

ANNUAL REPORT 2015

African Institute of Financial
Markets and Risk Management



AIFMRM's second year of operation was challenging, productive and eventful. Two highlights stand out: the highly successful 'Risk Management as a Career' event in August, and the HEQC accreditation in December of our professional master's degree – the MCom in Risk Management of Financial Markets. The success of both of these leads us to believe that we are firmly on the right track.

We would like to take this opportunity to express our gratitude to our donors, Liberty, ABSA/Barclays Africa and FirstRand, and their representatives, Brian Kipps, Colin Iles and Miné van Zyl, for their support, guidance and confidence as we pursue our vision and fine-tune our strategy.



Also, thanks to the various staff in the Faculty of Commerce who supported the Institute during the course of this year; particularly the efforts of everyone who assisted us during the student protests. These disruptions brought university operations to a halt for more than two weeks and had significant after-effects, which we managed to mitigate.

- David Taylor, Director, AIFMRM

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243 Completed the
Business Risk
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2 New online short
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300+ Attend AIFMRM
industry events 

30+ Visiting academics and
industry experts 

4 Public events 

1 Television slot 

R1.9m Worth of coverage 



WHAT PEOPLE
ARE SAYING
ABOUT AIFMRM

UCT's Faculty of Commerce has upped its game over the past few years, offering a Mathematical Finance Master's degree on par with any in the world. This is not just our belief but the feedback we receive from academic visitors from around the world.

- **David Taylor, Director, AIFMRM**

There has never been an institute of this kind on the African continent.

- **Don Ross, former Dean of the Faculty of Commerce, UCT**

The vision is to have a national impact, a continental impact and eventually an international impact.

- **David Taylor, Director, AIFMRM**

[The Institute] provides the financial industry with an opportunity to dictate, to a level which we haven't been able to, the sorts of training that we want people to have.

- **Colin Iles, Barclays Africa**

We want to make a difference in the way financial professionals are trained in South Africa and it is the first of its kind on the African continent.

- **Co-Pierre Georg, Senior Lecturer, AIFMRM**

The institute provides a unique opportunity where I can be involved in both academia and industry.

**- Obeid Mahomed,
Lecturer, AIFMRM**

Students can expect an intense teaching environment. They have to slog hard. They are inspired and they get a very broad picture of the world they are about to enter into, they will be in very high demand from employers.

**- Don Ross, former Dean of the
Faculty of Commerce, UCT**

We have the ability to bring in previously disadvantaged students and the funding available to support them.

**- Obeid Mahomed,
Lecturer, AIFMRM**

The Master of Philosophy specialising in Mathematical Finance is a superior academic programme and the Eduniversal ranking shows this.

**- David Taylor,
Director, AIFMRM**

The big innovation that this institution brings is that we have a professional degree, which means we have very strong ties with the financial services sector; we interact with them to understand their needs and what their problems are. We take this and bring it to the classroom and speak to students about things they need in their jobs from day one. I think this is what really sets us apart from anything else that is available in South Africa or in Africa.

**- Co-Pierre Georg, Senior
Lecturer, AIFMRM**

Our research is by nature very interdisciplinary – the financial system has changed over the past 50 years. It's not enough nowadays just to do economics.

**- Co-Pierre Georg, Senior
Lecturer, AIFMRM**

EDUCATION & TRANSFORMATION

Just two years into its operations, AIFMRM boasts **one of the world's top-ranked mathematical finance degrees**. In 2015, the institute also introduced a brand new MCom degree that will plug a critical skills gap in the financial services industry, and has launched two new specialist short courses with online learning partner GetSmarter to **address skills shortages in the industry**. AIFMRM also hosted its 2nd annual Financial Mathematics Team Challenge in 2015, which has doubled in size and increased in stature.

17 MPhil in Mathematical Finance graduates



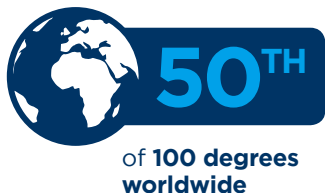
243 Completed the Business Risk Management online short course



2 New online short courses launched



UCT Mathematical Finance Master's makes global Top 50 list



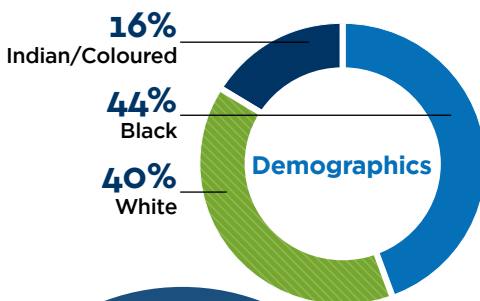
The Faculty of Commerce at UCT is the only institution on the African continent to make the prestigious annual Eduniversal Best Master's in Financial Markets ranking for 2014/2015. **AIFMRM's** Master of Philosophy specialising in Mathematical Finance made it onto the ranking list for the first time in 2015 in 50th position out of 100 degrees worldwide.

2014's top spot went to Stanford University's MS in Mathematical Finance. American institutions occupied the top nine positions.

Launch of new MCom

After a year of engagement with the financial services industry, in order to identify critical skills gaps, AIFMRM designed and launched a brand new **MCom degree in Risk Management of Financial Markets**. This exclusive degree, which will run for the first time in 2016, will train professionals in financial risk management. It is uniquely interdisciplinary, spanning the fields of finance, mathematics, computing, regulation and governance and has a novel structure in that it is a professional master's degree. Students will be assessed through a series of research projects, as opposed to the traditional dissertation requirement.

80 Applicants **25 Accepted**



Graduates from the MPhil in Risk Management of Financial Markets are likely to always be in demand. Such a multidisciplinary, transferable skill set will ensure that there will always be a position for them in most financial organisations.
- **Nicolaas Schutte, CIB Risk COO, Barclays Africa**



Obeid Mahomed addresses potential students at the Careers Fair to launch the new MCom in Risk Management.

One-of-a-kind in the

SOUTHWEST HEMISPHERE

Financial Mathematics Team Challenge

AIFMRM, in association with University College London (UCL) hosted the 2nd annual Financial Mathematics Team Challenge (FMTC) in July 2015. The demanding challenge is designed to **hone the skills of financial mathematics students by exposing them to real-world problems with industry relevance**, pitting them against talented peers from across the world.

This was the second time that the challenge was staged and AIFMRM director David Taylor said they were gratified to see that interest in the event grew immensely, with almost double the number of students participating in 2015. Five teams of four students and their mentors worked for seven days on

29 participants from

3 top global universities

research problems posed by academics and industry partners in quantitative research areas. Each team was mentored by academics and practitioners who volunteered from France, South Africa, Switzerland and the UK to ensure that the students had the right support to bring out their best.

HERN PPHERE

Online and proud

AIFMRM developed two new short courses in 2015 in collaboration with their online learning partner, GetSmarter, to add to its hugely successful Business Risk Management short course. Online learning continues to offer **a fast and effective way to reach more students with relevant skills and training** – especially by addressing critical skills shortages in industry and contributing to transformation of the sector.

Business Risk Management short course; 10 weeks:
Ran 5 times in 2015 with a total of 243 participants

Advanced Business Risk Management short course; 8 weeks:
Will run for the first time in Feb 2016

Foundations of Financial Markets in South Africa short course; 8 weeks:
First cohort in November 2015 with a total of 28 people

RESEARCH & INDUSTRY RELEVANCE

AIFMRM continues to work closely with industry to **advance knowledge and drive research**, discussion and enquiry in the African financial sector. 2015 was a busy year from a research perspective. African Collaboration for Qualitative Finance and Risk (ACQuFRR), the research arm of the Institute, continues to be **one of the most productive in the Faculty of Commerce**, producing 11 journal publications and hosting two industry masterclasses, as well as 23 weekly seminars for students and academics, two four-day research retreats for PhD students and academic staff, and three special seminars during 2015. ACQuFRR published the 2015 Financial Mathematics Team Challenge Research Reports in a combined volume. AIFMRM issued a special industry report titled: The IOSCO Transparency Principle and Modelling the Bid-Ask Spread.

11

Journal publications



6

PhD students



23

Weekly seminars



2

Postdoctoral
research fellows



Understanding the financial services industry

In 2015, an AIFMRM Project Team continued the skills research project commenced in late 2014 and conducted further interviews with various financial services companies on skills and education deficits in the banking and insurance sub-sectors.

ACQuFRR Special Seminars hosted in 2015

- Dr Philipp Koenig (DIW – German Institute for Economic Research): Too much of a good thing? A Theory of Short-term Debt as a Sorting Device
- Dr Helen Solomon (De Montfort University, United Kingdom): The bank lending channel is important for developing countries as most of our capital is mobilised by banks and not by capital markets
- Leanne Parsons (Johannesburg Stock Exchange): Colocation services at the JSE and improving the speed of trading

R10.7 million
overall project funding

AIFMRM receives
R1.5 million

Sponsorships like these are very important, without them, we couldn't study many pressing questions in the financial world.

- Dr Co-Pierre Georg

UCT awarded R1.5m to study international capital flows

Research into the financial challenges facing emerging market economies received a shot in the arm in 2015 when Dr Co-Pierre Georg of AIFMRM secured a five-year grant from the Volkswagen Foundation for research into international capital flows.

The project forms part of an international collaboration with academics from universities in Germany, the US, China and Japan, and will enable UCT to sponsor two PhD students for three years.

Senior Lecturer at AIFMRM and one of the project's co-principal investigators, as well as its research coordinator, Dr Georg commented that what set their proposal apart was its focus on emerging economies. "Very little research on developing countries is done outside the traditional development economic focus," he said.



One of AIFMRM's stated aims is to promote scholarship and **create the next generation of African academics** dedicated to rigorous financial and risk management research. Student research plays a key role in this.



What is Economic Complexity

- Financial institutions: new products
- Key bank instruments: derivatives, structured products

The international team will use the funds to undertake a comprehensive study on how new monetary policy tools like quantitative easing (QE), which industrialised economies introduced following the 2007 to 2009 global financial crisis, affect South Africa and other emerging markets. The study, in particular, looks at how much of the current economic recovery can be attributed to monetary policy intervention and which tools were the most effective. The team will look at QE from a finance perspective, so the impact of these policy actions on financial market prices, as well as on financial institutions' risk and credit supply can be measured.

It will also explore whether there are spill-over effects to financial institutions and markets in emerging countries; such as India, China and other countries in Africa. The researchers also plan to look into the effects on central banks if they were to reverse their currently extremely lax monetary policy stance and how this would affect financial stability in emerging markets.



Research
dissertations
under way

Student research

AIFMRM MPhil in Mathematical Finance students are assigned two supervisors (usually, one industry and one academic) for their research projects in May and are expected to work on their dissertations until submission the following February. The students make three oral presentations on their dissertations during the year. Their final presentation is in January just prior to submission.

The titles of the 2015 year's dissertations were:

1. Model Misspecification and the Hedging of Exotic Options
2. The Use of Stochastic Colocation for Sampling from Expensive Distributions with Applications in Finance
3. Currency Trios – Using Geometric Concepts to Visualise and Interpret Relationships between Currencies
4. Value-Add in Technical Analysis on the JSE Bond Market
5. Stock Loans and BEE Deals
6. Path-Dependent Volatility
7. Adjoint Venture: Fast Greeks and CVA Applications with Adjoint Algorithmic Differentiation
8. Investigating Methods of Identifying Jumps in asset returns
9. On the Hunt for a Factor Model of South African Stock Returns
10. Robustness of Bond Portfolio Optimisation
11. Exposure Modelling Under Change of Measure
12. The Trolle-Schwartz HJM Model
13. Kalman Filtering and the Estimation of Multi-factor Affine Term Structure Models
14. Pricing Index-linked Catastrophe Bonds via Monte Carlo Simulation and Some Comparisons with Other Pricing Techniques
15. Detection of Phase Transitions in the South African Market
16. Combining Multiple Strategies for Extracting Excess Returns on the JSE Using a Risk Budget
17. Hedging Performance of Interest Rate Models

PUBLIC EVENTS & OUTREACH

One of the key objectives of AIFMRM is to provide **new perspectives on the maintenance, monitoring and resilience of the financial system**. One of the ways it achieves this is by hosting public events and seminars to stimulate debate and engagement. In 2015, AIFMRM hosted four major public events – two policy forums, the screening of the documentary Boom Bust Boom, and a Careers Fair – **attracting over 300 people from industry, the media, the university community and the interested public**. During the year, AIFMRM also hosted more than 30 international speakers and academics who contributed to making these events a success.

300+ Attend AIFMRM industry events



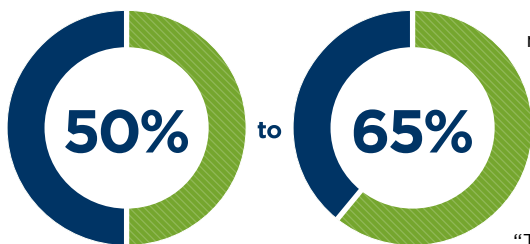
4 Public events



30+ Visiting academics and industry experts



The art and science of predicting financial markets



Professor Ben Jacobsen, who holds the Chair in Financial Markets at the Business School of the University of Edinburgh as well as the Tun Ismail Mohamed Ali Distinguished Chair at the Faculty of Economy and Management, Universiti Kebangsaan Malaysia (UKM), presented a **masterclass with AIFMRM in April entitled: The Art and Science of Forecasting Financial Markets.**

He told a capacity crowd at UCT's Graduate School of Business that academic research is making it possible to forecast financial markets

more accurately, but for most investors, financial forecasting remains something of a game of chance. The current, and not very comforting, reality is that economists' forecasts are only correct about 50% of the time.

"There is no scientific way to accurately predict markets all of the time, but we are beginning to get a glimpse of why, when and how financial markets may be partially forecastable based on recent academic research and thereby get slightly better odds," said Jacobsen, whose research focuses on forecasting financial markets and behavioural finance.

According to Jacobsen, his models have an accuracy rate of up to 65%. In the current age of disruptive innovation and change, being able to improve forecasting accuracy by a few percent can have a significant impact.

Boom Bust Boom



25 years of frustration

The next economic disaster could hit the world soon – and we are not ready for it, warned economic and financial experts at the **screening by AIFMRM of a new financial documentary Boom Bust Boom in Cape Town in June.** The documentary, described as a “fresh take on global economics” was presented and co-written by Terry Jones of Monty Python fame. The documentary is a combination of light-hearted humour and serious commentary. It features interviews with actor John Cusack, journalists Paul Mason and John Cassidy, along with world-renowned experts Andy Haldane (Chief Economist at the Bank of England and Nobel Prize winners Daniel Kahneman, Robert J Shiller and Paul Krugman. Co-producer, writer, and Dutch activist, **Professor Theo Kocken also attended the event.**

Cybercrime could get worse



SA is the
3RD

highest cyber-
crime hotspot
in the world

The lack of global regulation for online transactions and lack of knowledge around new technologies in the financial services sector such as cyber securities, cryptocurrencies and mobile money, is putting consumers all over the world at huge risk, financial experts said at an **international seminar hosted by AIFMRM in association with the Financial Consumer Protection Organisation (FinCoNet) in October.**

FinCoNet is an international organisation that was established in 2013, comprising supervisory authorities responsible for financial consumer protection.

The organisation held its annual meeting in Cape Town between 12 and 16 October 2015, and on the final day, convened the seminar at UCT with local and global financial experts, which looked at regulatory changes in South Africa and the complexity in retail financial markets.

During a panel discussion at the FinCoNet seminar, international experts **Paolo Tasca from the Deutsche Bundesbank, Maria Lucia Leitão from the Banco de Portugal and Gert Luiting from the Netherlands Authority for Financial Markets (AFM)**, as well as local experts, discussed the challenges regulators face regarding new technologies, cybercrime and online transactions.

The panel warned that the future would increasingly feature more online and mobile technologies, with sophisticated apps and services, while customers, on the other hand, would not necessarily be more sophisticated or financially literate. This could place them even more at risk to criminals.

National impact,
continental impact,
international impact.

SA consumers need to be boosted – not burdened



Household debt takes up **78%** of disposable income in SA.

Government could do more to incentivise saving while working to reduce household debt in order to get the economy back on track. Such was the key message coming out of the **2nd annual AIFMRM Policy Forum on Household Debt and the Macroeconomy in November.**

Guest speaker at the event, **Professor Atif Mian from Princeton University** said that his research has shown a clear link between household debt and economic slowdowns and even recession. His latest book, *House of Debt*, which he co-authored with Amir Sufi, details how household debt – the fastest growing segment of the credit market in the past 40 years – contributed to the 2008 global recession.

His work illustrates that the poorest 20% of homeowners in the US also had the largest amount of debt, while the wealthiest 20% had the least debt and also the largest share of the stock and bond markets.

One way to help reduce the burden on the poor was to lower interest rates, suggested Professor Mian. At the other end of the scale, Dr Georg, Senior Lecturer at AIFMRM said that people should also be motivated to save more.

While there is no silver bullet for fixing the economy, ignoring the role of household debt could lead financial authorities to make mistakes, Professor Mian cautioned.

Properly incorporating household debt into macro models can have policy implications in terms of how we should regulate the market and how we should design the financial products in the first place.

Professor Atif Mian



Caroline da Silva of the South African Financial Services Board at the international seminar hosted by AIFMRM and FincCoNet in October.

IN THE MEDIA

2 Opinion pieces



R 1.9 million Worth of coverage



1 Television slot



8 Radio interviews



Stokvels a retirement alternative

Informal sector is thriving under ESKOM and FLETHA and BANCORP

The informal sector is thriving under ESKOM and FLETHA and BANCORP. The sector is growing rapidly and is becoming a major source of income for many South Africans. This is particularly true in the case of stokvels, which are informal savings and investment groups. These groups are becoming increasingly popular as a retirement alternative, especially for those who do not have access to formal pension schemes.



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New Master's degree plugs finance skills gap

A NEW MASTER'S degree in financial risk management has been launched by the African Institute of Financial Markets and Risk Management (AIFMRM) to address the skills gap in the financial industry. The degree is designed to provide students with the knowledge and skills needed to manage financial risk effectively. It covers topics such as financial markets, risk management, and financial instruments. The degree is expected to be completed within two years.

Zuma's fitness for office in question

As much as the return of Jacob Zuma to head the Treasury is welcomed, it poses questions about President Jacob Zuma's fitness to hold office. Assuming he asked for advice before his shocking announcement, one of those possibilities present themselves – if not addressed, he may lose his ability to govern, or he may ignore their input. Alternatively, he is easily susceptible to public opinion and might be replaced as soon as the public outcry reaches his office, unless Co-Prime Minister



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New Master's degree for risk management

Mr. Zuma's fitness
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Professor David Taylor, Director of AIFMRM and Dr Andrea Macrina, a senior lecturer in the UCL Department of Mathematics and visiting lecturer at AIFMRM, who worked together to establish the Financial Mathematics Team Challenge at UCT.

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