

CONTACT
INFORMATION

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RESEARCH
INTERESTS

Fixed Income, Risk Management, Financial Econometrics, Real Estate

EDUCATION

University of California at Berkeley

Ph.D., Finance and Real Estate, August 2013 - May 2017 (expected)

- Committee: Nancy Wallace (Co-chair), Christopher Palmer (Co-chair), Amir Kermani

University of California at Davis

Ph.D., Applied Mathematics, January 2011 - June 2013

- Committee: Debashis Paul (Co-chair), Alexander Aue (Co-chair)

M.S., Electrical and Computer Engineering, September 2009 - December 2010

Shanghai Jiao Tong University

B.S., Electrical Engineering, September 2005 - June 2009

PROFESSIONAL
EXPERIENCE

Florida State University

Assistant Professor in Finance, Starting in May 2017

Schlumberger

Research Engineering Intern, June - September 2011, July - August 2012

WORKING PAPERS

Do Government Guarantees Inhibit Risk Management? Evidence from Fannie Mae and Freddie Mac (Job Market Paper)

Fannie Mae and Freddie Mac's implicit government guarantee is widely argued to cause irresponsible risk taking. Despite moral-hazard concerns, this paper presents evidence that Fannie Mae and Freddie Mac (the GSEs) more effectively managed home price risks during the 2000-2006 housing boom than private insurers. Mortgage origination data reveal that the GSEs were selecting loans with increasingly higher percentage of down payments, or lower loan to value ratios (LTV), in boom areas than in other areas. Furthermore, the decline of LTVs in boom areas stems entirely from the segment insured by the GSEs only, and none of the decline stems from the segment co-insured by private mortgage insurers. Private mortgage insurers also did not lower their exposure to home price risks along other dimensions, including the percentage of high LTV GSE loans they insured. To quantify how the GSEs' portfolios would have performed under alternative home price scenarios, I build an insurance valuation model based on competing-risk hazard regressions, calibrated Hull and White term-structure model, and forecasting prepayment and default speeds. I find that the GSEs' risk management would have been sufficient for the historically average 32% mean reversion but insufficient for the realized 95% mean reversion between 2006 and 2011. My results highlight that post-crisis reform of the mortgage insurance industry should carefully consider additional factors besides moral hazard, such as mortgage insurers' future home price assumptions.

Estimation of Quadratic Forms for High Dimensional Time Series: Correcting Finite Sample Bias in the Mean Variance Frontier *with Alexander Aue and Debashis Paul*

Presented at: NBER-NSF Time Series Conference 2016, Columbia University; UC Berkeley Risk Management Seminar

In finite samples, risk is known to be underestimated in the mean-variance frontier. This paper proposes a novel algorithm correcting this finite sample bias when asset returns follow a high-dimensional time series. Assuming a linear process formulation studied in Liu, Aue, and Paul (2015), an algorithm is proposed to estimate the spectral distributions of the coefficient matrices of the linear process by making use of the asymptotic behavior of the empirical spectral distributions of symmetrized autocovariance matrices. This leads to the formulation of a strategy for the estimation of the mean-variance frontier, utilizing the estimates of the coefficient matrix spectra. The proposed method is extended to a setting in which the returns are assumed to have a factor model structure with observed factors, while the unknown idiosyncratic terms are assumed to belong to the aforementioned class of linear processes. The performance of the proposed methods is examined through extensive simulation studies.

JOURNAL
PUBLICATIONS

On Marcenko-Pastur Law for Linear Time Series, with Debashis Paul and Alexander Aue, *Annals of Statistics*, vol. 43, no. 2, pp. 675-712, 2015.

Presented at: NBER-NSF Time Series Conference 2013, Federal Reserve Board

Learning in A Changing World: Restless Multi-Armed Bandit with Unknown Dynamics *with Keqin Liu and Qing Zhao, IEEE Transactions on Information Theory*, vol. 59, no. 3, pp. 1902-1916, March 2013.

TEACHING
EXPERIENCE

University of California, Berkeley

Graduate Student Instructor (Teaching Assistant)

MFE Asset Backed Securitization August - October 2015, August - October 2016

MFE Investment and Derivatives April - May 2015

MBA Real Estate Investment and Market Analysis January - May 2015

University of California, Davis

Teaching Assistant

Probability Theory, Calculus, Linear Algebra

NOTABLE
PRESENTATIONS

2016

NBER-NSF Time Series Conference, Columbia University, New York

UC Berkeley Real Estate Seminar, Berkeley

University of Waterloo, Department of Statistics and Actuarial Science*, Waterloo, Canada

2015

UC Berkeley Risk Management Seminar, Berkeley

USC Marshall School of Business, Data Sciences and Operations*, Los Angeles

2013

NBER-NSF Time Series Conference, Federal Reserve Board, D.C.

(* indicates presentation by coauthor)

GRANTS AND
AWARDS

Berkeley New Faculty Advisee Research Grant
Fisher Center for Real Estate and Urban Economics Research Grant
NBER-NSF Young Researcher Travel Grant (twice)
UC Berkeley Graduate Division Travel Grant

REFERENCES

Nancy Wallace (Co-chair)

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in Real Estate Capital Markets
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