Business reasons to analyse a credit registry database

Zoran Bohaček

HRVATSKA UDRUGA BANAKA

CROATIAN BANKING ASSOCIATION
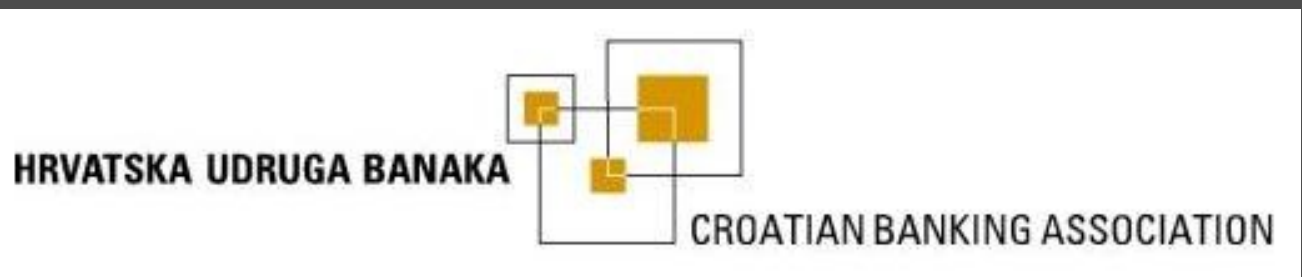
Croatian Quants Day   **22. II. 2008.**

Credit Scoring: some definitions

CREDIT SCORING is a statistical methodology used to predict future events based on the past experience.

It predicts the likelihood a particular event will occur in a given period of time.

The assumption is that the future, at least in the medium term, will be similar to the past.

Credit Bureau Score: worldwide overview

% of credit requests which include Credit Bureau Score

USA:	**95%**
Italy:	**91%**
Canada:	**80%**
South Africa:	**65%**
Colombia:	**45%**
Mexico:	**30%**
Poland:	**15%**

In Croatia

- No Credit Bureau score yet
- 24 months of history needed
- Potential is here
- Database contains 2,7 million names
- There are 7,5 million "trade" lines

Different Types Of Scoring

WHAT DO YOU WANT TO PREDICT?

Risk	who will generate loss?
Response	who will answer to the offer?
Profit	who will generate revenue?
Attrition	who will remain customer?
Collection	how many Euros can be recovered?
Fraud	is this a fraudulent transaction?

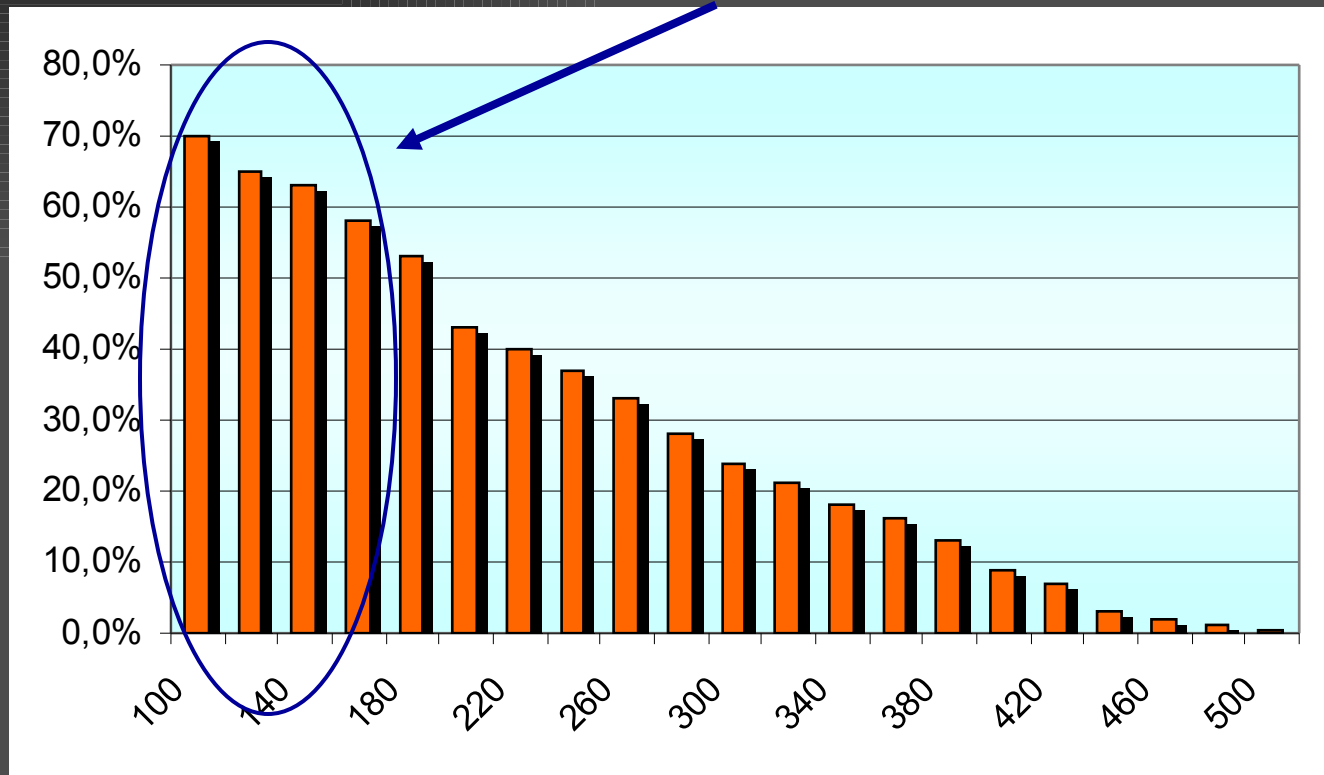# Other Fields For Scoring

➢insurance:

    ➢score = odds of claim

    ➢score determines premium

➢direct marketing

➢internet interactions

➢health

➢employment

➢tax authorities

➢.......

…rank ordering tool

The lower the score, the higher the probability of the event to occur (e.g. customer default)

High

Probability of the event to occur

Low

Low ← **Score** → *High*

Credit Scoring: typologies

Socio-demographic Scores

➢ forecast a future individual specific event

➢ built on static data

➢ rely heavily on external data

➢ one shot computation

APPLICATION SCORE

Behavioural Scores

➢ dynamic evaluation based on behavioural information

➢ built on the whole set of available information

➢ computed on monthly base

CREDIT BUREAU SCORE

PRE-SCREENING SCORE

BEHAVIOURAL RISK SCORE

ATTRITION SCORE

COLLECTION SCORE

Credit Bureau Score: some definitions

The Credit Bureau Score is a synthetic and predictive indicator which forecast the future payment behaviour of an applicant based on his credit information stored in the Credit Bureau

- It allows an **overall** vision of the individual relative degree of risk towards the system.

- It is means of **rank ordering** potential borrowers

- It **sums up** in a score what an individual past credit performance and current usage says about his future credit performance: the higher the score the more creditworthy the lender

- It is based on **all** the credit related data available in the Credit Bureau.

Credit Bureau Score: an example

CHARACTERISTICS	ATTRIBUTES	POINTS
Number of bankcard account	0	15
	1	22
	2-4	30
	5+	20
Worst level of delinquency on instalment loans	No instalment loan	30
	Never delinquent	40
	30 days past due	10
	60 + days past due	5
Time since the oldest account was established	below 12	12
	12-47	35
	48+	60
Average current balance (€)	0	50
	1-99	45
	100-3999	40
	4000 +	25

Each individual will have one attribute for each characteristic, each attribute relates to a number of points, the score is the sum of the points awarded to each characteristic in the scorecard

score : 117

Weight the most predictable information

Pie chart: Weight of the most predictable information
- types of credit in use 10%
- New credit 10%
- Length of credit history 15%
- Amounts owed 30%
- Payment history 35%
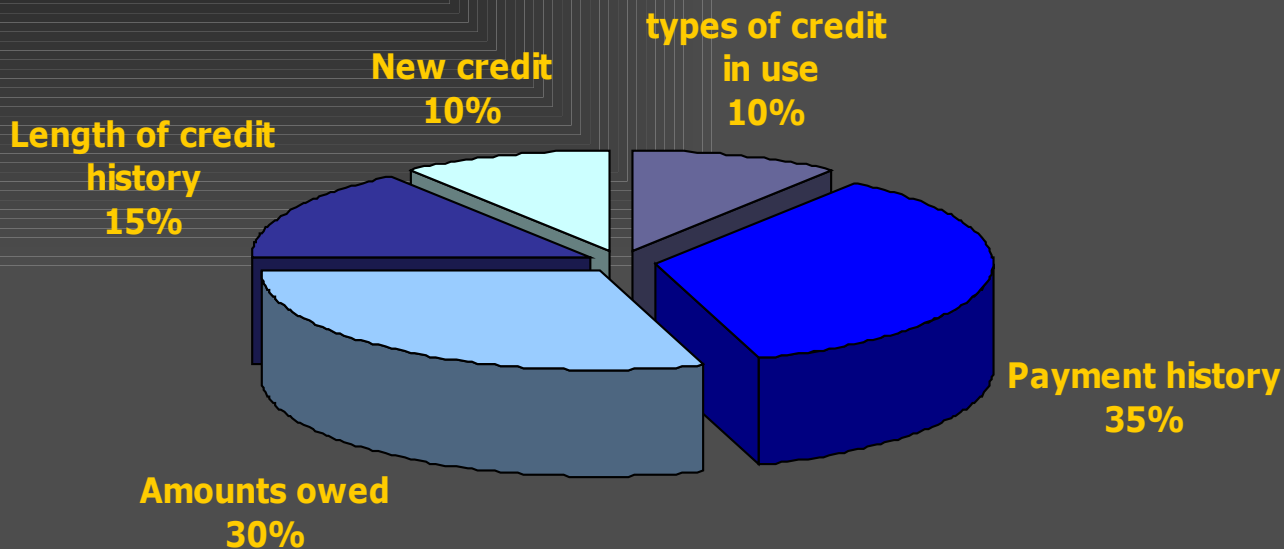
Score factors

What rises the score?   **What lowers the score?**

High amount of credit

(trust of other lenders)

Length of credit history

(the older, the better)

Number of instalment credit

vs credit cards

Missing payments

(older items or items with small amount will count less)

High balances

(customer overextended)

New requests

(opening several accounts in the short tem represents greater risk)

Credit Bureau Score: benefits for banks

➢ **Synthesis**: It sums up in a score all the information of the credit report

➢ **Prediction:** it is a predictive indicator of future performance

➢ **Automation**: It can easily be integrated in the decision processes

➢ **Consistency**: It makes the evaluation objective, consistent and standardized

➢ **Monitoring**: It gives a periodic snapshot of the overall risk quality of the portfolio

Pricing strategy example

Score range	Bad Rate	Total
518-<=596	91.8%	5.0%
597-<=652	43.3%	10.1%
653-<=670	22.6%	15.3%
671-<=680	13.7%	20.1%
681-<=690	10.1%	25.1%
691-<=698	7.4%	30.9%
699-<=704	5.9%	36.5%
705-<=708	5.5%	40.9%
709-<=712	4.9%	45.4%
713-<=716	4.4%	51.0%
717-<=720	3.8%	55.3%
721-<=723	3.7%	60.2%
724-<=728	3.5%	65.8%
729-<=732	2.1%	70.8%
733-<=736	1.4%	76.0%
737-<=740	1.6%	80.2%
741-<=743	1.2%	85.8%
744-<=748	1.1%	91.3%
749-<=752	0.9%	95.9%
753-<=765	0.9%	100.0%
Total	11.6%	100.0%

Reject

Refer

Apply higher price

Apply lower price

Another Example of CB Score

Decision matrix based on tranches of scores, bad rate and % of total

C. B. Score	SOCIOLOGICAL Score											Total	
	A	B	C	D	E	F	G	H	I	L	M		
A	0,24	0,21	0,03	0,18	0,30	0,17	0,16	0,25	0,16	0,20	0,21	2,1	2,2071113
B	0,05	0,07	0,01	0,05	0,03	0,04	0,11	0,08	0,02	0,03	0,05	#NOME?	0,4438717
C	0,05	0,12	0,08	0,12	0,07	0,18	0,13	0,07	0,10	0,09	0,07	1,1	1,0213747
D	0,05	0,10	0,12	0,40	0,24	0,41	0,03	0,40	0,30	0,08	0,30	2,4	2,643334
E	0,03	0,02	0,04	0,07	0,08	0,09	0,11	0,06	0,08	0,08	0,06	0,7	0,709095
F	0,07	0,20	0,10	0,20	0,40	0,20	0,20	0,10	0,05	0,02	0,04	1,6	1,2086279
G	0,04	0,06	0,08	0,13	0,16	0,32	0,29	0,15	0,13	0,10	0,12	1,6	1,5879538
H	0,08	0,14	0,15	0,34	0,18	0,24	0,33	0,29	0,35	0,15	0,17	2,4	2,3983999
I	0,07	0,09	0,14	0,18	0,22	0,26	0,31	0,38	0,31	0,23	0,16	2,3	2,3235997
L	0,21	0,34	0,28	0,45	0,40	0,81	0,60	0,54	0,54	0,39	0,34	4,9	5,1852903
M	0,19	0,35	0,36	0,68	0,59	0,84	0,77	0,83	0,91	0,48	0,38	6,4	6,3853288
N	0,04	0,18	0,11	0,22	0,20	0,39	0,49	0,51	0,37	0,29	0,40	3,2	3,1213354
O	0,13	0,14	0,23	0,33	0,21	0,60	0,52	0,40	0,39	0,48	0,34	3,8	3,774204
P	0,32	0,33	0,59	0,80	0,86	1,14	1,14	1,26	1,10	0,89	0,90	9,3	9,324454
Not evaluated	2,98	3,98	4,22	5,40	5,35	7,40	7,47	6,59	5,95	4,20	4,14	57,7	57,66602
TOTAL	4,6	6,3	6,5	9,5	9,3	13,1	12,7	11,9	10,8	7,7	7,7	#NOME?	

Bad rate

	0,0 - 2,5
	2,5 - 5,0
	5,0 - 8,0
	8,0 - 13,0
	13,0 - 20,0
	20,0 - 30,0
	30,0 - 40,0
	40,0 - 60,0
	60,0 - 100,0

The Credit Bureau Score is the second "dimension" to be integrated in the construction of the decision matrix. Its predictive value will be combined with the application score in the form of a matrix.

Credit Scoring and the Customer Life Cycle

GOAL: to increase the length of credit relationship and to maximise the profitability

Value

Targeting

Portfolio Management

Time

Acquisition

Collection

GOAL: to reduce time and costs of acquisition of new customers

Credit bureau score can be easily integrated in every aspect of customer lifecycle improving the performances of the portfolio and therefore the banks profitability