

Bank Loan Pricing

academic year 2020/21
Syllabus

Teacher:

ROBERTO TORRESETTI

Aim of the course

Students will gain a thorough understanding of the practices currently used by banks when originating (pricing) a bank loan for their customers (retail or corporate). The course will offer insight into the various areas of the bank involved when pricing a bank loan (Finance department for funding, Chief Risk Officer area for loans balancesheet provisioning, CFO area for capital allocation). The course will then present students the case for the impact on the Bank Loan Pricing of the new Securitization Framework and advanced Machine Learning techniques for default prediction.

Tentative program:

Topic by each lecture (45 min each):

1. Bank Loan Pricing base case: CoL (cost of liquidity) + CoC (cost of credit) + CoK (cost of capital).
2. CoL: Blended curve construction. How to treat future Bond issues and Sight Deposits.
3. CoK: Regulatory capital and Risk Weighted Assets
4. CoK: Risk Weighted Assets for Standardized and Advanced Internal Rating Based Banks.
5. CoK: new securitization framework and its impact on the RWA for a securitized portfolio
6. CoK: Risk Weighted Assets calculation for a securitized portfolio
7. CoK: Significant Risk Transfer for a securitized portfolio
8. CoC: Lifetime Expected Loss. Probability of Default and Loss Given Default.
9. CoC: default prediction models. Typical dataset structure, module layout and prediction horizon.
10. CoC: default prediction models. Univariate and Multivariate Logistic regressions.
11. CoC: default prediction models. Input variables encoding and Cross Validation.
12. CoC: default prediction models. Regression and Classification Trees.
13. CoC: default prediction models. Ensemble Machine Learning Algorithm: Model Space and Stochastic Optimization.
14. CoC: default prediction models. Random Forest: Bagging (Bootstrap aggregating) and Boosting ensemble algorithms.
15. CoC: default prediction models. Bank Loan Pricing impact of alternative machine learning and ensemble algorithms.
16. CoC: macro-economic scenario projections. Credit Portfolio Models as sparse problems.
17. CoC: Credit Portfolio Models: Bayesian Model Average.
18. CoC: Bayesian Model Average vis-à-vis the EBA Stress Test Methodological Note.
19. CoC: Bayesian Model Average estimation.
20. Bank loan pricing comparison: from base case to advanced (including securitization framework and advanced credit models).

CALENDAR OF THE LESSONS will be defined soon. Classes will be held remotely.

NUMBER OF ELIGIBLE STUDENTS: max. 25 students; 2nd year students will take priority.

HOW TO APPLY

To submit your application, please send an email to **mef@unimi.it** specifying in the subject line the name of this lab.

Application deadline is **Tuesday 9th March 2021 h23:59 (CET)**.