

O5 Case Study Reports

Intensive Programme “Advanced Topics”

O5/A2 Case Study Report 2

“Advanced Topics in Bank Risk Management”

Alexandru Ioan Cuza University of Iasi –
Banca Comercială Română S.A.

July 2016

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Change History

Version	Date	Author(s)	Changes
0.1	June 20, 2016	Sorin Gabriel Anton Cezar Chirilă Silviu Ursu	Written case for the second pilot IP (Iași, 10-23 July 2016)
0.2	September 21, 2016	Sorin Gabriel Anton Cezar Chirilă Silviu Ursu	First draft of O5/A2 – Case Study Report 2
0.3	November 2, 2016	Sorin Gabriel Anton Cezar Chirilă Silviu Ursu	Final version (incorporating partners' and QCEB's feedback)

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Overview

This report summarizes the results of the case study used within the second intensive pilot programme (IP) offered at the Alexandru Ioan Cuza University of Iași (UAIC) in July 2016, within the framework of the International Project **INTQUANT** – “Creating an International Semester for Master Programmes in Quantitative Finance”, Funding Scheme: Erasmus+ Strategic Partnerships (Key Action 2).

The case has been elaborated by UAIC in cooperation with Banca Comercială Română S.A and is part of the intensive course “Advanced Topics in Bank Risk Management”.

The case study approach offers international teams of students from four master programmes in finance and risk management from the INTQUANT partner universities (UAS Vienna, UNIBO Bologna, UEK Katowice and UAIC Iași), an opportunity to solve a real-life problem experienced by the local industry partner - Banca Comercială Română S.A., and also to benefit from the networking opportunities created by the interaction with other students, faculty, and industry professionals from various European Union countries.

The case study report consists of three main parts:

- **case provided to students;**
- **teaching note for the lecturer;**
- **brief overview of the key outcomes from the case study onsite learning**

The case study report includes also the following appendices:

- **the structure of the final case report** provided by each team of international students that analyzed the case;
- **the structure of the evaluation forms** for the final case report and the onsite presentation of the international students team report.

1. Case

1. Synopsis/Executive Summary

Lending is a major function performed by financial institutions. It involves many different types of risk, among which one of the most important is credit risk. Though the essential elements of credit risk are still unchanged, financial institutions and investors are facing credit risk in many different, and often novel, forms. The rapid development makes it hard for even sophisticated investors, such as financial institutions, to properly understand, assess, and manage the credit risk involved in their transactions.

The latest global financial crisis has brought to the forefront the need for better credit risk measurement. The ability to distinguish between good and bad customers represents a key factor in conducting banking transactions.

The proposed case examines the problem of credit risk management addressed by a Romanian commercial bank. The aim of this case is to build and calibrate a challenger model that can improve the current application of its rating model for private individuals. Based on a sample of applications of private individuals that have been approved by the bank during 2013-2014, students will have to propose a rating model that:

- is in line with the social principles of the common good of the bank;
- satisfies the regulatory requirements presented in Regulation 575/2013 of the European Council and Regulation 5/2013 of the National Bank of Romania;
- properly discriminates between clients that repay the loans and the ones that enter default in a one-year time window, allowing the bank to safely develop its business in the limits of its risk appetite.

The students will have the chance to go through the methodological component of scorecard development. They will use data mining techniques in order to identify and select the most important risk factors that predict the default of a customer. These factors will be included in a final scorecard, with high discriminatory power between the clients that pay and the ones that don't pay their loans.

The case study presents a series of issues that modelers must solve in practice when developing a scorecard. The students are faced with the issues of creating a model that respects regulatory requirements and in the same time is in line with the principles of sustainable development of the society. Therefore, the students must reflect in a critical way to whom the bank should lend, in order to assure an alignment with the common good principles.

2. Short history and company overview/ Background

Banca Comercială Română (BCR) is the most important financial group in Romania, including companies on the leasing, private pension and housing bank markets, as well as mobile banking services. BCR is the most valuable financial brand in Romania, according to level of customer trust and number of clients who mainly bank with BCR. The bank was formed in 1990 by taking over the commercial activities previously undertaken by the National Bank of Romania. BCR developed into the most important financial group in Romania, with over €15 bn. in terms of asset value. The bank provides universal banking operations (retail, corporate & investment banking, treasury and capital markets) and diversified its business in the leasing market (BCR Leasing, 2001), life insurances (BCR Asigurări de viață, 2004), private pensions (BCR Administrare Fond de Pensii, 2007), and housing bank (BCR Banca pentru Locuințe, 2008).

From 2006 on, BCR became a member of Erste Group, which was founded in 1819 as the first Austrian savings bank by the Viennese priest Johann Baptist Weber. Together with a consortium of philanthropic citizens, he founded the first Austrian Savings Bank, with the aim of helping poor people save money and gain financial independence. Almost 200 years ago, the very founding concept of Erste Group already embraced the idea of contributing to the common good. Unlike the operations of investment banks or many other financial institutions, Erste Group's business has always been firmly embedded in the real economy. Customer savings deposits fund the loans for housing construction or purchases or investments by companies. This is how the bank creates sustainable value for society. In conducting its business, bearing corporate responsibility towards its customers, employees, investors, local communities and national economies is a defining feature of the bank. Since 1997 Erste Group has developed into one of the largest financial services providers in Central and Eastern Europe, with more than 46,000 employees serving around 16.4 million clients in 2,900 branches in 7 countries (Austria, Czech Republic, Slovakia, Romania, Hungary, Croatia, and Serbia).

3. Body of the analysis

With the European sovereign debt crisis and the U.S. economic recovery sputtering, the international call for tighter regulatory standards has become more prominent. This led in 2013 to the implementation of the Regulation 575 of the European Parliament and of the Council, on prudential requirements for credit institutions and investment firms. The regulation was transposed the same year in Romania through the Regulation 5 of the National Bank of Romania.

The focus of the regulatory framework in case of credit risk is set on appropriate capital requirements that would effectively protect the stakeholders of the banks against default. These capital requirements are assessed through a risk based weighting of the

assets of the bank. The risk-weighted assets (RWA) are calculated through two methods: the standardized approach and the internal rating based approach.

The standardized approach for the calculation of RWA is based on weights that are fixed by the regulations for classes of exposures: private individuals, companies, central administrations, etc. For example, a mortgage to a retail customer is weighted with 35%, an exposure of 60.000 EUR leading to a RWA of 21.000 EUR. In case of companies the approach allows for discrimination of the capital requirements based on the rating provided by an external rating company, for example Fitch or Standard & Poor's. For example, an exposure of 100.000 EUR to a company rated AAA leads to a RWA of 20.000 EUR, while the same exposure for a company rated CCC leads to a RWA of 150.000 EUR.

The internal rating based (IRB) approach is used by banks to estimate the capital requirements through an internal assessment of the risk. Through this method, the capital requirement for each exposure is calculated by using rating models developed and calibrated to the specific portfolios of the banks. The advantage of the IRB approach is the competitive capital estimations for clients with low risk. Banks can use it to steer the business decisions in lending. Nevertheless, according to the regulatory requirements, the bank can use the IRB approach only prior to the approval by the regulator of the rating models and underlying rating processes.

The requirements for the permission by competent authorities to use the IRB approach are detailed in Articles 142 – 145 of Regulation 575/2013. Most notably, the regulator requires that:

- “the institution's rating systems provide for a meaningful assessment of obligor and transaction characteristics, a meaningful differentiation of risk and accurate and consistent quantitative estimates of risk”;
- “internal ratings and default and loss estimates used in the calculation of own funds requirements and associated systems and processes play an essential role in the risk management and decision-making process, and in the credit approval, internal capital allocation and corporate governance functions of the institution”;
- “the institution documents its rating systems and the rationale for their design and validates its rating systems”.

BCR is adhering to the idea of contributing to the common good, being actively involved in the society with the scope of sustainable development of value in the communities that the bank is part of. In this regard, BCR is seeking to be a model, an inspiration source and a catalyzer for all its stakeholders.

BCR is aligning its business strategy to the needs of the community, developing innovative products to help its clients to accomplish their dreams and aspirations. Considering the current road to IRB on which the bank is following, a need of a social responsible rating model plays an important role in the risk strategy of the bank. Currently the bank is using such models, developed in line with the regulatory standards.

The case to study can be described as follows:

TITLE: Banca Comercială Română and Responsible Lending on the Road to Basel III

PROBLEM DESCRIPTION:

You have to join a team of students and develop a challenger model that can improve the current application of the Bank's rating model for private individuals. The Bank has disclosed in this purpose an anonymized sub-portfolio of applications of private individuals that have been approved by the bank during 2013-2014. The data for each client is related to socio-demographic information and with the default behavior for one-year time window. The detailed description can be found in Appendix 1. List of socio-demographic variables.

Your team is required to analyze the 21,000 cases of applications and propose a rating model that is in line with the social principles of the common good of the bank. That means that you have to propose a target portfolio that you consider suitable for a sustainable development of the society. This target portfolio should obtain a reasonable score that would allow the Bank to do business in a safe manner, within its risk appetite.

The rating model must discriminate between clients that repay the loans and the ones that enter default in a one-year time window. The base of the rating method must be a logistic regression, with the DEFAULT_FLAG as target variable. The rating model must satisfy the regulatory requirements presented in Regulation 575/2013 and Regulation 5/2013, including validations that test at minimum the robustness of the model assumptions and the accuracy of the model output.

The selection committee will verify that the rating model has been developed according to the regulatory standards and that it has been properly documented. The analysis of each team will reflect the effect of the rating model on the underwriting process for the portfolio selected as being representative for sustainable development of the society. The selection committee will verify if the rating model allows for a safe business process that is properly aligned with the strategy of the Bank.

4. Questions for discussion

1. What is a rating model and how does it allow the bank to safely develop its business?
2. How do you select the most appropriate risk factors for a rating model? How do you assess the explanatory power of attributes of your variables?

3. How do you present your results in a clear and intuitive manner?
4. What statistical tests can you use in order to validate your model?
5. To whom must a bank give the loans in order to assure a sustainable development of the society?
6. What is the effect of the rating model on the underwriting process for the portfolio selected as being representative for sustainable development of the society?

5. Conclusion/recommendations

The analysis should be carried on by five teams of international students working on the main questions of the above-described problem.

Each team has to provide its own set of solutions that should aim at an optimal equilibrium between:

- the models developed and used by the bank to fulfill its strategy;
- the regulatory requirements and limitations imposed to the bank's models;
- the sustainable value that bank is creating for the society.

6. References

1. Anderson, R., *The Credit Scoring Toolkit. Theory and Practice for Retail Credit Risk Management and Decision Automation*, Oxford University Press, New York, 2007.
2. Van Gestel, T., Baesens, B., *Credit Risk Management. Basic Concepts: Financial Risk Components, Rating Analysis, Models, Economic and Regulatory Capital*, Oxford University Press, New York, 2009.
3. *Regulamentul nr. 5/2013 privind cerințe prudențiale pentru instituțiile de credit, Banca Națională a României*, <http://www.bnr.ro/apage.aspx?pid=404&actId=326618>
4. *Regulamentul nr. 575/2013 al Parlamentului European și al Consiliului din 26 iunie 2013 privind cerințele prudențiale pentru instituțiile de credit și societățile de investiții și de modificare a Regulamentului (UE) nr. 648/2012*, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0001:0337:RO:PDF>

7. Appendices

Appendix 1. List of socio-demographic variables

Attribute	Description
ID	Unique ID
REQUEST_DATE	Date of loan request initiation
PRODUCT	Product type
BIRTH_DATE	Birth Date of solicitor
BIRTH_PLACE	Birth Place of solicitor
DISTRICT	Solicitor's district of residence
AREA	Area of residence (county capital, urban or rural area)
RESIDENTIAL_PLACE	Living Status (owner, tenant, cohabitant, etc.)
EDUCATION	Highest Education Level of solicitor
MARITAL_STATUS	Marital Status of solicitor
HOUSEHOLD_MEMBERS	Number of household members
NO_OF_DEPENDENTS	Number of dependents
PROFESSION	Profession of solicitor
INCOME	Monthly Accepted Income (RON)
EMPLOYMENT_DATE	Date of Employment at current work place
BUSINESS_SINCE	Date of business start of Current Employer
LEGAL_FORM	Legal form of Current Employer
INDUSTRY_TYPE	Industry of Current Employer (no aggregation)
ECONOMIC_SECTOR	Industry of Current Employer (aggregated)
EMPLOYEE_NO	Employee number of Solicitor's Current Employer
CLIENT_SINCE	Date of first bank relation
DEBIT_CARD	Indicator if solicitor has debit cards in BCR at loan request time
CURRENT_ACCOUNT	Indicator if solicitor has current accounts in BCR at loan request time
SAVING_ACCOUNT	Indicator if solicitor has saving accounts in BCR at loan request time
SALARY_ACCOUNT	Indicator if solicitor has salary accounts in BCR at loan request time
FOREIGN_ACCOUNT	Indicator if solicitor has accounts in foreign currency in BCR at loan request time
FINALIZED_LOAN	Indicator if solicitor has repayed loans in BCR at loan request time
DEPOSIT	Indicator if solicitor has deposits in BCR at loan request time
PENSION_FUNDS	Indicator if solicitor has pension funds in BCR at loan request time
DEFAULT_FLAG	= 1, if client reaches 90 days past due in 1 a one year time window from loan origination = 0, otherwise

2. Teaching Note

1. Synopsis

The purpose of the case study is to provide an in-depth analysis of the rating models used by a large Commercial Bank, in the context of a tightly regulated lending environment that followed the sub-prime financial crisis.

The case focuses on the particular situation in which the Bank bases its business models on the development of the society that is part of. The task becomes even more complicated in the context of a tightly regulated banking environment, where all the steps in the development of the model must be clearly documented and validated.

The case can be briefly described as follows:

- The Commercial Bank discloses for this purpose an anonymized sub-portfolio of applications of private individuals. The data for each client is related to socio-demographic information and the default behavior (see *appendix 1. List of socio-demographic variables*).
- Students should work in international teams and develop a rating model used for underwriting in the private individuals' portfolio. In particular, teams should select the variables with the highest discriminatory power and which provide the most robust model in terms of statistics and business rationale. The statistics part must be validated through a set of tests measuring the discriminatory power of the model and the stability of the population in time. The business part will be sustained by a rationale argumentation that presents the ways in which the variable selection helps the society by providing the loans to the part of the population that assures sustainable development.

An introductory course on risk management is a pre-requisite for the case study. Participating students should have a basic understanding of the role, activities, and sources of risk, especially for banks. Good knowledge of mathematical and statistical concepts for assessing risks and some basic programming skills are also required.

2. Topical Area

The area of research for the case study can be described, in a broad sense, as mathematical tools including logistic regression analysis and data mining techniques used for modeling the credit risk of private individuals loans.

3. Teaching objectives

The main objectives of the case study are the following:

- to gain an in-depth understanding of the methods for modeling credit risk in a banking portfolio of loans for private individuals;
- to construct a rating model that has the right balance between a high discriminatory power and selection criteria that provide a sustainable development of the society;
- to build student judgment on ethical decisions on how a bank can help the society that is part of to develop in a sustainable way;
- to become aware on the effect of the tight regulatory standards, namely that the subjective choices from the modeling process that go beyond the statistical results must be properly documented and clear and evidence-based arguments must be provided for these choices;
- to explore the statistical methods for validation of a rating model, in terms of discriminatory power and stability of the development population.

Additionally, the work on the case can contribute to achieve some general teaching objectives, such as the ability to:

- summarize case findings in a team report, present and defend these in a clear and effective way;
- critically assess both one's own and other teams' case reports during the presentation phase;
- work in an international team environment and use intercultural creativity to achieve an agreed outcome.

4. Student Reading Assignment

Case: *Banca Comercială Română and Responsible Lending on the Road to Basel III*

Additional:

1. *Regulamentul nr. 5/2013 privind cerințe prudențiale pentru instituțiile de credit, Banca Națională a României*, <http://www.bnr.ro/apage.aspx?pid=404&actId=326618>
2. *Regulamentul nr. 575/2013 al Parlamentului European și al Consiliului din 26 iunie 2013 privind cerințele prudențiale pentru instituțiile de credit și societățile de investiții și de modificare a Regulamentului (UE) nr. 648/2012*, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0001:0337:RO:PDF>

5. Student Study Questions

1. What is a rating model and how does it allow the bank to safely develop its business?
2. How do you select the most appropriate risk factors for a rating model? How do you assess the explanatory power of attributes of your variables?
3. How do you present your results in a clear and intuitive manner?
4. What statistical tests can you use in order to validate your model?
5. To whom must a bank give the loans in order to assure a sustainable development of the society?
6. What is the effect of the rating model on the underwriting process for the portfolio selected as being representative for sustainable development of the society?

6. Suggested Teaching Plan for 60-Minutes Class

(10 min.) What are the big issues that a bank is dealing with today?

(10 min.) What is the purpose of a bank in a developing society and how can the bank help to foster sustainable growth?

(10 min.) What is the effect of the global financial crisis on the management of credit risk and how did the underwriting process change during this time? What mathematical models are used in a bank's internal processes for the management of credit risk and what are the regulatory requirements on the rating models?

(30 min.) Assume that you are a statistician working for a Commercial Bank and you have to develop a rating model for the private individuals underwriting process.

What does a Bank expect from the documentation of the rating model?

- Individual assessment of the socio-demographic variables and a measurement on how they predict the defaulted and non-defaulted loans.
- A rating model with high discriminatory power, which allows the bank to safely develop its business and help the society, by providing the loans to the part of the population that assures sustainable development.
- A validation of the rating model, including a series of statistical tests that prove a high out-of-sample accuracy ratio and a robust representativeness of the development sample.

7. Discussion Questions and Analysis/Student Response

This section gives details information to the instructor on how to address the main questions. This section can be seen as a roadmap to the instructor.

1. What is a rating model and how does it allow the bank to safely develop its business?

Asking the students about a rating model is an excellent point to introduce the topics of mathematical models used by the bank in the underwriting process for private individuals. Most of the students might be familiar with the ratings produced by the rating agencies for important companies or countries, but might not be aware that normally small commercial banks are using similar approaches also for private individuals for accepting or rejecting a loan application.

A rating model is thus presented as a classification mechanism that assigns to each loan application a grade, which indicates how probable is for the loan to be repaid. One criterion for acceptance of a loan is whether the underlying risk of the loan's rating is lower than a specific cut-off level. The cut-off value is normally set in line with the risk appetite of the bank and therefore allows for a safe way to develop its business and follow its strategy.

This is the point in which the discussion can include additional ways in which the rating models are used. The most important aspect can be the regulatory capital requirements and the loan provisioning processes.

2. How do you select the most appropriate risk factors for a rating model? How do you assess the explanatory power of attributes of your variables?

We suggest that a clear set of statistical methods must be made mandatory for the tests used to assess the appropriateness of the risk factors. The students will have to run a single variable analysis, by measuring two lead indicators for each variable: their information value and their individual discriminatory power.

The information value of each variable is closely related the transformation technique used in credit risk. This is called the weight of evidence transformation and consists considering a number of attributed grouped by the values of the variable and assigning a number to each attribute that measures its underlying risk. The information value of the variable measures how well is the risk spread between these attributes. Variables with high information values are preferred, as they indicate a high dispersion of risk levels across the grouping attributes.

The individual accuracy ratio is calculated by using a logistic regression with each variable as a single explanatory factor. The results of the statistical regressions will allow for a ranking of the socio-demographic variable by the individual discriminatory power. The

discriminatory power is measured by the accuracy ratio indicator, which is a number between 0 and 1 that explains how many of the defaults are predicted correctly by the rank order of the model. The variables with accuracy ratio closer to one are preferred, as they cluster the defaults in the risky part of the rank order entailed by the model.

3. How do you present your results in a clear and intuitive manner?

The students are faced with the problem of presenting the results of the statistical model in simple terms.

The scorecard construction is a very powerful technique, used in the financial industry to present the outcome of the logistic model estimates. The approach consists of a transformation for the coefficients of the logistic regression and the weight of evidence assigned to each attribute, measure in terms of scores. Based on each loan's characteristic, a total score between 0 and 1000 is assigned to each application. The loans with the highest scores are accepted and the others are rejected, the cut-off being set in terms of overall risk profile targeted by the bank.

4. What statistical tests can you use in order to validate your model?

In order to assure that the model is properly developed the students must prove that the characteristics of the model remain robust when measured on a sample different from the one on which the model was developed. Before starting the development of the model, students are asked to partition the sample in two 70% - 30% size samples. The 70% sample will be used to develop the model, whilst the 30% sample will be used to validate the model results.

We suggest that the students are encouraged to think independently on which tests can be used to validate the model. Nevertheless, it is expected that they run at least two type of tests: measuring the accuracy ratio of the model on the validation sample and estimating the representativeness of the model for the population in the validation sample. The system stability index can be used for the second measurement, by assessing the difference between the discrete distributions of the population on the groups of each variable, in the development and validation sample.

5. To whom must a bank give the loans in order to assure a sustainable development of the society?

This part of the study is highly subjective and it is expected that each team will provide highly different answers. Nevertheless, probably characteristics like age and marital status will probably be part of a high number of assessments.

The most important aspect is that students must understand that there is a high discrepancy between the part of the population that needs the loan and their risk profile that is accepted by the bank. For example, when it comes to age, the younger part of the population will arguably use a loan in a more sustainable way, probably to buy their first house or to sustain their education. But when inspecting the data, it will show that this is also the attribute in the age variable with the most risky profile. That is because many young people defaulted on their loans. The hard part is to add more socio-demographic characteristics that allow for further discrimination in the young population between the clients that most probably repay their loans and the ones that will default.

6. What is the effect of the rating model on the underwriting process for the portfolio selected as being representative for sustainable development of the society?

Most of the teams will probably select a portfolio that is representative for sustainable development of the society, biased also by their perspectives. That means that themselves, as seen from the characteristic of the model, would probably be included as targeted clients. Therefore, it makes perfect sense to ask whether they would be rejected or approved in case they would apply for a loan, using the model developed by their own team.

This exercise has the role to make the students understand the potentially irreversible loss in the bank's credibility in the case when a wrongly specified rating model consistently rejects trustworthy clients in their loan application.

8. Conclusions

The case study underlines the utility of a mathematical approach to credit risk management.

Students have the opportunity to understand how the regression method is used in practice and also to observe the effect that a mathematical model can have on the steering of a commercial bank.

3. Key outcomes

The case “Banca Comercială Română and Responsible Lending on the Road to Basel III” was studied during the IP held at the Alexandru Ioan Cuza University of Iasi (UAIC) in July 2016 by five international teams that included at least one student from each of the INTQUANT universities - UAS Vienna, UNIBO Bologna, UEK Katowice and UAIC Iași.

The key outcomes from the case study onsite learning are as follows:

1. Results of the case study proved the utility of a mathematical approach to credit risk management. The regression method is considered in practice a very useful tool for estimation of probability of default and it represents the main ingredient of a rating model. The students had the opportunity to understand and discover how this method is used in practice and what is the process for selection of a representative set of information in the estimation process that assures a high discriminatory power.
2. Students had the chance to witness, in this simple case study, the effect that a mathematical model can have on the steering of the bank. This has a direct implication in the portfolio on which the bank chooses to do business. Therefore, it is of crucial importance to assure that the targeted portfolio from the strategic point of view is also aligned with the risk best practices, allowing the bank to develop its business in a safe and reliable manner.
3. Participants worked in an international team environment, used intercultural creativity to achieve an agreed outcome, and benefited from the networking opportunities created by the interaction with other students, faculty, and industry professionals from various European Union countries.

Lecturer / Practitioner Evaluation

The approach used by all teams included the estimation of the attributes for all variables. The coefficient of the scorecard must be estimated only for each variable. An approach in which the coefficients are estimated for each attribute of each variable does not take into consideration the weight of evidence transformation.

The process of documentation has an important role in the development of a rating model. This is a direct requirement from a regulatory perspective; therefore it must be treated with care. Each team provided a detailed documentation of the development process, thus aligning their results with the regulatory requirement. Teams had in their reports a special part that included a validation test for the model discriminatory power. Nevertheless, the transparency of the documentations for most of the teams, regarding the selection process of the final variables, can be improved. The information value and the economical trend for the weight of evidence would be required in the overall documentation. The social impact is not properly addressed in the process. The expectation was to understand the effect of the existing scorecard on the targeted portfolio.

Participant / Student Evaluation

According to the evaluation forms, most students considered that the course was very well organized and the information about the programme were provided on time. The good balance of lectures, tutorials and practical exercise facilitated the achievement of learning outcomes. The learning materials (recommend readings, schedule, and course notes) provided by the international team of lectures were relevant and useful for students. However, some students considered that additional practical examples are needed.

The students appreciated the opportunity to work in an international team environment and to use intercultural creativity to achieve their tasks. All of them agree that the international programme helped them to significantly improve their knowledge in the field of credit risk management and also their social skills. The involvement of the industry representative both before and during the programme was very appreciated by the students.

The social programme helped international students to improve their knowledge about Romania and Iasi and also to get in contact with other European students in an informal way. The students considered that during the IP there were enough opportunities to exchange ideas and experiences with other students and lectures and the University facilities were suitable for group working.

Appendix 1. Case Analysis Report

A case study report consists of defining the problem, conducting analysis, and arriving at a conclusion(s) for action. The report should have maximum 3 pages and use Arial font, size 12, double-spaced. There are no limits to appendices.

Important: Imagine your report will be submitted to a client or a superior in the organization. It should follow professional report writing standards and avoid unnecessary jargon. Try the best you can and don't worry about getting the "right" answer!

1. Introduction & Problem Statement:

Summarize and highlight events and information from the case that provides a context for your problem statement and analysis. Identify the main issue or central problem that you will address as well as other minor issues that will be dealt with.

2. Analysis:

Specify any assumptions to proceed with case information. Using **case information only**, develop arguments supported by calculations. Demonstrate deep understanding of the issues. Present evidence to back up and substantiate decisions that you have undertaken. Determine and weigh alternative courses of action.

3. Conclusions:

Summarize how you have addressed the main problem and related issues. Detail follow up and recommendations.

Appendix 2. Evaluation Forms

INTQUANT SECOND PILOT INTENSIVE PROGRAMME
ADVANCED TOPICS IN BANK RISK MANAGEMENT
 10-23 JULY 2016, ALEXANDRU IOAN CUZA UNIVERSITY OF IAȘI



REPORT ASSESSMENT FORM

Grader: _____

Team: _____

Part	Maximum Points	Points	Notes
Scorecard and Betas	15		
Transformation of Variables	15		
Selection Process	15		
Social Impact and Business Perspective	15		
Validation	15		
R Code & Database	25		
Total	100		

INTQUANT SECOND PILOT INTENSIVE PROGRAMME
ADVANCED TOPICS IN BANK RISK MANAGEMENT
 10-23 JULY 2016, ALEXANDRU IOAN CUZA UNIVERSITY OF IAȘI



PRESENTATION SCORING SHEET

Grader: _____

Team: _____

Criteria	Maximum Points	Points	Notes
Model <i>Was the model developed and validated rigorously and appropriate?</i>	25		
Argument <i>Did they provide an effective social/economic argumentation of final outcome?</i>	20		
Questions <i>Were they able to answer questions effectively?</i>	20		
Team Involvement <i>Team involvement in the presentation / Questions and Answers</i>	15		
Poise <i>Were they confident? Were they convincing?</i>	10		
Materials <i>Quality of slides</i>	10		
Total	100		