Associate fellow of the department, Ecole Polytechnique)

This project aims at examining the determinants and impacts of Corporate Social Responsibility (CSR) in small and medium sized firms, focusing in particular on its environmental component and on the private equity industry.

We first examine how the literature on CSR may explain the voluntary integration of firms into the energy and environmental transition. We also analyse the link between environmental performance and financial performance (research internship of ENSAE student Yannis Kemel on "CSR and financial performance", June 15, August 15, 2014).

Finally, we analyze the impact sustainable and unsustainable corporate practices have on equity financing. We develop in particular a unique framed field experiment in which professional private equity investors competed in closed auctions to acquire fictive firms. We observe that corporate non-financial performance impacts firm valuation and investment decision and we quantify to which extent. Our main result is an asymmetric effect, entrepreneurs having more to lose from unsustainable practices than to gain from sustainable

ones.

Note: Report on the internship of Yannis Kemel available upon request

Awards:

Vanina Forget has received the Best PhD award from FIR-PRI (French Social Investment Forum & Principles for Responsible Investment) jury 2013.

Project title: The impact of instantaneous volatilities on the correlation dynamics of asset returns.

Principal Investigator: Jean-David Fermanian (CREST-ENSAE)

Coauthor: Hassan Malongo (Dauphine)

In financial econometrics, the dynamics of volatilities has been studied in depth and for a long time. This is not yet the case for instantaneous correlations between asset returns. In particular, most authors split these multivariate dynamics into univariate volatility processes on one side, and correlation dynamics on the other side. This is particularly the case in the Dynamic Conditional Correlation framework of Engle (2002), fuelling artificially the idea that an independent treatment of both is nice.

To challenge this logic, we create a feedback between the two latter faces by testing the impact of the model instantaneous volatilities on the model correlations. Similarly, we discuss the influence of instantaneous switching regime probabilities on these correlations too. We measure statistically significant effects that provide a way of improving asset allocation strategies and risk management measurements. Beside this empirical approach, we have observed that the theory of DCC models is not well established. We have contributed to fill this gap by exhibiting sufficient conditions for the existence and the unicity of stationary solutions.

Project title: The theoretical properties of so-called "granularity adjustments" to evaluate analytically some risk measures of large portfolios.

Principal Investigator: Jean-David Fermanian (CREST-ENSAE)

When portfolios of assets are large, the calculation of some risk measures, as value-of-risk, become very costly. To overcome this problem and fuelled by the implementation of regulatory capital benchmarks (Gordy, 2001), some closed-form formulas have been proposed to approximate these risk measures: the so-called "granularity adjustments" (GA).

Since these formulas have been proved in an "ad-hoc" way, we have provided a mathematically sound framework and GA-type properties, that are able to manage general multifactorial models and heterogeneous portfolios. We apply our formulas to several models, particularly a CDO-type model with random recoveries. We explain under which circumstances such techniques do not improve on the first order approximations (the "infinitely granular" formula).

Project title: Variance targeting in multivariate GARCH models: merits and drawbacks

Principal Investigators: Christian Francq and Jean-Michel Zakoian (CREST-ENSAE)

Co-authors: Lajos Horvath (Utah University), Genaro Sucarrat (BI Norwegian Business School).

Publications and preprints:

« Variance targeting estimation of multivariate GARCH models », under revision in *Journal of Financial Econometrics*.

Abstract: We establish the strong consistency and asymptotic normality of the variance-targeting estimator (VTE) of the parameters of the multivariate CCC-GARCH ($\$p,q\$$) processes. This method alleviates the numerical difficulties encountered in the maximization of the quasi likelihood by using an estimator of the unconditional variance. It is shown that the distribution of the VTE can be consistently estimated by a simple residual bootstrap technique. We also use the VTE for testing the model adequacy. A test statistic in the spirit of the score test is constructed, and its asymptotic properties are derived under the null assumption that the model is well specified. Numerical illustrations are provided and an empirical application based on daily exchange rates is proposed.

« An Exponential Chi-Squared QMLE for Log-GARCH Models Via the ARMA representation », preprint MPRA

<http://mpa.ub.uni-muenchen.de/51783/>

Abstract: Estimation of log-GARCH models via the ARMA representation is attractive because it enables a vast amount of already established results in the ARMA literature. We propose an exponential Chi-squared QMLE for log-GARCH models via the ARMA representation. An additional advantage of the estimator is that it corresponds to the theoretically and empirically important case where the conditional error of the log-GARCH model is normal. We prove the consistency and asymptotic normality of the estimator, and study its efficiency both asymptotically and in finite samples. Several applications illustrate the usefulness of the estimator.

Project title: Multivariate Risk Parameters in Conditional Volatility Models

Principal Investigators: Christian Francq and Jean-Michel Zakoian (CREST-ENSAE)

« Risk parameter estimation in volatility models » forthcoming in the *Journal of Econometrics*.

This paper introduces the concept of risk parameter in conditional volatility models and develops statistical procedures to estimate this parameter. For a given risk measure r , the risk parameter is expressed as a function of the volatility coefficients and the risk of the innovation process. A two-step method is proposed to successively estimate these quantities. An alternative one step approach, relying on a reparameterization of the model and the use of a non Gaussian QML, is proposed. Asymptotic results are established for smooth risk measures,

as well as for the Value-at-Risk (VaR). Asymptotic comparisons of the two approaches for VaR estimation suggest a superiority of the one-step method when the innovations are heavy-tailed. For standard GARCH models, the comparison only depends on characteristics of the innovations distribution, not on the volatility parameters. Monte-Carlo experiments and an empirical study illustrate the superiority of the one-step approach for financial series.

« Multi-level conditional VaR estimation in dynamic models », *CREST Preprint 2014-01*.

We consider joint estimation of conditional Value-at-Risk (VaR) at several levels, in the framework of general conditional heteroskedastic models. The volatility is estimated by Quasi-Maximum Likelihood (QML) in a first step, and the residuals are used to estimate the innovations quantiles in a second step. The joint limiting distribution of the volatility parameter and a vector of residual quantiles is derived. We deduce confidence intervals for general Distortion Risk Measures (DRM) which can be approximated by a finite number of VaR's. We also propose an alternative approach based on non Gaussian QML which, although numerically more cumbersome, has interest when the innovations distribution is fat tailed. An empirical study based on stock indices illustrates the theoretical findings.

Project title: Positional Portfolio Management

Principal Investigator: Christian Gourieroux (CREST-ENSAE)

Co-authors: Patrick Gagliardini, Marco Rubin (both University Lugano)

The performance of funds of funds managers are often not presented in absolute terms, that is, by evaluating the expected returns and risks of their managed portfolios, but by comparison with their competitors. What is important is more to be in the top ten, or in the top twenty. Our project consists in introducing dynamic models appropriate for a joint analysis of the positions (the ranks) together with the analysis of the absolute performances. These dynamic models will be used to define a positional portfolio management, which optimizes the conditional utility of future position instead of maximizing the expected utility of the future portfolio return. In this respect we follow the literature on positional good introduced by Hirsch (1977) and consider the performance characteristic of the funds of funds portfolio as a public good. If each funds of funds manager follows such a positional strategy, we expect to recover some usual externalities and to examine the consequences on market risk.

The positional dynamic factor model distinguish two types of components

- i) First we focus on the cross-sectional distribution of returns: this is a distribution which evolves in time function of some underlying macrofactors. Typically these macrofactors might capture the evolutions of the first cross-sectional moments: mean, variance, skewness, kurtosis. Their dynamic will be represented by a stochastic dynamic model accounting for the constraints existing especially between the cross-sectional skewness and kurtosis.
- ii) The second component of the model is a dynamic model for cross-sectional ranks. This model has to be compatible with the definition of ranks, especially the constrained form of their cross-sectional distribution, while allowing for possible migrations between the top and bottom of the ranking between different dates.

This migration speed can also depend on some latent stochastic factors, possibly linked with the factors driving the cross-sectional distribution.

Then the returns are deduced by considering the transformation of the ranks by the cross-sectional quantile function, and will depend of all the underlying macrofactors. We will develop the prediction and filtering formulas, and introduce appropriate estimation methods for this nonlinear factor model. Then the estimated model will be used to compare the financial properties of the standard portfolio management and of the positional one, in term of risk, of allocation turnover, but also in terms of stability of the position. At least two papers are scheduled. The first one has been submitted.

Patrick Gagliardini, Christian Gouriéroux, Marco Rubin, Positional Portfolio Management, *Swiss Finance Institute Research Paper*, No. 14-20

This paper has been presented to European Econometric Society Congress, to SOFIE "Large Scale Factor Models", Lugano 10-12, September 2013, to Risk Forum on Big Data in Finance and Insurance, Paris, March, 2014, Congress of Société Française de Statistique, 2-5 June, Rennes, to Conference on Indirect Estimation Methods in Finance and Economics, Konstanz, 30-31 Mai 2014, Congress of Society for Financial Econometrics, Toronto, 11-13 June, 2014, Congress of European Finance Association, Lugano, 27-30 August, 2014.

A second paper will consider the statistical inference and the properties of the estimation methods. This second paper will be presented according to the general econometric literature on panel data, without application to Finance only. Indeed another important application of this type of modelling is the joint dynamic analysis of individual incomes: the macro-factors driving the distribution of incomes will capture the general evolution of income, but also of the inequality. The factors introduced in the rank dynamics will capture the mobility of individuals between poor and rich people.

Project title: Does banking deregulation promotes innovation?

Principal investigator: Johan Hombert (HEC Paris)

Co-author: Adrien Matray (HEC Paris)

We test the hypothesis that soft information exchanged through close bank-firm relationships is crucial to the funding of innovation. Using banking deregulation as a shock to lending relationships, we find that when relationships are hurt: (i) the number of innovators decreases, especially in soft information intensive sectors; (ii) firms reallocate their projects away from R&D investment and toward investment in physical assets; and (iii) the share of technologically innovative industries in total value added declines. Overall, our results support the idea that the banking structure shapes comparative advantages by determining the nature of information processed by lenders.

The paper was presented at the Adam Smith Conference in Corporate Finance at the Saïd Business School in Oxford. We submitted the paper to the *Review of Financial Studies* which has requested a revision.

Projects' titles: "Risk Taking and Unconventional Monetary Policy" and "Risk Taking and Optimal Policy"

Principal Investigator: Olivier Loisel (CREST-ENSAE)

Co-author: Behzad Diba (Georgetown University)

These two projects have merged into a single, more ambitious project which is now close to completion. A preliminary version has been presented at the Labex Ecodec Workshop in Finance, at HEC Paris, on September 26-27, 2014.

In this project, we build a model in which banks may inefficiently take too much risk during booms and too little during recessions. We depart from the existing literature in two key ways: by assuming efficient risk (which is necessary to get too little risk taking) and by assuming risk aversion (which is necessary to get too much risk taking when risk is efficient). In our framework, excessive risk taking arises from two familiar institutional features, namely limited liability and deposit insurance, while insufficient risk taking comes from banks' charter value (itself due to long-term assets that cannot be liquidated in the short term). We study the role of a capital-requirement policy in this context, determining optimal policy under discretion and under commitment, and highlighting the gain from commitment.

Project title: Belief-Free Price Formation

Principal investigator: Stefano Lovo (HEC Paris)

Co-authors: Johannes Hörner, Tristan Tomala (HEC Paris)

We analyze security price formation in a dynamic setting in which long-lived dealers repeatedly compete for trading with potentially informed retail traders. For a class of market microstructure models, we characterize equilibria in which dealers' dynamic pricing strategies are optimal no matter the private information each dealer may possess. In a generalized version of the Glosten and Milgrom model, these equilibria deliver price dynamics reminiscent of well-known stylized facts: price/trading-flow correlation, stochastic volatility, price bubble and inventory/inter-dealer trading correlation.

Project title: Risk-based Capital Requirements for Banks and International Trade: Evidence from Basel II Implementation in Turkey

Principal Investigators: Tomasz Michalski (HEC Paris, Economics & Decision Sciences Dept.) and Evren ORS (HEC Paris, Finance Dept.)

Co-authors: Banu Demir (Bilkent University)

We find that changes in risk-based capital requirements for banks can affect the real economy through international trade. Using a natural experiment – Basel II adoption in its Standardized Approach for all banks in Turkey as of July 1, 2012 – we investigate the impact of new risk-weights applied to commercial letters of credit (CLC) on related Turkish exports. We estimate the resulting payment-term-cost elasticity of CLC-financed exports to be between -0.5 and -1. These results are robust to the presence of zero-trade observations, bank or country credit ratings, frequency of the data (annual or quarterly), various sub-samples, and a placebo test.

A working paper has been presented at several conferences.

Project title: “Does Banking Integration Influence Real-Economy Convergence? Evidence from the States’ Industrial Portfolios”

Principal investigators: Tomasz Michalski (HEC Paris, Economics & Decision Sciences Dept.) and Evren ORS (HEC Paris, Finance Dept.)

Co-author: Neslihan DINCIBAS (HEC Paris, Finance Dept.)

We set out to examine the role, if any, of financial integration following banking deregulation in shaping states’ industrial structure in manufacturing. This is an important research question: existing research indicates that states’ economies synchronize following banking deregulation (for ex., Morgan, Rime and Strahan, 2004, QJE), but we know little regarding the channels of the observed industrial integration (with the exception of Michalski and Ors, 2012 JFE who show that inter---state trade flows increase following inter---state banking deregulation).

With the help of the LABEX ECODEC funding we were able to put together a state---level panel data for the 48 contiguous states in the USA and match them with banking deregulation and integration data. Our first empirical results indicate that banking integration has an impact along the lines of specialization of states: following entry of banks from state j that is over---specialized (with respect to US average) in industry s into state i that is under---specialized in the same industry, industry s grows faster in state i .

Our initial findings were presented in a HEC Paris Finance Dept. “brown bag” seminar. We are now in the process of refining our empirical analysis with a view to have a first draft written during the first quarter of 2014. We will then submit the draft to various academic conferences in order to be able to have additional feedback on our work prior to journal submission.

Project title: On the design of optimal health insurance contracts under ex post moral hazard

Principal Investigator: Pierre Picard (Ecole Polytechnique)

Co-authors: Pierre Martinon and Anasuya Raj (Paris School of Economics)

We analyze the design of an optimal medical insurance contract under ex post moral hazard, i.e., when illness severity cannot be observed by insurers and policyholders may exaggerate their health expenditures. We characterize the trade-off between ex ante risk sharing and ex post incentive compatibility in an optimal revelation mechanism under hidden information and risk aversion. We show that the optimal contract provides partial insurance at the margin and we provide conditions under which an upper limit on coverage is optimal. We also analyze the effect of correlated background risk on the optimal insurance contract. The methodology goes through optimal control and numerical simulation methods.

Project title: insurance fraud: on collusive mechanisms in Taiwan. Theoretical and empirical analysis.

Principal Investigator: Pierre Picard (Ecole Polytechnique)

We analyze, from theoretical and empirical standpoints, how insurance distribution channels may affect claims fraud, when policyholders and service providers collude. The empirical analysis is about the Taiwan automobile insurance market. Indeed, striking forms of claims manipulation exist in this market: opportunistic policyholders tend to manipulate claim dates to reduce the burden of deductible and to take advantage of the bonus-malus mechanism. We focus attention on the role of dealer-owned agents (DOAs), since they have informational and bargaining advantages when faced with insurers, and may be tempted to encourage the collusion of their car repairer with policyholders. We develop an optimal contract model with claim auditing where contracts are sold either through DOAs or through standard independent agents, and where policyholders and car repairers may collude to manipulate claims. We also use a database from the largest Taiwanese insurance company to test for the relevance of theoretical predictions. In particular, we verify that fraud goes through the postponing of claims to the end of the policy year, possibly by filing one single claim for several events, and we show that the fraud rate is larger among policyholders who purchase insurance through the DOA channel than among other policyholders.

Project title: Carbon Control

Principal Investigator: Jean-Pierre Ponssard (Ecole Polytechnique)

- Capacity decisions with demand fluctuations and carbon leakage
Guy Meunier & Jean-Pierre Ponssard. April 2013,
Resource and Energy Economics 36 (2014) pp 436-454
<http://www.sciencedirect.com/science/article/pii/S0095069614000436>

Competitiveness and carbon leakage are major concerns for the design of CO₂ emissions permits markets. In the absence of a global carbon tax and of border carbon adjustments, output-based allocation is a third-best solution and is actually implemented (Australia, California, New Zealand). The EU has followed a different route; free allowances are allocated to existing or new capacities in proportion to a benchmark, independent of actual production. This paper compares these two schemes in a formal setting and shows that the optimal one is in fact a combination of both schemes, or output-based allocation alone if uncertainty is limited. A key assumption of our analysis is that the short-term import pressure depends both on the existing capacities and the level of demand, which is typical in capital intensive and internationally traded sectors. A calibration of the model is used to discuss the EU scheme for the cement sector in the third phase of the EU-ETS (2013–2020). This allows for a quantification of various policies in terms of welfare, investment, production, company profits, public revenues and leakage.

- Carbon Leakage and capacity-Based Allocations. Is the EU right?
Guy Meunier, Jean-Pierre Ponssard and Philippe Quirion (CIRED),

Journal of Environmental Economics and Management

Volume 68, Issue 2, September 2014, Pages 262–279

<http://www.sciencedirect.com/science/article/pii/S0928765514000232>

For carbon-intensive, internationally-traded industrial goods, a unilateral increase in the domestic CO₂ price may result in the reduction of the domestic production but an increase of imports. In such sectors as electricity, cement and steel, the trade flows result more from short-term regional disequilibria between supply and demand than from international competition. This paper formalizes this empirical observation and characterizes its impact on carbon leakage. Domestic firms invest in domestic plants under uncertain domestic demand conditions; then, as uncertainty unfolds, they may supply the domestic market from their domestic plants or from imports. We prove that there would be no leakage in the short term (without capacity adjustment) but that there would be in the long term (with capacity adjustment). Furthermore the larger the uncertainty, the larger the leakage. We also characterize the impact of uncertainty on the (short and long term) pass-through rates of the carbon price. In the concluding section we discuss the implications of these results for the evaluation of climate policies.

Project title: Cash Mergers and the Volatility Smile."

Principal Investigator: Ioanid Rosu (HEC Paris, Dept. of Finance)

Co-authors: Alan Bester (University of Western Ontario, Canada) and Victor Martinez (State Street, United States)

Here are the steps achieved in pursuing this project:

1. The working paper has been finished. Here is the abstract:

In an empirical study of cash mergers since 1996, we find that the equity options on firms that are the target of a merger display a pronounced smile pattern in their implied volatilities. We find that this merger volatility smile is more pronounced when the success probability of the merger is higher. We then propose an arbitrage-free model to analyze option prices for firms undergoing a cash merger attempt. Our formula matches well the observed merger volatility smile. Furthermore, as predicted by the model, we show empirically that the merger volatility smile has a kink at the offer price, and that the magnitude of the kink is proportional to the success probability of the merger.

2. The paper is currently under revision at the Review of Asset Pricing Studies (RAPS).

On January 21, 2014, we have received a Revise and Resubmit decision from the Editor of *RAPS*, Wayne Ferson.

3. Since then, we have been working to address the editor's comments. We plan to re-submit the paper to the *RAPS journal* in January or February 2015.

Project Title: Wine as a Long-Term Investment

Principal Investigator: Christophe Spaenjers (HEC Paris)

Co-authors: Elroy Dimson (London Business School and Cambridge Judge Business School) and Peter Rousseau (Vanderbilt University)

The working paper “The Price of Wine” can be downloaded here:

<http://ssrn.com/abstract=2321573>

We examine the impact of aging on wine prices and the performance of wine as a long-term investment using a unique historical database for five long-established Bordeaux wines that we construct from auction and dealer prices. In line with the predictions of an illustrative model, we observe the highest appreciation rates for young high-quality wines that are still maturing. Our results also suggest that owners of famous wines receive non-pecuniary benefits—especially for old bottles—even though this “psychic” dividend is probably small relative to financial returns. Next, we estimate an annualized real financial return to wine investments (net of insurance and storage costs) of 4.1% between 1900 and 2012. Wine returns are lower than equity returns but positively correlated with them, yet wine does outperform government bonds, art, and stamps. We note that the historical returns on wine documented here may have exceeded ex ante expectations.

Project title: Model of Trading in the Art Market

Principal Investigator: Christophe Spaenjers (HEC Paris)

Co-author: Stefano Lovo (HEC Paris)

This paper presents a model of trading in unique durable assets that provide individual-specific payoffs, such as art, luxury real estate, and firm subsidiaries. Agents make purchase and sale decisions in an auction market based on their private use value of the asset and on the expected resale revenues. Individuals with a relatively strong taste for the asset are willing to pay a high price and sell only when hit by a liquidity shock. By contrast, those deriving little pleasure from ownership aim to resell quickly at a profit if acquiring the asset despite their low bids. As a result, holding periods and financial returns are negatively correlated. Furthermore, speculative activity increases in economic expansions, leading to a positive correlation between prices and voluntary sales volume. The empirical predictions of our model find support in historical art transaction data.

Project title: Understanding Firms' Investment Behavior

Principal Investigator: Julien Sauvagnat (CREST-ENSAE)

Subprojects and co-authors

1. Corporate Governance and Investment: Evidence from US Business Combination Laws

2. The Investment Multiplier: Evidence from Suppliers-Customers Links in the US

J.-N. Barrot (MIT Sloan)

3. Collateral Shocks and the Functioning of Internal Capital Markets

J.-N. Barrot (MIT Sloan)

Claire Lelarge (INSEE)

One axis of my research proposal was to study the propagation and amplification of micro shocks through supplier-customer relationships. The empirical analysis realized jointly with Jean-Noël Barrot (Assistant Professor in Finance at MIT Sloan) led to the following working paper, available on SSRN website:

« Input Specificity and the Propagation of Shocks in Production Networks »

This work has been presented at the following conferences:

- 6th Rothschild Caesarea Summer Finance Conference (Israel, July 2014)
- EARIE Conference (Milan, August 2014)

This work has been also accepted at the next annual conference of the American Finance Association in January 2015.

I will focus my research in the following month on the same topic. In particular, my objective is to use French data to describe firms' strategies – in terms of sourcing, trade credit and more generally financing – to mitigate potential micro shocks that might affect their production networks. For this, I submitted last May an application for data access to the Comité du Secret Statistique, which has been accepted in June. The datasets should be available next month.

The three sub-projects listed above are part of a broader research agenda that seeks to understand the investment behavior of firms.

In the first project, I empirically investigate the effect of corporate governance on firms' investment and growth. By mitigating moral hazard, good corporate governance relaxes in theory financial constraints and boosts investment. The identification strategy relies on exogenous variations in corporate governance, namely the staggered introduction of business combination laws in the US between 1985 and 1991. In line with theory, I find that equity issues significantly drop after the passage of an antitakeover law. I also examine the real effects of the drop in outside financing on firms' investment (physical investment, R&D expenditures, advertising expenses) and growth. Preliminary regressions show that investment is significantly reduced after the passage of an antitakeover law, but only so for firms which are a priori likely to be financially constrained.

Recent empirical work highlights the role of collateral in boosting firms' investment (see e.g. Gan, 2007 and Chaney, Sraer and Thesmar, AER 2012). In the second project, we empirically investigate whether such investment shocks at the firm level propagate along the supplier

chain. The identification strategy relies on a data set of firms' principal customers of US companies. We will try to empirically assess the suppliers' investment sensitivity to the investment of their main customers, using as an instrument shocks to the value of the real estate owned by customers. This study might illustrate how idiosyncratic firm-level shocks can trigger important industry shocks.

Finally, the last project aims at understanding the functioning of internal capital markets inside French business groups. The identification strategy will rely on collateral shocks at the level of each affiliated entity (using again variations in the value of real estate). The general objective will be to empirically investigate how collateral shocks are used inside business groups. In particular, we will try to identify potential frictions in the allocation of resources stemming from the organization of the group and the wedge between cash flow rights and control rights.

Project title: Limited Attention and Institutional Investors' Trades

Principal Investigator: Daniel Schmidt (HEC Paris)

Co-author: Bastian Von Beschwitz (Federal Reserve Board)

Do institutional investors have limited attention? Conclusive evidence on this question is absent from the literature, both because attention is *difficult to measure* and because attention is *endogenous*.

In this project, I draw on rational attention theory to identify attention shifts of institutional investors and examine their influence on trading and performance. Finally, I study the stock-level effects of institutional investors' inattention.

My identification rests on the assumption that investors pay more attention to news about stocks in their portfolio. To see the idea, consider the following example: Consider two investors (1 and 2). Investor 1 holds stocks A and B in his portfolio. Investor 2 holds B and C in the portfolio. Suppose A and B are in the news, C is not. I compare the trading response of investors 1 and 2 to the news of stock A. Under limited attention, investor 2 should be able to pay more attention and thus to react more strongly to the news of stock A. The reason is that, in reacting to the news of stock A, investor 1 was distracted by the news of stock B (because it is in his portfolio), whereas investor 2 was not or at least less distracted (because it is not in his portfolio). An appealing feature of this sort of quasi-experiment is that it provides plenty of cross-sectional and time-series variation in investor distraction: in another period, it may be that stock C is in the news, whereas stock B is not in the news; hence, investor 2 is now expected to be distracted relative to investor 1. In other words, in a panel setting, I can control for both investor and time fixed effects, removing endogeneity concerns that come from unobserved market-wide trends or unobserved fixed investor characteristics.

I plan to exploit this setting to study several questions:

1. Do institutional investors trade less in response to news about a stock when their other portfolio stocks are in the news?

2. Do institutional investors trades are more or less profitable when they are distracted?
3. Are there distraction effects at the stock level? In other words, is there evidence for underreaction or reduced price efficiency when a stock is predominantly held by institutional investors which are distracted by news about their other portfolio stocks?

Project title: Bank Exposure to Interest Rate Risk and Monetary Policy

Principal investigator: David Thesmar (HEC Paris)

Co-authors: Augustin Landier (Toulouse University) and David Sraer (Berkeley)

We show empirically that banks' exposure to interest rate risk, or income gap, plays a crucial role in monetary policy transmission. In a first step, we show that banks typically retain a large exposure to interest rates that can be predicted with income gap. Secondly, we show that income gap also predicts the sensitivity of bank lending to interest rates. Quantitatively, a 100 basis point increase in the Fed funds rate leads a bank at the 75th percentile of the income gap distribution to increase lending by about 1.6 percentage points annually relative to a bank at the 25th percentile.

We are currently revising the paper for the *Journal of Finance*. The referee and editor asked us to address the issue that interest rate exposure may be a choice made by banks in expectation of higher future interest rates. It is classical endogeneity problem. We have found various ways of addressing this criticism and are in the (long) process of crafting the new draft and the response to the referees. In particular, we use the insight that commercial banks that belong to large banking groups do not choose the income gap (it is chosen by the holding). We use additional tricks to prove that indeed, the effect we document is a pure causal effect.

The reason why the Journal of Finance is potentially interested in the paper is that it is an important, extremely simple problem, that all banking supervisors are aware of. The data that we use is very simple and public. The topic is also timely, as interest rates are in the process of rising again on the other side of the Atlantic as the Fed exist its QE policy.

The paper was presented at the AFA conference, at Bank of England, Humboldt University (Berlin, Germany), at the "Bank Performance, Financial Stability and the real economy" conference (Naples), "Banks and the Real Economy" conference in Saint Gallen.

Project title: How does corporate investment respond to increased entry threat?

Principal Investigator: Philip Valta (HEC Paris)

Co-author: Laurent Frésard (University of Maryland)

This paper uses reductions of import tariffs to examine how incumbents modify their investment decisions when the threat of entry by foreign rivals suddenly intensifies. We find that incumbents significantly reduce investment by 8.6\% in response to higher entry threat following tariff reductions. Various tests indicate that this finding is robust and likely causal. Moreover, and in consistency with strategic investment models, we provide evidence

suggesting that the reduction of investment is related to strategic motives to influence the competitive behavior of foreign rivals. Overall, the paper provides novel evidence on how strategic interactions in the product market influence firms' investment decisions.

5 Invited professors

Year	Invited professor	University	Purpose of the visit	Establishment
2013	Chassagneux Jean-François	Imperial College London	Collaboration with Bruno Bouchard Impact of aggressive high frequency traders on slow agents	CREST-ENSAE
2013	Rasonyi Miklos	University of Edinburgh	Collaboration with Bbouchard Impact of aggressive high frequency traders on slow agents	CREST-ENSAE
2013	Chassagneux Jean-François	University of London	Collaboration with Bruno Bouchard Impact of aggressive high frequency traders on slow agents	CREST-ENSAE
2013	Chassagneux Jean-François	Imperial College London	Collaboration with Bruno Bouchard Impact of aggressive high frequency traders on slow agents	CREST-ENSAE
2014	Diba Behzad	Georgetown University	Collaboration with Olivier Loisel on Risk Taking issues	CREST-ENSAE
2014	Wakker Peter	Erasmus University	Will give seminars	HEC
2014	Karni Edi	University John Hopkins	Will give seminars	HEC

6 *PhD and postdoc grants*

Our budget enables us to support 2 to 3 Phd or postdoc students per year. Phd grants are given only for one year, to students whose Phd is close to be finished.

Year	Name		Advisor	Institution	Research Area
2013	Dufays	Arnaud	J.M. Zakoian	ENSAE-ParisTech	Financial econometrics
2013	Benamar	Hedi	D. Thesmar	HEC	Market microstructure
2014	Penasse	Julien	E. Challe	Polytechnique	Finance and art market
2014	Catherine	Sylvain	D. Thesmar	HEC	Social Security and Porfolio Choices
2014	Dincbas	Neshkihan	E. Ors	HEC	Banking

7 *Conferences, workshops and summer schools*

The first workshop dedicated to our research area is planned on September 26 and 27, 2014, at the HEC "Castle" near Paris. It aims at gathering together the members of our team and to present the researches that we have supported so far.

Although most of the speakers are members of the Labex, we have also invited three keynote speakers of high international academic level with whom we would like to interact: Lasse H. Pedersen (NYU Stern School of Business), Enrico C. Perotti (University of Amsterdam) and Yacine Ait-Sahalia (Princeton University).

Three thematic sessions are organized. They reflect our different research areas: Asset Pricing and Complexity, Finance and the Real Economy, Regulation.

Many other workshops have been co-organized by members of the Labex and financially supported.

Name	Partners	Applicant	Date	Location
New tools for financial regulation	Banque de France/ACP/CREST	C. Gouriéroux	November 2012	Paris
Conference of the European Group of Insurance Economists	The Geneva Association	P. Picard	September 2013	Paris
4th HEC Workshop On Entrepreneurship	HEC	T. Astebro	October 2013	Paris
Principles for Responsible Investment (PRI) sixth annual conference	PRI/Groupe Caisse des Dépôts/Polytechnique/Chaire Finance Durable et Investissement Responsable	P. Cifro	November 2013	Paris
Finance and the Real Economy	HEC	T. Michalski	December 2013	Paris
6th Annual Hedge Fund Research Conference - The latest Research Transforming the Asset Management Industry	Euronext/ILB/Lyxor/ U. Paris Dauphine	C. Gouriéroux	January 2014	Paris
7th Financial Risks International Forum: Big Data in Finance and Insurance	Chambre de commerce et d'industrie/ILB	A. Frachot	March 2014	Paris
The 15th Econ Day. Frontiers in Macroeconomics and Finance	UEB/CNRS/GENES/ENSAI	S. Auray	July 2014	Rennes
Systemic Risk and Financial Regulation	Banque de France/SoFiE/Research Initiative "Régulation et Risques Systémiques"	C. Gouriéroux	July 2014	Paris

European Household Finance Conference	IEF/SAFE/Swedish House of Finance	L. Calvet	September 2014	Stockholm
Stochastic analysis for risk modelling	CIRM/CEREMADE/ANR Liquirisk	B. Bouchard	September 2014	Marseille

40th EGRIE (European Group of Risk and Insurance Economists) conference – September 2013

EGRIE is a European based non-profit organisation dedicated to promoting research on risk and insurance. This is mainly achieved through the organisation of scientific conferences and meetings, the publication of research materials and the creation of a contact network amongst the concerned parties.

4th HEC Workshop On Entrepreneurship – October 2013

Leading social scientists from around the world converged on HEC Paris to discuss this new frontier of investment at the 4th HEC Workshop on Entrepreneurship. Attendees discussed how entrepreneurs negotiate, the impact of French employment insurance policy changes on entrepreneurship, and the role of ethnicity-based venture capital investments in the USA.

PRI-CDC Academic Network Conference – November 2013

More than 40 new research papers on responsible investment were presented and defended during break-out panels at this conference and accompanying student symposium, offering actionable insights for PRI signatories and other institutional investors.

Attempts to incorporate ESG factors into mainstream investment strategies are hampered by a number of factors,

Academics were challenged to engage with investment practitioners to tackle these issues:

- Knowledge gap between academia and practice
- Limited existence of research on asset classes other than listed equity
- Historic lack of consideration of ESG issues in financial education
- Lack of models to incorporate ESG into economic and financial forecasts
- Variation in acceptance of the relevance of ESG relevance between industry participants.

Research highlights

VOTING AND ENGAGEMENT

- Understanding the dynamics of Voting on Shareholder Proposals, Liviu Andronic, IAE Toulouse
- Shareholder engagement in emerging markets, institutional and organisational determinants in Brazil and South Africa, Camila Yamahaki, Principles for Responsible Investment

SHORT-TERMISM

- Metrics and models to overcome short-termism within investment decision, Paul Cox, University of Birmingham/NEST
- Socially responsible investing and short-termism in capital markets, Hsiang-Li Chih, National Taipei University
- Impact of ESG investors on stock market shorttermism- empirical evidence from the US, Europe and Japan, Toshikazu Hayashi, Japan Research Institute.

PRICING AND VALUATION OF ESG FACTORS

- Impact of ESG investors on stock market shorttermism- empirical evidence from the US, Europe and Japan, Leola Ross, Russell Investments

FIXED INCOME

- The effects of Corporate Social Performance on the cost of corporate debt and credit ratings, Ioannis Oikonomou, University of Reading

SOVEREIGN WEALTH FUNDS

- The responsible investment practices of the world's largest government sponsored investment funds, Hugues Letourneau, Carleton University

[6th Annual hedge fund research conference: The latest research transforming the asset management industry – January 2014](#)

With close to a hundred submissions from 50 universities in 17 countries, 15 unpublished papers were selected following a thorough screening process by a scientific committee of internationally respected academic professors.

Since its inception, this event has become a reference in the field of risk management and alternative investments research, now attracting the most reputable academics working on cutting-hedge topics.

Over the last 5 years, the "Annual Hedge Fund Research Conference" has thus been a platform for international visibility. Indeed, out of a total of 76 research papers presented across the last 5 events, 36 of them have already been published in the most renowned academic publications.

Scientific Committee: V. Agarwal (Georgia State University), C. Cao (Penn State University), S.

Darolles (Université Paris-Dauphine), R. Garcia (Edhec Business School), C. Gouriéroux (University of Toronto and CREST), L. Fournier (NYSE Euronext), A. Patton (Duke University), T. Ramadorai (University of Oxford), T. Roncalli (Lyxor), R. Sadka (Boston College).

Organizers:

Serge Darolles (Université Paris-Dauphine)

René Garcia (Edhec Business School)

Christian Gouriéroux (University of Toronto and CREST)

7th Financial Risks International Forum, Big Data in Finance and Insurance – March 2014

The forum pursues three objectives:

- to identify the main streams of research that will structure the Finance and Insurance's evolutions in the future;
- to organize presentations and debates on these new trends;
- to assess the market and regulatory impacts of these evolutions.

TOPICS

- Large Scale Linear and Nonlinear Factor Models, Granularity, Nonlinear Principal Component Analysis, Construction of Indexes from Large Data Sets;
- Behavioral Scores, Real Time Updating of Scores and Rankings
- Analysis of Retail Contracts, of Balance Sheets Histories, of Investors and Fund Managers Behavior, of Risk Appetite Indicators Given on Google;
- Analysis of Markets with Highly Differentiated Products: Pricing the Quality Characteristics, Hedonic Price Indexes, Application to Markets of Physical Goods
- Contagion and Systemic Risk, Regulation in a Large Dataset Environment, Non Regulated Web Currencies
- Effect of Big Data on the Organization of the Markets (Web Market Monitoring), on the Role of Intermediaries, on the Product Design
- High Frequency Data, Market Microstructure.

Advance Course at the Ecole Polytechnique, May 2014

This is an advance course with recent developments at the interface of environmental economics –theory of externalities– and industrial organization –mechanism design, contract theory, oligopoly pricing, collusion– of approximately 10 hrs. It covered the following topics.

Uncertainty: prices vs quantities

Adverse Selection and Moral Hazard

Investment and Innovation

Voluntary Regulation and Opt-in Provisions

Cooperation and International Agreements

The 15th Econ Day. Frontiers in Macroeconomics and Finance – July 2014

The Labex Ecodec co-financed this conference that gathered about 40 participants. Progra and speakers:

Claudio Campanale (University of Alicante) - "[Life-cycle portfolio choice with liquid and illiquid financial assets](#)" (co-authors: Francisco Gomes and Carolina Fugazza)

Céline Poilly (University of Lausanne) - "[Corporate Cash and Employment](#)" (co-auteurs : Philippe Bacchetta (University of Lausanne, Swiss Finance Institute, CEPR) et Kenza Benhima (University of Lausanne, CEPR))

Paul Klein (Simon Fraser University) - "[Dynamic Capital Tax Competition in a Two-country Model](#)" (co-author: Miltiadis Makris, University of Southampton).

Vincent Sterk (University College London) - "[The Transmission of Monetary Policy Operations through Redistributions and Durable Purchases](#)"

Mike Elsby (University of Edinburgh) - "[Understanding Employment Persistence](#)" (co-authors: Ryan Michaels, University of Rochester and David Ratner, Federal Reserve Board)

Ricardo Reis (Columbia University) - "[Inflating Away the Public Debt: An Empirical Assessment](#)" (co-authors: Jens Hilscher and Alon Raviv, Brandeis University)

Sergio Rebelo (Kellogg School of Management, University of Northwestern) – "[Non-linear effects of taxation on growth](#)" (co-author: Nir Jaimovich)

Systemic Risk and Financial Regulation – July 2014

The Banque de France and the ACPR, the French banking regulator, in association with the Society for Financial Econometrics (SoFiE), will jointly organize a conference entitled "Systemic Risk and Financial Regulation", to be held in Paris on 3-4 July 2014.

In the aftermath of the global financial crisis, financial regulation has gone through major changes in order to prevent the build-up of systemic risk. However, many problems still remain unresolved and more research, notably empirical research, is called for. This conference aims at bringing together experts in banking, insurance, regulation, and financial economics in order to take stock of current academic research on systemic risk and financial regulation. In particular, contributions dealing with the following subjects are encouraged:

- systemic risk measures,
- stress testing,
- counterparty risk,
- modelling the interaction between the macro-economy and financial regulation,
- financial networks,

European Household Finance Conference – September 2014

The objective is to present state-of-the-art empirical research and empirically motivated theoretical research on household financial behavior and on how this is influenced by other choices, government policies, and the overall economic environment.

Stochastic analysis for risk modeling – September 2014

This conference focuses on recent developments in stochastic analysis motivated by the risk management of risks and in particular Knightian uncertainty.

The emphasis will be on new mathematical technics, together with an emphasis on potential industrial applications.