



## From the FSRM Director

Welcome to this issue of the FSRM newsletter. First, to the 30 new students who entered the program in this semester, I would like to say that we are delighted to have you with us and that I can proudly claim that you collectively are a great class of highly qualified students with diverse backgrounds, selected from more than 300 applicants. Second, I would like to say congratulations to the nine students who are graduating in January. Your success is due to the hard work and dedication in the past 16 months. We wish you a very bright and successful career. To our continuing and part-time students, who worked very hard in the summer as interns in various financial and consulting companies or at their full time jobs, enjoy the winter break, after another exciting semester of challenges and learning. Lastly, I wish to thank our advisory committee members, FSRM faculty and staff members for your generous help and dedicated work. Have a happy holiday season.

In this issue, we will review and recap the significant events of the semester, point out the ways in which industry practice and experience are blended with classroom instruction and comment on the “Big Data” industry trend, which seems to further validate the uniqueness of the FSRM program’s approach to quantitative finance and risk management education.

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



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## Semester Kick-Off Picnic and Family Day



On an early October Saturday, the Statistics Department Chairperson, Professor Regina Liu, and the FSRM Program Director, Rong Chen, hosted a picnic for faculty, staff and students, and their families and friends, in nearby Donaldson Park. Everybody spent a pleasant afternoon mingling, meeting and playing – as well as enjoying delicious food and barbeque - or even discovering new “grill master” skills by helping out with the cooking. The investment in bringing together new and current students;

students, staff and faculty; international and domestic students more than paid off during the semester by the camaraderie and connections that were created at the event. A big thanks to Ms Xialu Liu, FSRM head teaching assistant and one of the Department’s doctoral students, for managing all the logistics and preparation that made this event such a big success. Thank you, Xialu.

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## Practitioner Seminar Series

The FSRM Practitioner’s Seminar brings experienced professionals in finance and risk management to the campus to give practical talks on the quantitative and statistical aspects of their work. Professor Lee Dicker is the chair of the series and has worked hard to identify and recruit industry professionals to share real world examples of quantitative analysis performed at their firms with the faculty and students in the program. Students are required to attend these seminars as part of the ongoing practical training requirement that applies continuously as they move through the program. They benefit greatly by connecting what they learn in this series with the content of their courses as the material presented is referenced and used in their course work. Past and current semester speakers have come from Morgan Stanley, Bank of America, Deutsche Bank, the Global Association of Risk Professionals (GARP), Jefferies, and Nomura.

For example, on October 12, 2012, Mr. Hanse Chung, an executive director and risk manager at Morgan Stanley, spoke on Counterparty Credit Risk and Credit Valuation Adjustment at the Practitioner’s Seminar. In his talk, Hanse discussed the importance of counterparty credit risk assessment and highlighted some of the challenges in developing successful metrics. These topics were also covered in the Advanced Risk Management course and Hanse’s material helped inform the in-class discussion and also provided the basis for a homework assignment in the course. A further example is the seminar on the different structures of residential mortgage backed securities and the risk factors impacting them which was given as part of the series by Peter Cieka of Jefferies & Co. Again, this material was useful in illuminating interest rate risk in the Advanced Risk Management course during this semester.

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## Online Access to Student Resumes and Bios

All student resumes and bios can now be accessed online from the FSRM website or using the link <http://www.fsrn.rutgers.edu/people/student-gallery>. Each student has an individual web page with their photo and bio, as well as a link to their resume and contact information. Interested employers and recruiters can access information about both internship and full time candidates and contact a candidate directly. Please pass this link on to those in your professional network who might be interested in engaging or helping to place an FSRM intern or graduate in a quantitative analysis or risk management position. Employing an FSRM student in an internship or full-time position is a win-win for both the employer and the student!

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## Practitioner as Instructor

The Practitioner Seminars Series is one useful way of bringing industry practitioner perspectives and experience into the FSRM program training. There are others, including internships and industry partnerships, about which we will have more to say later. A further approach, which we discuss below, was launched this semester in the Advanced Risk Management 536 Course. This is the direct incorporation of the “practitioner as instructor” into the classroom.

In teaching the Advanced Risk Management course to students in their final semester who will soon graduate and seek or take up jobs, Dr. O'Reilly wanted to blend the teaching of the mathematics of risk with the practical experience of executives and managers exposed to the everyday workings of the markets, people and corporations. So, with the able help of Chris Donohue, Managing Director of the GARP Research Center and member of the FSRM Advisory Board, Dr. O'Reilly was able to recruit a cadre of outstanding industry professionals to collaborate in teaching the course and help train people who will be able to communicate across the divide between the mathematics of risk and the way that risk is actually managed in the context of corporate hierarchy, governance, financial markets, business goals and regulation.

Dr. Glen Swindle, who has held senior positions at Constellation Energy and Credit Suisse, lectured on interest rate, commodities risk and managing traders' books from both a risk and P&L perspective; Dr. Peter Went, who manages the bank risk programs of GARP, covered off credit risk and Philippa Girling, now head of Business Risk at Capital One and former head of Global Corporate Risk functions at Morgan Stanley and Nomura, dealt with Operational Risk and Risk Governance in financial institutions.

A case study on the risk management failings at the UK bank HBOS over the period 2006-08 was assigned to three groups of students who presented their analysis and recommendations to a virtual senior risk committee at Lloyd's Bank which acquired HBOS at the beginning of 2009 in a brokered rescue takeover. The above experts were joined by Ken Abbott in playing roles on the Group Risk Management Oversight of Lloyds bank. Ken Abbott, who took the role of Group CRO in the case study review, is Managing Director at Morgan Stanley where he is the COO across Market, Credit and Operational Risk.

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## “Big Data” – So What?

There has been a lot of ink spilled recently on the degree of penetration of “Big Data” techniques into financial services firms. Just how fast and pervasively it is happening doesn’t really matter in the sense that the data analysis tools and other techniques learned in the FSRM program apply to both “regular” and “big data”, to risk management and quantitative analysis generally.

However, the foundation of FSRM training has always eschewed “econophysics” and the notion that models rule. What is true is that there are no “Higgs Bosons” in Finance i.e. models which can predict future discoveries in the financial markets before anyone actually observes them. Instead FSRM teaches mathematical and computing tools which allow us to inspect, discern, extract and apply information from data, rather than create models out of mathematical “thin air” and then see if they fit after the fact. In other words, we are “data driven”. The data shifts and changes and, as a result, the information and signal also shifts and changes over time. To quote Tom Mitchell, head of machine learning at Carnegie Mellon, speaking about financial market data, “It is not completely random and unpredictable: there are regularities in financial markets.”

The “data driven” mind set our training develops is important and valuable whether operating in a context of “Big Data” or not because it embeds the ever-present question in the psyche of our analysts, that is “What does the data say?” Not the question “What does the model imply that the data ought to be saying?” – which is the question embedded in the psyche of the mathematical modelers trained by traditional “Quant Finance” programs.

The main point about the “Big Data” discussion is that as the penetration of “Big Data” advances in financial services the demand for FSRM skills will also grow accordingly. Core financial services disciplines like risk management and credit assessment are all being influenced by the rise of data-intensive applications. A recent article in the Financial Times reported on JPMorgan Chase initiatives in using “Big Data” technologies to spot internal fraud risk in Operational Risk management and in pricing real estate collateral securing troubled mortgages.

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## Two Internship Experience Profiles

*Ran Zhang: Data Scientist Intern – Comrise Technology, Inc.*



“At the start of my summer internship, I was put through an intensive three-week training course on ECL (Enterprise Control Language), which is the data query language used on the Lexis Nexus High Performance Computing Cluster to query and analyze and transform “Big Data” sets.

In the second phase of my internship, I was assigned to a project team tasked with creating and pricing product “bundles” for the cosmetics company, L’Oreal. We had to figure out what were optimal bundles of products for L’Oreal to package and sell together and how to price them. This involved analyzing a very large data set of L’Oreal sales transaction data from its distribution channels all over the USA, finding the patterns in the data and then using them to create and price product bundles so that the overall sales revenue and profit would increase post-bundling compared to pre-bundling.”

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*Patrick Ewane Essouman: Quantitative Analyst, BNY ConvergeEx*



“Like Ran, as part of my internship, I was trained in a powerful query and programming language, q, designed to be used in conjunction with a massively scalable database, kdb+, for querying and analyzing massive real time and historical data sets. In my case, the training was focused on the capture and analysis of tick data – that is real time streaming data for equities, futures and FX. After training, I interned in the Financial Engineering and Advanced Trading Solution Unit. This unit is primarily responsible for the development of next-generation trading tools that help traders improve performance and devise passive or aggressive trading strategies. As part of the Quant team, I contributed to the development of new strategies for enhancing the electronic trading and order management system. This assignment required intensive quantitative data analysis and statistical modeling of market microstructure, intraday price prediction and market impact. The internship allowed me to hone my programming skills in R and q/KDB+ and provided me with practical experience in applying many of the statistical tools and methodologies that I was taught over the previous two semesters in the program.”

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## Honors and Celebrations

*GARP Research Fellowship:* The GARP Partnership for Risk Education awarded a GARP Research Fellowship to Patrick Ewane Essouman for his research proposal to compare various new measures of systemic risk proposed after the “financial crisis”, evaluate or “back-test” their performance on historical data and investigate options for more robust modifications or alternatives. The Fellowship Program received great interest from many students across GARP's network of Master-level programs so it was a real kudu that Patrick's proposal was accepted and supported. Patrick will publish and complete his research by the end of December, 2012.

*First Class Graduations:* Nine students who entered in the first FSRM cohort in the Fall of 2011 will be graduating in January, 2013. At the time of writing, seven have accepted job offers and will start on this bright new phase of their careers in January. The other two are still in the process of interviewing and deciding. We wish all of them the best of luck.

Please join with us in congratulating the following students on successfully completing the course work, the practical requirements and the research project requirements of the program. We will celebrate their graduation at a dinner in late January. If you wish to be notified of the date, place and time so that you can join in that celebration, please contact the Editor. The soon-to-be-graduates are:

Vaibhav Desai, Patrick Ewane Essouman, Jiaxuan Han, Sheeraz Hyder, Wenyan Liu, Heng Tan, Wei Xu, Xingzhi Yu and Yuting Yuan.

It was great to have you and we will bask in the reflected glow of your successful careers!