INVESTMENT SOCIETY

IMPERIAL COLLEGE

Summer Magazine

2019

imperial college union

Contents

Our Society

The Imperial College Investment Society (ICIS) was founded in October 2015, with the aim of educating members on value investment techniques and promoting careers within buy-side firms in the financial services industry

We hosts interactive weekly investment meetings where our members have the chance to present investment pitches, ask questions and vote on buy/sell decisions.
We also manage a column in Imperial College's student-run newspaper, Felix where we encourage students to contribute articles weekly that promote discussion and interest in the industry and the markets.

We offer competitions, career advice talks and guest lectures by industry experts on a range of finance topics. Also available are a diverse range of career opportunities ranging from Private Equity to Asset Management through office visits, exclusive dinners and speaker sessions from industry professionals.

By submersing themselves in the world's financial news, jargon and investment theory our members develop vital commercial awareness and financial acumen; which is critical to making successful applications in a competitive world.

Our Committee

David Tyoember
President

Hi All, I hope that you're all looking forward to getting involved in the Society via the various meetings, events and programs that we'll be running this academic year.

As President I am working closely with the whole committee to ensure that we make this year of Investment Society Meetings, Events, Programs and general opportunities as good as they can be.

Last year I was the VP of Diversity (now renamed to Head of Diversity and Inclusivity) for the Society, which helped me develop a good understanding of the society's internal processes and how I could work with the rest of the committee to improve on things this year.

Feel free to get in touch with me if you have any specific queries etc by email at david.tyoember17@imperial.ac.uk, or via LinkedIn (www.linkedin.com/in/tyoember).

Joe Arrowsmith
Chairman

I'm Joe Arrowsmith, the current Chairman, previous President and before that, the Vice President. Last year, with help from the 18/19 committee, some of the things we achieved: introduced the diversity in finance series, enabled the Investment Society to get a page into the Felix, began work for the investment platform, created a mentor ship program and merged with the Impact Investment Society. Outside of Investment Society, I founded Algothon [algothon.org] and the Algorithmic Trading Society.

I'm a 3rd year Bioeng. My area of interest is buy-side quant finance applying machine learning to create new sources of alpha. I have interned as a Machine Learning Researcher for Aspect Capital, Spring Weeks at Citi and JP Morgan.My role for this year is to help guide the new committee and of course I am happy to help anyone else. I am contactable by my email: joe.arrowsmith16@imperial.ac.uk

I wish you all the best for the new academic year!

Roshan Shah
Secretary

Roshan here!, 4th Year Chemical Engineering

Investing is something every person should be doing so I got interested near the beginning of university. We are natural investors: we choose how to allocate our limited resources and so I became interested in the ways people think about investing and how this is practically done in the finance world.

As for the society, there were lots of events and meet ups (and free pizza) so getting involved in the society came naturally. Even more so in second year where I started going to the joint events like the TEC course and getting application advise which really was top-notch.

I'm currently the Secretary of the group and I'm likely the person responding to your emails. I aim to maintain the current high standards and be as helpful as possible to the rest of the committee.

All the best for the rest of the year!

Adrian Diaconu
Treasurer

Hello! My name is Adrian and I am a 2nd year Mathematics student. I have been an active member of the society since joining Imperial, going to almost all weekly meetings and events. My goal is to work in the financial sector and the society can help me achieve this goal in many ways. Firstly, the weekly meetings are a great way to get a grasp of the macroeconomics and the jargon used and it will allow you to understand the financial markets better. You can practice your knowledge by presenting a stock pitch during one of the meetings. Secondly, the networking events are a great way to connect with people from the industry and to learn some of their secrets to becoming successful. This year I will serve as the Treasurer of the society. I will manage its budget, as well as help other members when they need. I encourage new members to be as active as possible by attending the weekly meetings. They surely helped me a lot so they can definitely help you, as well!

Rohhil Chhabra
Head of Buy-Side Corporate Relations

Hey there! My name is Rohhil Chhabra and I am a second year Mechanical Engineering student. My first exposure to finance was through investing courses at the Singapore Exchange which I participated in to grow my savings from the Singapore military. Having enjoyed these courses, I participated in several online finance courses and also passed the CFA Investment Foundations exam. It was with this interest in the markets that I joined the Investment Society, where I hoped to refine my industry knowledge and technical skills. I was then appointed Head of Fixed Income (Credit) where I wrote articles and delivered an educational session to members. I was able to build deep knowledge on the asset class, which aided in landing me spring week offers from Citi and BlackRock. With my interest and networks in the buy side, I was elected as Head of Buy Side Corporate Relations. I am responsible for collaborating with buy side firms to bring networking, learning and career opportunities to our members. If you are interested in the buy side, do get in touch with me!

Issac Yukun Zhu
Head of Sell-Side Corporate Relations

Hi, my name is Isaac, final year mathematics student. investment society has been a huge part of my uni life, and that is why i decided to extend my tenure in the committee as your sell side corporate relations officer. specializing in negotiating sponsorship proposals, i hope to get us the best deals this year.

I would like to extend my warmest welcome (or welcome back) to everyone. together with my multi-talented team, I look to continue expanding our society and providing more meaningful opportunities for our members. In all our activities and future endeavors, we aim to always uphold the society's ethos of inclusivity. This means providing a friendly environment for all members to explore the industry.

Please do not hesitate to contact me if you have ideas on potential sponsorship deals, or concerns about anything in general. See you around!

Arnau Bonet
Head of Impact Investing

My name is Arnau Bonet and I am a second year Electrical and Electronic Engineering student.

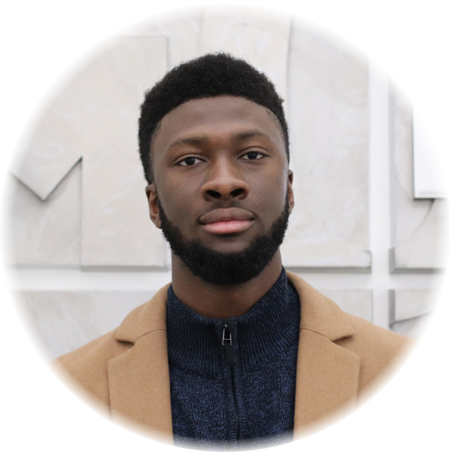
The society is adapting to the changing landscape of the financial industry and we have introduced a new position this year: I am the new Head of Impact Investing.

I grew up in Barcelona, studying in a French school, and arrived to London last year. I was an active member of the society during the whole year, and it made me see that I want to pursue my career in the financial industry. The weekly meetings, educational sessions and mentoring gave me the necessary knowledge and skills to land a spring week as a first year.

As Head of Impact Investing I will try to raise awareness about the changes the industry is experiencing, bringing external speakers and organizing talks. This year will be very rewarding for all members of the society, we have plenty of things in mind, I hope you enjoy it!

Thomas Alston
Head of Portfolio Management

Hello, I am Tom a third-year Aeronautics student and I love to play sport, including Waterpolo, swimming, and rowing. I was lucky enough to have two spring weeks with HSBC and Citi (Capital Markets) and very much looking forward to joining Citi this summer on their Summer Analyst rotation. I am this academic year's portfolio manager. My job involves managing the various portfolios the society has. Our first portfolio is member-driven, in which members undergo stock pitches and have their security if they have successfully persuaded the audience at our weekly meetings. The second is an ESG led portfolio, which will be partnered with our Impact Investing team. Thirdly we will have a portfolio run by the committee and society contributors. I look forward to getting to know all of you- please feel free to email any questions you may have.



Chidera Orabueze
Head of Diversity and Inclusivity

My name is Chidera Orabueze and I'm currently in my second year studying EEE.

I undertook work experience within the financial services industry which initially sparked my interest. I enjoy being able to apply my analytical skills gained from studying Engineering to work on complex financial transactions.

What drew me to the Imperial College Investment Society was the interesting line up events that I got to experience last year.

I particularly enjoyed the BAME in Finance event where I got to network with likeminded peers as well as professionals within the industry.

This year, I am the society's Head of Diversity & Inclusion where my aim is to provide a unique environment for everyone (including those from underrepresented backgrounds) to gain opportunities and insight into the world of Finance. Also, I will be organising the BAME in Finance networking event which comes up on the 22nd of October this year.

Wei Loon Ooi
Head of Technology Development

Hi everyone, I am Wei Loon and I am this year's head of Events and Marketing. I am a third year Chemical Engineering student for the year 2019.

I am in charge of ensuring events that happen throughout the year runs smoothly for the benefits of the society. Head down over to our weekly meetings and events by Investment Society to learn more about investing or just making new friends in general!

The committee in Investment Society has got a whole range of various events lined up for you including talks, application workshop and more! My email is wei.ooi17@imperial.ac.uk so feel free to drop me an email for any queries!

Hilliam Tung
Head of Technology Development

Hi, I'm Hilliam, a 2nd Year JMC student and the incoming Head of Technology for InvestmentSoc for 2019/2020. I work on the Investment Society's tech stack, building applications to help make Investment Society more than just weekly society meetings through technology. Having just picked up the role last summer, I've already created the Fresher's Fair Investment Challenge webgame that some may have seen, and currently developing a news website as a hub for our members like you to get involved with writing market news pieces, as an extension of the articles we publish weekly in Felix, which I hope to release soon.

At heart, I'm a hobbyist programmer but with huge fascinations for data and financial data, having founded the Investment Society at my Sixth Form and raised a portfolio from a teacher-invested £100 to £400 using technical trading, to regularly building automated trading systems for Steam that manage thousands of £s of virtual video game assets as a fun pastime of mine.

Should you ever want to get involved or get to know me more, I'm available at hkt18@ic.ac.uk.

Xerxes Chong
Head of Editorial

Hi, I'm Xerxes, a 3rd Year MEng Aeronautical Engineering student.

In my role as Head of Editorial for the society, I am responsible for all the publications of the society. These will be the bi-annual magazine released by the society at the end of summer and in spring.

As the society also manages its own column in Imperial College's student-run newspaper, Felix, I also double up as the section editor for this section and am part of the Felix Editorial Team. With the aid of 2 new Co-Editors, Jinay Patel and Pavan Gill, I am responsible for ensuring quality content is put out weekly in the section. I am spearheading the introduction of an educational series that will run through all 3 academic terms. Be sure to check out Felix weekly to be up to date. Anyone keen to learn more about contributing to the publications can drop me an email at xc4317@ic.ac.uk

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Our Stories

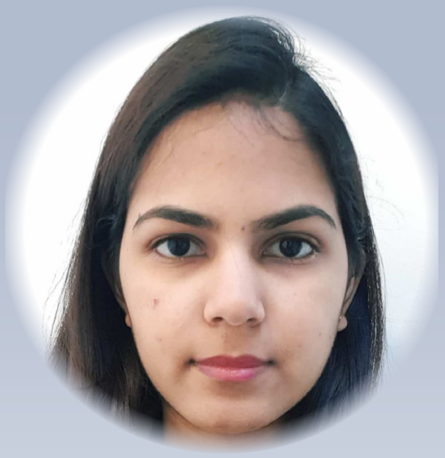
While value is often quantified with a number in this industry, our society also recognises that value is often greatest when intangible.

In this section, we put to paper the stories of those who achieved and attained that which many desire. We know that their achievements, experiences and most importantly lessons learnt along the way will be of value and guide you on your journey

The society would like to thank all students and alumni, who have so graciously taken time out from their daily lives, to share their experiences with us

Insights to Insight

Learn about how what goes on during Insight Events and why you should apply



Manjeeta Matabudul

MEng Chemical Engineering

Manjeeta attended insight events at JP Morgan Chase & Co and Barclays. There she had the opportunity to learn more about the firms business through case studies, trading simulations and workshops.

How did you find out about your Insight Events? What motivated you to apply?

Personally, I have always been very interested in finance when I first joined university. So, I started researching from very early on, on how to secure a summer internship in my penultimate year. I knew that it would be a very competitive process since I did not have much technical knowledge in finance.

After researching online and attending a few networking events organised by investment banks, I was made aware of the opportunity to gain an insight into finance through Spring Weeks. Most of these Spring Weeks have an assessment centre on the last day and this enables the spring intern to be fast tracked for a summer internship the following year.

Some STEM students are concerned that their lack of finance knowledge would set them back in the application process. What was the most challenging aspect of your application process and how did you overcome them?

Coming from a non-finance background, initially, I was also quite concerned that my application will not be strong enough compared to that of a finance student. However, after talking to a few business representatives during some networking events, they have properly explained to me that banks welcome STEM students because they bring something different given the various skills they possess. Moreover, as I was applying to the Spring Weeks, I have realised that most of the interview questions were competency ones.

As long as you are able to show to the recruiters that you are passionate about finance, it should not be challenging. Bearing this in mind, I have been applying to a lot of companies. The most challenging aspect of the application process was the rejection.

However, I did not let this put me off and continued applying as I was confident that I would be accepted somewhere in the end.

What did you do during these Insight Events? Which activities did you enjoy the most and why? Were there any that stood out as memorable?

"...banks welcome STEM students because they bring something different given the various skills they possess"

During my Spring Weeks, I was exposed to the various divisions within a bank. There are many different roles available, that I was never aware of before. I got the opportunity to talk to some of the business representatives and know more about their day-to-day roles.

There were a few group activities involved such a case study on both banking and markets, a trade simulation and stock pitch. The case studies were a great way of applying and mastering the technicals.

Sometimes, there would be networking dinners and we would get to talk to other spring interns as well as the analysts, associates and vice-presidents. One activity that I have really enjoyed was the risk game. I was put in a team of five people and at first, we were falling behind as we were lending money to companies which eventually went in default. Our team would not have been losing money if we had done some background research on various factors such as the industry or the company's credibility.

It was a fun way of learning how important it is for a company to properly manage the various types of risks.

"One can only know whether finance is the right fit for him/her by attending an insight event and having a feel of what it is like to work in finance. Researching about finance and experiencing working in finance are two completely different things"

As a STEM student, how has attending these Insight Events influenced your choice of career path you might want to pursue in the future? Did it confirm/dispel any former beliefs you had of the industry?

Attending these Spring Weeks has fuelled my passion for finance. I am now in a good position to know what I am getting into by choosing finance as a career. I have always had positive beliefs of the financial services industry and these events confirmed those beliefs and were beyond my expectations.

Why do you think it is important for incoming students at Imperial College who are considering a career in the industry, to consider attending Insight Events?

One can only know whether finance is the right fit for him/her by attending an insight event and having a feel of what it is like to work in finance. Researching about finance and experiencing working in finance are two completely different things. Moreover, it is also a good opportunity to learn the technical knowledge and have access to more learning resources.

Any parting words, advice or anecdote/teachable moment you would like to share?

My advice would be to not give up. It does get frustrating at times when you don't get any offer from banks and you start thinking that maybe finance is not for you. However, do not let this get to you and keep pushing. If one door closes, another one opens.

Physics to Finance

Can't get a finance job studying STEM? Read how these ladies from Physics are breaking into the industry

Ahana Banerjee

Msci Physics

Ahana has attended multiple Insight Events at various firms including Morgan Stanley, Nomura, and Bloomberg. She has recently completed a summer internship as a Technology Analyst at Morgan Stanley and is currently also the firm's campus ambassador for Imperial College.

How did you find out about your Insight Events? What motivated you to apply?

I love meeting new people and learning more about the world around me. I started applying to Insight Events out of sheer curiosity – I knew little about the financial services industry, and simply wanted to know more. The more events I attended, the more people I met and the relationships I built. To begin with, I signed up to all the finance-related societies at Imperial and TargetJobs. Through their respective mailing lists, I was alerted about upcoming events. I regularly check that my CV is up to date so that I can apply to most events as and when they come up.

Some STEM students are concerned that their lack of finance knowledge would set them back in the application process. What was the most challenging aspect of your application process and how did you overcome them?

If there is one big take-away from my experience in the financial services industry, it is that STEM students are highly desirable. Ultimately, most of the skills needed for a career in finance are learned through experience. As such, most firms are really looking for people that can learn complex concepts quickly, work well in a team, and are self-motivated.

Personally, I capitalised on my STEM background. Many finance jobs involve strong numerical acumen. It is important to remember that you are competing with candidates who may not have done any mathematics since their GCSE's. Additionally, Imperial is a high-pressure environment in which there is a heavy workload, and often conflicting deadlines. The time-management and organizational skills fostered from this environment are, in my opinion, unparalleled.

As well as transferrable skills, one must demonstrate an interest in finance. I had never studied any economics, but I took up some online courses in Corporate Finance, signed up to subscriptions like Finimize, and spoke to as many people in the industry as I could. Finance is not rocket science, and employers know that. Any firm can teach you basic finance and accounting, but they cannot teach you how to think.

You attended multiple Insight Events, including 2 that were focused on women in the industry. How did these 2 events differ from the rest of the Insight Events? Which activities did you enjoy the most and why? Were there any that stood out as memorable?

"...I signed up to all the finance-related societies at Imperial and TargetJobs. Through their respective mailing lists, I was alerted about upcoming events"

My interests have always left me in the minority demographic; whether that be in Physics, Finance, music or gaming. I have always been encouraged and empowered to pursue whatever I found interesting, but I recognize that this is not as easy for all women. For this reason, I think it is important to lead by example and therefore apply for diversity events whenever possible. The women's events are, for the most part, the same as any other networking event. The only difference that I have noticed is a slight focus on encouraging women to be more confident.

Women tend to be more conservative in their approaches to problems and doubt their own skills more than their male counterparts. I have always found the subject of women's events to make for particularly interesting conversations. They are brilliant opportunities to expand your network, have applications fast tracked, and to learn more about a firm. As a woman, one should be aware that most firms are trying very hard to diversify their uptake, and you should make the most out of that opportunity.

As a woman studying for a STEM degree, how has attending these Insight Events influenced your choice of career path you might want to pursue in the future? Did it confirm/dispel any former beliefs you had of the industry?

When I started my Physics degree, I was completely convinced that I would become an Astrophysicist. In my first year, I applied to some spring weeks, as there was no reason not to. At the time, I hardly understood what an investment bank did. I was lucky enough to get a spring week at Morgan Stanley, which I converted to a summer internship. I began to understand that the hardest part of securing a role at the top financial services firms, is getting your foot-in-the-door.

Hence, I figured that if I wanted the option to get a job in finance when I graduate, I needed to start early. This is why I consistently try to attend as many networking events as possible. I am not necessarily ruling out a career in academia, but I am proactively seeking other roles that may match my skill set better and trying to open those doors. Learning more about the industry has made me realize that bankers are not evil.

"... The time-management and organizational skills fostered from this environment (Imperial) are, in my opinion, unparalleled"

Many still have preconceived notions about the type of person that goes into the industry. Cultures vary between firms, but generally, everyone is driven and hard-working. The financial services industry is one of the largest, most international and diverse industries. It accommodates a plethora of skillsets; allowing one to diversify their knowledge.

On a larger scale, it is meaningful work - whether that means bringing new technologies to the market, helping people plan for retirement, or helping a small business grow - it adds value to people's lives.

Why do you think it is important for incoming students at Imperial College, particularly women who are considering a career in the industry, to attend these Insight Events?

I cannot stress enough just how beneficial attending these events can be. The industry is built on relationships, and it is crucial that you start forming these early. It is good to be on the radar of various HR teams and to have contacts at the firm if you have any questions about their role/ the firm down the line. Even if you find that their sector is not something you want a career in, contacts can be extremely useful in other situations. For example, if your university society needs corporate sponsorship for an event, you now have someone to reach out to and ask.

"On a larger scale, it is meaningful work - whether that means bringing new technologies to the market, helping people plan for retirement, or helping a small business grow - it adds value to people's lives."

Attending these events is also a great opportunity to develop your networking skills. The thought of approaching a stranger and asking them career-related questions about something you may know little about can be terrifying, at first. However, there is little to lose.

In the first few events, you may prefer to observe your colleagues and make a note of some of the good questions they have asked. Over time, the conversation will come more naturally to you, and you have the opportunity to build genuine, strong relationships with those you may meet.

Any parting words, advice or anecdote/ teachable moment you would like to share?

Just to reiterate – network, network, and network! People are any firm's most valuable asset, and provided you can show that you're smart, driven and willing to learn, others will want to help you. On a parting note, getting selected for these events is hard, and the financial services industry is competitive.

Do not be disappointed by rejection – everybody faces some form of it, and it is part of the experience. It is important to show resilience and perseverance.

Priyanka Lad

Bsc Physics

Priyanka has attended an Insight Event by Bank of America Merrill Lynch and a paid 2 week technology internship at Nomura in 2018. She also attented an actuary work shadowing week at Aon. She has recently completed a summer internship as a Market Risk Analyst at the Macquarie Group.

Why did you choose this division for your summer internship? Which aspect of it you were drawn to?

I chose this division because I wanted to apply my technical skills gained from my Physics degree to the finance industry. It intrigued me to be able to interchange my problem solving and numerical skill set between a scientific and financial context.

After researching, market risk appealed because it required a technical skill set, but was also at the front of the business, rather than being back office.

Therefore, I found the role more all rounded, as it required you to deal with traders and understand trading and the business, satisfying clients, as well as using problem solving to calculate and set trading limits for products. It appeared to have a higher social aspect compared to other back office roles in the bank.

I was also drawn to the fact that market risk protects the business, so I would see the impact of my work daily and in the long term, which seemed satisfying. It seemed like an extremely important role, as it involved telling traders what they could and couldn't trade, the volumes they could trade and working out strategies to hedge the risk.

This had to be balanced with a trade that kept a client happy. This problem solving aspect is what I was drawn to.

"Only two people from my team had finance backgrounds, with the rest coming from engineering, computer science and maths backgrounds..."

Can you explain a bit more about what your role entailed? What was the highlight of working in this role?

I was based on the metals, agriculture and bulks desks, so I monitored trades done on those desks daily and how the trades changed the bank's exposures to variations in the prices of the products. If exposures changed drastically I had to find and explain what trades had caused that.

I also had to check APRA (a regulatory authority in Australia) stress test results against our own exposures for certain dates to see if they matched and explain if they didn't by analysing the books on those dates.

When a client approached a trader

wishing to trade a new product, I had to write a limit approval paper which described the product, the various limits set for trading the product, which I had to decide myself, and the reasoning behind those limits. This had to be approved by the trader, the division director and then by the global head of trading. This was probably the highlight of my role because I didn't expect to send a piece of my work to the global head of trading.

Another highlight was having weekly video conferences with other market risk teams across the globe, and learning about what they were doing, as each location focused on the market risk of different divisions.

A lot of my time was spent understanding option theory, as traders and my team often spoke and described data in terms of the option greeks, and with the option theory being very complicated I was told that it would take 6 months to master. It was interesting to find out that Physics had an application here, with Brownian motion and PDEs being behind option pricing.

What were the educational backgrounds of your fellow interns? Did you feel at all disadvantaged coming from a non-finance background during your internship?

I was the only market risk intern, but across the whole intern cohort, most had come from Economics or Finance degrees, but technical degrees were prevalent with the Technology interns. However, there were also a couple of Physics and Maths degrees within investment banking interns. There were quite a few interns from Imperial and UCL.

I felt disadvantaged coming from a non-finance background at first, especially during the first week when all the interns were together in training and a lot of financial knowledge was required and known amongst other interns. Also, at my desk I had no knowledge of the option greeks, option pricing, hedging strategies, exotic options and various trading exchanges which were discussed everyday in market risk. However, I was reassured that I would be trained in all of that, and that most of the knowledge used wasn't even in an Economics degree.

Only two people from my team had finance backgrounds, with the rest coming from engineering, computer science and maths backgrounds. Therefore, even though coming from a finance background may give you some background knowledge, the skill set you have is a lot more important

Some STEM students are concerned that their lack of finance knowledge would set them back in the application process. What was the most challenging aspect of your application process and how did you overcome them?

For me the most challenging aspect of my application was when I was asked technical financial questions in the interview, and when I was also asked about the financial markets. To overcome the technical financial questions, I made sure that I had researched properly about market risk and the key financial instruments that were traded i.e. forwards, swaps and options. Additionally, I researched models used in market risk such as VaR. I knew that they would push me further in those areas if I mentioned them. When asked technical questions about the instruments and which were best used in made up scenarios, it required just taking a moment to think about it logically.

In regard to the financial markets, it wasn't something that I regularly kept up with at university and I was honest in my application and said that my economics and financial knowledge/awareness was something I wanted to improve. They were understanding of this and helped me with any basic questions I had during the internship.

I also struggled with video interviews in the beginning because I found it hard to act natural to a camera hole on my computer and felt quite stiff and robotic. To overcome this, I watched myself back in the practice video questions to see what could be improved and pretended that I was speaking to a person or a friend so I spoke with more enthusiasm.

As a STEM Student, how has this summer internship influenced your choice of career path you might want to pursue in the future? Did it confirm/dispel any former beliefs you had of the industry?

This summer internship has made me decide that I want to go into market risk in a bank. I had always wanted to go into finance after university just to experience using my skill set in a different context as a challenge. However, being a STEM student, I am unsure I will remain at a bank forever, as I am interested in start-ups and science.

It confirmed my beliefs of the luxuries of working in a bank, with breakfast and fruit being provided everyday, formal lunches weekly and a lot of social events. Graduates are also sent to New York or Sydney for a few weeks to do their training. It also dispelled my belief of banks only wishing to make money, as Macquarie has a Green Investment Group division, who work on ideas for renewable energy sources to invest in for a better future.

Macquarie also monitor the carbon footprints of companies they invest in. Although being a male dominated industry, I saw that an effort was being made to hire more females as the intern cohort wasn't lacking females.

"Don't feel disadvantaged or put off when applying for roles that are finance heavy,... companies want to hire people with a variation of backgrounds."

Any parting words, advice or anecdote/ teachable moment you would like to share?

Don't feel disadvantaged or put off when applying for roles that are finance heavy, as companies want to hire people with a variation of backgrounds. Use your background to your advantage in interviews to show what you can bring to the role.

Be honest in interviews, so if you are completely unsure on an answer, tell them you are but show that you are keen to drive your learning. Be a sponge on the internship and absorb all information – there is a lot of new information everyday for many weeks so make sure you write everything down otherwise you will forget them. Always ask questions as it shows you are eager to drive your learning, and if you don't understand something, ask them to explain it again.

Whilst on your role, if you find that you are also interested in a different area, ask your manager or make an effort yourself to contact someone in that area for a meeting to learn more about it. The company would want to have you in a role you are keen about, and if they like you they will interview you for that area afterwards if you wish to switch.

Take full advantage of the networking, because you may find a role that you hadn't heard of before that may be for you.

Summer Success

From an insight event to a full-time job offer, read about Daniel's journey

Daniel Banh

BSc Chemistry

Daniel Banh attended insight events at Morgan Stanley, Citi and Goldman Sachs. He was fast tracked to the Summer Analyst program of Citi. Having completed his summer internship in 2019, Daniel was offered a full-time analyst role in 2020

You rotated through different departments during your internship, how was that like? Can you explain a bit more about what the roles entailed? What was the highlight of working in these roles?

So this summer at Citi, I was in the Capital Markets Origination (CMO) division which essentially serves the capital raising requirements for clients. I specifically rotated in 2 teams, both of which were in DCM (Debt Capital Markets). DCM deals with clients who want to raise capital through debt financing which means issuing bonds.

My first rotation was in SSA DCM which deals with Sovereign, Supranational and Agency clients. These clients are frequent investment grade triple A issuers. These issuers include clients like the Kingdom of Spain, the World Bank and KfW. SSA Issuers have both the highest frequency and volume of bond issuance.

My second rotation was in Liability Management which is a team which deals with everything to do with bonds once their issued. A liability management desk will execute transactions like bond buybacks (tender offers) and changing bond covenants (consent solicitations).

As an Intern/Analyst, the bread and butter of what you'll be doing in DCM is PowerPoint and Excel, some of the things you can expect to do include helping out on pitch books, weekly and daily admin tasks

"I was absolutely clueless! Clueless about how to network, clueless about the industry and clueless about how to get real work experience in the industry."

and investor analysis. As you move up to Associate and VP level, you'll start to get more responsibility with clients. The highlight of working in these roles was definitely the high level of deal exposure, someone can try their best to explain what they do as a DCM banker, but that doesn't compare to practical experience on the desk. My highlight was seeing 3 new issue deals executed on the same day

Your journey began with an insight event, which led to an offer for a summer internship and ultimately to a full-time offer. What aspects do you think you performed well in that brought you this far? What aspects are you keen to work on going forward?

My first exposure to banking was an insight day at Morgan Stanley. At that point in my journey, I was absolutely clueless! Clueless about how to network, clueless about the industry and clueless about how to get real work experience in the industry. Meeting similarly like-minded people helped me obtain the skills required to break into the industry.

In terms of aspects which have got me to where I am today, I would say number 1 has to be personality. At the end of the day, these firms are looking for people, not robots, they need to see you as someone they would be comfortable putting in front of a client and someone that people will enjoy working with. It's important to show your wit and personality, don't be the clown of the group, just be yourself.

Aside from this, I would say my desire to learn and develop my knowledge in the industry has served we well. It's important to always be inquisitive and keen to learn more about the industry as that's something you can't fake.

In terms of things to develop, I'd say I need to brush up more on my excel skills and also my general industry knowledge.

What were the educational backgrounds of your fellow interns? Did you feel at all disadvantaged coming from a non-finance background throughout your journey?

In CMO, I was one of only 2 students who wasn't studying a finance/economics/management degree. Everyone studied at a top university and coming from a non finance background, I did feel slightly less prepared that my fellow interns. Naturally, as a Chemist, I didn't have the base knowledge as someone who studies finance at LSE or someone who studies Economics at Warwick. I also felt disadvantaged due to my relative lack of experience, the majority of the interns had already completed internships and placements in the industry already.

But being a non finance student gives you a much better opportunity to show your worth. Use the unique skills that you develop on your degree to work more efficiently and creatively on the desks.

"But being a non finance student gives you a much better opportunity to show your worth. Use the unique skills that you develop on your degree to work more efficiently and creatively on the desks"

As a STEM student, how has your journey from an insight event to a summer internship, influenced your choice of career path you might want to pursue in the future? Did it confirm/dispel any former beliefs you had of the industry?

Even though I chose to study Chemistry, going into first year, after a few insight events in the summer of year 13, I knew that a career in banking would interest me. I used spring weeks and my summer internship to confirm whether it would be a career that could suit me. After a spring week, I knew I had a steep learning curve as there was so much about the industry I didn't know about. Thankfully, I was able to convert onto a summer internship off the back of my spring week and my summer internship was my most important experience when it came to confirming my interest in the industry. You'll never know whether something will suit you unless you get practical experience. By spending 9 weeks on the DCM desks, I knew a career in the banking industry would suit my personality and skill set and it would be a place where a lot of the transferable skills I developed in my degree could be put into practice.

In terms of confirming/dispelling beliefs about the industry, my summer internship confirmed a lot of things: you work long hours, your work is rewarding, you get to work with some of the sharpest and brightest minds in the world and you get paid well.

What are your top 3 tips for students looking to embark on a similar career path?

1. Get experience: apply for insight days, spring weeks and internships, getting the opportunity to speak to people will help you better understand what roles are available in the industry and what might suit you best

2. Network: whether it be at an event, or on LinkedIn, speak to people, ask questions, enrich yourself with more knowledge

3. Apply with commitment: you won't get anywhere if you don't apply, don't be scared but also remember that it's an all or nothing approach needed, if you put 10% effort into getting a banking summer internship, you won't get very far, you have to be committed.

Any parting words, advice or anecdote/ teachable moment you would like to share?

Banking isn't for everyone, but if you think you'd be a fit, give it a go. Don't just look at the money, you need to have a genuine interest in what you are going into.

Quants

Quantitative analysts, also known as Quants, bring the mathematics to the money

Yao Lei Xu

PhD in Big Data, MEng EEE

Yao Lei studied EEE as an undergraduate and is now undertaking a PhD in Big Data at Imperial College, researching techniques for signal processing and machine learning. He recently completed a summer internship in Quantitative Research at Bank of America Merrill Lynch

The role of Quants is not as well discussed as traditional roles in Investment Banking and Asset Management. What exactly are Quants and what was your internship role about? Could you tell us more about what a typical day was like?

> **“...EEE’s focus on signal processing, information theory, machine learning and programming gave me tools that I applied every day in my Quant role.”**

The Quants apply mathematical methods to solve financial problems. There are several types of quantitative roles, each with a different focus.

The most common tasks include pricing financial instruments, managing risks and developing investment strategies. Depending on the role, the technical expertise can vary from stochastic optimization to machine learning. The level of interaction with clients can also vary significantly. I was a quantitative investment strategist, which meant applying statistical signal processing and machine learning methods to uncover

> **“...a quantitative role in finance is in some respects more challenging than the classical STEM applications .**

investment opportunities, ranging from minutes to several months. My typical workday included reading up market news, working on my project, meeting with the team, attending lectures and finally networking, networking, networking.

What aspects of being a Quant attracted you to the role?

From a technical point of view, a quantitative role in finance is in some respects more challenging than the classical STEM applications. Unlike the physical world where stationarity can often be assumed, the underlying process that generates the data in the market can change suddenly due to regulations, news and even the weather. It is a second order chaotic system that reacts to its own predictions, which I find absolutely fascinating.

You studied EEE as an undergraduate and are now a PhD student in Big Data. Would you say your undergraduate degree prepared you well for exploring a career as a Quant?

My degree definitely prepared me for a quantitative role in finance. EEE’s focus on signal processing, information theory, machine learning and programming gave me tools that I applied every day in my Quant role.

However, I did spend a significant amount of time outside of university learning about financial markets, which is just as important (if not more) than the hard, technical knowledge.

What prompted you to pursue a PhD in Big Data. Is a PhD an important prerequisite to be a successful Quant?

For my master’s final year project, I had the opportunity to explore big data techniques in the field of signal processing and machine learning under the supervision of a great professor. Overall, I found the experience and the topic really interesting, which is why I decided to pursue a PhD in

> **. . It is a second order chaotic system that reacts to its own predictions, which I find absolutely fascinating”**

this field.

Is the PhD strictly necessary to become a Quant? No. If you have a quantitative background and a good understanding of finance you will likely make it to the interviews. Does having a PhD help? Absolutely. Most of Quant positions are advertised for PhDs only since they are more used to research and solve un-tackled problems.

Why do you think students at Imperial should consider a career in the quantitative side of finance? What are your top 3 tips for students who are looking to embark on a career as a Quant?

Most of the roles in finance requires you to become an expert in a specific industry or asset category. The Quant role instead allows you work across multiple asset classes and get a generalist view of the market. My top 3 tips for applying:

- Master your networking skills. Learn how to sell yourself and always come prepared to the interviews.
- Master relevant technical skills (stochastic processes, probability, statistics, optimization, machine learning, programming, etc.)
- Master financial knowledge (different asset classes, derivatives, macro-economics, portfolio theory, arbitrage, risk-neutral pricing, etc.)

Any parting words, advice or anecdote/ teachable moment you would like to share?

There are a lot of Quant roles out there, each requiring a different set of skills. Know what you are applying for and prepare accordingly. I am more than happy to answer any question anyone might have so reach out to me. Good luck.

Tricks of the Trade

Do traders simply look at fancy charts? Tianzi tells us more about a day in the life as a trader

Tianzi Liang

BSc Mathematics

Tianzi has attended events such as Algothon, Society Trading Challenge at Morgan Stanley and been a trainee at Amplify Trading. She has recently completed a summer internship at Goldman Sachs, having attended their Trader Academy in 2018

You have attended various trading events including Algothon, Goldman Sachs Trader Academy and were a trainee at Amplify Trading. What exactly is trading and what aspect of being a trader attracted you to the role?

"By working as a trader, I can learn a wide range knowledge; finance, psychology, politics and geopolitics, which are transferable skills across many industries."

Traders in investment banks make markets for their clients, they help their clients by buying and selling financial products, raising funding and managing risk. The aspect of trading that attracts me the most is its day-in and day-out responsiveness. A trader needs to closely watch what's going on in the market and take actions according to timely events. By working as a trader, I can learn a wide range knowlede; finance, psychology, politics and geopolitics, which are transferable skills across many industries. I also appreciate the fact that it's a very fast pace and exciting job.

You study Mathematics as an undergraduate. Would you say your academic degree and life at Imperial College, prepared you well for exploring a career as a trader?

Learning math as a major definitely gives me an edge throughout my internship, it also gives me the confidence to tackle any hard problems. For example, in the derivatives market, a lot of pricing of the products require mathematical knowledge and being able to quickly absorb the fundamental methods of pricing models helped me to finish my projects on time.

What were the educational backgrounds of your fellow interns? Did you feel at all disadvantaged coming from a non-finance background throughout your internship?

My fellow interns came from very diversified backgrounds, across 20+ universities in EMEA (Europe, the Middle East and Africa) countries and speak 10+ different languages. I don't think coming from a non-finance background is a disadvantage at all. The people from the trading floor won't expect too much financial knowledge from you if you have a math major. It's more about the mindset and the ability of picking up new things they are looking for.

Some STEM students are concerned that their lack of finance knowledge would set them back in the application process. What was the most challenging aspect of your applications process and how did you overcome them?

As long as you are genuinely interested in this area and show them you have spent time doing your research and following the market, I think the lack of finance knowledge wouldn't be a problem. The most challenging aspect of my applications would be the uncertainty throughout the process and there's indeed some luck involved in the whole process depending on the company and your interviewers. So if you don't get an offer, don't get frustrated, just move on and try your best for the next one

Why do you think students at Imperial should consider a career in trading? What are your top 3 tips for students who are looking to embark on a similar career path as you?

"My fellow interns came from very diversified backgrounds, across 20+ universities in EMEA (Europe, the Middle East and Africa) countries and speak 10+ different languages."

Most students in Imperial College London have a science background and are good with solving problems from a quantitative and logical approach, which is the skill a lot of trading companies are looking for.

The 3 tips I would give other students looking to start their career as a trader or in banking would be:

- Make sure you know where your interest lie, it's not always good to go broad, know the division you're interested in and focus your efforts on it.
- Prepare your C.V.s and cover letters early, practice online tests using online resources and do mock interviews with your friends.
- Be proactive and attend events held by the companies so you'll have more to talk about during your interview.

Any parting words, advice or anecdote/ teachable moment you would like to share?

Just want to share a typical day of a trader. It depends on the asset classes you're dealing with but normally, you should be at office before 7am, some desks might come to the office before 8am.

There will usually be a morning meeting to catch up with your team members and also wrap up what happened yesterday. The whole day will be intense compared to other divisions because they need to closely monitor their position.

They'll be off work at 5-7pm (also depending on the desk) and have two days rest during the weekend.

Passing It On

They have stood where we stand, faced the same challenges and came out on top
Hear from these alumni in industry

Fei Wang
BEng Electronic and Information Engineering

Fei Wang graduated from Imperial College in 2012. She started as a graduate analyst in Deutsche Bank, leaving almost 5 years later as an Assistant Vice President. Holding post-graduate qualifications in management and finance, she is currently an Operational Specialist at Goldman Sachs

You spent more than half a decade at Deutsche Bank, with a last held position of Assistant Vice President. How did your job scope change as you rose through the firm? What was the most challenging transition you've had and how did you overcome it?

My role has changed and evolved tremendously during this time. It's mind-blowing of how much I've learnt and grew during this time. Starting as a graduate analyst, I worked on small, ad-hoc tasks by assisting other team members initially, and then developed myself as the sole expert in certain areas, leading multiple cross-divisional programs in my latter years. It's a continuous journey. I kept on learning, delivering and building trust. There are a few moments which felt particularly challenging but also rewarding.

When I was an analyst, my Assistant Vice President resigned, and I needed to take on his projects in two weeks' time. These were complex and critical projects facing intense deadlines. Given limited time, I came up with a learning plan to build the high-level picture. I also tried to understand the context and rationale of things, not just what or how am I asked to do. Understanding the root cause of things helped me staying clear on the goal and can adapt to changes.

The most important thing was just being confident, willing to step in a new area, and do everything I can to solve unforeseen problems. I enjoyed the challenges, delivered on time and got promoted after that.

"Many hiring managers told me that they really enjoy working with people coming from Imperial, as they are very smart and hard-working"

You undertook part-time studies for 2 master's qualifications at LSE, first in finance and then in management, having already graduated from Imperial with a BEng and with work experience under your belt. The saying goes that your degree stops mattering after your first job. Just how are important are post-graduate qualifications in industry?

When I was at university, a degree to me was mostly just what helps me in finding a job. After working for several years, I realised the impact of one person's education will keep carry out throughout his entire career. It can be direct or indirect. You not only learn the knowledge, but also develop the associated skills, logical mindset, approach to solve problems through this degree.

I studied masters' in Finance and management for my continuous development. When I started working in an investment bank, I wanted to learn more financial knowledge and understand how the market works, so I studied master's in Finance at the LSE. It helped me a lot in my role to understand the context, develop insights and become a subject matter expert quickly. After I worked a few years, my responsibility at work expanded, and I got interested in the management area, so I studied an executive master's in management degree.

I was one of the youngest one in my cohort as it was an executive degree. Many of my course mates are managing directors and CEO's, and they wanted to learn management to be more effective leaders in big organizations, not that they need the qualification to succeed their roles.

The management degree helped me understand leadership, business and strategy, which is a great preparation to move to more leadership roles or starting my own business later. I recommend thinking about your career as the next ten years, where would you like to go, what skills would you need, and prepare yourself for that

You studied EIE at Imperial but are working in finance. Did you ever feel like you were at a disadvantage coming from a non-finance background? Are there aspects of your STEM education at Imperial that have helped or held you back in your career?

"Looking back, I would've relaxed a lot more emotionally and enjoyed student life more... more extra curricula and spend more time with friends..."

I always feel very proud that I got an engineering degree from Imperial. An engineering degree is highly valued, especially in investment banks and Imperial has a great reputation as well. Many hiring managers told me that they really enjoy working with people coming from Imperial, as they are very smart and hard-working. There are many similarity and transferrable skills between science/engineering at Imperial and finance at investment banks.

They are both data-driven, very analytical, and require a lot of focus and accuracy. From my experience, financial knowledge is relatively easy to pick up on the job, and someone's ability to solve problems, analyse data to come up with insights is the most important part to add value and contribute.

I developed a logical and structured way of analysing and solving problems, and appetite to work with data, which helped me greatly in my role.

Many students get caught up in the pressures of the rat race; obtaining a first-class honours, polishing their C.V.s and stressing out over internships to get the top jobs. Looking back on your time as a student, what would

“There’s no competition at the end of the day, as people all take different paths. The important thing is to focus on your own path and take pleasure during the process.”

you have done differently? Do you have any regrets?

It’s very easy to get caught up between lectures, coursework and internship etc when I was at Imperial.

Looking back, I would’ve relaxed a lot more emotionally and enjoyed student life more. I would find passion in my study, take pleasure in soaking up knowledge and focus less on the pressure of coursework or exams.

In addition, I would also participate in more extra curricula and spend more time with friends.

I co-founded the ICU Pole and Aerial Society back in 2011 and that was the best memory for me at Imperial. I’m quite pleased to see the society is still running today.

Lastly, I would focus on my own development and wouldn’t compare with others. Ten years after I graduated, my friends are all in different countries, industries and professions. There’s no competition at the end of the day, as people take different paths. The important thing is to focus on your own path and take pleasure during the process.

What are your top 3 tips for students at Imperial who are looking to embark on a similar career-path as you?

Firstly, start early and stay informed on what kind of opportunities there are, either it’s getting an internship, attending an insight day or a networking event. Finding an internship and receiving an offer is easier(generally) than finding a graduate offer directly. I got a spring-week internship first, and subsequently received offers for a summer internship and graduate job, which takes the pressure of finding a job away during my final year.

Prior internship experience will help you after starting the job, as you’re more familiar with the company structure and probably already have some network. Secondly, think about why you would like to do this and be as specific as possible. It’ll help you understand what is it that you are really looking for, make informed decisions when opportunities come up, and drive your career path rather than be given one.

Thirdly, I would recommend taking time in finding the right career than rushing into something you don’t feel excited about. It’s easier to keep options open whilst still being a student, than switch career path once already started, even this may mean taking another year for master or a gap year. It’ll probably take longer time and more effort to switch career later.!

Any parting words, advice or anecdote/ teachable moment you would like to share?

My biggest advice would be to stay confident and don’t be too hard on yourself by taking score too soon, either you are finding a job or starting one soon. I like thinking interviews are two-way: You are being interviewed but you are also interviewing the company – to see how much they get to offer for you. If you get the job, take pride it and if you don’t, take it as a matter of suitability and move on to the next one.

In addition, I recommend empowering yourself to make decisions or influence others when you are just starting a career. At the end of the day, you are the one holding the remote-control button of your career. You can question the way things are done, propose alterative plan of tasks you are allocated from day one, and don’t need seniority or other’s permission to do that.

Alexandre Militski

MSc Management

Alexandre graduated from the Imperial College Business School with a distinction in his MSc. He holds an Economics degree (1st Class) from the University of Essex. Having worked in investment banking at JP Morgan and SGCIB, he is now a Private Equity Associate at Oaktree Capital Management.

“start your career planning early... talk to alumni... Go to as many events and presentations organised by banks... This will allow you to be in front of the competition and is often going to make the difference”

Many students get discouraged by investment banking’s long hours and high pressures, despite the high levels of remuneration. What are some positive, but lesser known aspects of this career that people should know more about?

One big positive, however probably not a “lesser known” aspect is the exit opportunities. A large part of people (myself including) go into investment banking because they want to be challenged and learn, earn a good living, but don’t want to decide what to focus their career on right away.

For some, looking for a “chiller” life after banking, the exit would be a corporate development job, for the more entrepreneurial types it would be a start-up, and for the ones like me who find that they really enjoy financial analysis it would be investments (Private Equity or Hedge Funds being the most common exits from top banks)

You hold a master's degree from the Imperial College Business School. How valuable are postgraduate qualifications for breaking into the industry? Are there situations where they be useful/ redundant?

"Investment Banking will give you the best exit opportunities, and if you want to pursue a career in investments, IB is the way to go."

Breaking into banking can be really tough due the large number of candidates of high calibre, and obviously having a Master's degree from a "target" school such as Imperial will get your foot in the door. It is also useful to be surrounded by people at the business school applying for the same jobs and doing similar interviews so you can share tips and experiences, revision notes, etc.

However if your knowledge of corporate finance is good (either from your undergraduate degree or from studying on your own) and you have a strong BSc / BA from a good university, skipping the masters can be a good way to save time and money, as once you are on the job nobody will care whether you have a postgraduate degree or not.

You had an 11-month stint as an off-cycle intern after graduating from business school. Off-cycle internships are not as well-known as the regular summer ones, what are they and how do they differ from the ones offered in summer?

Some banks tend to hire analysts only from the "off-cycle" internships, usually lasting between 6 months and a year. This is particularly true for the European non-bulge bracket banks (think French / Italian / Spanish banks) as well as a number of boutiques.

This is often the case because universities in these countries require some sort of placement as part of the degree, and it is also a good way for a bank to test the candidate for a longer period of time (as opposed to the 8 weeks in the summer) and check the person's "resilience", which is in my opinion one of the main qualities required in IB. In return, the candidate gets a better exposure, has the opportunity to see a deal or two from the "pitching" stage until closing and to get a much better understanding of the job.

"Technical skills are what most private equity funds will be looking when hiring a junior banker...

The second most important thing will be work ethic: the ability to work long hours, withstand pressure and be diligent in what you deliver..."

Some have mentioned investment banking as a great training ground for young graduates pursuing finance. Having shifted to private equity, how valuable are the technical skills, work ethic, deal experience and networks outside the investment banking industry?

Technical skills are what most private equity funds will be looking when hiring a junior banker. From day 1 they expect you to build complex models, analyse and make an opinion on companies' financials and be able to conduct a due diligence process on an opportunity.

The second most important thing will be work ethic: the ability to work long hours, withstand pressure and be diligent in what you deliver is key in the fast paced environment of a PE fund.

Why do you think students at Imperial should still consider investment banking as a possible career path? What is your top tip for students who are looking to embark on a similar career path as you?

As I mentioned before, Investment Banking will give you the best exit opportunities, and if you want to pursue a career in investments, IB is the way to go.

On the other side, if you decide to stay in banking in the long term, you will have the opportunity to work on a multitude of interesting situations, across many geographies, alongside some of the brightest people out there, which will make your learning curve extremely steep and allow you to become really knowledgeable in a particular area of finance (such as a product e.g. M&A, Leveraged Finance, ECM or DCM, or an industry).

Oh yeah, the pay is not bad as well

My top tip to the students would be the following: start your career planning early. Do the "spring weeks" in your fresher's year to understand whether banking is suitable for you. Try to talk to alumni to identify the best ways to get your foot in the door for an internship.

Go to as many events and presentations organised by banks as you can. This will allow you to be in front of the competition and is often going to make the difference.

Any parting words, advice or anecdote/ teachable moment you would like to share?

Given the time of the year, I wish all the students at Imperial good luck with their banking applications and want to tell them not to get discouraged if their first interview doesn't go as well as expected: every step is a learning experience, and as long as you are able to identify what went wrong, you will do better next time. It often takes more than one application and interview to get the offer (sometimes more than a dozen), so keep on persevering and your efforts will pay off!

Conrad Thomas

BSc Physics

Conrad graduated from Imperial College in 2018. As an undergraduate, he attended Insight Events at Bank of America Merrill Lynch (BAML) and Boston Consulting Group. After completing internships at BAML and Commerzbank AG, he is now with MUFG

What is your current role? Could you tell us more about what a typical day is like?

I am currently in my first year as a graduate on the rotational Structured Finance graduate programme at MUFG. After completing a few weeks of entry training, I have been placed in the Commodities and Structured Trade Finance team for the next 6 months.

My team provide financing solutions for commodity producers and processors, primarily located in emerging markets. We also serve large commodity traders looking to finance their prepayments to commodities producers. My day-to-day tasks involve credit analysis, financial modelling as well as monitoring the performance of existing deals.

You have attended Insight Events in consulting and investment banking. What made you decide to pursue investment banking?

I enjoyed both the Investment banking and Management Consulting Insight Events.

I enjoyed the problem solving and analytical aspects of my physics degree and I felt these were skills I wanted to further develop in my professional career. I chose Investment Banking because banking is a profession that allows me to analyse a

"I chose Investment Banking because banking is a profession that allows me to analyse a range of economic, political and financial factors when recommending key decisions"

range of economic, political and financial factors when recommending key decisions. In addition, I was motivated by the fact that Investment Banking offers you the opportunity to become a product specialist fairly early on in your career. There's no "right reason" to choose any career path, but candidates should always have an original and honest reason prepared for the inevitable interview question of "What made you choose this career?".

You studied Physics at Imperial but are working in finance. Did you ever feel like you were at a disadvantage coming from a non-finance background? Are there aspects of your STEM education at Imperial that have helped or held you back in your career?

I didn't feel at a disadvantage coming from a non-finance background. Coming from a STEM background, I think it's important to recognise the skillset that your degree/extracurricular activities have provided you with but also to proactively develop skills that have not been developed to the same extent. By studying Physics at Imperial, I developed a great skillset of problem solving and analytical ability that I currently utilise every day in my career.

However, as a physics student, the area of knowledge I lacked the most was my knowledge of economics and accounting. The Imperial College Business School offers a great selection of modules. I would highly recommend the Accounting module for anyone interested in banking.

In terms of developing your understanding of financial markets, it's very important to read financial news from publications like Reuters and Financial Times etc. Candidates can really differentiate themselves when they start to develop and articulate their opinions on matters such as the state of the global economy, on-going mergers and acquisitions, financial regulation etc. I would suggest reading market commentary such as Pension Craft and The Water Coolest (a bit more lighthearted) to develop this skill. Another great source is the Bank of England and reading the monthly FOMC minutes, which can really help to explain key monetary policy decisions.

"Candidates can really differentiate themselves when they start to develop and articulate their opinions on matters such as the state of the global economy, on-going mergers and acquisitions, financial regulation etc"

What are your top 3 tips for students at Imperial who are looking to embark on a similar career-path as you?

If you're preparing for interviews or assessment centres, it's vital that you practise tough interview questions with your peers. Candidates should be prepared to speak about competency questions, previous experience and recent developments in the financial sector at depth. Preparing answers to the above topics is a good start, but being able to articulate is a separate skill that will differentiate candidates. When preparing, attention to detail is key. Candidates should be aware of a bank's unique strategy and their strengths/weaknesses in different products and markets. Annual reports are a great place to start! Also, ask your interviewer questions. There's no better way of showing genuine interest in the sector. Finally, make sure you receive feedback on your interviews and request feedback - this is a great, constructive way of finding out how well you did, and also seeing which areas you can improve in for the future.

Any parting words, advice or anecdote/teachable moment you would like to share?

I would highly recommend that students consider applying to MUFG. I am really enjoying my graduate scheme so far!

Our Knowledge

A core function of our society is education.

Our society believes one of the best ways to self-educate is to write about it.

Presented in this section are some articles written by our members, first published in the Investment section of Imperial College London's student-run newspaper, Felix

We would like to thank Felix Editor, Henry Alman, for allowing us to reproduce these articles for this magazine.
All previous articles can be found online at felixonline.co.uk

A Country's Piggy Bank

Xerxes Chong | Felix Issue 1700

We've all heard the age-old advice; save up for a rainy day, spend a little less, invest that money and have enough to retire. Your favourite car, that house in the countryside, that trip to the Maldives you've been planning since the days of eating lunch at your desk. The message is clear, invest for the future. As we meticulously allocate funds to reap returns, so do countries through a sovereign wealth fund (SWF).

SWFs are the investment funds of countries, which invest for the long-term benefit of its economy and its citizens. Funds are derived from accumulated trade and budget surpluses and from the exportation of natural resources. Sources are split between commodity-based and non-commodity-based sources. Oil and gas forms more than 50% of global SWF funding. Some countries even have multiple funds to meet specific investment goals of its government. According to SWF Institute, the 10 largest SWFs in the world at time of writing, consists mainly of Middle Eastern and Asian funds, except for Norway's Government Pension Fund. It holds the title of the largest SWF in the world, having more than $1 trillion of assets under management.

The Linaburg-Maduell Transparency Index measures the transparency of a fund's operations on metrics such as; how transparent it is about holdings, government ownership structure, investment process and objective. Funds are ranked from 1 to 10, from the non-transparent or "opaque" to the most transparent.

SWFs are split into 4 broad categories; savings, macro-stabilisation, pension reserve and strategic funds. They differ in their investment objectives and methodologies such as; having a short or long-term investment horizon and projected liquidity requirements (indicating the frequency of future withdrawals from the fund). Each fund is split across 4 asset classes; cash, equities, fixed-income (bonds) and alternative investments such as private equity, hedge funds and real estate. In general, funds with longer investment horizons will be heavily weighted in equities as the longer time frame would ride out short-term market volatility and allow investments to bear fruit. Alternative assets tend to be found on funds with longer horizons, requiring longer planning and execution to exit profitably. Shorter-investment horizons necessitate a larger proportion of liquid assets to meet large and often unexpected capital outflows due to higher liquidity requirements. Most SWFs are savings and macro-stabilisation funds.

Savings funds preserve and grow a country's wealth for the future and have investment horizons that span decades. Countries rich in lucrative but inevitably finite natural resources such as; oil, gas, precious metals and other commodities, channel revenue from its sale to savings funds. This ensures future generations can reap the benefits of a depleted or stranded resource. SWFs such as the Kuwait Investment Authority and Saudi Arabia Public Investment Fund were set up to meet the future of depleted oil wells, stricter environmental regulations and the proliferation of cheaper green-energy alternatives that renders hydrocarbon extraction uneconomic.

Macro-stabilisation funds are designed to mitigate the effects of the resource curse, an economic phenomenon in resource-rich countries that result in high government spending with soaring commodity prices, followed by austerity during downturns. Money is drawn down from these funds to make up for the loss of revenue, injecting liquidity and smoothing out the peaks and troughs of government spending. The funds are also used to help stabilise the value of a country's currency during macroeconomic shocks. For these reasons, investment horizons are short and involve mainly liquid assets.

Countries save and invest, just like people. Source: Thinkstock

'Savings funds preserve and grow a country's wealth for the future and have investment horizons that span decades.'

Pensive reserve funds invest to build capital for their government's future pension obligations. An example would be Singapore's GIC, which manages funds from Singapore's Central Provident Fund, a compulsory savings plan for working Singaporeans to fund their retirement, healthcare and housing needs. Returns between 1% and 5% are guaranteed by the government. GIC manages a fixed pool of the country's savings and foreign reserves to generate good long-term returns that beat global inflation.

Strategic funds can form part of a country's domestic economic policies, investing in strategic industries to nurture their development, promoting growth in the domestic and international economy as well as providing generous returns. They provide key early funding to small and medium enterprises and may take longer-term stakes to facilitate the growth in later stages of the business cycle. Some are even pro-active managers, assisting in restructuring and funding of distressed companies. Whilst such funds tend to have a domestic focus, some have reaped returns and dividends to venture into overseas markets. Singapore's Temasek initially managed various state-owned-enterprises but eventually transitioned into a more globally orientated portfolio with stakes in Alibaba and Standard Chartered, while retaining a sizable domestic portfolio. In January 2018, Temasek joined Google in investing in Indonesian ride-hailing firm Go-Jek, which is preparing to launch in Singapore in October 2018 to compete with Malaysian rival Grab.

Apart from Norway and Singapore, several large SWFs have been facing scrutiny, particularly funds from the Middle East, scoring an average of 5 on the transparency index. The lack of transparency in these funds size and objectives, coupled with close links to their governments, have led to speculations of politically motivated investments. SWF's can clandestinely acquire strategic assets of another country, stealing proprietary information, patented technology and trade secrets. The bailout of major U.S financial firms during the global financial crises of 2007-2008 by Asian and Middle Eastern SWFs and the subsequent poor performance from these investments, increased debate on investment strategies and put pressure on managers to avoid further losses.

These funds are institutional investors with large sums of capital ready to be injected. The range of companies they invest in adds to the available pool of capital accessible across the life cycle of businesses. Savings and pension funds invest current earnings for future generations, allowing individuals and countries to continue participating in the domestic and international economy for years to come. In times of need, SWFs have aided distressed companies, both domestic and international. Despite criticism, SWF's have their place in the international capital market.

Credit Risk in Investment Management and Financial Services

Esuabom Dijemeni | Felix Issue 1708

Lehman Brothers had to file for bankruptcy during the 2008 Global Financial Crisis. Source: Linda Nylind, Guardian

The objective of this series, Risk in Investment Management and Financial Services, is to provide a top-level introduction to risk in investment management and financial services. A broader and wider understanding of different types of risk faced in investment management and financial services is critical towards our understanding of different investment and financial products, services, and strategies adopted in a growing risk dynamic environment that we are experiencing today. The different types of risk include: credit risk, operational risk, market risk, investment risk, liquidity risk and model risk. The aim of this article is to provide a top-level introduction to credit risk in investment management and financial services.

Credit Risk is the probable risk of loss resulting from a borrower's failure to repay a loan or meet contractual obligations. It is the risk of default on a debt that arises when a borrower fails to make required payment. This implies a lender does not receive the owed principal and interest. This leads to a negative disruption in the lender's cash flows and increases costs of debt collection.

Three key components of credit risk are: counterparty risk; issuer risk; and concentration risk. Counterparty risk is the risk associated with the risk to each party of a contract will not meet its contractual obligations. Issuer risk is the risk associated with the probability of loss resulting from the default of the issuer of the credit. Concentration risk is the risk arising from the concentration to a single counterparty, sector, country and/or industry. The key issues associated with credit risk includes: probability of default, loss given default, exposure at default, recovery rates, credit events, maturity, wrong way risk, and non-performing credit asset.

Credit risk measurement and reporting plays a vital role in credit risk management. Three commonly used techniques for assessing credit risk are: credit exposure; credit risk premium, and credit rating. Credit exposure measures the total amount of credit extended to a borrower by a lender. The higher the credit exposure of an investment firm or financial firm, the higher the likelihood of credit default. Credit risk premium is the return in excess of the risk-free rate of return on a credit-based investment is expected to yield. Credit risk premium rewards an investor who tolerates extra risk. High risk credit-based asset attracts a higher credit risk premium. Credit rating is a credit score that reflects the likelihood of payment by a borrower. The higher the credit rating, the higher the likelihood of payment. The big three credit rating agencies are: Moody's, Standard & Poor and Fitch rating.

An effective credit risk policy is paramount and essential for modelling, controlling and managing credit risk. The key stages of credit risk policy development recommended by Basel are: development, validation, approval, implementation, review and post-implementation monitoring. Credit risk and credit risk policy can effectively be managed by using: a reliable credit scoring system; understanding financial, non-financial and extraordinary input factor to a firm; conducting robust stress testing, setting limits /caps to control risk; monitoring and tracking key risk statistics and key risk indicators;

and continuously carrying out internal and external credit audit. It is important to note that effective credit risk mitigation is also required. This involve having underwriting standards, guarantees, credit limits, netting, collateral, diversification, credit derivates, credit default swaps, insurance, and central counterparties.

2008 financial crisis remains a prime example and a prime reminder of credit risk failure. There was a high default rate in the United States subprime home mortgages sector (mortgage-backed securities).

On one hand, this was partly caused by deregulation in the financial industry which led Banks to execute very risky derivates trades. On the other hand, the credit failure was due to an extremely large appetite for banks to increase their profit margin at all cost. The result of the credit risk failure came be highlighted as follows:

1. Worst recession since the Great Depression

2. House prices in the US fell by 31.8%

3. 8.8 million jobs lost in the US

4. $19.2 trillion lost household wealth

5. Lehman Brothers filed for bankruptcy

6. Global financial systems came to its knees

The role and sound practices of credit risk management and credit risk policy development in practice is complex and challenging. However, continuous and iterative credit risk management and credit risk policy development remains central and critical to the success of firms in investment management and financial services in an every growing dynamic risk environment.

A spy who went public: Aston Martin lists on LSE

Xerxes Chong | Felix Issue 1711

Source: Pixabay

On 3rd October 2018, the iconic British marque synonymous with James Bond debuted on the London Stock Exchange, a milestone for the historically troubled carmaker, with a past marred by several bankruptcies. The shares were priced at £19, valuing the company at £4.3bn. While most IPOs are traditionally capital raising operations, this IPO was a profit-taking exercise for its 2 largest shareholders, Italian private-equity group Investindustrial and Kuwaiti investment fund Investment Dar, who sold off a quarter of the company.

Slipping as much as 8 percent on the first day of trading, the price has dropped to a current low of £12.60. Peer-to-peer lender Funding Circle, which listed 2 days after Aston Martin, is down 28% from its listing price. The poor post-IPO performance of 2 high-profile flotations is symptomatic of the weaker IPO market inflicted by the spectre of Brexit, which could herald a period of low deal flow as on-going transactions are reconsidered. Jonathan Clatworthy, director of investment management at Arbuthnot Latham mentioned the “challenging valuations” of the UK market, citing a lack of track record to justify top level valuations. Aston Martin listed with the desire to achieve premium valuations like luxury brands Hermes International, LVMH and Italian rival Ferrari. A share price of £19 valued Aston Martin at 20 times earnings, close to Ferrari’s current 22 times earnings, despite Aston Martin having a lower profitability and poorer financial track record.

In contrast to the poor performance of its share price, Aston Martin reported stellar third quarter earnings, with revenues rising 89% from £156mn to £282mn. Profit before tax rose a staggering 933.3% to £3.1mn from £0.3mn. This growth was underpinned by strong sales in the Americas and Asia Pacific, including China, where demand for the DB11 derivatives and the new Vantage doubled sales amidst a slower Chinese market. Shifting of production volume to the cheaper Vantage and V8-engined DB11 derivative had dropped the average selling price per vehicle. The production of the brand’s first SUV (Sports-Utility-Vehicle), the DBX is on track for completion in the first half of 2019, which will strengthen the product range. With Aston Martin on-track to double its production volume to 14,000 units within the decade, it has had to re-evaluate relationships with local component suppliers who cannot keep pace, prompting Aston Martin to look overseas for new partners. With the current German-made gearboxes and engines (V8 from Daimler and V12 from Ford), three-fifths of components are imported from Europe. This move signals a further reduction in the “British-ness” of the brand. Fans of the automaker, who take pride in hand-crafting each car in England, will be getting a lot less British for their buck.

CEO Andy Palmer, who breathed a “sigh of relief” when briefed in a late-night call on the Brexit deal, may be having a few more sleepless nights. Prime Minister Theresa May’s deal was rejected by the House of Commons on 15th January 2018. While Minister May returns to the drawing board, this setback leaves Aston Martin on tenterhooks as the possibility of a no-deal exit from the EU looms closer. An outcome that does not protect the UK's access to the single market will introduce red tape and drive up cost by disrupting the complex integrated supply chains that feed the UK's automotive industry. With 10% of people employed in the UK's automotive manufacturing originating from somewhere else in the EU, such a blow will hamper the industry's acquisition and retainment of foreign talent. Carmakers have cautioned about these consequences. Jaguar Land Rover estimates job losses in the tens of thousands and intends to close one of its three UK plants. Toyota and BMW have also expressed intentions to shut their plants in the aftermath of the exit. In anticipation of messy customs, carmakers have stockpiled raw materials, with Aston Martin stockpiling engines since September 2018. The global market Aston Martin commands may insulate the company from weakness in the EU and UK, including the added cost of import and export tariffs on its vehicles. However, the disruption to its European supply chains could derail the company's expansion plans. It seems Aston Martin and its UK-based peers, will just like Bond's favourite drink, be in for quite a shaking.

Electronic and Algorithmic Trading for Fixed Income Securities

Dike Dijemeni & Esuabom Dijemeni|Felix Issue 1712

Electronic trading has become an increasingly important part of the fixed income market landscape in recent years. The rise of electronic trading has enabled a pickup of automated trading (including algorithmic and high-frequency trading) in fixed income futures and parts of cash bond markets. These recent changes have resulted in a transformation of the fixed income market structure, the process of price discovery and nature of liquidity provision. Electronic trading is advancing amid these structural changes, while implications for market quality and functioning are yet to be fully explored. This article provides a view of the rising use of electronic and automated trading in fixed income and related derivatives markets – a process we refer to as "electronification".

Algorithmic Trading is a process to buy or sell a security based on some pre-defined set of rules which are backtested on Historical data. These rules can be based on Technical Analysis, charts, indicators or even Stock fundamentals. For example, suppose you have a trading plan that you would buy a particular stock if it closes in Red for 5 consecutive days. You can formulate this rule into Algorithmic Trading system and even automate it so that Buy order is placed automatically when your condition is met. You may even define your stop loss, target and position sizing in the algorithm which would make your trading life easier.

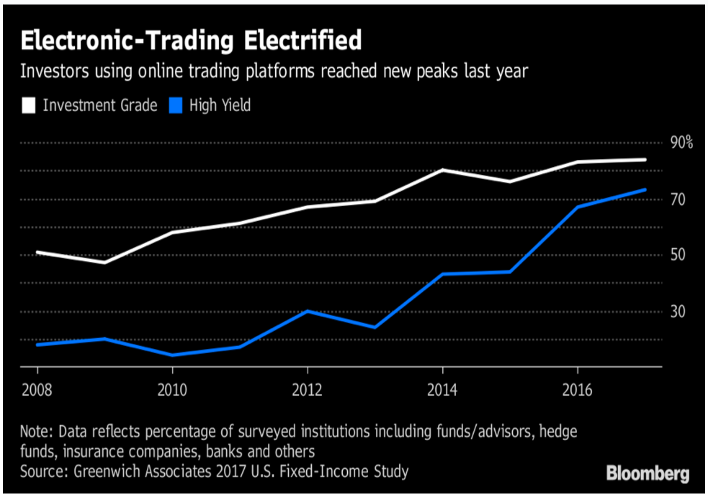


Fig 1. Growth in fixed income electronic trading of investment grade and high yield bonds
Source: Bloomberg

Algorithmic trading strategies can be roughly grouped in three categories: Trade Execution, Market-Making; and Directional, Relative Value and Arbitrage Strategies. Trade Execution is when execution algorithms are often concerned with minimising the price impact of a transaction. Market-Making is to profit from the bid-ask spread, while ensuring tight risk control over inventory positions and minimising the risk of transacting with an informed counterparty.

Directional, Relative Value and Arbitrage Strategies are strategies that attempt to exploit systematic short-term patterns in asset prices or arbitrages; may also implement strategies identifying arbitrage opportunities in markets with fragmented liquidity.

The impact of electronic trading in fixed income markets and the resulting shift in various aspects of market structure have had a noticeable impact on market quality and its optimal measurement. Electronic trading is having a significant impact on the structure of fixed income markets and the interplay of various participants in the market ecosystem. Electronic trading has also contributed to changes in market-making business models, a growing presence of firms employing automated trading, and greater weight being placed by investors on improving execution.

The extent of electronic trading in fixed income markets varies

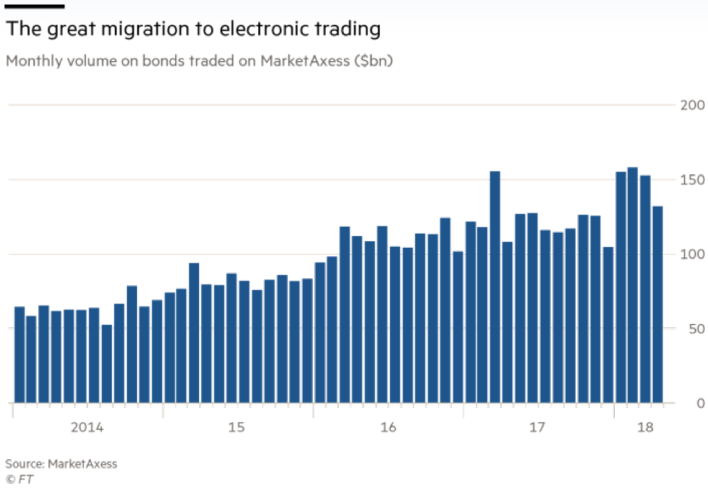


Fig 2. Growth of electronic in fixed income (bond) market
Source: Financial Times

significantly but has been growing over time globally as shown in Fig. 1 and Fig. 2.

Despite the phenomenon's growing importance, policymakers' direct access to continuous and comprehensive data on electronic trading in fixed income markets is so far limited. It also presents the results of an ad hoc survey of over 30 platform providers conducted by the Markets Committee Study Group. In some fixed income segments, electronification is now nearly as developed as in cash equities and foreign exchange.

In some markets, an increase in electronic trading has been driven directly by technological improvements that have facilitated a reduction in the marginal cost of providing intermediation services and lowered the barriers to entry for companies with a technology advantage. Electronic trading is most advanced in those markets in which assets are most standardised and highly liquid – in particular, futures and the inter-dealer on-the-run US Treasury market.

In conclusion, it is clear that electronic trading in fixed income markets is advancing and that this is creating efficiencies for many market participants, improving transparency and reducing market segmentation. It is important to note that the appropriate responses may differ across jurisdictions because of the heterogeneous nature of fixed income markets as well as the varying degrees of "electronification". Four core areas for further policy assessment include: data, disclosure and monitoring; market quality and stability; risks and risk management; and trading practices and regulation.

Bond Curve Yield Inversion – Foretelling turbulent times ahead

Alexander Koh | Felix Issue 1709

Yield curve inversions have traditionally been a foretelling sign of impending recessions. To explain the idea of a yield curve, one needs to understand what exactly a yield is. A yield to maturity, or simply bond yield has multiple interpretation, the simplest being – it is the return an investor realises on a bond. For instance, a yield of 4.5% on a bond implies that an investor would get a return equivalent to a 4.5% annual interest rate in a bank account. Bond yields are inversely related to bond prices, when bond prices are low, the yields are high, vice versa.

However, high yields are not always ideal. During the Greek debt crisis and Greek bond default, Greek government bond yields (10Y) reached yield as high as 48.60 before the Greek government defaulted. Bond yields, while giving a yardstick for retail investors to compare the returns on their investment between different bonds, does not account for the risk of default – hence astronomically high yields implies that investors are valuing the bonds very low prices to account for the likelihood of default.

Moving on, a yield curve simply illustrates the yields of a type of bond against the maturity of the same bond (e.g. yield of 10YR U.S. bond against the maturity of 10 Years). A standard yield curve is shown below.

There are 3 crucial things to understand about the yield curve.

1. Short-term government bonds (<2 Years) typically has a lower yield relative to long-maturity government bonds because long-maturity bonds tend to have a higher default risk (hence the prices of 10 year maturity bonds tend to be lower and their yields tend to be higher). i.e. the Yield curve is upward sloping in a normal scenario.

2. Short-term government bond yields are controlled by the central bank via monetary policy, in the U.S. context, this is done by adjusting the Federal Funds Rate or by carrying out Open Market Operations (Sale or purchase of government bonds). When the U.S. Central Bank (the FED) raises the Fed funds rate, this increases the cost of borrowing for overnight loans by commercial bank and commercial banks would raise their interest rates conversely. In times of inflations (high economic growth/Overheating), the FED would raise interest rates to relieve the inflationary pressure while during times of deflations (recessions), the FED would lower interest rates.

3. The long-term government bond yields are controlled by bond traders and reflects the sentiments of bond traders. For instance, when the market is performing well, bond traders would expect that the FED would raise interest rates, and conversely, this would lower the price of bonds and increases yields. Bond traders in turn, would start selling the long-term bonds in anticipation of this rate hike (and decrease in bond prices), leading to high yields for the long-term government bonds. In this sense, an upward sloping yield curve reflects a healthy economy.

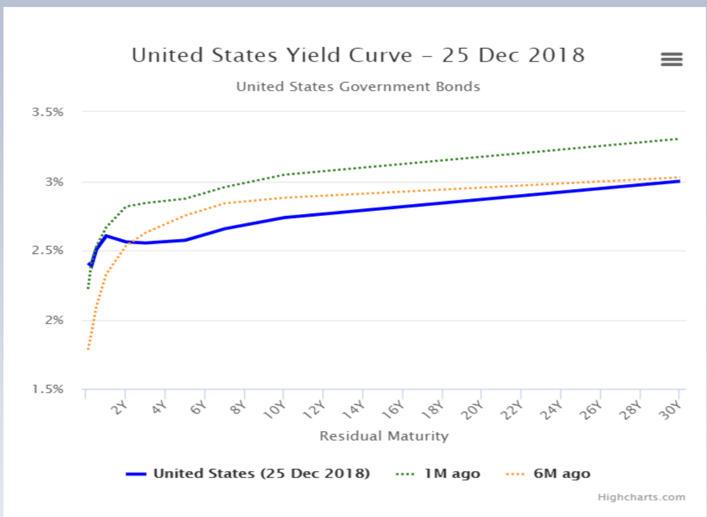
However, when bond traders suspect that the FED would lower interest rates, in light of an impending recession, bond traders would began buying long-term government bonds as the price of long-term government bonds would rise when the FED lower interest rates. Hence bond traders would begin buying long-term government bonds and this would lower the yield of long-term government bonds. This reflects a pessimistic investor sentiment towards the market, and it is a strong warning sign of an impending recession.

Overall, it can be observed that a yield curve inversion – when the yields of long-term government bonds becomes lower than the yields of short-term government bond, it is a strong warning sign of an impending recession. Historically, the bond curve has inverted 7 times since the 1980s, out of which, 6 times the bond curve inversion has predicted and preceded recession. The 6 times were: the two 1970s oil crisis, the 1980s recession, the 1990s recession, the early 2000s dotcom burst and the 2008 Global Financial Crisis. Each time, the bond curve inversion happened less than 2 years prior to each recession.

In recent times, the spread between the 3-year and 5-year U.S. government bond has turned negative (i.e. one segment of the yield curve has inverted). Moreover, the spread between the 2-year and 10-year U.S. government bond lies at 17.6bp (or 0.176% point spread). While the current yield curve has yet to be fully inverted, it can be seen that the yield curve is flattening (see treasury yields below).

Given the hawkish stance the FED has been assuming (hawkish refers to the FED closely watching inflation and would likely raise rates), the flattening of the yield curve implies that bond traders suspect that the FED would assume a dovish position in the near future. Ironically, the Fed still chose to raise interest rates in Dec 2018 despite the foretelling signs of yield curve inversion – a harbinger of recession.

Nevertheless, it is imperative to keep in mind that the timeline between yield curve inversion and economic recessions are not instantaneous. The yield between the three to five year maturity bonds dipped below zero during August 2005, two years prior to the start of the Global Financial Crisis.



Foretelling turbulent times ahead. Source: Highcharts.com

Treasury Yields

NAME	COUPON	PRICE	YIELD	1 MONTH	1 YEAR	TIME (EST)
GB3:GOV 3 Month	0.00	2.35	2.40%	+0	+108	4:29 AM
GB6:GOV 6 Month	0.00	2.45	2.52%	+0	+100	4:29 AM
GB12:GOV 12 Month	0.00	2.50	2.58%	-7	+86	4:29 AM
GT2:GOV 2 Year	2.50	99.90	2.55%	-26	+66	4:29 AM
GT5:GOV 5 Year	2.88	101.36	2.58%	-29	+33	4:29 AM
GT10:GOV 10 Year	3.13	103.33	2.74%	-30	+26	4:29 AM
GT30:GOV 30 Year	3.38	107.50	2.99%	-31	+16	4:29 AM

Will the Fed continue down its hawkish path? Source: Bloomberg

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Keeping Up to Date

There are a plethora of resources to learn about the financial markets. Here is a non-exhaustive list of sources for you to keep up to date and raise your commercial awareness

- **Felix Newspaper**
  Our society manages its own column in the Felix news paper. Published every Friday during term time, this year sees the introduction of an educational series of articles published once every week.
- **Financial Times (FT), Wall Street Journal (WSJ) The Economist**
  Imperial College provides its students to the online subscriptions of these publishers. The Economist only accessible in the Central Library
- **Bloomberg Terminals**
  For the more advanced users
  10 Bloomberg Terminals are available at Level 1 of the Central Libary
- **Mogul News App**
  Handpicked articles from Bloomberg, The Telegraph,

Getting involved in the society

Keen to get involved in our society?
Here are some ways you can do so

- **Writing articles**
  We encourage members to write about all things related to the industry and we aim to have them published in Felix. Great articles will also go into our quarterly magazine. Contact Head of Editorial for more information
- **Weekly Stock Pitches**
  You sign up to pitch a stock at our weekly meetings This is a great chance to hone your financial knowledge and presentation skills at the same time
- **Run for Head of Sector Class**
  That requires you to write a piece in each quarterly magazine as well as giving a talk once a term on your asset class
- **Society Portfolio**
  Our society runs its own virtual portfolio. Contact Head of Portfolio Management for more information on how to play a part

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