

PIOTR ORŁOWSKI

Avenue de Sevelin #13E
1004 Lausanne, Switzerland
Date of birth: 20 march 1984
Nationality: Polish

Phone: +41 786 499 638 / +1 847 749 6027
e-mail: piotr.orlowski@usi.ch

EDUCATION

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.
Graduation expected before June 2017.

September 2015 – August 2016:

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.

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

“Modeling Divergence Swap Rates in Incomplete Option Markets”: R in Finance (May 2016) — invited @ Ketchum Trading LLC

“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) [Job Market Paper]:

Big Risk. I develop a family of trading strategies, which offer investors exact exposure to realized variance measures. The strategies allow for disentangling the pricing of small (diffusive) and big (jump) risk in financial markets. The central innovation comes about via allowing for dynamic trading in European options. I non-parametrically document the existence of compensation for directional and magnitude-of-big risk trades. I also document important patterns in daytime and overnight trading. First, the divergence (variance) risk premium is positive during daytime when the hedging frequency is high enough, and negative during night-time. The daytime profits are greater in magnitude than night-time losses from a long position. Compensation for big risk is mostly available overnight. Furthermore, investors are significantly rewarded for taking on big risk mostly after such adverse events occur in the financial markets.

Orłowski, P. (2016) [work-in-progress]:

Modelling Divergence Swap Rates in Incomplete Option Markets. In complete option markets, one can construct option portfolios which exactly replicate divergence (variance), skewness and quarticity swap contracts. The prices of these contracts can be easily calculated in affine jump diffusion models. Real option markets are far from completeness, and modelling the prices of the feasible higher-order swaps requires pricing option portfolios. I develop a surrogate Rao-Blackwellized particle filtering method, which allows for ML and Bayesian estimation of affine option pricing models based on data from incomplete markets. The complete-market option prices serve as location parameters in the surrogate distribution. With the use of the filtering method I estimate a three-factor jump diffusion model and document how well it is able to capture the magnitudes of option risk premia across various strike ranges, as reported by Schneider and Trojani in “Fear Trading”.

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 multi-period settings. Empirically, the dispersion of stationary and martingale pricing kernel components in the benchmark long-run risk model yields a counter-factual dependence of short- vs. long-maturity bond returns and is insufficient for pricing optimal portfolios of market equity and short-term bonds.

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):

Option returns and risk premia: a direct approach. We propose a computationally tractable estimation approach for a completely specified (under P and Q) multi factor 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.

EXTRACURRICULAR COURSES

Workshop in Modern Scientific Computing November 2016
University of Geneva Geneva, Switzerland
with prof. Simon Scheidegger (Uni Zurich)

SoFiE Summer School 2014 July 2014
Department of Statistics at Harvard University Cambridge, USA
“The Econometrics of Option Pricing” with prof. Eric Renault (Brown) and prof. Patrick Gagliardini (USI Lugano).

SoFiE Summer School 2013 July 2013
Oxford-Man Institute of Quantitative Finance Oxford, UK
“Financial Forecasting” with prof. Andrew Patton (Duke) and prof. Allan Timmermann (UCSD).

Asset Pricing in Continuous Time June 2013
University of Lugano Lugano, Switzerland
with prof. Paul Schneider (USI Lugano)

High-Frequency Econometrics December 2012
University of Lugano Lugano, Switzerland
with prof. Viktor Todorov (Kellogg)

Econometrics of Macro-Finance June 2012
University of Lugano Lugano, Switzerland
with prof. Alain Monfort (CREST)

TEACHING EXPERIENCE

Financial Econometrics October 2014 – February 2015, Fall 2016
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

Consultant: Data Science

Alphacruncher AG

Analysis of unstructured or weakly-structured data. Data modelling. Development of analytical tools for education and investment management.

Since September 2016

Lugano, Switzerland

Senior Economist

Dom Maklerski AFS

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.

February 2007/August 2010

Warszawa, Poland

Assistant to Commercial Attaché in Poland

Agence Wallonne à l'Éxportation

Market analysis, reporting in French for Belgian enterprises wishing to enter the Polish market.

July 2005/August 2005

Warszawa, Poland

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/>

PROGRAMMING and SOFTWARE

R: very proficient

standalone libraries for Finance/Econometrics / C++ integration / parallel computing / data science / Shiny web development;

C++: proficient

object-oriented paradigm / standalone libraries for Finance/Econometrics / some experience with MPI/OpenMP

HPC: familiar with work-flow on large computing clusters

SQL: proficient

ability to work with very large data sets

MATLAB: proficient

Python: working knowledge

commercial software for accounting

LANGUAGES

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