

# ANNUAL REPORT 2017



Developing minds that **shape** the financial industry to **advance** society.

# DIRECTOR'S MESSAGE

AIFMRM's fourth year of operation has been as inspiring, challenging and productive as the previous three. This report contains a summary of AIFMRM's activities during the year. There were numerous highlights in 2017, but the graduation of the first cohort of the new MCom in Risk Management of Financial Markets and the design of the new Master's degree in Financial Technology stand out.

I would like to take this opportunity to express gratitude and appreciation to AIFMRM's donors: Absa, FirstRand, Liberty, Nedbank and Old Mutual, and their representatives: Colin Iles, Miné van Zyl, Brian Kipps, Anél Bosman and Judy Faure, for their strategic guidance, trust, and financial support as we pursue AIFMRM's vision and purpose together. We are delighted to welcome Sanlam as a new AIFMRM donor from 2018.

I would also like to express my gratitude to my colleagues in AIFMRM, the Dean, and the various staff in the Faculty of Commerce who supported the Institute during this year. We are pleased to report that while the 2016 student protests adversely affected the 2017 academic calendar, this year UCT remained open throughout the final exam period and implemented innovative tactics to avoid disruptions. This is an exceptionally positive development.

Sincerely,



Professor David Taylor  
**Director - AIFMRM**

December, 2017



# HIGHLIGHTS

## Teaching and Research

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**47%**

increase in MCom applications for 2018 (MPhil 21% increase)

**5** journal publications

**1st in Africa**

new Financial Technology Master's degree launched

**12** PhD students



**FinTech degree - a first for Africa**

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**299** Applications for 15 places

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**Advertising, Marketing, and Publicity**



**2** policy forums

**800+** LinkedIn Members

**70.5%** increase in media coverage

**Transformation and Addressing Skills Shortages**

**2** career events



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**Funding AIFMRM**

**R5.2 million**

BankSETA scholarships



AIFMRM's **Donors**



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**The people of AIFMRM**

# TEACHING AND RESEARCH

Teaching and research remain the core focus of the Institute. Both the MPhil specialising in Mathematical Finance and the MCom in Risk Management of Financial Markets continue to grow, attracting high-quality applicants.



**47%**  
increase

in MCom applications  
for 2018



**5** journal  
publications



**1st** FinTech degree  
in Africa launched



**12** PhD  
students

AIFMRM designed a new MPhil degree that offers a first-of-its-kind specialisation in the topical area of financial technology or FinTech. The Institute continues to run three non-credit-bearing online short courses aimed at addressing skills gaps in the financial services sector.

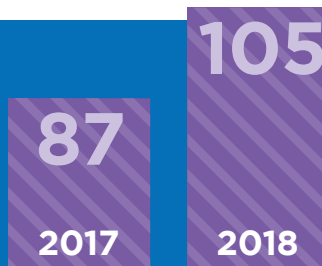
Research related activities remain strong. The Institute has 12 PhD students and 3 Postdoctoral Research Fellows and hosted several research events in 2017.

Industry relevance remains a guiding principle in all of AIFMRM's endeavours. Both the MCom and the MPhil involve a high degree of industry interaction on a learning level. Industry experts co-supervise the MPhil minor dissertations, and its external examiners include market practitioners. The Institute also convenes an annual Curriculum Review Committee with expert risk management practitioners to maintain the relevance of the content of the MCom degree.

The Institute continued to collaborate with industry through its events (examples are the Careers in Quantitative Finance and Risk Management, Women in Finance and the annual Financial Mathematics Team Challenge events) and teaching (including the MCom Externship initiative, the Current Issues in Risk Management seminar series, and the Practitioners Seminars).

AIFMRM also curates a highly active LinkedIn group that seeks to stimulate discussion between industry, academia, students, regulators and industry bodies on topical issues in financial markets and risk management. In 2017 the group reached the 800-member mark.

## MPhil specialising in Mathematical Finance



## MPhil Applications

## What students are saying about this degree:

"Few other programmes, not only at UCT but also in the rest of South Africa, can boast similar levels of international recognition as does the MPhil. This level of excellence not only appealed to me prior to enrolling for the MPhil but was also characteristic of the programme as administered by the highly qualified and skilled educators who staff the MPhil."

**Gaphela Mashalaba,  
Class of 2017**

"I enjoyed the emphasis on problem-solving and thought in the assessments. While there was an element of time management, the focus was not on rushing through questions but rather on thinking through them carefully and submitting your best attempt."

**Marcio Lopes, Class of 2017**

"I found this year to be, by far, the most challenging year of my academic career. What I found different about this year compared to my past years of studies is that I never once felt bogged-down or helpless. This is a testament to the lecturing staff."

**Christopher Baker,  
Class of 2016**

"I came to study mathematical finance but got out with more than what I came to study for. I came out a better me than I was before."

**Ndinae Masutha,  
Class of 2016**

## Alumni Reunion: 21 years of Mathematical Finance in South Africa

AIFMRM hosted its first Mathematical Finance alumni reunion on the evening of 30 October 2017 at Rand Merchant Bank in Johannesburg. Alumni from both the previous Wits Honours, and later UCT Master's programme, attended.

The proceedings commenced with a talk by Professor David Taylor, which gave a fascinating history of Mathematical Finance in South Africa; followed by presentations from Nicole Alers and Glenn Brickhill (both from the Class of 1999) and Parin Gokaldas (Class of 2000). The alumni presentations gave a personal account of each speaker's journey, including some amusing anecdotes from their time as students.

## MCom in Risk Management of Financial Markets



### MCom Applications

## What students are saying about this degree:

"I have always wanted to improve my networking skills, and I found that the company dinners that we attended throughout the year really helped [in this regard]. Interview processes become easier because I become comfortable interacting and understanding what recruiters and heads of department at banks look for in graduates. As a result, I managed to secure a job early on in the first semester. AIFMRM has given me a platform and access to resources that would ordinarily not be available."

**Maryjane Mokgethi, Class of 2017**

"This degree has pushed me to achieve outcomes I previously thought impossible."

**Aaron Hellenberg,  
Class of 2017**

"I consider this year as being the definitive point of my academic career to date. For the most part because I actually thoroughly enjoyed what I've been doing."

**Gobolwakhe Dube,  
Class of 2016**

"I experienced a very steep learning curve at the beginning of the year having to learn coding skills in multiple programming languages as well as regain mathematical and statistical knowledge. With the help of the AIFMRM staff and tutors, it was possible to overcome these challenges and acquire new skills that have proved invaluable."

**Alexia Marr, Class of 2017**



# FinTech degree – a first for Africa



**299 Applications for 15 places**



**10 offers to women  
(66%)**



**AIFMRM launched a new Master of Philosophy specialising in Financial Technology, making it the first university on the continent to offer a specialisation that is designed to equip students with the necessary skills and knowledge to embrace the technological revolution in the financial services sector.**

South Africa's financial services industry faces a significant challenge: the rise of modern technology, commonly labelled as financial technology, or 'FinTech', combined with a lack of skilled graduates who are able to navigate this complex new terrain. The new degree sets out to address this gap.

The coursework is highly interdisciplinary and co-taught with the Departments of Statistical Sciences and Computer Science. The degree will commence for the first time in January 2018. Unsurprisingly, the new degree received a record 299 applications, but just 15 students will embark on an exciting learning journey in 2018.

"FinTech offers a unique opportunity to radically transform the industry. Young startups are already challenging the incumbents and our students will be on the forefront of this technological revolution in South Africa.

Our focus on entrepreneurship means that we will change the students' mindset so that they not only want to go out and 'get' a job, but also to go out and create a job – or a hundred jobs.” – Programme convenor  
Dr Co-Pierre Georg

The coursework includes the revolutionary blockchain technology that is behind cryptocurrencies like Bitcoin. One of the focal points will be to cultivate an entrepreneurial mind-set in our graduates so that they are inspired to create jobs.

## Online Short Courses

In collaboration with the Faculty of Commerce's online learning partner, GetSmarter, AIFMRM offers three, non-credit-bearing online short courses aimed at working professionals.



### **Business Risk Management**

10-weeks

Provides a comprehensive overview of enterprise-wide risk management.

Ran **5 times** in 2017:

**201 participants** in total.

### **Foundations of Financial Markets in South Africa**

8-weeks

Designed for individuals operating in the financial services and investment industries, both on the buy and sell side.

Ran **3 times** in 2017:

**97 participants** in total.

### **Advanced Business Risk Management**

8-weeks

A comprehensive simulation of the risk management process.

Ran **twice** in 2017:

**41 participants** in total.

# MCom Externship Programme

The MCom in Risk Management of Financial Markets externship programme ran for a second time in 2017. Hoping to build on the success of 2016, 26 students were divided into teams and partnered with six organisations in a four-week process (three weeks for research and problem solving and one week for assessment and feedback) during which they addressed a specific problem. Participating companies pose the problems, supervise and provide mentorship for the student teams.

The 2017 problems came from FirstRand, Absa, Thomson-Reuters, Liberty, MMI, and Rand Merchant Bank. The teams each produced a report that detailed their approach, analysis, solutions and recommendations, and presented their findings to their peers and mentors. “The value of the externship lies in its format. The students work in groups where they apply common sense, knowledge, resources and analytical skills to determine an outcome, thus mimicking the project process in the workplace,” comments Professor David Taylor, Director of AIFMRM.

## 2017 research highlights



**12** full-time and part-time **PhD students**  
(3 new in 2017)



**3** full-time, **Postdoctoral Research Fellows**



**5** journal **publications**



**7** **international conferences** presentations



**2** **special seminars & 2 workshops** hosted



**2** Avior **Research Seminars**

AIFMRM's research unit integrates postgraduate teaching and research in quantitative and mathematical finance, economic risk, and their allied disciplines in the Faculty of Commerce at UCT. As such, academic membership extends beyond AIFMRM to include related researchers at UCT, and collaborators from other universities.

The unit coordinates the minor research dissertations for the MPhil in Mathematical Finance and the projects for AIFMRM's research Master's, PhD students and Postdoctoral Research Fellows, and oversees the research-related activities of the Institute. AIFMRM also offers three-year PhD scholarships and one-year Postdoctoral Fellowships. Members receive research support for conference travel, research equipment and publication costs.

## AIFMRM academics pioneer new method for financial markets

Two AIFMRM academics made waves internationally in 2017 for pioneering a numerical method that ensures greater efficiency and accuracy when pricing financial instruments in markets.

Professor Tom McWalter and his PhD student, Ralph Rudd, presented their new numerical method for pricing derivative instruments at the prestigious **Global Derivatives Trading and Risk Management Conference** in Barcelona in May. This is one of the world's leading finance conferences.



“It is an honour to be invited to speak at this conference,” says Professor David Taylor, Director of AIFMRM. “It’s one of the leading conferences on quantitative finance in the world, and more than 500 practitioners and academics in the field will be there. This is the first time that a South African has been invited to speak at the event.”

# EVENTS


MARCH	9 & 10	<p><b>Workshop:</b>  <b>Systemic Stress Testing using Agent-Based Modelling</b></p> <p>12 presentations over 2 days by PhD students from AIFMRM and the Institute for New Economic Thinking (University of Oxford)</p> <p>Led by Professor Doyne Farmer (University of Oxford) and Dr Co-Pierre Georg (AIFMRM)</p>
	31	<p><b>Special Seminar:</b>  <b>Learning to Communicate with Deep Multi-Agent Reinforcement Learning</b></p> <p>Jakob Foerster          (University of Oxford)</p>
MAY	22	<p><b>Special Seminar:</b>  <b>What is FinTech and does it matter?</b></p> <p>Periklis Thivaivos and Dimitri Anagnostopoulos          (True North Partners)</p>
JUNE	24 & 25	<p><b>Workshop: The Promise of the Rainbow</b></p> <p>Economists, lawyers, environmental and social activists discussed a new, more inclusive economic agenda contributing to an ongoing book project</p> <p>Led by co-authors Dr Christine Makanza (AIFMRM Postdoctoral Research Fellow) and Dr Co-Pierre Georg (AIFMRM)</p>
JULY	20	<p><b>Avior Research Seminar: Understanding Financial Crises: A statistical perspective</b></p> <p>Professor Matheus Grasselli (McMaster University)</p>
	26	<p><b>Avior Research Seminar:</b>  <b>Asset Price Bubbles: Economics, mathematics and statistics</b></p> <p>Professor Matheus Grasselli (McMaster University)</p>

## 4th annual FMTC hits all the right notes

Five teams of financial mathematicians from Europe, South America, the UK, and Canada competed in the 4th annual Financial Mathematics Team Challenge (FMTC) at UCT in the June/July break.

A much-anticipated event on the academic calendar, the FMTC is jointly hosted by AIFMRM's research unit and University College London (UCL).

"The challenge mimics the environment that industry professionals face every day, where there is often not much time to solve difficult problems. Teams are each presented with a thorny, real-world financial modelling problem and given 10 days to solve it," says David Taylor, Director of AIFMRM.



"Teams are each presented with a thorny, real-world financial modelling problem and given 10 days to solve it."

The 2017 winning team, led by PhD student Ralph Rudd from UCT and mentored by Adjunct Professor Rodrigo Targino from Fundação Getulio Vargas, Brazil, came up with a solution on risk parity, with a real-life application for investment firms building portfolios for investors, in which risk is allocated differently and presents investors with new opportunities to offer to their clients.

Glen Point Capital LLP, a London-based hedge fund, contributed one of the research problems as well as partial sponsorship of the 2017 challenge. The event attracted students and academics in financial and insurance mathematics from UCT, University College London, University of Technology Sydney, ETH Zürich, University of Vienna, McMaster University, Fundação Getulio Vargas and Freiburg University.

Each team produced a report containing a critical analysis of the research problem and their results.

# TRANSFORMATION AND ADDRESSING SKILLS SHORTAGES

Addressing transformation and skills shortages is core to the purpose of AIFMRM, and key to its partnership with industry. All of its degrees and short courses have been developed to respond to a need for specialist skill-sets such as risk management, quantitative modelling and, more recently, FinTech.

Transforming the student body at the Master's level relies on attracting and funding suitable candidates through the three degrees. This requires alertness to opportunity and attention to detail. To ensure that it cast its enrolment net as wide as possible to attract a diverse and quality student base, the Institute ran a targeted online advertising campaign and hosted two career-specific events in 2017 - including the highly successful Women in Finance in August.

Additionally, AIFMRM sought to address deficiencies in skills and to promote continuing education in the sector through the provision of policy forums, special seminars and workshops directed at students and participants from within financial services.



## Role models for women


Young South African women need exposure to strong role models in the financial industry if gender imbalances are to be corrected, say industry leaders.

To facilitate this, AIFMRM organised a special event featuring women in finance to pique female students interest in postgraduate study and, in so doing, help correct the gender imbalance in both higher education and future career choices. This was one of two careers specific events held during the year.

The Women in Finance event featured female leaders from several leading financial institutions including Liberty, Rand Merchant Bank, Old Mutual, Nedbank, MMI, Thomson Reuters and Absa, who shared their stories and discussed the prospects for women rising to the top in finance.

A recurring theme in the recollections of many female industry veterans was the need for courage in a largely male-dominated field, despite increasing evidence that diversity is not only beneficial but necessary. Event organiser, Tanja Tippett, an investment manager at Old Mutual Investment Group and Adjunct Associate Professor at AIFMRM, cited the recent MSCI Japan Empowering Women Index (WIN) developed by MSCI, while Thomson Reuters data scientist and panellist at the event, Reona Bassudeo, noted that data suggests that diversity is essential to survival.

Panellist Anél Bosman, ME: Markets for Nedbank CIB, encouraged young women to jump at any and every opportunity. Growing up, she said that her career options were “to become a teacher or Girl Friday.” However, selling beauty products as a teen gave her a taste for independence – which set the tone for a lifetime of demanding more from her life.



*“A recurring theme in the recollections of many female industry veterans was the need for courage in a largely male-dominated field”*

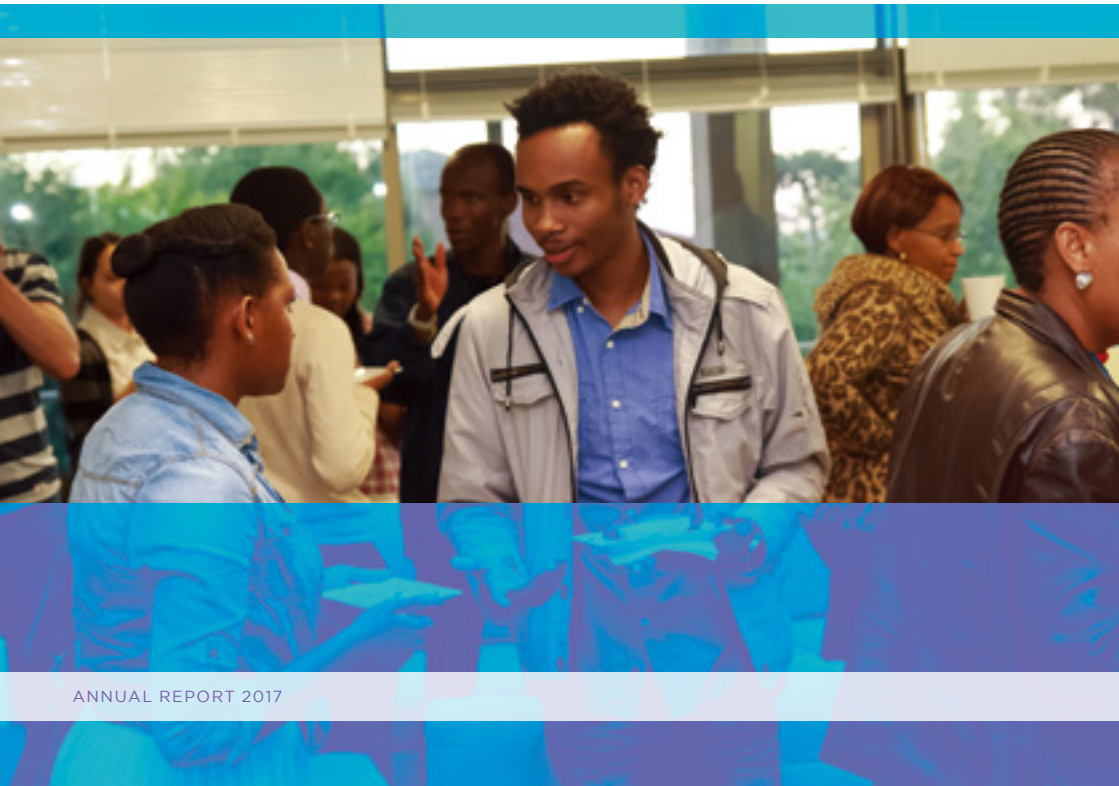


# AIFMRM Careers Fair

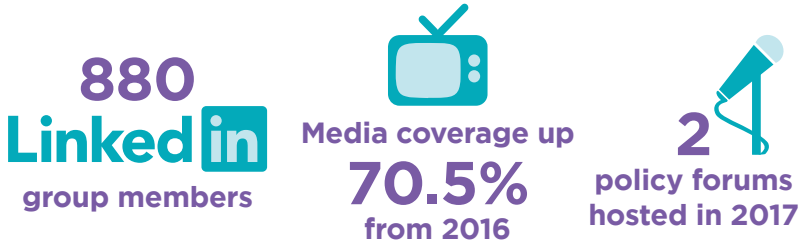
## Careers in Quantitative Finance and Financial Risk Management

On 23 August 2017, AIFMRM and the UCT Careers Service jointly hosted the third annual industry event to promote AIFMRM's Master's degrees to UCT students and to inform them about career options in these areas. In previous years the event focussed only on careers in Risk Management. In 2017 it included Quantitative Finance.

Industry practitioners Lennox Masangane (Rand Merchant Bank), Kim Buker (Liberty), Nico le Roux (Absa), Ved Somera (Nedbank), and Greg Mollentz (OMSFIN) joined AIFMRM staff in providing a nuanced insight into each speciality. The event was well-attended, with 96 students and industry participants in the audience and panel.



# ADVERTISING, MARKETING, AND PUBLICITY



**A crucial part of the mandate of AIFMRM is to be relevant – not just to industry – but to the economy and society of South Africa and the continent more broadly.**

In addition to hosting relevant events that engage the industry, media and the public, AIFMRM maintains an active media presence through the development and distribution of noteworthy and relevant content via the Institute's content partner, Rothko.

In 2017, AIFMRM had a profile in the advertising arena due to a successful 3-month digital campaign for the two current degrees. The campaign helped net an increase in 2018 applications of 47% for the MCom in Risk Management of Financial Markets and 21% for the MPhil in Mathematical Finance. The Institute engaged with prospective students through targeted events around career prospects and two policy forums that were open to industry and the public. AIFMRM also curates an active LinkedIn group that regularly shares their key events, opportunities and media coverage with its more than 800 members. This year, AIFMRM sponsored one of its students to travel to New York to participate in the UN Global Leaders Summit demonstrating a commitment to fostering an expanding community.


# AIFMRM rising star presents solution to food waste at UN Global Leaders Summit

Maryjane Mokgethi, a student on AIFMRM's MCom in Risk Management of Financial Markets programme, headed to New York in September to attend the UN Global Leaders Summit and present a solution to the problem of food waste.

Earlier in 2017, Mokgethi entered the UN Global Compact's Breakthrough Innovation Challenge, which aims to bring together "young intrapreneurs from leading companies to design future sustainable business models powered by disruptive technologies". No small task, but Mokgethi and her team were up for the challenge.

The competition posed eight questions and students were invited to submit a solution to any question. "We worked on a challenge posed by Nestlé: 'to enable exponential consumer engagement and behaviour change to contribute towards Nestlé's strategy to prevent and minimise food waste along the value chain.' We won, and the prize for the winning solution was a trip to New York to attend the Summit and present our solution alongside Nestlé," she explains.

Mokgethi and her teammates, Bridget Fundikwa and Wadzanani Nyabeze, two recent chemical engineering Master's graduates from UCT, created a solution to minimise food waste through a mobile app that allows consumers to track the expiry of perishable items that they have purchased, to avoid waste.



"Mokgethi and her teammates ... created a solution to minimise food waste through a mobile app that allows consumers to track the expiry of perishable items"

AIFMRM proudly sponsored Mokgethi's New York trip. Dr Co-Pierre Georg, Senior Lecturer at AIFMRM, says, "It is not every day that one of our own embarks on an exciting adventure like this."

Georg sees Mokgethi as a significant role model, especially for young women. When asked if she has advice for young women pursuing their dreams, she says: "My story certainly shows that anything can happen! Be daring. Try. Go out of your way to have a well-rounded university experience and life experience. Be socially conscious and engage with people or join university societies that you may not have been exposed to before."

## Celebrating AIFMRM's donors

**AIFMRM is externally funded by companies in the Financial Services Sector. In 2017, Old Mutual and Nedbank joined Absa, FirstRand and Liberty, in investing in AIFMRM to develop much-needed scarce skills for the financial services industry.**

The two new donors Nedbank and Old Mutual will collaboratively invest R10 million over five years into the Institute. Sanlam will join AIFMRM as a major donor in 2018.


AIFMRM Director Professor David Taylor said the university is delighted with the endowment and noted that a significant number of the major banks and insurance companies in South Africa have now invested in AIFMRM.

**"These are significant contributions and a vote of faith in what we are doing at the Institute."**

**Professor David Taylor,  
Director of AIFMRM**

In a further show of support, the Banking Sector Education and Training Authority (BANKSETA) contributed just over R5.25 million in scholarship funding for AIFMRM Master's students in 2017.

Judy Faure, Chief Risk Officer at Old Mutual, says Old Mutual actively supports a range of education and skills development initiatives because “as a responsible business, we know we have a vital role to play in driving socioeconomic development and building a better and more inclusive society. There is a critical need for financial expertise, for example, on risk management programmes. We will be working closely with AIFMRM to ensure students are gaining a deeper level of financial skills.”



**“We believe in the work done by AIFMRM in building capacity and deepening quantitative skills.”**

Anél Bosman, Managing Executive of Markets at Nedbank CIB, agrees. “We believe in the work done by AIFMRM in building capacity and deepening quantitative skills.” She says the banking group supports the Institute and its programmes, which form part of its corporate responsibility in creating a sustainable platform for growth and transformation in South Africa.

## AIFMRM Donor Day

The first annual Donor Day was held on 31 March 2017 at UCT. The principal objective was for students to gain an idea of what to expect after they graduate and enter industry. The donors had an opportunity to meet the 2017 cohorts of both the MCom in Risk Management of Financial Markets and the MPhil in Mathematical Finance. The proceedings began with breakfast, followed by an introduction and positioning of AIFMRM and the donor relationship by Professor David Taylor, Director of AIFMRM. Thereafter, a graduate from each donor company gave a 10-minute talk about their experience of the student/workplace transition.

Donor talks included Buhle Mbele and Christopher Roberts (Nedbank), Babalwa Nonkenge (Absa), Stefan Steyn (FirstRand), Matt Shaw (Rand Merchant Bank), Jateen Kooverjee (Liberty) and Martin van der Walt (Old Mutual).

## In the media



2

TV interviews



46

print clips

valued at R 3,482,840.45  
(Advertising Value Equivalent)



7

Radio interviews



107

online clips

(51% of coverage)  
valued at R 4,471,302  
(Advertising Value Equivalent)



# THE PEOPLE OF AIFMRM



**David Taylor**  
Director



**Peter Ouwehand**  
Associate Professor



**Dr Co-Pierre Georg**  
Senior Lecturer



**Dr Abhik Mukherjee**  
Senior Lecturer



**Obeid Mahomed**  
Lecturer



**Thomas McWalter**  
Adjunct Associate  
Professor



**Tanja Tippett**  
Adjunct Associate  
Professor



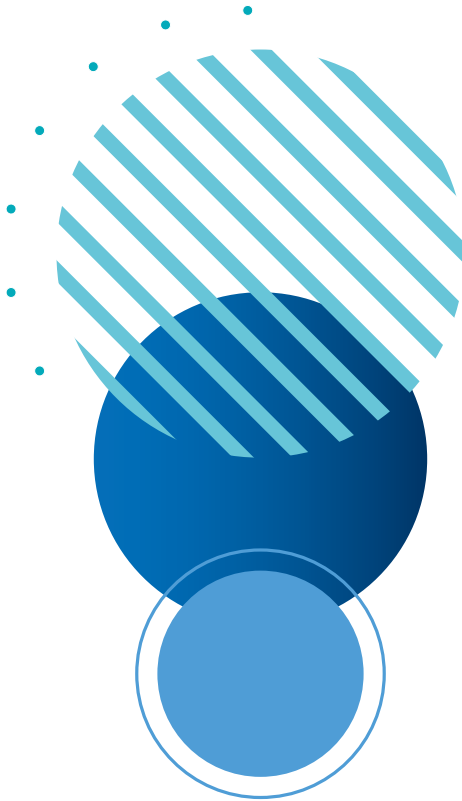
**Billy Enderstein**  
Student Psycho-  
Socio Welfare  
Counsellor



**Lizzy Starck**  
Administrative  
Officer



**Lameez Fakier**  
Administrative  
Officer



**African Institute of Financial Markets and Risk Management**

Faculty of Commerce  
University of Cape Town  
[aifmrm@uct.ac.za](mailto:aifmrm@uct.ac.za) | [www.aifmrm.uct.ac.za](http://www.aifmrm.uct.ac.za)

