Wednesday, June 19, 2019

9:31 AM

0620\_debtx

Monday, June 17, 2019

10:11 AM

<https://www.linkedin.com/in/william-s-mercer-cfa-b05a933/>

As part of our Quantitative Research Team, the **Senior Quantitative Analyst** will assist with the development and enhancement of the **valuation models**, communicate and interpret valuations results for clients, and perform **statistical analysis and valuation** of various **commercial real estate, residential consumer and C&I** loans. This position also interacts directly with our **trading and development teams** in the identification of key data elements for use in the asset pricing models.

Responsibilities:

♦ Design, **develop and operate quantitative models to predict**: probability of default, loss given default, prepayment rate and **market value** for residential, commercial, consumer and C&I loans.

♦ **Work with software engineers** to create system requirements and test the implementation of those requirements.

♦ Communicate and interpret valuation results for **clients** and help to understand their needs and objectives.

♦ Develop proficiency with proprietary trading database and tools to pull and analyze data for use in the statistical research and analysis.

♦ Provide **basic programming** support in R, SQL and/or VBA/Excel as needed.

♦ Develop and produce loan portfolio valuation reports, perform stress test and model validation analysis.

♦ Assist with ad hoc requests and projects.

Required Experience:

♦ Graduate degree in Finance, Statistics, Engineering, Economics, Mathematics or other program that is technical and quantitative in nature.

♦ Advanced Excel skills with **VBA, R** and/or **SQL** programming experience.

♦ Familiarity with R or other statistical software packages.

♦ 3-5 years of financial industry experience, preferably in **credit analysis or risk management** arena.

♦ Familiarity with **debt fundamentals.**

♦ Demonstrable basic financial acumen.

♦ Strong attention to detail.

♦ Team player with strong communication and interpersonal skills.

♦ Strong analytical skills with the ability to dissect quantitative and qualitative information.

♦ Passion and desire to work in a dynamic investment setting and culture of learning.

0618 Steve’s tips:

Interview: Thursday 2pm; 100 Summer St (summer&high st); 19th floor; Sign in at security, ask for Will Mercer;

Interviewer:

Will Mercer: not quant; real nice and humor; humble; know the stuff, don’t pretend you know

Quant guy (2-3 from 6-8 members): check Linkedin; programing in python/R/VBA

Two rounds: second round will be CEO (Kindsly/Bill Looney/Tom Goodwin)

Research on the company: LinkedIn/Website product/Executive profile/google some trading deals

Culture: relaxed/ flat structure; small company not a big bank

Some questions for quant: how to deal with data/ensure data’s correctness

Why you change: smaller company; quicker movement; chance to see more and more exposure

Prepare:

New resume: adding interests

PD/LGD model development for C&I/CRE/SBB/Mortgage

Work with IT for database; UAT

Work with business for their need

logistic regression: explain to non-tech/assumption/logit function

R/Python/VBA

CECL/IFRS/HCR framework:

* + CCAR:/DFAST model for performing loans; **IFRS**: score all loans through model, split them into three stages by their risk:
    - Stage 1: Assets that are performing (DPD less than 30; performing loans)
    - Stage 2: Assets that have significant increase in default risk (DPD30-90; SICR(Significant Increase in Credit Risk, latest FICO is much lower than the origination FICO))
    - Stage 3: Credit impaired (default definition: DPD90days/charge off/NPL)
    - Staging **distribution** and its **stability** over time (quarterly/yearly movement) analysis
  + Based on Life time losses:
    - Stage 1 losses calculated for only **1-year** forecasting horizon; For CECL, it also predict lifetime loss for stage 1 loans
    - Stages 2 and 3 losses calculated for remaining **lifetime** (11 year for C&I line)
  + ECL: Various **combinations** of multiple **scenarios** explored for ECL calculation;
    - For IFRS, multiple probability-weighted scenarios; For CECL, does not specifically require either a single economic scenario or multiple economic scenarios.
  + Discounting:
    - For IFRS, required; For CECL, permitted.

Loan valuation:

Debt fundamentals:

Company info:

From my understanding, Debt Exchange first serve as a marketplace to buy (bid) and sell loans, provide liquidity for loans. When it has huge amount of loan transaction data, you provide some analytics for clients to use. Like you have a **DXScore** (from 1 to 120 rating scale) to rate the loans by the probability of default. **DXMark** for the fair value of the loan. Also you have products like **DXCDA** (DX credit default analytics) to CECL(expected credit loss) calculation for the portfolios.

I watched some videos post on your website, it was you and Chris Tomecek talking about the DXCDA platform, the CECL solution you built. I got to know some of your functionality of the product and I truly believe your product has huge potential in the market.

One huge competitive edge of you has huge amount of loan transaction data on your debt exchange platform over the years since you launched the platform. This is exactly what a lot of financial institution needs, especially for those regional banks which **do not have enough loss data** to build a robust model to predict loss. For example Santander's internal historical data only goes back to 2007. This short history is not sufficient to build robust models. Therefore, Trepp/Moody’s Analytics CRD was leveraged as it has a longer time-series (1980 through 2017).

And even they have enough data, it may cost them a lot to build up a centralized database ready for the modeling or execution. I know this very well because the major project I was involved when I first joined the team was to build up centralized database for model development. Check the jianli: data.

The Debt Exchange, Inc. offers loan sale advisory services for commercial, consumer and specialty finance debt. The company also provides file preparation and loan valuation and analytics services. It offers DXMark, an automated valuation service; DXValue, a consultative valuation service; DXScore, a risk rating system for whole loans and participations; and DebtXData, a marketplace data for primary and secondary loan markets. Additionally, the company provides Software-as-a-Service platforms including DXOpen for direct asset sales; DXParticipate for banks participations; and DXSyndicate and DXAgency for primary syndications. The company serves commercial banks, insurance companies, investment banks, and government agencies. The Debt Exchange, Inc. was founded in 2000 and is based in Boston, Massachusetts.

<https://www.debtx.com/corp/credit-default-analytics/>

DebtX’s Credit Default Analytics solution (DXCDA) calculates your loan portfolio’s expected losses with **loan-by-loan granularity**, giving you an immediate view into any potential capital impact that CECL may have. DXCDA is a fully outsourced, independent CECL service that saves your bank time, manpower and money. DebtX runs all CECL calculations and provides outputs in the format that best fits your accounting platform. DXCDA leverages the **most robust historical data set** in the market for both **performing** and **non-performing** loans.

Why DebtX: interest + ability

Interest:

* + Smaller size company; More exposure to different portfolio and projects;
  + Environment of Fintech; DebtX has been named one of the Best Fintechs to work for by American Banker.
  + Work with experienced and smart people. Flat structure, and many chance to talk to even senior management people.

<https://www.americanbanker.com/list/best-fintechs-to-work-for>

In 2017, the company moved to a new building with an amenity space that includes billiards and table tennis, beer taps and video games.

Why you change: smaller company; quicker movement; chance to see more and more exposure

Ability:

Very similar to what I am currently doing and what I can provide.

When I looked at the job description that Steve sent me, I checked the responsibilities listed for this position. It says Develop models to predict PD/LGD for commercial and consumer loans. Yeah that’s what I do. Communicate with clients about their business need. Yeah that’s what I do. Work with IT/engineers to validate the data and the system. Man that’s exactly what I do. So I was so excited and told Steve that I can’t wait to go to this company and meet with you guys.

Bring your idea:

Do you have functions to show the contribution of each scenarios?

**Sensitivity** analysis:

We conduct sensitivity analysis of some important macro-economic variables. Business team want us to show them the contribution of each variables to the final results. For example, after we build a regression model, although we can tell the rough effect of each variable by checking the coefficients of the regression model, but that is hard to **quantify the contribution**. So we will plus or minus one variable by its standard deviation and fix all the other variables, and we re-run the model to see the updated results. We do this for all variables and create the **pie chart** to show the contribution of each variable.

Also, if we run several scenarios like base/adverse/severely adverse and have the loss numbers for these three scenarios, and we want to know that the contribution of all scenarios to the increment loss from base to adverse. Then we can try change one scenario to adverse while holding all other scenarios as base, run the model and get the loss numbers. We do this for each variable and we can use **waterfall plot** to show the contribution.

My Questions:

For Will:

Steve told me you have 12 years in DebtX. It is really impressive. You have been in the company and industry for such a long time. So my question is could you tell me one thing that you has changed ever since you joined DebtX, or you have seen changing over the years?

Could you share with me some of your experience of how you joined DebtX from other financial institution? Also can you talk about the career path at BCG?

If you were to hire me, what is the things you will be looking for me to do on day one, or in first three months.

Could you talk more about your team? How many team members? What are the backgrounds of them? Are they most PhD? What are some of past experience they have?

What is biggest challenge DebtX is facing right now, and may be very crucial to deal with for company's growing for next few years?

How's the company's culture?

For Quant:

How's the culture?

 These six recommendations from DebtX optimize your CECL implementation:

* + Before doing anything, examine the **quality and quantity of existing loan data**. Many institutions don’t have a **centralized repository for storing loan loss data**. This data is the most critical item in building, back-testing and validating Expected Loss models. In fact, many banks have difficulty generating a current loan tape complete with underwriting elements necessary for basic analytics because that information isn’t captured in their core systems. If a bank has an exceptional credit culture, it likely doesn’t have a statistically significant sample of defaulted loans required for CECL analysis. That is also true for de novo banks or recently acquired portfolios. “Determining what data you do and don’t have will dictate your options,” Mercer said.
  + Select a **model** for predicting losses that best fits the available data. Model-building is always a challenging and time-consuming process. It is especially daunting under CECL requirements because the results must be predictive. Not only does the model have to generate losses for the various asset types based on individual **loan characteristics**, but it also needs to **forecast** future economic and market conditions for the **life of the loan**. Using those forecasts, the model must predict a loan’s performance based on how those conditions will alter its characteristics at every pay period **until maturity**. Part of an auditor’s review of the finished model will include back-testing **predicted** results against **actual** loss data.

After available loss history data is processed, the next step is to analyze whether to buy or build the model. If a bank has collected a statistically significant amount of loss history, it has the option to build a model internally or purchase commercially available software that will help frame the construction process. Either option is ambitious and time-consuming; typically six months if software is purchased, or longer if built from scratch.

“If a bank has little or no loss history collected, the only option is to utilize a third party, end-to-end solution, such as DXCDA,” Mercer said.

* + Use loan loss data and forecasts that are germane to a **portfolio**, not national level information. While no single methodology is absolutely recommended, it is generally accepted that CECL model results must be historically relatable to an institution’s lending footprint. Actual loan loss data is clearly more useful and that is the recommended approach. However, deep sets of actual loan loss data and the raw materials required to build forecasting models are very expensive.
  + Model Expected Losses at the **loan level**, not portfolio level, to optimize implementation and utility. In a recent survey, 70% of bankers planned to use Expected Loss results for portfolio management purposes or credit risk monitoring. Implementing a model that delivers loan level results will make the most of an institution’s investment in CECL. At the loan level, Expected Loss data can help determine whether a specific loan should be held, monitored or sold, depending on its impact to reserves. In contrast, portfolio-level modeling doesn’t offer much insight or opportunity for value-added analysis.
  + Create an auditable plan to keep the model updated and assign staff accordingly. CECL modeling isn’t a one-and-done event; it requires **regular updates** to loan loss, market and economic data. If an institution chooses an in-house solution or decides to purchase software, make sure there is a team responsible for the updates, with adequate redundancy.
  + Don’t buy a one-dimensional CECL solution. Find a suite of functionality that can improve other areas of loan portfolio management and credit monitoring. **Some solutions** include stress testing, fair value, credit risk scoring, and business intelligence tools, among other functions.

“However painful CECL may be in the short-term, smart implementation can strengthen a bank’s balance sheet, lending operations and overall risk management,” Mercer said.