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NUS INVESTMENT SOCIETY

INVEST

ANNUAL YEARBOOK 2020

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INTRODUCTION

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PRESIDENT'S MESSAGE

- Nicklaus Ong

Dear Readers and Friends of NUS Investment Society,

This academic year, NUS Investment Society has continued to deliver great value to our members and the wider student community. Building upon past experiences, we have introduced numerous initiatives focusing on the development of our members, and held exciting events for the wider student community to learn from.

The past year has been a turbulent and humbling experience for investors, both veteran and amateur. With geopolitical tensions running high, a lower for longer environment, surging debt and the coronavirus that threatens the world economy, risk management and in-depth analysis is crucial to deliver returns. It is also during times like these that investors learn the most. In NUS Investment Society, we have continued to develop the investment acumen of our members throughout this period. Despite the circuit breaker, our departments held investment pitches, conducted markets discussions, and actively shared articles to keep up to date with financial markets. Their efforts cumulated in the publishing of research reports of outstanding quality, equipping our members with industry relevant skills to further their career goals!

We believe that all roundness and multi-disciplinary skills are necessary for success in the workforce, be it for investments or non-investments roles. With this in mind, we introduced another initiative, Invest Academy, our rigorous flagship training programme that spans over two weeks. All members of NUS Investment Society had the privilege of attending this programme where they were exposed to Equity Research, Macroeconomics, Quantitative Finance, Fixed Income, and Portfolio Management, thereby setting the foundational knowledge from which our members can build up upon. Many industry leaders with diverse experiences also took the time off to come down and share their experiences with our members through our weekly speaker sessions. With their contribution, our members have benefited greatly and we have much to be thankful for.

Our dedicated members of the non-research departments have also contributed greatly towards raising the financial literacy of the wider student population. Despite the postponement of NUS-SGX stock pitch competition this year, they have pushed forward for other initiatives and held the Invest Fiesta where numerous distinguished speakers attended our events. Over the course of three days, attendants learnt personal finance, investments knowledge, and attended career talks to further their development! Throughout the year, our finance workshops were also enhanced with more content delivered to the attendees, thus raising their knowledge areas in investments.

We have also kickstarted a new department covering corporate credit. After consulting with industry professionals, we recognised a need for such a department to fill the experience gap in the student body so that they may learn to practice what has been taught in class. In the coming year, we will also be launching a virtual fund where the analytical prowess and skills of our members will be put to the test. There is much in store, and we are very excited for what is to come for both members for NUS Investment Society, and for the wider student community.

Before I end, I would like to take this time to thank everyone who has had a hand to play in our success the past year. It is only with the support of NUS, the unfailing dedication of our members, and active participation from the student community that we were able continue making an impact. NUS Invest will continue to grow and contribute to the best of our abilities.

Thank you and take care!

Nicklaus Ong Jing Xue
President
17th Executive Committee
NUS Investment Society

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OUR VISION

To be a globally recognized investment club dedicated to providing premier investor education and honing talented students for the investment and finance world.

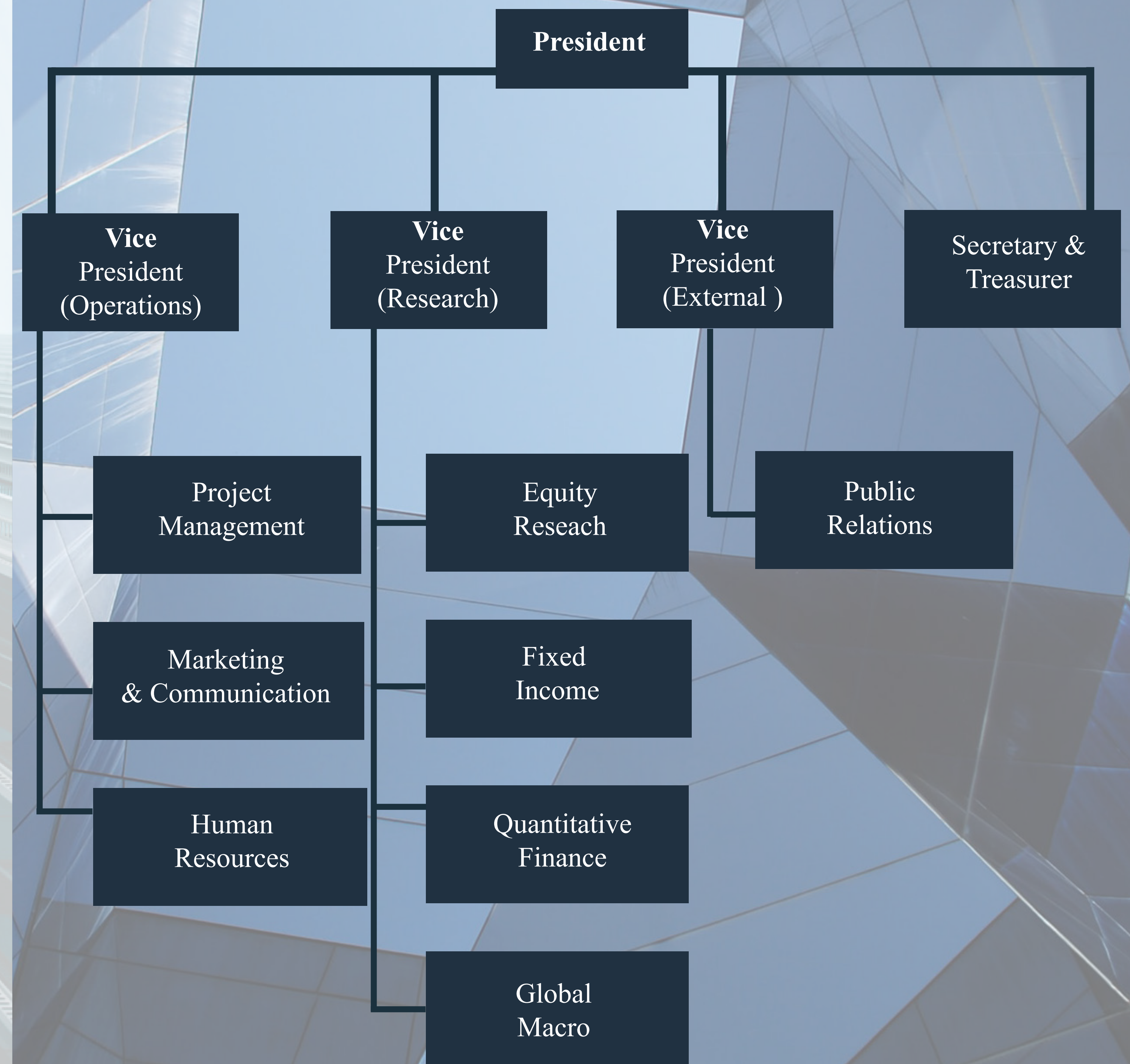
OUR MISSION

To promote financial literacy and investment knowledge among student investment enthusiasts.

To create networking opportunities and interactions between industry professionals and students.

To empower students dedicated to pursuing a career in finance with skills valued in the industry including the use of financial and analytics software.

ORGANISATIONAL STRUCTURE



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OUR DEPARTMENTS

Equity Research

The Equity Research (ER) department seeks to share knowledge and equity analysis in the global equities markets. ER analysts will serve to provide quality reports on stocks and industries to add value to subscribers. The department also aims to kick start its first ever virtual fund management to allow NUS Invest students to learn and transit to the finance world through experimenting and sharing investment ideas.

Global Macro

The Global Macro (GM) department was established to provide a platform for both students and the community to share and discuss trading knowledge, trade management and global macro economic trends which includes the Forex market, central bank policies. GM aims to encourage students to expand and deepen their trading literacy through workshops, weekly research meetings, and various networking events.

Quantitative Finance

The Quantitative Finance (QF) department seeks to explore quantitative investment and algorithmic trading strategies, grounded in mathematics and statistics. More academically-inclined, we keep ourselves at the forefront of academic research whilst conducting our very own in-house research. Away from the ivory tower, a strong emphasis on implementation equips our members with knowledge and skills employed by industry professionals today.

Fixed Income

The Fixed Income (FI) department seeks to serve as a platform for students to better understand FI as an asset class and its importance in the world today. The department aims to help students evaluate investments in debt products and the value it can bring to any portfolio. The department also wishes to equip members with a comprehension of fundamental credit concepts and the relevance of macroeconomic trends, through case studies and fundamental analysis on Asian corporate credit issuers.

Project Management

The Project Management (PM) department aims to bring NUS Invest to the forefront of imparting financial education to the student population in NUS and beyond. By connecting external companies and budding student investors through organising a wide variety of events, we hope to create a productive platform for the sharing of investment knowledge and expertise, and establish strong networks with the industry professionals.

Marketing & Communication

The Marketing and Communications (Marcomms) department aims to bring NUS Invest to greater heights by marketing our brand name to external parties. Marcomms actively collaborates with industry professionals of increasing influence to give both internal members and the student community insights to the finance world. Through utmost determination and passion, we serve to spearhead marketing efforts and promotion of events to help the Society achieve its goals and vision.

Human Resource

The Human Resource (HR) department is in charge of constructing and executing policies that enhance our members' welfare. Valuing our alumni, it is also our top priority to foster and maintain strong connections with them, bringing in industry knowledge into the Society and forging a stronger network for our members and the club. We also seek to administrate the Society's Recruitment Drive and relevant events to bring in the best individuals to join us.

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RESEARCH

Fixed Income
The yield curve – What is it and what does it imply?

Global Macro
U.S. Monetary Policy – Will Fed Consider Negative Rates?

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A Rational Approach To Investing In Uncertain Times

Quantitative Finance
Quantitative Techniques

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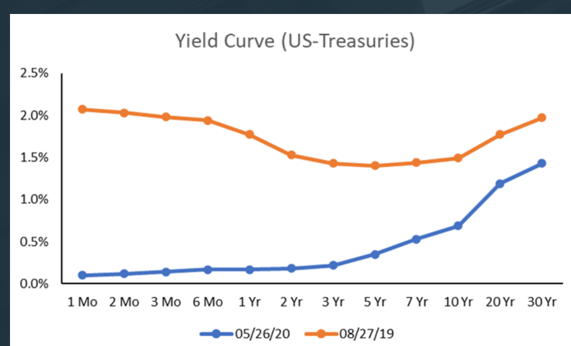
FIXED INCOME : THE YIELD CURVE - WHAT IS IT AND WHAT DOES IT IMPLY?

There has been talk about how the shape of the yield curve serves as a predictor of economic sentiment, with a yield curve inversion preceding almost every US recession since 1975. We shall take a closer look at what a yield curve is and understand more about how a yield curve is formed alongside various observations and potential trade ideas based off the shape of the curve.

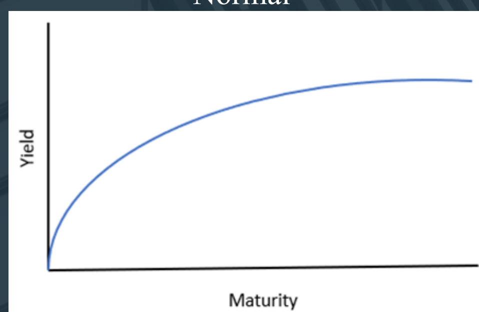
Firstly, what is a yield curve? Put simply, it is a plot of the rates of bonds of various maturities, with the shape of the curve visualising the spread, or difference in interest rates, based off bonds of identical credit risk across different maturities. The figure below shows an example of the yield curve of US Treasuries as of 27th August 2019 and 26th May 2020.



Source: US Department of the Treasury

As observed, the shape of the yield curve varies across the 2 different dates. Generally, 2 key theories drive the yield curve, the Expectations Hypothesis has Liquidity Premium Hypothesis. Put simply, the Expectations Hypothesis is a predictor of future interest rates while the Liquidity Premium Hypothesis serves to explain why the curve tends to be upward sloping due to extra risk investors undertake when holding longer dated bonds, which is compensated for through the term premium in the bond's yield.
The shape of the yield curve provides an insight to market expectations. The short-end of the curve tends to be influenced by monetary policy while the long-end of the curve tends to be shaped by investors' expectations of factors such as the economy, inflation and fiscal health. These expectations will change over time and eventually form various slopes of the yield curve, which will then predict various scenarios.

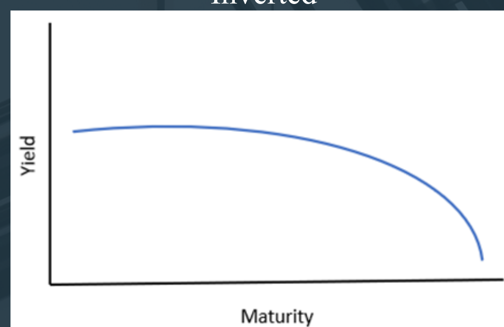
Normal



Source: NUS Investment Society

A steep curve is usually seen during economic expansions, with expectations of increased demand for capital resulting in inflation. Long-term investors would then demand higher interest rates to compensate for inflation risk, resulting in a steeper yield curve. Short-term investors are able to re-invest their holdings at higher yields at a quicker pace, which explains the difference in yield.

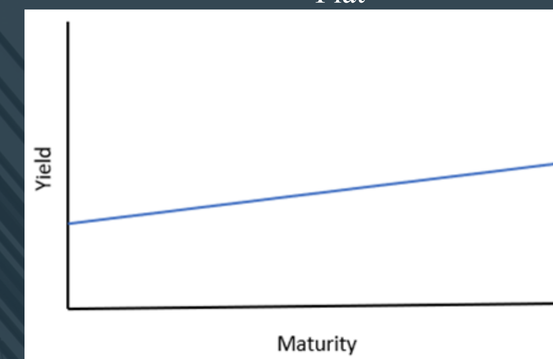
Inverted



Source: NUS Investment Society

In the case of an inverted yield curve, long-term interest rates are lower than short-term interest rates, which does not seem rational. In this scenario, the market expects the economy to slow down and future interest rates to drop. Long-term investors would try to lock in interest rates before they fall even further due to expectations of an economic slowdown.

Flat



Source: NUS Investment Society

Flat curves typically precede yield curve inversions, as short-term and long-term rates converge. However, not all flat curves will result in inversions.

Usage of yield curves

A benchmark curve is usually plotted using treasuries as the underlying security, which allows investors to compare the spread between the 'risk-free' asset (Treasuries) and other fixed income instruments such as corporate bonds. This spread can be measured to determine investors' risk appetite and get an overview of sentiments in the market. This spread generally widens during recessions and contracts during recoveries, with the most recent widening taking place back in March during the selloff that took place due to fears of economic depression due to lockdowns imposed by COVID-19, adding to the "risk-off" stance when investors sold risky assets, which in this case are BBB rated corporate bonds.

Source: St. Louis Fed

Certain extraordinary policies implemented can distort the shape of the yield curve. A few key strategies are discussed below:

Quantitative Easing (QE)

QE is a type of unconventional monetary policy central banks adopt. This strategy involves having the central bank make purchases from the secondary market to increase money supply alongside lowering interest rates through raising the price of the bonds by bidding up the bonds. This action will result in lower interest rates. QE has been adopted by major developed central banks such as the Federal Reserve (Fed), European Central Bank (ECB) and Bank of Japan (BoJ) and remains in place due to great economic uncertainty from COVID-19. We start to see QE starting to take effect in the US, with the FED balance sheet ballooning in times of crisis, such as the global financial crisis in 2008 and more recently COVID-19 in the past few months.

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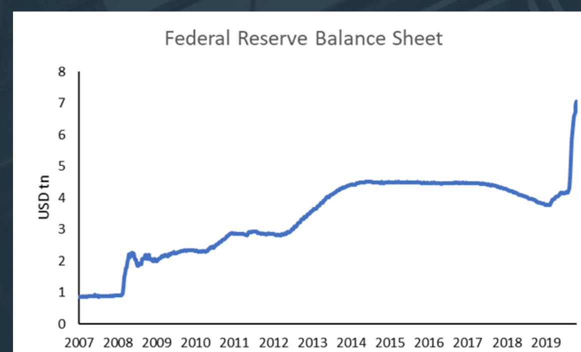


Source: Federal Reserve

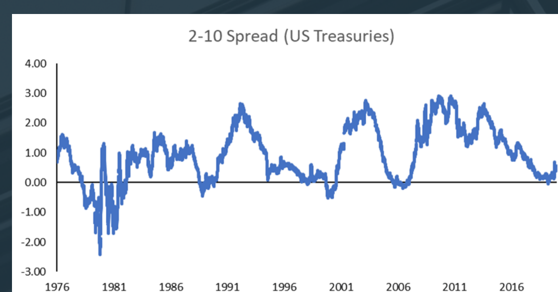
Yield Curve Control

This strategy involves having the central bank set a target rate for a certain term (Eg. 10-year interest rate) and purchase securities to ensure the interest rate remains at the target rate, which can result in distortion of rates due to purchases from the central bank to meet the target rate. This policy has been in use in Japan and more recently in Australia for government bond securities. This program tends to be more targeted as compared to QE.

How Does the Yield Curve forecast recessions?

Although the yield curve generally slopes upward, it will occasionally invert, with the short-term interest rate yielding more than the long-term interest rate, with a closely monitored spread being the 2-10 year spread. Inverted yield curves have preceded every recession. So how does an inverted yield curve signal a coming recession? Generally, when the slope of the yield curve changes, it usually reflects investors' expectations of future interest rates. A steepening yield curve (Where the spread between long and short-term interest rates increases) typically implies an expectation of higher short-term rates in the future. As for a flattening curve, the opposite takes place, implying an expectation of falling short-term rates.

Market expectations of future interest rates would therefore reflect investors' expectations of future economic activity and monetary policy. In the case of a weakening economy/recessions, short-term interest rates typically fall as demand for credit weakens central banks eases monetary policy in an attempt to spur growth through lower financing costs. If investors are expected a recession to take place, they will expect short-term rates to tumble and subsequently start to purchase longer dated bonds to lock in a higher yield. This action can potentially result in an inverted yield curve if the demand for longer dated bonds is high enough to cause prices to rise and yields to subsequently decline lower than short term yields, offsetting the term premium.



Source: St. Louis Fed

Trading the curve

Investors are able to make bets based on their expectations of the shape of the yield curve (Spread), be it based on flattening or steepening expectations. Recall that for bonds, prices increase when interest rates decrease and vice versa. One popular strategy is to utilise the yield curve spread trade, which involves taking

a long position on one end of the curve while taking a short position on another end of the curve. There are 2 key strategies in this trade, which is summarised in the table below.

Yield Curve Spread Strategy	Front End (Short-term)	Back End (Long-Term)	Action
Steepener	Long	Short	Long the spread
Flattener	Short	Long	Short the spread

There are 4 main scenarios in the yield curve spread trade, namely:

1. Bull flattener

In the bull flattener, long-term interest rates tend to fall faster than short-term interest rates, resulting in a flatter curve. In such a scenario, a "risk-off" situation usually takes place, with lower growth/inflation expectations, resulting in more buying on the long-end of the curve.

2. Bear flattener

In the bear flattener, short-term interest rates tend to rise faster than long-term interest rates, resulting in a flatter curve. In such a scenario, monetary policy tends to tilt towards hawkishness in a bid to cool the economy or provide firepower (Raising benchmark rates), which leads to higher interest rates on the short end of the yield curve.

3. Bull steepener

The bull steepener takes place when short-term interest rates decrease faster than long-term interest rates, resulting in a steeper curve. In such a scenario, monetary policy tends to tilt towards dovishness in a bid to spur economic growth (Lowering benchmark rates) which tends to influence the shorter end of the curve.

4. Bear steepener

The bear steepener takes place when long-term interest rates increase faster than short-term interest rates, resulting in a steeper curve. In such a scenario, investors are starting to price in higher inflation expectations which are likely to take place due to higher growth, with potential rate hikes from central banks in a bid to combat inflation.

These trades to express a view on the shape of the curve can be executed using many instruments, such as futures. There are other factors to consider when making such a trade, such as the DV01 (Dollar value of 1 basis point) and rolling contracts to maintain the profile of the original trade. Such trades can also be made for hedging purposes to manage interest rate risk.

Conclusion

We have understood what a yield curve is and how it is a widely used tool to gauge market sentiments and predict future economic scenarios. However, it is important to note that the shape of the yield curve can be influenced by unconventional policy that we see today (Fed/ECB/BoJ etc). We have also observed why an inverted yield curve typically indicates an impending recession and how investors can make trades based off their expectations of the yield curve.

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EQUITY RESEARCH: A RATIONAL APPROACH TO INVESTING IN UNCERTAIN TIMES

Mixed signals

The start of 2020 was filled with added uncertainty for investors as they emerged from a strong bull market in 2019, but also had to contend with various risk factors that were taking shape around the world. While markets exhibited cautious optimism regarding the Phase 1 Trade Deal between the United States ("US") and China, investors were forced to face a litany of other concerns (Figure 1). However, nothing quite shook the world as much as what arrived next: COVID-19.

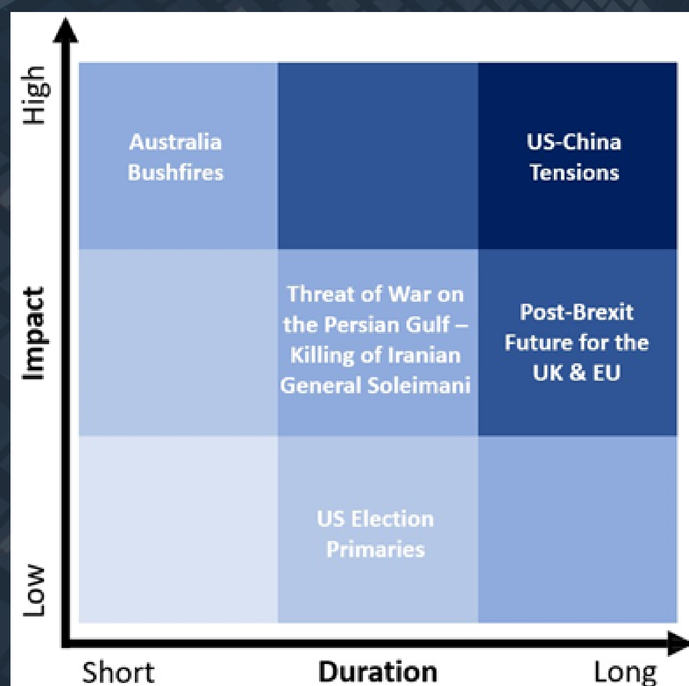

Figure 1

This time it's different?

The COVID-19 pandemic, a once in a century black-swan event, has derailed economies around the world as governments continue to grapple with the first mass viral outbreak since SARS in 2003. COVID-19 put an end to the longest bull-market ever witnessed in the US, which spanned a period of almost 11 years starting from the wake of the Great Financial Crisis in June 2009 and ending in March 2020. The end was marked when the DJIA officially entered a bear market on 11 March 2020 as it fell from a peak of c.30,000 to c.19,000 in the span of a few short weeks, representing a >20% decline from all-time highs. The S&P500 and NASDAQ followed suit the next day.

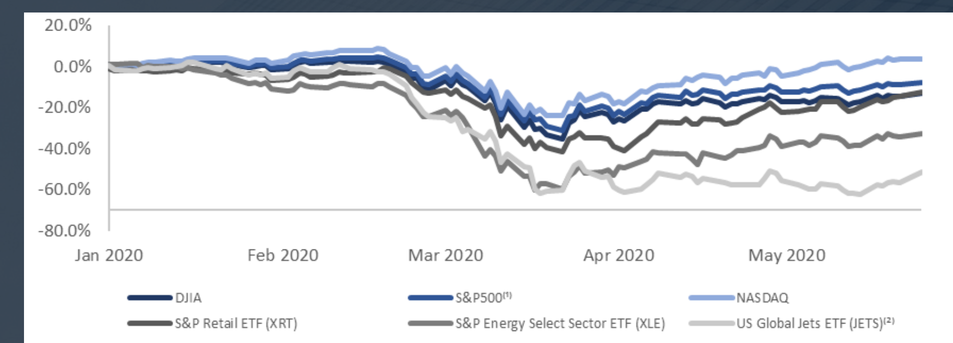

Figure 2

Source: WSJ (share price as of 26 May 2020)

Note: 1) The 3 largest constituents of the S&P500 are Microsoft Corporation, Apple Inc, and Amazon.com Inc (2) The 3 largest constituents of JETS are Southwest Airlines Co., American Airlines Group, and Delta Air Lines Inc

	6m Pre-Trough to Trough Performance	
Sector	**Dotcom Bubble (%)**	**GFC (%)**
Financials	(17)	(53)
Materials	(10)	(38)
Utilities	(12)	(36)
Industrials	(21)	(35)
Technology	(45)	(32)
Discretionary	(15)	(30)
Staples	(10)	(26)
Healthcare	(10)	(23)
Energy	(3)	(22)
Communication Services	(31)	(20)

Figure 3

Source: JP Morgan (as of 1 April 2020)

While COVID-19 has negatively affected many industries, its impact has been felt most acutely in the Tourism and Travel space where the collapse in demand has threatened the very survival of established airline companies around the world. Major airlines have already sought bailouts from governments (e.g. Lufthansa, Thai Airways, and Singapore Airlines), and Virgin Australia became the first casualty as it entered Voluntary Administration proceedings to restructure its debts. Singapore Airlines, which holds a 20% stake in Virgin Australia, undertook a rights issue offered at $3 per share, raising S$8.8bn through a mix of Ordinary Shares and Mandatory Convertible Bonds in a bid to raise cash for survival. In the retail sector, stay-at-home orders, social distancing, and general apprehension among shoppers to head out has led to reduced footfall in malls and accelerated the shift to e-commerce.

At the macro level, economic indicators point to significant stress. Consumer and business sentiment have fallen drastically, with unemployment figures skyrocketing as businesses lay off employees in a bid to scale down and conserve cash. In the US, non-farm payrolls fell by 20.5m in April, led by losses in the leisure and hospitality sector. The unemployment rate rose to 14.7% and the labour force participation rate plunged to 60.7% (the lowest reading since 1973). Consumer spending, (which has consistently contributed to c.70% of US GDP) has correspondingly taken a hit, falling 13.6% month-on-month in April 2020.

Region	Global GDP Growth Forecast 1Q 2020 (%)	2Q 2020 (%)
Global	**(15)**	**(18)**
Developed markets	**(11)**	**(40)**
US	(10)	(40)
Euro Area	(15)	(45)
Japan	(4)	(17)
UK	(11)	(59)
Norway	(17)	(33)
Sweden	(9)	(33)
Emerging markets	**(21)**	**14**
China	(41)	57

Figure 4
Source: JP Morgan (as of 31 May 2020)

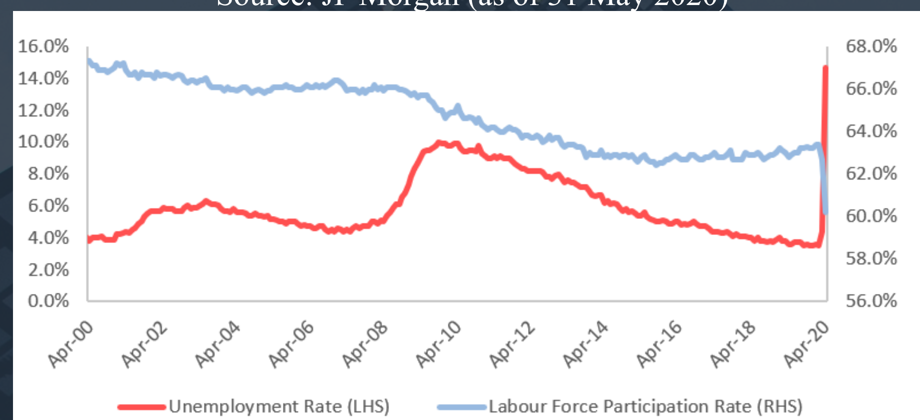

Figure 5:
Source: US Bureau of Labour Statistics

Risk on, risk off, or somewhere in between?

Despite persistent uncertainties, equity valuations have gained meaningfully from the lows reached in March. US markets have recovered more than 50% from March troughs even as companies report weaker earnings, cut/terminate dividends, and withdraw guidance. At the time of writing, 66% of S&P companies have withdrawn EPS guidance for 2020, including heavyweights such as Apple, Google and Walmart. In addition, S&P500 dividend futures point to a recovery to 2019 levels only in 2029/30. Despite this negative backdrop, there has been some recovery in investor sentiment. As of 30 May 2020, the GS Sentiment Indicator printed a reading of +0.1 (against a previous reading of -1.3) which shows a cautious, but gradually returning appetite for equities among retail and institutional investors. However, sentiment is still far from bullish, as the most recent Fund Managers Survey indicates elevated cash positions of 5.7% vs a 20-year range of 3.5%-4.5%, indicating some level of conservatism among fund managers.

With the S&P500 currently trading at a 20-year high on its 12-month forward P/E, the question remains: is this a new normal, or will we see a reversion to the mean? With fair arguments on either side of the debate, we believe the answer hinges on if/when a vaccine is developed.
Three trends we think are here to stay (and how they affect your investment decisions)

1. Cash is King

We expect to see a cash crunch in consumer discretionary and tourism-dependent industries, and see the most downside in the following industries:

- Automobile Industry: Key risk is the high cash burn rate. Ford and GM are estimated to burn c.US$4bn per month during this period, with Ford already drawing US$15.4bn from two credit lines last month.

- Airline Industry: Key risk is high leasing costs coupled with illiquid assets. Virgin Australia has already entered Voluntary Administration proceedings.

- Discretionary Retail Industry: Key risk is that products are of a larger ticket size and are considered non-essential. These products are expected to experience a significant decline in demand as consumers tighten spending due to worsening economic conditions.

We anticipate larger movements in working capital as companies attempt to shorten their cash conversion cycle. At the same time, we foresee decreases in operating income due to lower revenues coupled with higher expenses incurred to adhere to COVID-19 regulations. This may be slightly offset by companies scaling back on expansion CAPEX, and focussing only on essential maintenance CAPEX instead. While some reports such as JP Morgan's research report on COVID-19 weigh the possibility of an optimistic V-shaped recovery as lockdowns are lifted and pent up demand is unleashed, we remain modestly cautious given the potential of a second wave of infections and general apprehension amongst consumers in resuming social interactions. We see opportunities in companies with sizable cash balances and low leverage which will allow them to draw additional credit if required. Microsoft is one such company; as of end 2019, it had US$134bn in cash and short-term investments, and debt of US$79bn. Furthermore, Microsoft generates strong recurring cashflows from its subscription-based business model.

The ER View*: We remain selectively overweight on equities. In particular, we are long cash heavy, low leverage, low cash burn companies, especially in the consumer staples space. We also see viable opportunities in companies which have product lines considered "essential", and cloud-based SaaS companies due to stable cashflow generation without excessive CAPEX requirements. We are short on the airline and auto industry due to their high maintenance CAPEX requirements and severe revenue declines, and are also short on industries which typically rely on large-ticket sized discretionary consumer spending.

2. The Champions of Tomorrow: Remote Companies

Home entertainment services, delivery services, and e-commerce have benefitted from the new social norm, and the stickiest of services such as Netflix and Amazon are likely to continue profiting in the long run.

Figure 6
Source: Company Filings as of Q1'20

According to a report by McKinsey, buy online, pick up in-store ("BOPIS") grew 28% year-on-year and e-commerce sales have increased by nearly 10% since the onset of the pandemic, led by grocery purchases. With working remotely almost mandatory, share prices of video conferencing and cybersecurity firms have skyrocketed. Video conferencing company ZOOM has seen its price increase by 161% year-to-date while cybersecurity firm Zscaler has seen a year-to-date gain of 110%.

Given this backdrop, we are positive on the following companies:

- Salesforce (NYSE: CRM): Investments into cloud technologies have allowed Salesforce to future-proof their business as demand for customer relationship management software is set to pick up due to the shift towards teleworking.

- Equinix (NASDAQGS: EQIX): With prior investments into data centres, Equinix is set to benefit from the teleworking environment through its data storage services fuelled by the influx of data.

- XPO Logistics (NYSE: XPO): With exposure to both e-commerce storage and transport along with its proprietary cloud-based command centre, XPO Logistics can lower cost and increase efficiency in its warehouses, providing a strategic advantage to leverage the e-commerce boom.

- Walmart (NYSE: WMT): With a robust delivery option and investments into cloud network facilities, Walmart can capture growth from the accelerated shift to e-commerce by leveraging on big data to customize its customer's online shopping experiences.

Surprisingly, seemingly defensive stocks such as Telcos – where services are more integrated, have displayed a lacklustre performance in recent months. Globally, the MSCI World Telecommunications Service Index has declined by 13%. Despite the increase in service demand due to teleworking, Telcos lack an actionable monetization strategy due to their rigid price structure. According to Reuters, the rapid surge of services has resulted in huge costs spent on upgrading systems along with the CAPEX investment for 5G technology. With COVID-19 delaying the rollout of 5G, we expect a negative impact on Telcos as 5G fails to materialize in the expected timeframe.

The ER View*: We are long cybersecurity, communications technology, e-commerce ready companies, and transport and cloud computing companies as we expect increasing adoption of teleworking and lasting changes in consumer purchasing behaviour accelerating the shift to e-commerce. We believe that investors should focus on quality companies with cash generative business models to weather the economic impact from COVID-19 as volatility will continue to remain elevated in the near term.

3. The Visible Hand (of the Fed) and its Effects on Markets

Regarding monetary policy, the US Federal Reserve (the "Fed") has pledged a Draghi-esque stance of "Whatever It Takes", adopting a policy that plunged rates to just above the technical zero level while removing the cap off the Fed's balance sheet. In addition, the Fed has also started temporary dollar swap lines with 9 foreign central banks, and has expanded its bond-buying program to include investment-grade corporate bonds and corporate bond exchange traded funds. As of 18 May 2020, the Fed's balance sheet has topped US$7tn, a stark contrast to just US$4.2tn at the start of March. Actions of similar relative scale have been taken by Central Banks across the globe. With treasury yields at record lows, capital has been pushed from bond markets into equity markets in search of higher yield.

Regarding fiscal policy, the US government, through the issuance of treasuries, has directed massive fiscal stimulus at consumers (through fiscal policies including unemployment relief and financial aid) and small businesses (through the equities, and underweight bonds and cash. Our view to underweight bonds is underpinned by the belief that global PMIs are at trough levels, and that markets are under-pricing the risk of inflation returning given that the US 5-year Breakeven Inflation Rate currently stands at a mere 0.83% as of 29 May 2020 (far below the Fed's target rate of 2%). In the meantime, as the world waits for a vaccine to be developed, we retain strong conviction on equities in selected industries and sectors (mentioned above). In particular, we are optimistic on US equities given the flexible labour market and the Fed's aggressive policy response supported by the "dual mandate" of full employment and inflation of 2%. Moreover, the Fed has far more policy flexibility than other major central banks given the small size of its balance sheet relative to GDP (40% for the Fed, compared to >40% for the ECB, and >100% for the BOJ).

Conclusion

COVID-19 will redefine investors' perceptions of companies, industries, and even countries. As we enter a new age, social norms will change, global supply chains will evolve, and new winners and losers will emerge from the ashes of this once-in-a-century event. In these uncertain times, it is more important than ever to have a Rational Approach to Investing.

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GLOBAL MACRO: U.S MONETARY POLICY - WILL FED CONSIDER NEGATIVE RATES?

When the financial markets were buckling in March because of the terror about the Covid-19, the Fed committed to use its "full range of authorities" to prevent the financial markets from a liquidity crisis. The Fed has taken some extraordinary measures to cushion the economic shock – some are from the 2008 playbook and the others went well beyond. The unlimited support, despite the sudden stop in economic activity, manages to stabilize the markets and backstop the financial system. The Fed's stimulus can be categorised into: (1) interest rate cut, (2) loans and asset purchases and (3) regulatory changes.

The Fed cut its benchmark fed funds rate twice in March 2020, the first time by 50 bps and the second time by 100 bps, effectivity lowering the fed funds rate from 1.50%-1.75% to 0.00%-0.25%. In addition, the Fed also cut its discount rate, which lower the cost of discount window lending, by 150 bps down to 0.25%. In addition, the Fed also reduced the cost of swap lines with major central banks and extended the maturity of FX operations and extended more USD swap lines to more central banks.

On top of interest rate cut, the Fed expanded their balance sheet. The scale of the program is open-ended or sometimes called the unlimited QE, though the Fed has been hesitant to call these measures a QE. It instituted an unlimited bond purchasing program, increased repo market operations, created new emergency lending facilities (Table X). The Fed's balance sheet has increased to more than USD 7 trillion with some forecasts predicting it could reach USD 9-10 trillion.

Facilities	**Description**
Commercial Paper Funding Facility	*Facilitates the issuance of commercial paper by companies and municipal issuers*
Primary Dealer Credit Facility	*Provides financing to the Fed's 24 primary dealers collateralized by a wide range of investment grade securities*
Money Market Mutual Fund Liquidity Facility *(MMLF)*	*Provides loans to depository institutions to purchase assets from prime money market funds*
Primary Market Corporate Credit Facility	*Purchases new bonds and loans from companies*
Secondary Market Corporate Credit Facility	*Provides liquidity for outstanding corporate bonds*
Term Asset-Backed Securities Loan Facility	*Enables the issuance of asset-backed securities backed by student loans, auto loans, credit-card loans, loans guaranteed by the Small Business Administration*
Paycheck Protection Program Liquidity Facility (PPPLF)	*Provides liquidity to financial institutions that originate loans under the SBA's Paycheck Protection Program (PPP)*
Main Street Lending Program	*Purchases new or expanded loans to small and mid-sized businesses*
Municipal Liquidity Facility	*Purchases short term notes directly from state and eligible local governments.*

On the regulatory changes, the Fed made a number of technical changes to hold on less capital so then can lend more to those borrowers affected by Covid-19.

The Fed has very clear dual mandates which are inflation and unemployment. While unemployment is very high currently, it is mainly because of the economic standstill due to the coronavirus lockdown. We think that inflation is more concerning as a consequence of such a dramatic loosening of monetary policy. There is much evidence of countries who turned to printing money in difficult times and ended up in high inflation. We do not think that the U.S. will end up in high inflation. In macroeconomic theory, an increase in money supply should increase the levels of inflation. However, money supply is not the only driver of the general price level. Another key driver is the speed at which money moves in the financial system – otherwise known as the velocity of money. A low velocity of money allows money supply to increase significantly without causing a high inflation. While money supply is high in the U.S., the velocity of money is at record low. While there are many explanations for the low velocity of money, the reasons are all very structural in nature and it all revolves around the idea of more savings rather than spending. The inflationary pick up is more likely through USD weakening as a result of narrowing rates differential between USD and the rest of the world.

Another interesting topic is about negative rates and their likelihood in the near future. Ever since the 150bps cut, the Fed has touched the zero lower bound (ZLB) and there are increasingly more talks about negative rates. For what it's worth, the market is pricing a 20% probability of a cut in 2021. The latest round of Trump vs. the Fed also involved negative rates, although Jay Powell has repeatedly made it clear that NIRP is not one of the policy tools that the Fed will consider. We understand that due to Covid-19, governments around the world have announced tons of fiscal stimuli and the government spending is one of the key drivers that will help economies to weather the coronavirus. Considering that, there is a benefit of negative rates because it reduces the relative borrowing cost further, this is what we think Trump wants. Historically high rates disparity between USD and the rest of the world is structurally bullish for USD. The lack of fundamental support (weaker U.S. growth) since 2019 has been accelerated by the coronavirus-led 150 bps cuts in March, USD has been moving lower (see below for USD analysis) since. If the Fed chooses to pursue NIRP, USD will weaken further and the relationship between weaker dollar and higher inflation will materialise. This will in turn erode the nominal value of debt repayment for the Covid-19 packages, which is a valid concern by Trump.

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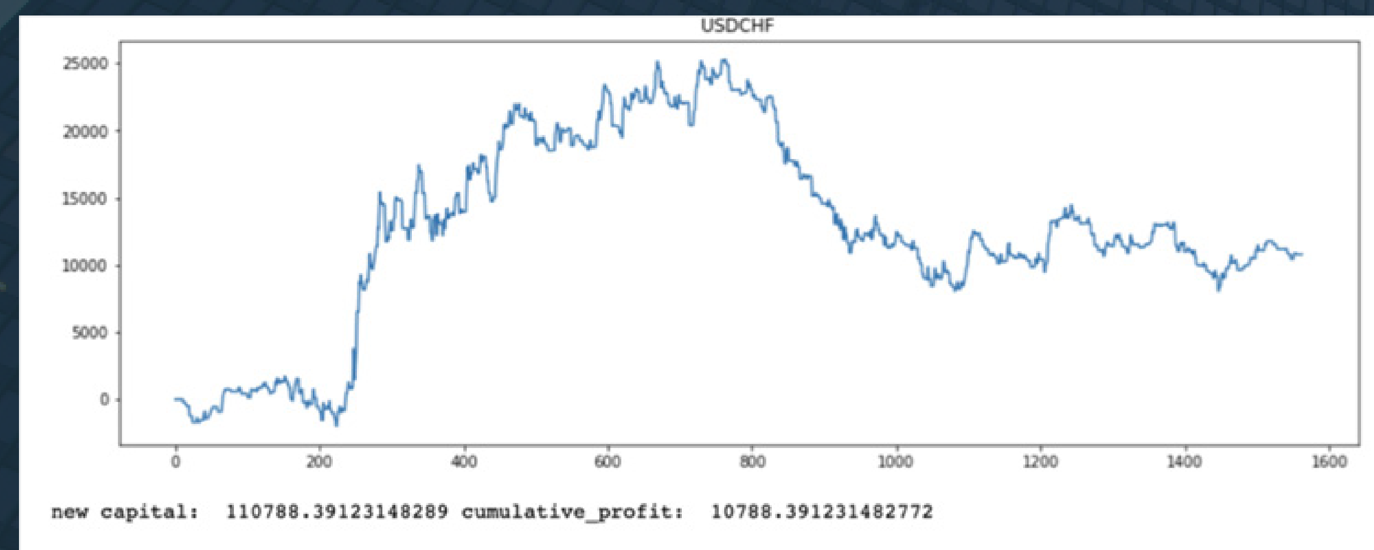
QUANTITATIVE FINANCE: QUANTITATIVE TECHNIQUES

Quantitative Analysis refers to the use of mathematical and statistical methods to analyze problems in finance. Over the past year, the NUS Investment Society Quantitative Finance (QF) directorate have worked on various problems ranging from technical analysis, natural language processing and machine learning on financial data. This write-up will give a rather high-level overview of some of these projects.

One of our works was using machine learning classifiers and the LSTM (long short-term memory) neural network to predict trends in the Foreign Exchange Market (FOREX). The project involved taking raw data from the Bloomberg terminal for FX currency pairs, engineering new features and running it through different models. The features added includes technical indicators (e.g. stochastic oscillator) and signal processing features such as average of past n days.



The data was then run on various classifier models – random forest, support vector machine etc. A stacking technique was used to incorporate the results of all the models. This was compared against an LSTM neural network. There were good findings from this project and the figure above showcases the profit curve for the USDCHF currency pair when doing a simple buy/sell approach on the price signals generated by the model.

A similar study was done on the housing market as well. We used machine learning models and regression techniques to evaluate whether we could predict housing prices in Singapore. The data for this was sourced from various sources e.g. government datasets.

Apart from that, an interesting study was to use natural language processing and see if news headlines can affect stock price movements. We used Bloomberg news headline data that mention apple stocks (AAPL) and tried to see if the headline can affect the stock price movement in the very next day. We did sentiment analysis of the headlines and trained it using some of the classification models mentioned above. Our model was found to have achieved an accuracy of 70% (7 / 10 signals predicted correctly) through this approach which goes to show that news or social media can be used to a certain degree to forecast stock price movements.

In all, these studies help to show the potential of quantitative techniques in trying to beat the market. Depending on the right features/data, we saw how a trading strategy that uses a machine learning approach can potentially achieve a good profit margin. We also saw how news/media can also be used as a data source to forecast trends in the market. Exciting times are ahead of us and research in this field is only growing day by day.

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OUR EVENTS

Invest Academy

Forex 101

FIESTA'19

Fundamental Analysis & Fixed Income 101 (FAFI 101)

Invest Cohesion

Combined Meetings

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INVEST ACADEMY

Written by Alina @ Su Myat, Marcomms Executive

Invest Academy is a compulsory event that happens for two Saturdays in a row for the first time the new members join The Investment Society. It is when each of the Departments under the Research Department of the Investment Society gives an introduction to topics which are related to what each of them does respectively.

On the first Saturday, after a general introduction and briefing, two of the Departments gave their presentations – the Equity Research Department and the Global Macro Department. They shared valuable and comprehensive knowledge on passive investments, stocks and better understanding the stock market, inflation rates, etc. Following that on the next Saturday, the Quantitative Finance and Fixed Income provided us with their fair share of a myriad of information. These included an introduction to python and its functions, bonds, credit analysis and looking at probability and its functions more in-depth, etc.

Invest Academy is an enriching and meaningful experience, especially if you entered the Investment Society with the desire to learn more about finance and explore related subjects. This event comprehensively provides the start for that journey. Although it may initially be overwhelming due to the immense amount of new information that comes your way, for those who have little to no prior knowledge and even for those who are relatively familiar with such information, it is not a challenge to learn something new and refreshing and to gain something insightful. Being able to get to know your fellow Department members value-adds to this as well.

FOREX 101

Written by Liang Zheng Yong , Marcomms Executive

The FX101 is an annual event introduced by the Global Macro (GM) Research Department back in 2014 to provide the student population and the general public with basic Foreign Exchange (FX) knowledge for them to kickstart their FX trading journey. This is done as part of NUS Investment Society's effort to promote financial literacy in NUS and provide a platform for like-minded individuals to interact and share knowledge with each other.

This course is a half-day event that is very beginner-friendly as it started with the introduction of basic currency knowledge such as reasons to trade FX and some basic terminologies such as bid-ask-spread. This is followed by the GM directors giving a preview of the macro-economic environment and how it will affect some of the currencies. Various economic indicators that professional traders look at were also introduced in detail so that participants will be able to start trading right away after attending the course.

Of course, in order to be successful in trading, one does not only conduct fundamental analysis of the economy but also technical analysis on chart and candlestick patterns. Famous patterns such as the Double Top, Head and Shoulders and Flag and Penant was introduced. By including technical analysis in the second half of the curriculum, FX101 seeks to provide a holistic view on FX trading so that participants can choose the type of analysis that they prefer, or even combine both analyses to achieve better results.

Moving one step further, the team also applied the theories taught into practice by inviting GM researchers to share their research and trade ideas. Not only are participants able to see how our analysts conduct their research, they can also listen to their views on the economy so that when they go back, they can use these trade ideas and start trading right away. The session was well organised and participants were able to learn a lot from the informative and insightful sharing.

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FIESTA 2019

Written by Peh Yi Shuen , Marcomms Executive

The entire 3 days series of NUS Invest Fiesta 2019 is indeed insightful and fruitful one. The NUS Invest Fiesta 2019 covers a wide range, from learning about personal finance to global market outlook followed by industry exposure.

NUS Invest Fiesta Day 1: Personal Finance

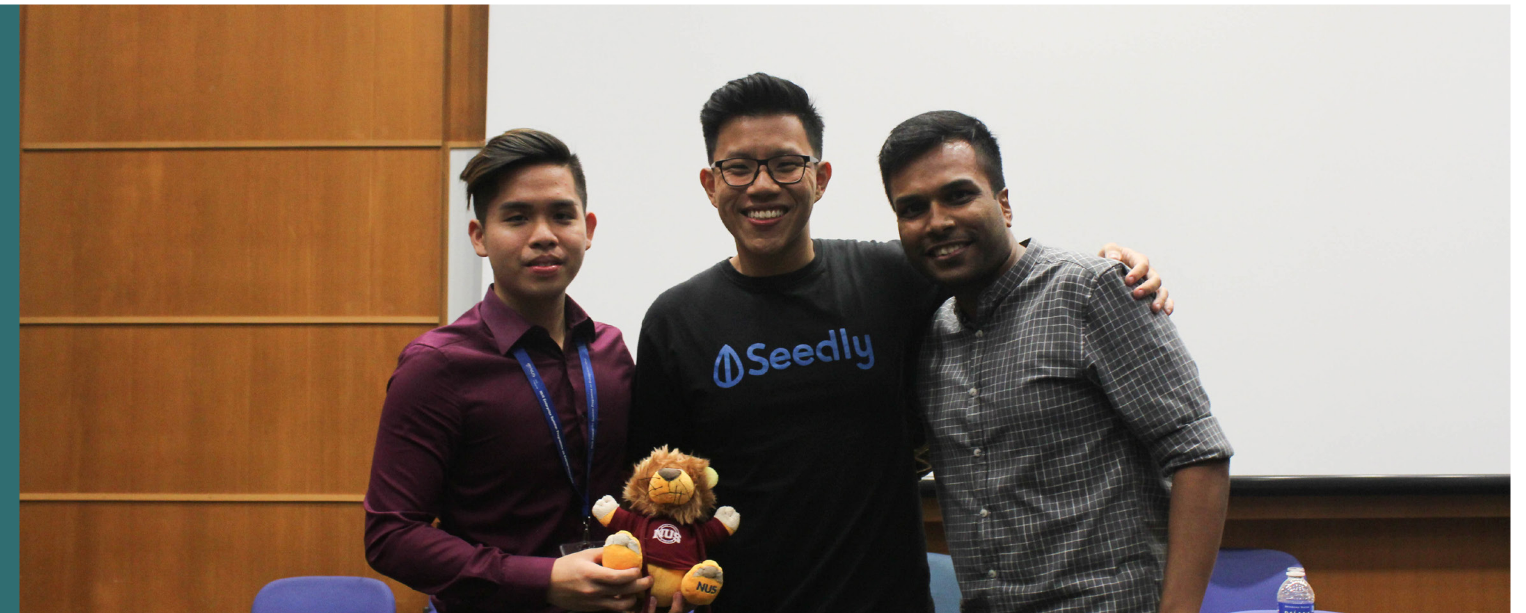
Mr Kennth Lau, the co-founder and CEO of Seedly, Ms Sue Mae Ching and Mr Timothy Ho from DollarsAndSense.sg shared with us on tips on how to invest, budgeting and to diversify our income streams. During the sharing, a cashflow management was shared: 20% take home salary should be set aside for savings (Savings account, insurance coverage), the other 50% will be spend on expenses and the last 30% of it will be set aside for wealth (stocks, ETFs, REITs, Funds, etc.). This will be useful in giving us, especially those who are soon to step into the workforce, a rough overview of how we should manage our finances.

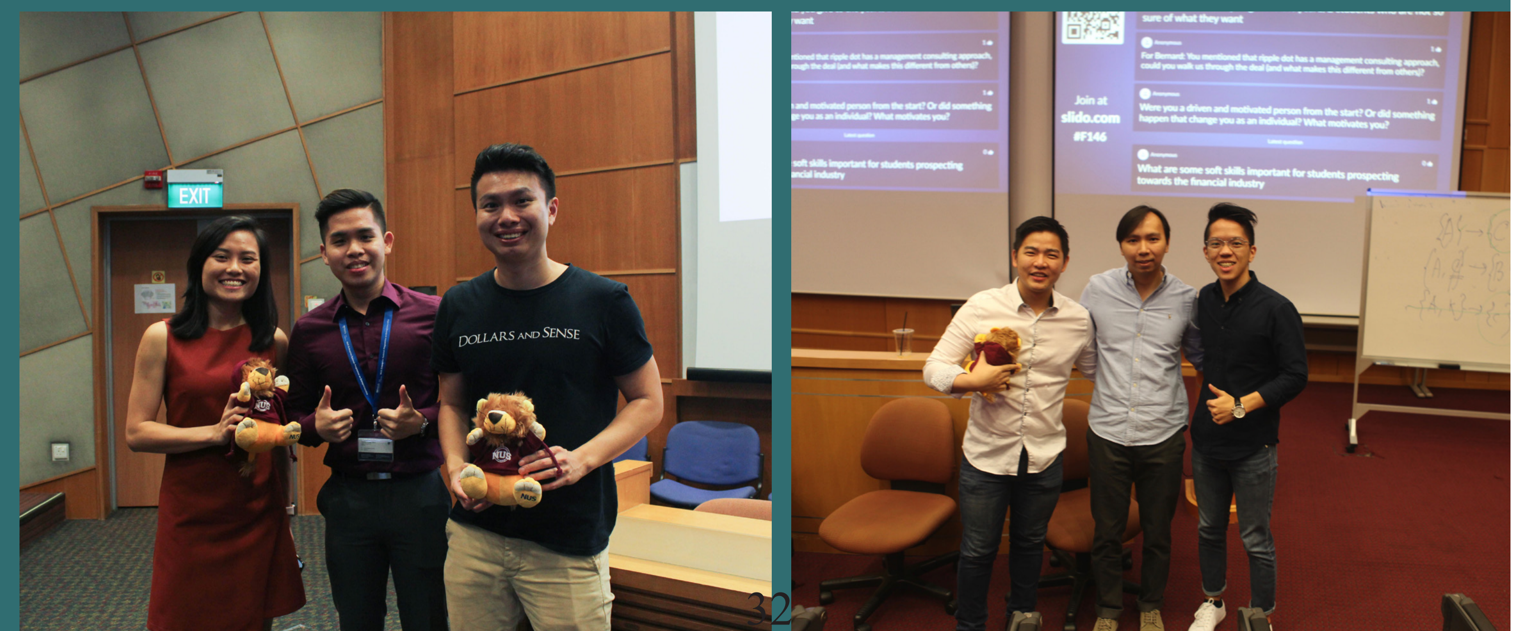
NUS Invest Fiesta Day 2: Global Market Outlook

The speakers who came down were Mr James Choo, Chief Market Strategist from HSBC Private Banking, Mr Ammar Jilani from Emerging Markets Trading, Namura and Mr Joel Lim, the former managing direction of Julius Bear. Their views on the upcoming recession and how the current Hong Kong situation affects the market outlook were being shared in the session too. Besides that, they also recognize that banking might be a sunset industry so having varying skill sets such as coding would be good.

NUS Invest Fiesta Day 3: Industry Exposure

The program started with a sharing by 3 speakers: Mr Arun Pai from Kristal.AI, Mr Bernardus Christianto from BNP Paribas and Mr Gordon Goh, followed by a networking session with them. It was inspiring to hear their stories and tips on how they got into the investment banking sector. It was overall a good experience especially for those who aim to enter investment banking because valuable sharing was made e.g. what kind of potential new hire they are looking for and the expectations of their jobs.





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FAFI 101

Written by Jean Chew, Marcomms Executive

NUS Investment Society held its first Fundamental and Fixed Income 101 workshop on 8 February 2020. The workshop was well-received by the general public and students alike despite the growing concern of the novel coronavirus, attracting a total of around 100 participants.

This workshop aims to equip participants with better financial and investment literacy, while encouraging them to kickstart their investment journeys! It seeks to strike a balance between sharing basic financial knowledge, together with some practical know-how, in order to cater to the different personal investing experiences of all participants.

This year, the workshop covered an exciting array of content, ranging from valuation methods and basic financial modelling, to key fixed income concepts and bonds in personal portfolios. The half-day course proved to be exciting and thought-provoking for participants who, when asked, feed-backed that they were keen for more such sessions.

Once again, we would like to thank our very own Fixed Income and Fundamental Analysis departments for sharing their insights and knowledge during this event. Hopefully this event has provided participants with greater insight and inspired them to take the leap of faith in their own personal investment journeys! We will be back with even better content and speakers next year!

INVEST COHESION

Written by Alina @ Su Myat , Marcomms Executive

Invest had a cohesion in the first semester of AY19/20. Members of the Society from all departments gathered to have an enjoyable time filled with fun and games. Everyone got a chance to earn points and win prizes for their respective departments in games like "Hangman", "Charades" and "Guess The Lyrics", after feasting on a sumptuous buffet.

Members got to interact and bond with those from other departments in an environment different from the usual meetings and events, bringing the Society closer together.

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COMBINED MEETINGS

Written by Elicia Chua, Marcomms Executive

NUS Investment Society's Weekly Combined Meetings provide members with valuable opportunities to network and learn from speakers from a variety of institutions such as prestigious banks, asset management firms and trading firms.

In one of the combined meetings, we had the privilege of Ray, from GIC fixed income who came down for a sharing session. In his sharing, he gave 3 key advice that personally stuck with me. The advice given was very useful and relevant, coming from his personal experiences when he was also a NUS Business undergraduate. Firstly, Ray mentioned that he documented and reflected on all of his interview experiences, seeking for continual self-improvements. Secondly, Ray shared a general rule of thumb that one should apply to more than 50 firms for a successful response. On this note, he also mentioned that we should be shameless and hungry for opportunities. Lastly, Ray also spoke about having a growth mindset, to acquire skill sets that would keep us competitive in the long run and to develop a niche that would render you irreplaceable by others.

We also had the opportunity to invite QCP Capital, a cryptocurrency trading firm down for an information sharing session. This was a different and interesting opportunity as most members in NUS Invest would probably be unfamiliar with cryptocurrency. Personally, one of the most striking nuggets of wisdom shared was that trying to impress directors and analysts at networking events is actually useless. To break into the trading sphere, it is all about personality; to be opinionated, to be smart in tailoring your resumes to the firm you are applying for. He also mentioned that life as a trader is highly personal and individualistic, meaning that you can't copy someone else's systems of doing things and you really have to find your own way of doing things. In another combined meeting, we had a briefing for the FX demo trading competition. This was one of the rare occasions where our combined meeting was also open to public for the purpose of sharing advice related to the competition. In that briefing, he shared the top 3 mistakes that traders make:

1. Poor risk management which has a lot to do with the psychological effect - Never invest more than you can afford to lose

2. Risk to reward ratio - When you risk something, you want a reward that is more than your risk.

3. Flawed or Absent trading system - Traders should and must go in with a plan or system in place, so ALWAYS have a plan!

All in all, the combined meetings were all very fruitful sessions that have allowed members to connect and interact with distinguished guest speakers and in the process, acquire invaluable knowledge about the finance industry and how they can prepare themselves to be career-ready.

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