AGGREGATE RATING MODEL IN THE TOURISM INDUSTRY

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Abstract. *In the paper the authors present a model aggregate rating based on credit-scoring models, banking models and their rating model. Multi-criteria approach and an aggregate model better capture business risk of the company.*

Keywords: rating, credit-scoring models ratings, profitability, liquidity, solvency

JEL Classification: G17, G32

1. Literature Review

Between bankruptcy risk and there is a direct relationship of proportionality, namely: the activity involves less risk, the possibility of bankruptcy is lower and vice versa.
Before granting loans, banks are trying to assess business risk, being particularly concerned with default risk and risk of default by borrowers. One way business is credit risk assessment - scoring that can be expressed as a notation of assessment or evaluation of the attributes of the applicant to grant credit, aims to establish a hierarchy of credit applicants in a note or score.
For this purpose are required:

- Establishment of a number of variables (wealth, income level, stability of work and home, age, familiar tasks, behavior and relationships with banks as debtors etc.).
- Issuing a system allowing the implementation of the aggregation of variables in a joint, overall expression.

In this connection it is emphasized deficiencies arising from the transposition. It has a contradictory situation. The rankings can be as precise as the notation for each variable, as it can become confusing note resulting from aggregation, whereas aggregation as a way of generalization, it means loss of information, giving the concrete sides disclosed by them.
Aggregation brings the same denominator, but leads to loss of identity of subject characteristics. Compensation phenomenon, which is produced by aggregation, may overshadow the essential sides being covered by the appreciation of other features, insignificant purpose: minimal risk.
The overall system efficiency is closely related to consideration of the most significant factors that can be variables of the system, and optimize the aggregation. System, the whole of it, is an expression of the Bank's credit policy reconsideration based on periodic statistical data and processed by specific methods: multiple regression or technically known as multiple discriminant analysis MDA (Multiple Discriminant Analysis).

Scoring method is based on block rates (indicators) determined statistically weighted by some coefficients in a mathematical model can be determined with a certain probability of future health businesses. In business it is important that management decisions be based on the rating analysis.
The literature opinions are divided on the performance rating models. The most famous Romanian models are: the Ion Anghel Gheorghe Băilăşteanu model, model Ivoniciu Paul. Credit scoring models developed by specialists stain are: the Altman model Stickney, model Robertson Conan-Holder model. Remember the model of banking models: BCR, Banca Transilvania model, model Credit Europe model Piraeus Bank and others.

2. Method and Results

In research conducted we considered several tourism businesses, and built a model aggregate rating based on three levels of rating:

- Model of Rating;
- Model aggregate banks Romanian Commercial Bank and Piraeus Bank;
- Aggregate credit scoring model Ion Anghel and Stickney.

The rating is based on three categories of indicators grouped into indicators of liquidity and profitability, and solvency. For each group of indicators were established seven qualifiers as very good, good, above average, average, below average, poor and very poor, and their respective scores. These qualifications were equivalent to 5 grades AE related to banking and credit scoring models as "Very Good" and "Good" = A, "above average" and "average" = B "Below Average" = C, "Low" = D and 'Very Low' = E.
The Rating Model
Next were given scores ranging 3-15 points, broken down by categories of AE ratings as listed below.

A	B	C	D	E
15-13 pct	12-9 pct	8-6 pct	5-3 pct	<3

Ratings of the companies during the period 2003-2012, following the application of rating model falls within the rating category E, in the years 2003, 2005, 2006, 2007, 2012, and the rest of the year falls within the rating category B.
Rating model was built based on 5 indicators: Overall Solvency Ratio; Total Return Ratio; Return On Equity; Current Liquidity Ratio and Return On Assets.
Overall Solvency Ratio explain how the total assets of the entity may cover the total debt. The indicator measures the security enjoyed by the company to the bank and creditors; extent to which debts can be covered on account of assets. The indicator is calculated as a percentage ratio between net assets and total assets.
Confidence interval for this indicator has been split into 5 values which were awarded points according to the following scale:

Values	80%	105%	130%	155%	180%
Points	1	2	3	4	5

In the case of the analyzed period 2003 - 2012 the indicator throughout the period under review was higher than 180%, partly rating is 5.
Total Return Ratio is determined as a percentage ratio between gross result of the exercise and total revenue. Indicator highlights the contribution of property items from the results.

For this indicator has established the following scale:

5	4	3	2	1
> 12,1 %	8,1 - 12 %	5,1 - 8 %	2,1 - 5 %	0 - 2,0 %

The score is calculated consistently on almost all the period, giving the minimum score, except to meet in 2003 and 2011, when the score given was 2.

Return On Equity (ROE) emphasizes the efficient use of capital to shareholders and is calculated as the ratio between the net profit of the company and its capital.

The scores awarded for this indicator are:

5	4	3	2	1
>25	15<25	10<15	5<10	<5

Indicator values are less than 5 throughout the period under review, the score given is the one.

Current Liquidity Ratio reflects on the one hand the ability of current assets to current liabilities of the entity's face on the other hand shows the cash resources through current assets. In other words the current liquidity ratio measures the entity's ability to pay short-term debts. The higher the current liquidity, the entity is able to pay its obligations in 12 months demanding the balance sheet date. Current liquidity while assessing the effectiveness of an entity's operating cycle or its ability to transform production into cash.

The scores awarded are:

5	4	3	2	1
>2,5	2<2,5	1,5<2	1,5<1	<1

In the case of analyzed current rate experienced a positive development in the period under review, with the exception of 2012.

Return On Assets is the best known performance ratio of the rates of return on the system. Rate measures the profitability of the entire capital invested in the entity and determine the ratio of net result for the year and total assets of the entity.

For this indicator has been awarded the following scores:

5	4	3	2	1
>20	14<20	9<14	4<9	<4

The analysis carried out showed that the indicator values are less than 4 throughout the period under review, so the score given is 1.

Based on established intervals were given rating categories below:

Categ. A	**Categ. B**	**Categ. C**	**Categ. D**	**Categ. E**
20<25	15<19	10<14	6<9	<=5

By adding the scores obtained for each category of indicators were obtained following the following category scores aggregated rating:

Year	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Total points	9.00	10.00	9.00	9.00	9.00	10.00	10.00	10.00	12.00	9.00
Categories	D	C	D	D	D	C	C	C	C	D

The total score is determined according to the rating entity as follows:

A	B	C	D	E
15-13 pct	12-9 pct	8-6 pct	5-3 pct	<3

Aggregate grade rating granted analyzed period 2003 - 2012 is:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Aggregate Rating	E	B	E	E	E	B	B	B	B	E

Rating obtained by the company during 2003-2012, falls within the rating category E in 2003, 2005, 2006, 2007, 2012, and the rest of the year rating falls within the rating category B.

Under category B, the entity in this class have a rating and a good repayment capacity. The overall rating granted in the period under review the company has a good debt repayment capacity, both short and long term. The level of return on capital invested in the company's environment. For entity of category B are projected losses and related risk exposures for this category is considered low.

Entities category's financial performance related problems. Losses are in most cases are imminent.

The Banks' Aggregate Rating: Romanian Commercial Bank and Piraeus Bank

- *Romanian Commercial Bank Model*

After applying the model rating BCR have the following values:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Category	D	C	C	D	C	B	B	B	A	C

Ratings of the companies analyzed during 2003-2012 oscilează, after applying the rating model, and is in category A rating for 2011, B for 2008-2009 and 2004-2005, 2007, 2012 is in category C and the years 2003, 2006 rating category D.

BCR - Erste fall economic agents who use credit worthiness into five categories based on the scores of financial criteria, quantifiable analysis result nonfinancial criteria, quantifiable. Depending on their score, the loan will be classified in one of the categories of financial performance using the following scale:

Rating	Categories	Credit rating	Values
0.27-0.54	A	Standard	1,00-1,80
0.55-0.81	B	Observation	1,81-2,60
0.82-1.08	C	Substandard	2,61-3,40
1.09-1.35	D	Doubtful	3,41-4,20
>1.36	E	Loss	4,21-5,00

Scores are given increasing, so a company get a low score will be put into a higher category of creditworthiness.

- *PIRAEUS BANK Model*

After applying the model PIRAEUS BANK ratings were recorded during the following ratings to the following:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Categories	B	B	B	B	B	A	A	A	A	A

During 2003-2012, the company falls under the category rating in the years 2008-2012, and the remainder of the company falls within the rating category B.
By adding the scores obtained for each category of indicators were obtained following category scores aggregated following rating:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total points	5	6	7	7	7	7	6	6	6	6
Banking Aggregate Score	C	B	B	B	B	B	B	B	B	B

The total score is determined according to the rating entity as follows:

A	B	C	D	E
10-8 pct	7,9-6 pct	5,9-4pct	3,9-2 pct	<2

Category B includes clients financial whose performance is good or very good, but not can maintain this level over a longer period.
Category C is for customers with Financial satisfactory performance, but with a clear trend of worsening.

- *Aggregate Credit Scoring Model: Ion Anghel şi Stickney*
  - In Anghel Model

After applying the model analyzed enterprises Ion Anghel recorded the following ratings:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Credit scoring	B	A	A	A	A	A	A	A	A	A

Rating obtained by the company during the period 2004-2012, following the application of Model Ion Anghel, fall into the category rating and in 2003 companies fall into the rating category B.
During 2004 -2012 the company analyzed is in an area of non-bankruptcy, and in 2003 the business is in the area of uncertainty.

- Stickney Model

After applying the model analyzed Stickney rating companies obtained the following ratings society during the next:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Categories	C	B	B	B	B	B	B	B	B	B

He noted that during 2003-2012, the rating firms fall into category B rating, and in 2003 the rating is in category C.
During the analyzed period the probability of bankruptcy risk is high (rating given in most years is E and D), and the 2005-2008 default probability is lower, rating for the D.
By adding the scores obtained for each category of indicators were obtained following category scores aggregated following rating:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total points	5	6	7	7	7	7	6	6	6	6
Credit Scoring	C	B	B	B	B	B	B	B	B	B

The total score is determined according to the rating entity as follows:

A	B	C	D	E
10-8 pct	7,9-6 pct	5,9-4pct	3,9-2 pct	<2

The categories of rating scores are weighted with 35% aggregate model to obtain the overall rating. The aggregate model of banks and credit scoring model were given scores ranging from 2-10 for each rating category in the table above. The categories of rating scores are weighted 35% and 30% aggregate model bank credit scoring model to obtain the overall rating. The aggregate model of banks and credit scoring model were given scores ranging from 2-10 points.

SINTHESYS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Aggregate Rating	E	B	E	E	E	B	B	B	B	E
Points (percentage 35 %)	0.35	1.40	0.35	0.35	0.35	1.40	1.40	1.40	1.40	0.35
Aggregate Banks	B	B	B	B	B	A	A	A	A	A
Points (percentage 35 %)	1.40	1.40	1.40	1.40	1.40	1.75	1.75	1.75	1.75	1.75
Aggregate CREDIT SCORING	C	B	B	B	B	B	B	B	B	B
Points (percentage 30 %)	0.90	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
TOTAL POINTS	2.65	4.00	2.95	2.95	2.95	4.35	4.35	4.35	4.35	3.30
GENERAL RATING	C	B	C	C	C	B	B	B	B	C

Entities have a *Class A* rating from the highest level featuring excellent repayment capacity , with no irregularities in payment of debts to the creditor. For this category is impossible to record losses.
Under *Category B*, entities have a rating and a good repayment capacity . The overall rating granted in the period under review the company has a good debt repayment capacity, both short and long term. The level of return on capital invested in the company 's environment. For entity of category B are projected losses and related risk exposures for this category is considered low.
Entities in *Category C* have a good rating but may have problems with financial performance. Repayment capacity is adequate, but problems can arise irregularities debts to the creditor, but they can be solved without rescheduling. For entities in this category is unlikely record losses and related risk exposure for this category is considered average but acceptable to creditors.
Category D groups the entities financial returns issues giving rise to irregularities in payment of debts to creditors sometimes solved by rescheduling payments showing increased vulnerability to market shocks . Of the exposure is great.
The *Category E* grouped enterprises with financial difficulties exacerbated who is on the verge of bankruptcy. To exit from the financial difficulties businesses are required to take urgent decisions to finance itself through major mergers of capital.

3. Conclusions

From the analysis performed the following aspects:

- Financial decisions should be based on a correlated system of indicators;
- A method of analysis is the rating business;
- Individual rating models capture only part of the financial health of businesses;
- Therefore it is necessary to build a model unit to capture over 60% of health enterprises.

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