1. **Basic information**

* **Singapore Labor Foundation (SLF)**
* Established in Dec 1977, it is a statutory board under MOM.
* Aim is to improve the welfare of union members (i.e., via providing financial support for educational, social, cultural and recreational activities organized by NTUC) and to further the development of trade unions.
* Funded by contributions from unions, co-ops and returns from investments. Angsana Fund Management (AFM) is the investment arm of SLF. Note: A NP model portfolio can adopt 35% Public Equity, 15% FI, 27.5% PE and Illiquid, 12.5% Real Assets, 10% in Hedge Funds.
* **Market Risks**
* **Interest rate risk**: Re-pricing risk (i.e., differences between timing of rate changes and cash flows), yield curve risk (i.e., changing rate relationships across different maturities) etc. Value of **instruments with intermediate and long maturities can be especially sensitive to interest rate changes**.
* **Forex risk**: Risk arising from changes in values or asset-liability mismatch of these foreign currencies (vs domestic currency)
* **Credit trading risk**: Credit instruments are susceptible to default risk and credit migration risk.
* **Market liquidity risk**: Risk that an institution is not able to liquidate or offset a particular position due to inadequate market depth.
* **Effective Risk Monitoring Qualities**
* Measure current exposures through marked-to-market and calculate daily P&L
* Calculate Value-at-Risk (VaR) to measure a portfolio’s potential loss – It is defined as the loss level that will not be exceeded with a certain confidence level during a particular period, e.g., 1-day 95% portfolio VaR is $1M means that there is a 5% chance the loss will exceed $1M over 1-day.
* Expected Tail Loss (or Conditional VaR) that quantifies extreme losses. Where VaR aims to capture how bad things can get, CvaR provides a quantification of what the expected loss will be in a tail event, e.g., 1-day CVaR can be 99th percentile of loss distribution (1% of loss getting extreme).
* **Job Requirements – Senior Investment Analyst**
  + **Research**
    - Investment-related activities, e.g., **Manager research and selection**
  + **Data management**:
    - **Perform validation and reconciliation** to ensure consistent data across platforms, working to resolve discrepancies where necessary
    - Assume responsibility for timely **upkeep of critical research datasets**, including manager exposures, holdings, dealing terms and fees
    - **Provide trading support** by maintaining position records, entering trades into the system (upon instruction by the portfolio managers)
  + **Data Analysis & Modeling**:
    - Develop and maintain **cashflow forecasting models for underlying private asset managers** as well as at aggregate portfolio level
    - Test, validate and maintain **market risk models**
    - Support portfolio managers in **quantitative analysis on external managers’ investment performance, risk attribution,** deviations from benchmarks and asset allocation targets, as well as portfolio movements
    - **Develop and maintain tools on portfolio construction**
  + **Reporting**:
    - Ensure the timely **generation of investment performance and risk reports**, loading proxy data for risk computations and scenario analysis
    - Identify appropriate risk metrics to meet AFM’s evolving business needs
* **Interviewers**
* **Lilian Lee** – CEO & CIO of AFM
  + Manage SLF’s long-term reserves via asset allocation, portfolio implementation / construction covering public and private markets.
* **Tan Boon Siew** – HR Senior Executive

1. **Interview questions**

**Biographical**

1. ***Tell me more about yourself***

My bachelors was from NUS, where I majored in Accountancy. That was between 2009 and 2013.

Right after my graduation, I went on to join CPF Board, which is a statutory board that governs the savings and pension plan for working Singaporeans and PRs, where I was involved in:

* Analysing citizens’ data to ensure that they are accurate for government scheme payouts. We also used the same datasets to identify prevalent trends and provide relevant recommendations to support government policy reviews.

In 2016, I resigned from my job at CPF Board and went to pursue a joint Master study in Quantitative Finance with SMU and City University, which is based in London.

After my graduation from my Master’s studies in 2017, I joined Mizuho Bank as a business analyst, where I was responsible for developing robust financial tools using programming languages to streamline operational processes and perform data modelling.

In 2019, I left Mizuho Bank and went on to pursue a Quantitative Analyst role with Scientific Beta, which is an index provider firm. Besides assisting in thematic research (i.e., analysis of themes / patterns in dataset to identify meaning), I was involved in reviewing public ESG data sources and developing in-house capabilities to acquire ESG data for the index business

Aon is the latest stop in my career journey, where I currently sit with Aon’s Centre of Innovation & Analytics and is responsible for developing quantitative portfolio and ESG solutions aimed at delivering actionable insights for Aon’s investment business.

1. ***Workfare details***

Just a brief introduction on Workfare, which was the government scheme that I was working on. Workfare is a government scheme that encourages eligible lower wage workers to stay employed by supplementing their monthly incomes and retirement savings with monthly payouts. It also provides opportunities for them to up-skill themselves by providing separate funding support for their training purposes.

Before 2017, one of the qualifying criteria is that the worker must be earning a gross monthly income of not more than $1,900.

During the Workfare policy review for 2017’s implementation, one of the goals was to ensure that Workfare will continue to be targeted at the bottom 30th income percentile of workers. Based on the income data residing in our database, we were able to identify that the nominal gross income of the bottom 30th percentile has increased from $1,900 in 2012 to $2,000 in 2015. Thus, we proposed to our Minister to peg the new income ceiling to $2,000 instead for 2017’s implementation.

1. ***Tell me one of your strengths and weaknesses***

**Strengths**: I have an inquisitive nature where I like to drill into the granular details to have a firm grasp of how things work. For example in our climate change analysis, there is a front-end functionality in MSCI ESG portal that allows users to upload portfolio constituents and the portal is able to pull all the MSCI backend data to derive the portfolio carbon metrics automatically.

To sense check these carbon figures, I performed the manual calculations separately and realized that I was not able to replicate those figures. After some investigation and trial testing, I realized that MSCI has used the latest available data for the calculations, where the fiscal years underlying those data might not be aligned (e.g., 2021 EVIC and 2020 carbon emissions). This approach didn’t make financial sense since a company’s annual carbon emissions should rightfully be funded by the total debt & equity investments for the same year. As this approach was also not communicated in any of MSCI’s methodology papers, I raised this issue with the portfolio managers and this set the motion for internal carbon discussions and creating our own in-house methodologies that make more financial sense, while adhering to the principles listed in the framework.

**Weaknesses**: I feel that I am a persistent perfectionist, where I will devote most of my time to deliver every piece of work in the best way possible. As I soon realised, this persistence can be very tiring. In order to remain sustainable in the long-run, I have learnt to choose the battles that I wish to fight in.

**Motivation**

1. ***Tell me more about any ESG roles and responsibilities at Scientific Beta and ACIA.***

My role at Scientific Beta involved building in-house processes to acquire relevant ESG data to support the index business. Relevant ESG data include (i) extracting shareholders’ voting rights from annual reports and (ii) identifying coal-related involvements of our index constituents.

In Aon, there is a fundamental shift in my ESG scope, where I am responsible for reviewing statutory guidelines and research papers on TCFD climate metrics accounting for asset classes, such as Equities, Fixed Incomes and Alternatives. I also sit in this Aon Climate Standards committee, where we discuss issues concerning climate data quality of our data provider and coming up with objective methodologies to tighten the gaps / grey areas. Lastly, I am responsible of designing Excel-based solutions that incorporates the climate data and agreed-upon methodologies to automatically compute the carbon exposures for each of our underlying managers at the fund level and at the overall portfolio level.

1. ***Why do you want to work in SLF / Angsana Fund Management?***

This is the first time that I would be working in a foundation-investment setup. With its scale, I believe it is an ideal place that will provide me with ample opportunities to grow professionally. This aligns with my motivation to grow and take on new challenges. Such challenges would allow me to expand my existing knowledge and skillsets and provide me the momentum of keeping things interesting and fresh.

1. ***Why do you want to leave your current job? Why do you want to pursue this role?***

I’ve really enjoyed my time with my current team, and I’ve learnt a lot in this organization. However, I believe the compensation in my current role doesn’t fully reflect the value I bring, and I’m seeking a position that offers both personal and professional growth, with a compensation package that aligns with my skills and experience. After reviewing this role, I feel that it is a close fit to what I am looking out for, where I can leverage and grow my existing skillsets to support analysis, modelling and reporting in the areas of performance attribution and risk management.

1. ***Why did you leave your job at Scientific Beta back in 2021?***

Due to internal reorganisation, my role at Scientific Beta undergone a complete makeover. Thematic research and quantitative analysis were stripped from my responsibilities, and it was skewed towards data engineering, where I was responsible for researching public databases and acquiring public ESG data to support the index business. While this role is fulfilling, I wish that it could be more balanced in terms of giving me equal exposure to the entire data pipeline, instead of focusing on purely data engineering.

I raised this desire with my boss during my appraisal. However, he did not make any attempts to review my job scope to take my motivations into consideration. This in turn motivated me to explore opportunities elsewhere.

1. ***Why did you leave your job at Mizuho back in 2019?***

My job in Mizuho focuses more on the IT programming aspects, where I use programming languages and automation software to design tools to meet end users’ requirements. While my job may appeal to some, I am the kind of person who would derive more job satisfaction if I can make full use of my financial knowledge and existing programming skillsets to tackle bigger business problems and make a long-lasting impact to the business.

1. ***Why do you want to leave your previous job at CPF Board? Why the sudden decision to further your studies? And why Quantitative Finance?***

First, I believe in the process of lifelong learning. Since knowledge and technology are changing with time, I feel that it is important to keep up with current environment by acquiring relevant skillsets that I did not have previously, such as programming.

Second, I always have an interest in financial data analysis. With the abundance of data in this time and age, there are ample opportunities where we can use data to improve business processes and produce actionable insights for decision making. These 2 reasons propelled me to resign from my job at CPF Board and pursue a Master’s in Quantitative Finance.

**Project**

1. ***Tell me more about the thematic stock research that you have done at Scientific Beta. Describe one major time-critical project that you took part in and describe how you handled it?***

One of the time-critical / successful projects that I was involved in was during my time at Scientific Beta, where I was responsible for back-testing a few quantitative trading strategies and delivering the results in a span of two weeks:

* DeMark’s 9-day moving average strategy (mean reversion strategy: Buy if Pt < Pt-4 for 9 consecutive times and Sell if Pt > Pt-4 for 9 consecutive times)
* Factor models, such as the value factor (i.e. average return on the two value portfolios, i.e., 0.5\*(Small Value + Large Value) – 0.5\*(Small Growth + Large Growth)) and momentum factor (i.e. subtract the equal weighted average of the lowest performing firms from the equal weighted average of the highest performing firms, lagged one-month)

These trading strategies were back-tested against our existing index offerings, and their performance were evaluated by measuring their P&Ls, volatilities and trading Sharpe ratios ((Rp – Rf) / σ).

To ensure the results were delivered on time, I listed all the research objectives and set internal deadlines for each of them, which included designing the codes from scratch to pull the relevant data from the database and deriving the relevant computations. The results are as follows:

* DeMark’s 9-day moving average strategy works well for stocks with low volatility
* Multi-asset dollar-neutral factor strategy, in this case a bottom-up approach was used, works well for stocks with lower frequency price and slower rebalancing periods (e.g. monthly)

1. ***Tell me more about this FX Treasury automation project that you were involved in at Mizuho.***

The project was about designing a Straight Through Processing solution to automate the matching and booking of Non-Deliverable Forward (NDF) trades in both front-end and back-end systems, without changing the existing system designs. After scrutinising the system processes, designs and limitations, I created an automation tool using both Excel VBA and Robotic Process Automation (which was a new and untested technology for the Bank previously) to ingest counterparties’ trade confirmation details and input them into both front-end and back-end systems automatically. As a result of this automation tool, there was an FTE reduction of 25% for both front and back offices.

1. ***Tell me more about this ARIMA modelling project that you were involved in at Mizuho.***

Basically, it is a one-off project that involves stakeholders from the Risk Management Department. As part of their risk monitoring, the department is required to obtain the FX closing rates from Reuters on a daily basis to compute the Bank’s exposures.

As the closing rates are subject to changes arising from market events, the department was interested to know whether these changes could be modelled via time-series analysis, so that they could investigate any sudden upward / downward changes.

**Follow-up question: What is the result of that study?**

There is no conclusive evidence that the changes could be accurately modelled with time-series analysis. There was a follow-up study conducted to determine the impact of market news on FX closing rates. However, I was not involved as I had left the Bank since.

**Real-life Experience**

1. ***What is the riskiest thing that you have done?***

The riskiest thing I have done was revising for my GMAT test 3 days prior to the test date. That was in 2016. Back then, I was busy rolling out a major time-critical project for CPF Board. There was hardly enough time for revision as I had to work occasionally on weekends. When I finally had the time for revision, I spent half a day designing a study plan and setting daily goals. This was necessary for me as it had been 3 years since I left formal education and I did not receive any formal GMAT training prior to the test.

During those 3 days, I stuck closely to my study plan and ensured that the daily goals were met at the end of each day. While this was a risky move, I believed that my self-discipline and ability to cope with high pressure time-critical situations would see me through this difficult time. Because of these characteristics, I managed to pass the GMAT test.

1. ***What is your biggest mistake?***

During my stint with CPF Board, part of my job involved dealing with large amounts of data to ensure that they are accurate for government payouts. In that incident, I overlooked on some data anomalies and this resulted in erroneous payments made to the public. When I realized what I had done wrong, I immediately took responsibility and devised a recovery action plan to inform the affected individuals about the erroneous payments. As the affected number was less than 10, I called up each of them to apologize, and explained to them how the erroneous payments came about.

It was a painful lesson, but it was when I realized I learnt to be more sensitive when handling data, e.g. anticipate different scenarios where things may go wrong, and take pro-active steps to prevent such events from happening.

1. ***Do you have any questions for us?***

* [Lilian] Is this a new / replacement role? What are some of the biggest challenges that the candidate would be expecting in this role?
* [Lilian] What are the opportunities for growth and development within this role and the company?
* [Boon Siew] Can you share some interesting employee perks that I should be aware of?