# FSRM Newsletter

# From the FSRM Director

Welcome to this issue of the FSRM newsletter. It has been over a year since our last newsletter. We have a lot of good news to report to you. First of all, a total of 16 FSRM students received their Master degrees and graduated in January and May of 2013. Among these, one student continued to Ph.D. study, and the other 15 have all found jobs in financial institutions or financial services companies. This shows the strength of our students and the quality training the FSRM program provided. Congratulations to them all.

Second, the FSRM program has grown significantly, currently having 68 students enrolled, including 31 continuing students and 37 new students who just arrived in September. Most of the continuing students are expected to graduate in January or May of 2014. I wish them the best of luck in finding satisfactory employment. I also wish to welcome the new students. This is a very strong group, selected from a strong pool of several hundred applicants. It is also a diverse group, with different educational

backgrounds and working experiences. Some of them are from the NJ/NY area, and others from Europe, Asia and South America. They are working hard and making great progress in their education and career development.

Third, we have two new staff members joining the program in the past year. Dr. Lynn Agre is serving as our Associate Director for Career Development and Ms. Anh Luu is Assistant Director of FSRM.

Lastly, I am proud to announce that FSRM has joined the GARP Partnership for Risk Education as an Academic Partner Plus. Such a partnership enhances FSRM programs emphasis on the practical approach to risk management and allows students to build knowledge and skills necessary to succeed within the fast-paced financial industry.

In this issue, we will briefly introduce Dr. Agre and Ms. Luu first, then we will report some of the activities we have had in the past year, including student government activities, practitioner's seminar series, and several faculty and student profiles. We will also announce the 'Statistics in Financial Risk Management Conference' to be held on November 7, 2013 and the establishment of the new Rutgers Center of Excellence in Financial Statistics and Risk Management.

We hope you enjoy this newsletter. As always, we welcome any news, comments and suggestions you may have. Please keep the feedback coming. ☐

# Associate Director for Career Development



Lynn Agre, M.P.H., Ph.D. is currently serving as an FSRM Associate Director for Career Development Services on a part-time basis. She is also a pre-and post-award grants administrator and is a part-time lecturer in the Department of Statistics, Rutgers University. Dr. Agre is an expert in health and welfare policy and her current research interests include: the interaction between behavior and disease; how underlying mechanisms like depression predispose persons to later-life disability; and application of mathematical methods in elucidating the relationship between mental health attitudes, perception and physical health. Dr. Agre is in charge of leading the FSRM career development seminar series and helping FSRM students in their preparation of internship and job searching activities.

# Assistant Director of FSRM



Ms. Anh Luu is Assistant Director of FSRM. She holds a B.A. in accounting from Central Washington University and has extensive experience in customer relations and services. Before joining FSRM, she worked as a volunteer to assist low income individuals in tax preparation and patient care related issues. Ms. Luu is a great addition to the FSRM family with her efficiency and patience in working with the students, in event preparations and in smooth operation of the FSRM office. □

# Annual Picnic and Family Day



On Sep 16, the FSRM student society and the Department of Statistics and Biostatistics hosted a picnic for faculty, staff, FSRM students, and their families and friends. It was a beautiful afternoon and Donaldson Park with its lawns, trees and river, was an ideal place for such a wonderful gathering of more than 70 people. The food was wonderful, and included Korean BBQ, lamb kebab, seasoned chicken wings, burgers, sausages, vegetables, salads and drinks. The conversation was even better. The new students received good advice from the continuing students on course work, internships and job hunting.

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They also enjoyed the informal interaction with faculty members outside the classroom. Everyone had a wonderful time.

The FSRM student society, under the leadership of president Chen Lang, FSRM assistant director Anh Luu, and FSRM head TA, Xialu Liu, managed food preparation, organized volunteer drivers and helpers, worked on the BBQ grills, and handled the final clean-up. The Department of Statistics and Biostatistics provided the financial funding for the picnic. It will become an annual event.

□

# Practitioner Seminar Series

This semester FSRM invited several speakers,  who are experienced professionals from different sectors of the financial industry, including a brokerage company, trading firm, and investment bank.

## Basel Capital Framework and Risk Modeling
**by Dr. Wei Zhu, Citi ICG Risk Analytics**

*Dr. Wei Zhu, Managing Director in Citi's ICG (Institutional Client Group) Risk Analytics group, heads the Market Risk Analytics team and Counterparty Risk Analytics Modeling team globally. After joining Citi in 2001, Wei Zhu has focused on building quantitative models to capture market risk and counterparty credit risk, for the purpose of both internal risk management and regulatory capital calculation.*

*In this presentation, Dr. Zhu provided  an overview of Regulatory Captical requirement instituted by the Basel Committee of Banking Supervision* (BCBS), covering both its historical evolution (from Basel I) and the current status (Basel III). He also spoke about the general modeling techniques required by market risk capital calculation under Basel framework. This includes VaR, Streesed VaR, Incremental Risk Charge, and Comprehensive Risk Charge.

## Stock Market Inefficiencies Over the Last Six Decades
**by C. Michael Carty**, **New Millennium Advisors, LLC**

*Michael Carty supervises the construction and management of portfolios to achieve specific client objectives. He also designs, develops and evaluates indexes for use as ETFs. Prior to founding New Millennium Advisors in 1995 he was the Director of Closed-end Funds Strategy and Research at Prudential Securities and, before that, the Associate Research Chairman and Senior Portfolio Manager at Value Line where he managed the flagship Value Line Fund and Centurion Fund, then the best performing equity growth fund in Lipper's variable annuities universe.*

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Mr. Carty reviewed the evolution of identifying the probability distribution to which stock price changes confirm and showed the new evidence concerning the nature of these distributions and their implication for stock market efficiency over the last six decades. The results suggest that the Gaussian representation of the model is inadequate in explaining the stock price changes, and the parameters of the distributions are time dependent; the importance of their third and fourth moments has been largely ignored.



## Statistics and Current State and Trends in  Job Market for Quantitative Risk Management
**by Dr. Kenneth Abbott, Morgan Stanley**

*Dr. Ken Abbott is a managing director at Morgan Stanley in New York, where he is chief operating officer for the Risk Management Division.  In addition, he is the senior risk officer assigned to buy-side activity. Previously, Dr. Abbott ran market risk management for Bank of America's Investment Bank. He has over 25 years of banking experience, including 14 years at Bankers Trust as an analyst, trader and risk manager. Dr. Abbott is an adjunct faculty member at New York University, Rutgers University and Baruch College, and sits on the GARP Board of Directors. Dr. Abbott has a B.A. from Harvard in economics, an M.A. from New York University in economics and an M.S. from New York University's Stern School of Business in statistics and operations research.*

Dr. Abbott gave an informal but extremely insightful talk on the importance of statistics in the financial industry and the current state and the future of the job market for quantitative financial analysts and risk managers. He discussed measurement, uncertainly, risk, correlation, trend detection, seasonality and other topics and how they are used in the daily operation and decision making in financial firms. He also gave helpful advice on how to prepare oneself to be successful in the rapidly changing world of finance. The students were very excited after Dr. Abbott's presentation and felt confident that they have come to the right program at Rutgers and have decided to study financial statistics to further their career.
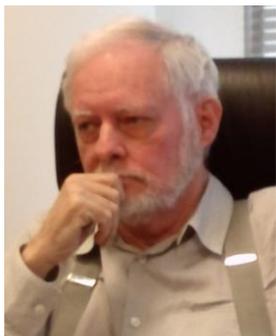
# A Filtering Noise from Correlation/Covariance Matrices. Implication for Trading, Asset Allocation and Risk Management
**by Dr. Alexander Izmailov, Market Memory Trading LLC;  Dr. Brian Shay, Hunter College, CUNY**

*Dr. Alexander Izmailov is currently a member of Market Memory Trading, L.L.C. He published more than 40 papers in prestigious scientific journals. He has held positions as a quantitative trader on vice-president and senior vice-president levels at several major investment banks and hedge funds. He has developed several successful trading strategies based on innovations in probability theory and statistics.*

*Dr. Brian Shay is currently a member of Market Memory Trading L.L.C, focused on algorithmic trading technologies. He has 40 years experience in systems and algorithmic programming. He has been a faculty member in the Department of Mathematics and Statistics at Hunter College, CUNY since 1971.*

Correlation/Covariance matrices inevitably contain noise due to finite sampling. In this presentation, Dr. Izmailov and Dr. Shay demonstrated a very effective and robust procedure to remove the noise from correlation/covariance matrices. This procedure exhibits dramatic improvement in various unconstrained and constrained optimization schemes and out-of-sample stability. A few portfolios with obvious underlying correlation structure were also presented.

# A Transformed Copula Function Approach to Credit Portfolio  Modeling
**by Dr. David Li, AIG investments**

*Dr. David Li is currently the head of modeling and a managing director at AIG Investments. Previously he was the CRO at CICC, and head of  credit derivative research and analytics at Barclays Capital and Citigroup. Dr. Li is an early participant of credit derivative market, and his approach on the credit curve construction and copula function  method for credit portfolio modeling has been widely used in the industry.*

Dr. Li presented a fundamental modification to the currently popular copula function approach to credit portfolio modeling in his talk. This discovery theoretically links credit portfolio modeling with classical equity portfolio modeling in the CAMP setting. It can also solve some practical problems in the credit portfolio modeling. Dr. Li also provided insightful advice to the students on career development and answered many questions from the students and faculty members.                                                  □

# Faculty Profile

Assistant Professor Lee Dicker works on problems in high-dimensional data analysis, which are ubiquitous in finance. Prof. Dicker is especially interested in statistical problems that highlight the subtleties of correlation in high dimensions, and in understanding features of statistical models and data that are essential for the successful application of high-dimensional methods, e.g., sparsity. Prof. Dicker's work relates to correlation draws on tools from random matrix theories and is useful for portfolio selection problems involving many assets; his work on sparsity and other work in random matrix theory has application in signal detection and loss estimation problems involving high-dimensional financial data. His research is supported by the National Science Foundation.

Professor Dicker has been involved with the FSRM program since 2011, teaching courses (FSRM582-583), mentoring students, and advising student-led summer research projects. According to Prof. Dicker, his work with the FSRM program has been among his most rewarding teaching experience at Rutgers.

*"It's been a true pleasure to work with the highly motivated, sharp and thoughtful students in the FSRM program. From the classroom experience, to the students' creative and insightful end-of-semester projects, I believe that I, along with the students, have gained a lot from the program."*           □

# Student Profiles

**Koh Seng Tan** earned his Bachelor degree in Economics and Statistics at Rutgers University, New Brunswick. While an undergraduate, he worked full-time at Malaysian and Thai Cuisine in Princeton, NJ. Because of his initiative spirit and outstanding leadership as well as teamwork ability that provides him a solid business background, he was promoted to manager.

Recently, Koh earned a full-time position as Financial Analyst II at Cenlar FSB before graduating in FSRM. He was trained in some powerful programming called Busch Analytics and Sendero. During his training, he ran different groups of Portfolio that depend on different assumptions for subservicing businesses. This project required highly intensive programming skills and quantitative data analysis.

As part of the Treasury department of Wholesale Banking at Cenlar, Koh is assigned to manage counterparties that related in balance sheet and net interest income. He contributes to the development of new strategy for enhancing efficiency on the management system as well as maintained high operational risk management on company preferences.

**Viranch Trivedi** joined the Apple store in order to strengthen his leadership and interpersonal skills, after obtaining his Bachelor's degree in the spring of 2010. Having majored in statistics during his undergraduate studies, Viranch had always been passionate about applying his analytical skills in order to solve complex financial problems. He was eager to join a Master's degree program that would give him the academic rigor and industry knowledge to be successful in a financial career. In the fall of 2012, Viranch chose to enter the FSRM program and was able to successfully jump start his career in finance. During his first year in the program, Viranch gained many valuable career development skills from the FSRM team and also from the Rutgers Career Services office. He went on to intern at the Federal Reserve Board of Governors in Washington, DC and was recognized for completing multiple projects that impacted economists throughout the Federal Reserve System. Upon graduation in January of 2014, Viranch will work as an analyst in the division of Risk Assurance at PricewaterhouseCoopers in New York City.

*"The Rutgers FSRM program has been an incredible experience that has accelerated my career growth exponentially. From day one, Dr. Chen, Dr. O'Reilly, and their team highlighted the importance of the job-search process. In addition, they provided access to numerous tools and resources that helped develop my marketability to employers and to feel confident during challenging interviews. By combining these tools with the plethora of resources offered by the Rutgers Career Services office, I was able to transform my career in just over a year. This achievement is the culmination of the hard work that I have put into developing myself and by learning from the FSRM team."*                                                    □

# Statistics In Financial Risk Management Conference
## by Dr. Neville O'Reilly

This fall, the FSRM program is expanding its outreach to practitioners and financial services firms in the wider NYC metropolitan areas with two important initiatives. The program already reaches out to the industry on a routine basis by bringing practitioners on campus to give seminars, workshops and classroom instruction and by seeking internship experiences in real world work environments for its students. On November 7, the program is hosting a one day event "Statistics in Financial Risk Management". This event brings together leading experts from around the world to present their latest work in applying statistics, statistical data mining and statistical inference techniques over a wide range of risk management areas, including systemic, credit and extreme event risks, and to the uncovering of investment opportunities thru arbitraging inefficiencies in the propagation and absorption of unstructured data by market players.

Speakers bios and the program agenda can be viewed at http://www.fsrm.rutgers.edu/nov-7-conference-program. The speakers include Jin-Chuan Duan, Cycle& Carriage Professor of Finance,

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Business School, National University of Singapore; Wolfgang Härdle, Ladislaus von Borkiewicz Chair of Statistics, School of Business and Economics, Humboldt-Universität zu Berlin; James Hodson, Manager of The Machine Learning and Statistical Inference group at Bloomberg LP; Ruey S Tsay, H.G.B Alexander Professor of Econometrics and Statistics, Booth School of Business, University of Chicago; Holger Rootzén, Professor of Mathematical Statistics, Chalmers University of Technology, Göteberg, Sweden; and Nassim N. Taleb, the best-selling author of The Black Swan and Anti-Fragile, former trader and Distinguished Professor of Risk Engineering at New York University's Polytechnic Institute.

The second initiative, which will be launched at the conference on November 7, is the establishment of the Rutgers Center of Excellence in Financial Statistics and Risk Management. The Center's mission is to serve as a central forum for interdisciplinary research and collaboration in financial statistics and risk management between academic researchers, students and practitioners in the financial industry. ☐

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