

The INTOQUANT logo, featuring the word "INTOQUANT" in a stylized font with a red line and a globe icon.

# INTOQUANT – Intensive Week

Case presentation

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# Introduction message

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## Coronavirus impact

In light of the continued spread of the COVID-19 across the globe and official decisions of polish government, we had to put in place necessary containment and contingency measures to protect the health and safety of you and your families.

For now, there is no possibility to meet in person on campus, as all polish universities are closed till March 25<sup>th</sup> with possibility to extend. Nevertheless, we decided to conduct this year's edition of INTQuant using the best available solutions. We believe that even in such limited form you can learn a lot and develop yourselves.

The following changes has been applied in INTQuant 2020 edition:

- The usual approach of solving the problem in groups of 5 people was reviewed. Each of you will work on the case by him-/herself.
- The complexity and scope of the problem has been greatly reduced to make the solution achievable within two weeks.
- The lecturing material has been limited to match the scope and complexity of the modified case.
- The lectures will be delivered in the form of self-study materials only.

Let's focus on materials now. Wish you a good lecture and hope you will still find good educational value in participating in INTQuant.

# Table of contents

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Section 1	<b>Case – overview</b>	3
Section 2	<b>PD &amp; LGD</b>	6
Section 3	<b>Input data</b>	9
Section 4	<b>Timeline proposal</b>	11
Section 5	<b>Grading</b>	13

## Section 1

# Case – overview

# Case

## Overview

Calculate ratings and PD using the Internal Model approach for three counterparties (Salzburg Bank, Bank of Cluj, Bank of Mazowsze) as of 23<sup>rd</sup> February 2018.

Portfolios:

Salzburg Bank (ID = 484)

Bank of Cluj (ID = 47)

Bank of Mazowsze (ID = 2741)

# Case

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## Data Files

- To solve the problem you need to make use of the following data:

### Counterparty defaults

- For PD model calibration
- <https://github.com/INTQuant-Katowice/2020/blob/master/Data/DataPD.txt>

## Section 2

# PD & LGD

# LGD&PD

## A brief overview

### Loss Given Default:

The amount of historical data on LGD is usually substantially less than for PD

This enables the company's to sometimes fall-back to expert judgment approach

- Assume some number based on the situation in the given industry/country
- Either use the most conservative value possible (100%) – all is lost.

**In this exercise we assume LGD is 60% for all the counterparties**

### Probability of Default:

Considered time horizon is one year

Usually bucketed into ratings (AAA, BB+, etc.)

Depends both on obligor - specific factors (e.g. equity to assets, revenue growth) and macroeconomic conditions (e.g. unemployment rate, GDP growth)

From statistical point of view PD is an estimator of default rate (share of defaulted counterparties over all observations), usually modelled via GLM models (logit, probit regressions)

Statistical models serves a support for Credit Officers responsible for credit condition assessment

**More info:** Credit Risk Fundamentals (Sara Nowogórska, UBS)



# Expectation

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What we would like to see?



Expert judgement on LGD



Build a PD model



Understand strengths and weaknesses of chosen approach



Check the model performance relying on provided data



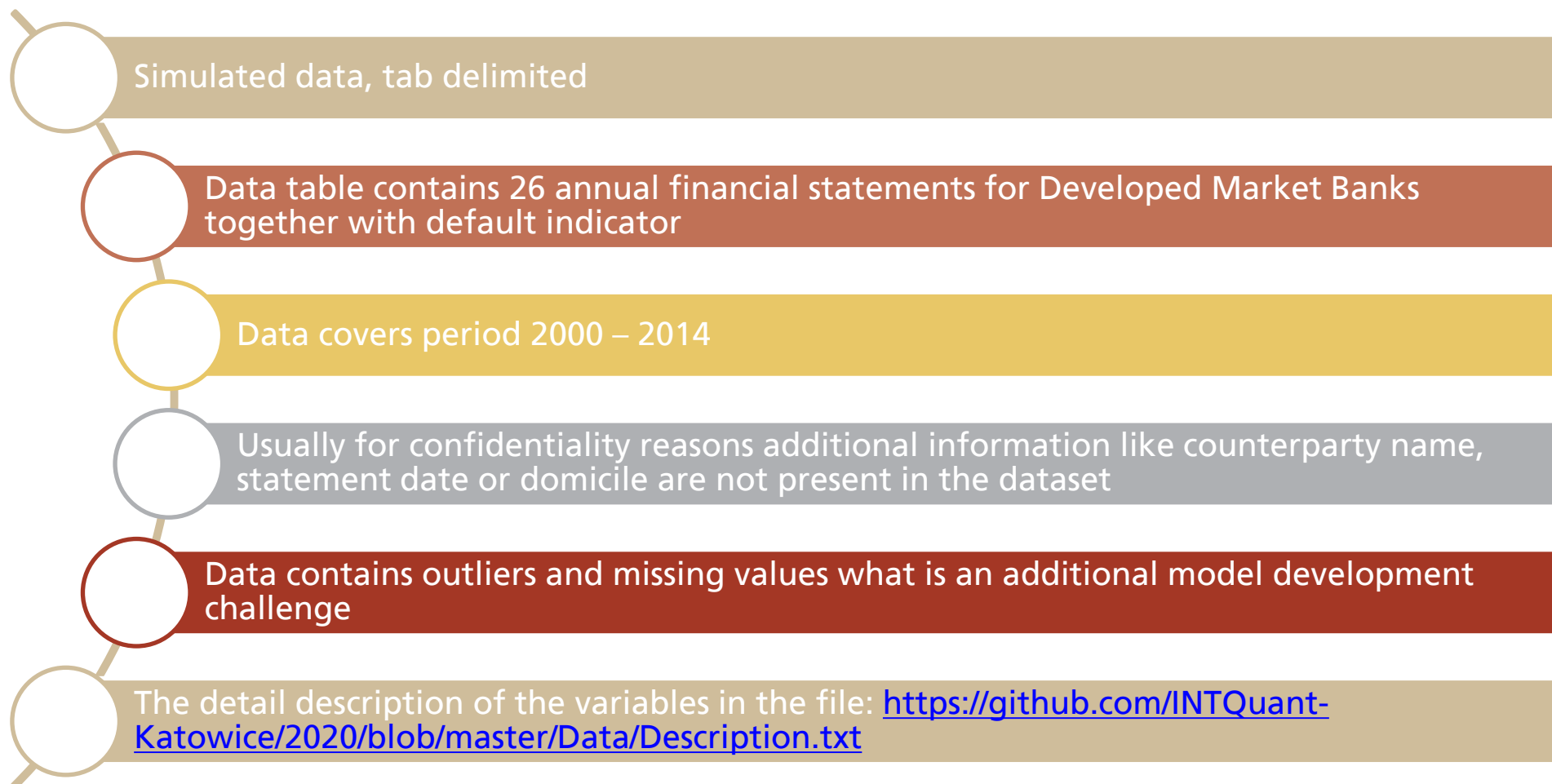
Use created model to assess credit rating of selected counterparties

## Section 3

# Input data

# Counterparty default data (PD)

## Composition of default data

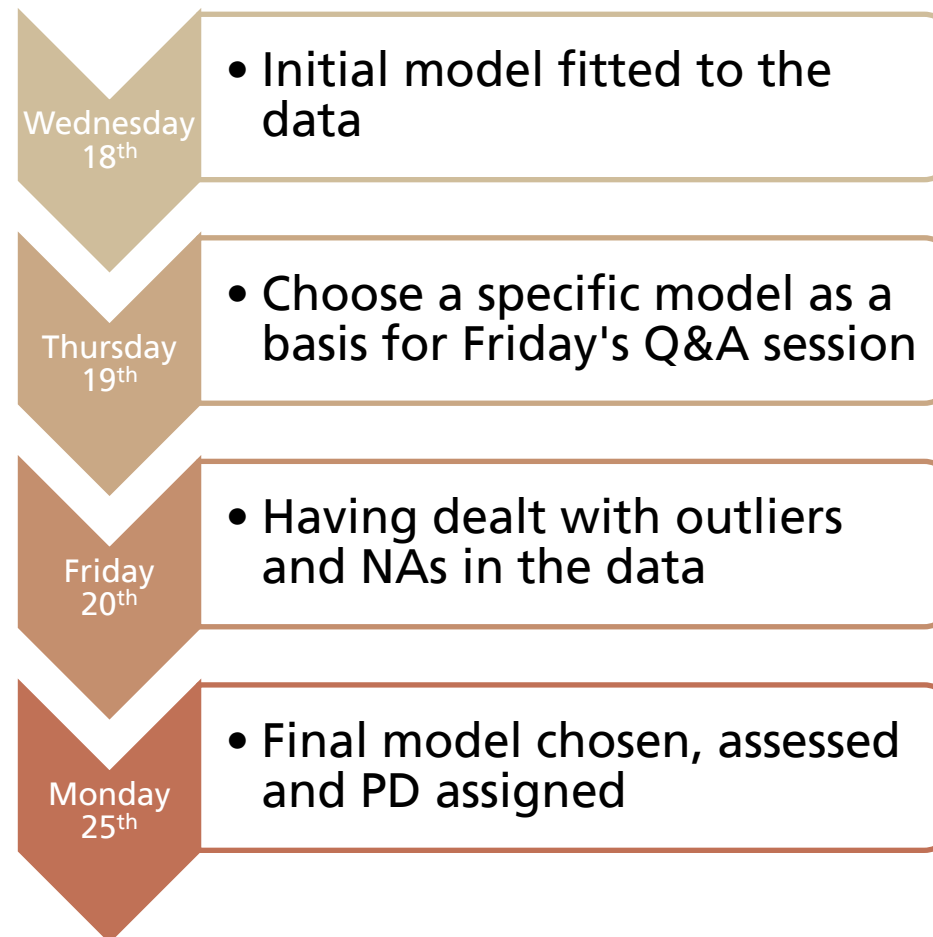


## Section 4

# Timeline proposal

# Timeline proposal

Only a suggestion



## Section 5

# Grading

# Grading

## Most important things to have in mind

- The most important thing is that the exercise is completed.
  - The simplest and working > Fancy and failing
  - Fancy and working > simple and working
- Milestones

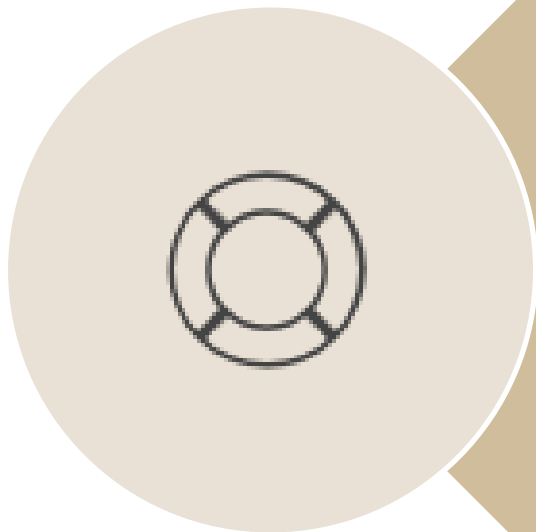


### PD

- Assess the PD model (visualizations and fit quality measures)
- Motivate decision to go for a given specification
- Assign a PD to each counterparty
- Extract PDs of the three counterparties that are in the scope of EAD part

# Contact information

What to do in case of problems?



Everyone is allowed to ask one Question every two days by an email.

- Sent the questions to: [piotr-a.morawski@ubs.com](mailto:piotr-a.morawski@ubs.com)
- Be sure to start the subject with phrase:  
**INTQuant Question – Day X**
- Be mindful to formulate your question properly to pinpoint the core of the problem
  - Questions like: **'Why it is not working?'** will be answered with **'Because you are doing something wrong.'**
- Make the questions methodology oriented not implementation oriented.

[www.ubs.com](http://www.ubs.com)



# Thank You

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Good luck!