PIOTR ORŁOWSKI

821 Washington St # 3N
60202 Evanston, IL, USA
Date of birth: 20 march 1984
Nationality: Polish

Phone: +1 847 749 6027 / +41 786 499 638
e-mail: piotrek.orlowski@gmail.com

EDUCATION

Since September 2015:
Visiting Scholar
Kellogg School of Management
Visiting Pre-Doctoral Scholar with Professor Viktor Todorov. Doc.Mobility grant no. P1TIP1_161875 of the Swiss National Science Foundation.

Since September 2010:
Ph.D. candidate in Finance
Università della Svizzera italiana & Swiss Finance Institute
Research in theoretical and empirical asset pricing under the supervision of Professor Fabio Trojani.

2003 – 2008
M.A. in Quantitative Methods in Economics and Information Systems,
Warsaw School of Economics
Master thesis "Verification of selected Market Microstructure Hypotheses for the Warsaw Stock Exchange", *cum laude*, supervisor: Katarzyna Bień-Barkowska, PhD

August 2006 – January 2007
Tilburg University (Erasmus Exchange Program)
Courses in Econometrics, Quantitative Finance, Risk Theory and Simulation

HONORS, AWARDS and GRANTS

Doc.Mobility grant of the Swiss National Science Foundation, 2015.

Graduate Scholarship of the Swiss Finance Institute to fund the first year of graduate studies at Università della Svizzera italiana, 2010.

Third Prize of the President of the National Bank of Poland for best master thesis in economic sciences defended in Poland in 2008.

Graduate Scholarship, Warsaw School of Economics, 2008-2010.

Scholarship for Academic Excellence, Warsaw School of Economics, 2004-2008.

PRESENTED ARTICLES

"Arbitrage Free Dispersion": 9th Annual SoFiE Conference, (June 2016), 2015 SFI Research Days (June 2015) — Seminars: Kellogg

"Big Risk": 2015 SFI Research Days (June 2015) [as Realized Jump Premia] — Seminars: Kellogg

"Option returns and risk premia: a direct approach": 8th Annual SoFiE Conference, Pre-Conference for Junior Researchers (June 2015), Society for Financial Econometrics Summer School 2014, Harvard University, USA (July 2014).

"An option implied non-parametric approach for filtering stochastic volatility": Swiss Doctoral Workshop in Finance 2013, Gerzensee (June 2013)

WORKING PAPERS

Orłowski, P. (2016) [work-in-progress]:
Modeling Divergence Swap Rates. *Swap rates for divergence and corresponding higher-order strategies hold information equivalent to that contained in the implied volatility surface, but quantifiable in a much more efficient way. The swap rates are easily calculable in Affine Jump Diffusion Models. I fit a fully specified model to the time series of stock returns and various sets of observed swap rates. Prices of higher-order contracts scaled by appropriate powers of the price of divergence imply that conditional Q-skewness and Q-kurtosis surfaces move differently from what asset pricing models estimated to-date predict. Careful specification of the jump distributions improves fit.*

Noori Khajavi, A., P. Orłowski, F. Trojani (2016) [work-in-progress]:
Realized Divergence. *Realized divergence is a generalization of realized variance and allows for defining related measures of higher-order variation. Measures with continuous and jump components, as well as purely jump measures arise. We provide Laws of Large Numbers and Feasible Central Limit Theorems which allow for inference about realized divergence in univariate settings with finite activity jumps in asset prices.*

Orłowski, P., A. Sali, F. Trojani (2015):
Arbitrage Free Dispersion. *We develop a theory of arbitrage-free dispersion (AFD) that characterizes the testable restrictions of asset pricing models. AFD measures Jensen's gap in the cumulant generating function of pricing kernels and returns. It implies a wide family of model-free dispersion constraints, which extend dispersion and co-dispersion bounds in the literature and are applicable with a unifying approach in multivariate and multiperiod settings. Empirically, the dispersion of stationary and martingale pricing kernel components in the benchmark long-run risk model yields a counterfactual dependence of short- vs. long-maturity bond returns and is insufficient for pricing optimal portfolios of market equity and short-term bonds.*

Orłowski, P., P. G. Schneider, F. Trojani (2015) [work-in-progress]:
Big Risk. *We develop trading strategies in derivatives markets which allow for isolating exposure to big risk, which does not scale with time (and is understood as jump risk in a semimartingale setting), and we characterise the dynamic properties of the strategy costs. We propose a method of efficiently implementing the strategies which greatly improves upon standard option-based replication methods. In the empirical application we implement the strategy in the S&P 500 index option market by (1) trading along the monthly option settlement calendar between 2004 and 2011 for a total of 82 settlement cycles and (2) trading along the weekly option settlement calendar between 2011 and 2015 for 261 settlement cycles. We find that highly accurate settlement-replication of jump payoffs is possible. Furthermore, we find that big risk strategies carry premia, and in some cases the premia survive transaction costs. We interpret this as model-free evidence that jump risk is indeed priced in financial markets.*

Orłowski, P., A. Sali, F. Trojani (2015):
Option returns and risk premia: a direct approach. *We propose a computationally tractable estimation approach for a completely specified (under P and Q) multifactor stochastic volatility model that aims to fit the dynamic properties of returns on option trading strategies. We show in a Monte Carlo experiment that our approach delivers reliable results even under moderate misspecification. We estimate a model using returns on delta-hedged option portfolios as observables. We describe the empirical properties of such returns and recover their model-implied conditional second moment structure. Return-fitted models exhibit lacking pricing properties. Including price information in the estimation significantly worsens the models ability to plausibly describe delta-hedged option returns. It is a demanding task for an affine model to reconcile the requirements of the two tasks at hand.*

Sali, A., P. Orłowski, F. Trojani (2012):
An option implied non-parametric approach for filtering stochastic volatility. *We construct option portfolios and transform their prices to provide a consistent estimate of instantaneous stochastic volatility. Highlights: Quickly converging estimates (faster than ATM Implied Volatility) // highly-efficient thin-*

plate spline option surface interpolator // high-frequency option data.

TEACHING EXPERIENCE

Financial Econometrics October 2014 – February 2015
Università della Svizzera italiana Lugano, Switzerland
Master in Economics and Master in Finance programs. Linear asset pricing models. GARCH models.

Probability and Stochastic Processes for Finance October 2011 – January 2014
Università della Svizzera italiana Lugano, Switzerland
PhD in Finance. Measure-theoretic probability. Limit theorems in general settings. Discrete and continuous-time stochastic processes.

Probability and Finance October 2011 – February 2015
Università della Svizzera italiana Lugano, Switzerland
Master in Finance. Fundamentals of probability, the binomial asset pricing model.

Econometrics September 2007 – January 2010
Warsaw School of Economics Warszawa, Poland
Bachelor, all majors. Fundamentals of econometric inference and operations research.

WORK EXPERIENCE

Senior Economist February 2007/August 2010
Dom Maklerski AFS Warszawa, Poland
FX market risk modelling and analysis, FX and macroeconomic forecasting. Risk assessment for FX derivative portfolios. Software development (pricing, accounting). Project team leader in the following fields: controlling, software development, risk management policy development, hedging strategy development.

Assistant to Commercial Attaché in Poland July 2005/August 2005
Agence Wallonne à l'Éxportation Warszawa, Poland
Market analysis, reporting in French for Belgian enterprises wishing to enter the Polish market.

COMMERCIAL SOFTWARE

Denderski, P., Orłowski, P. and Bobrowski, R. (2011): `AFS RM 3.0`, Environment for foreign exchange cash flow monitoring and interest rate risk management, risk assessment and accounting, FX and IR derivatives pricing, C++ and Python library implementation. Developed for Dom Maklerski AFS (Warsaw, Poland). `http://www.afsrm.pl/`

Denderski, P., Orłowski, P. and Zarembiński, J. (2010): `AFS RM`, An Octave-based environment for risk analysis, FX derivatives pricing and hedge accounting with a Java-Flex based GUI and on-line user access. Developed for Dom Maklerski AFS.

PROGRAMMING and SOFTWARE

R: package development including **C++** integration via Rcpp;

C++: development of libraries for R integration and commercial software;

SQL: financial databases (OptionMetrics, MarketDataExpress, CRSP), integration with **R**;

MATLAB: experienced with handling large datasets and numerical methods;

Python: financial commercial software;

HPC: work with SLURM job manager and REDIS-based distributed clusters;

git: knowledge of versioning software and workflow;

EViews: time series analysis;

MS Excel VBA: Worksheet update automation, simulation, etc.;

Rockwell Automation Arena: some experience with building models of operations.

LANGUAGES

English (C2), French (C1), Italian (C1), German (B1), Polish (mother tongue)