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**TRADITIONAL AND CUTTING EDGE BUSINESS CREDIT
SCORING**

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Abstract: *Financial stability is the ultimate expression of the ability of companies to operate in a complex and volatile market environment. In the Republika Srpska it was necessary for companies to adapt to new changes because the market favors the companies with good and disfavors the companies with bad credit history. Starting from this point, the paper presents The Ugljevik Power Plant joint-stock company's business analysis in the five-year period. The focus of the analysis is based upon financial stability, the company's assets and profitability, i.e. the performances of its creditworthiness. Therefore, using traditional methods, a financial score analysis has been conducted in both business conditions – when the company was achieving positive business results as well as when it was operating at a loss. In contrast to traditional methods, as cutting edge credit scoring methods, z-score and ZETA analysis have been used to calculate The Ugljevik Power Plant joint-stock company's credit score. A comparative analysis of the obtained results has been done by applying the old and new z-score and ZETA analysis method. The goal of research is to determine the creditworthiness of the company, as a precondition for its financial stability, and quality assessment and management capability to use information on creditworthiness due to more efficient financial management in the respective company.*

Keywords: *financial stability, liquidity, profitability, company, creditworthiness.*

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1. Introduction

The development of a market economy has led to a significant shift in the approach to financial management and changed the fundamental economic settings in the management of business activities and financial flows in particular. Companies have to adapt to the new changes, especially companies that operate in countries in transition such as Bosnia and Herzegovina (including the Republika Srpska as its constitutive part). The survival of companies on the market, which is influenced by global trends and the environment, is conditioned by those companies' ability to modify their offer through relocation of resources and through their credit scoring strengthening. All efforts in the field of management, organizational and financial restructuring will not give the desired results, if not accompanied by market restructuring and the involvement of enterprises in the international division of labor. To what extent is the management of domicile companies has accepted the demands of global economic trends and adapted their business to global market changes can be demonstrated through practical processing of companies' credit scoring. The need for permanent knowledge of the company's credit scoring is a prerequisite to its financial stability, which is essential for effective business decisions.

To assess the creditworthiness of companies, or their ability to meet their obligations, it is necessary to do the ratio analysis of: 1) its financial stability, 2) the company's assets 3) and its profitability. The objective of this analysis is to examine and evaluate The Ugljevik Power Plant joint-stock company's creditworthiness using the old and new z-score and ZETA analysis methods.

2. The concept of creditworthiness

The term creditworthiness implies the formal and material property of the entity that makes it a safe debtor, whether it is a bank in which the funds are invest, whether it's a company to whom a credit is given or a company that is preparing to sell securities. In the narrow sense, creditworthiness expresses a company's creditworthiness and its liquidity, and more broadly, the overall company's rankings (organizational, personnel, material and financial constitution), its market position, business reputation, development programs and business prospects and hence the creditworthiness and liquidity. (Bogetić, 1993, pg. 123.)

Credit scoring can show the probability of occurrence of the insolvency of the company in the future, but to a more general understanding it can show the company's rating in the field of liquidity and creditworthiness. In the broadest sense, the term creditworthiness includes overall rating based on the analysis of the annual financial statement and the situation of the company. In this broad sense, the credit score refers to the assessment of economic activities in the enterprise, the intangible assets in relation to the reputation of the company, its intrinsic value, or elements that also contain the assessment of liquidity and creditworthiness of the company.

The wider concept of credit score is more adequate the narrower concept, which boils down to the credit rating and assessment of the liquidity of the company. However, in business practice, term credit score implies value, reliability, professionalism and creditworthiness of companies. However, synthesized, these attributes indicate the credit scoring which has a much broader definition than creditworthiness. Namely, the credit score is identified through a broader definition in terms of: the company's business, its

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involvement in the market, the ways of fulfilling its obligations, its reputation in the domestic and international markets, as well as the rating that the company enjoys in the business environment. Moreover, it should be born in mind that creditors, in terms of credit scoring, ask debtors to fulfill various conditions and requirements. Depending on the performance of the debtor, the credit worthiness can be: 1) the minimum, 2) acceptable and 3) good.

The minimum credit rating gives the company, from its debtor's perspective, the possibility that its creditors believe that it will pay the obligations within the set deadline, or that the suppliers will deliver the goods and raw materials, but with a special provision of its claims.

The acceptable credit rating have those enterprises that can regenerate its business activity with the smooth (without limitation) financing, that is with the payment of its debts to creditors withing the deadline and to suppliers with normal deferred payment period.

The good credit rating allows the company to come in a debtor-creditor relationship with no problems. This credit rating is seen in those companies that meet strict criteria: 1) that their shares are included in the list of the stock exchange, 2) that they are financially (in the broad sense) and profitably stable, 3) that they smoothly enter financial markets and that they easily buy or sell capital.

3. Calculating the company's credit score using traditional methods

In order to assess the financial position of The Ugljevik Power Plant joint-stock company Sokolac, it is necessary to conduct the most important ratio analysis: 1) short-term and long-term financial balance, 2) liquidity, 3) solvency and 4) debt, for a five-year business period from 2012 to 2016.

For the analysis of short-term financial equilibrium, positions of the balance sheet are demarcated into two groups: on the assets side there are short-term time deposits, and on the liabilities side there are short-term funding sources. Short-term financial balance is obtained when the ratio of the short-term assests is put to one side with the short term financing sources on the other side.

Short-term financial equilibrium exists if the ratio is 1: 1 (acid test rule). Otherwise, short-term imbalance is moved to the short links (liquid assets), or to short-term sources (matured liabilities).

Figure 1. Short-term financial equilibrium of The Ugljevik Power Plant

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Short-term assets</i>	72.750.639	51.665.841	25.715.894	16.236.013	41.228.175
<i>Short-term financing sources</i>	19.504.127	19.577.503	18.181.419	27.735.533	34.809.204
<i>Short-term financial equilibrium</i>	3,73	2,64	1,41	0,58	1,18

Source: The Ugljevik Power Plant financial statements

Analysis of the short-term equilibrium shows that the short-term assests exceed the short-term sources of funding, while the short-term equilibrium coefficient is greater than 1. This means that the short-term financial equilibrium is shifted to the short liquid assets and short-term assets. The value of the coefficient of short-term financial equilibrium, if it is greater than 1, indicates that the company's liquidity was not questioned in any financial year, except in 2015 when the value of the coefficient was 0.58. During this year the company was permanently insolvent, and this is evident by the fact that the short-term funding sources (short-term obligations) are higher for 70.8% of short-term assets. However, it should be noted that the value of this ratio tends to fall, year after year, due to reduced short-term assets (short-term claims), and due to increased short-term financing sources (short-term liabilities).

Long-term financial equilibrium is obtained when the ratio of the long-term assets is put on the one side, and permanent and long-term capital on the other. Namely, if there is a short-term financial equilibrium, there must be a long-term one. In these circumstances, long-term financial equilibrium provides that the liquidity is mentained permanently, as there is a parallel alignment between the long-term assets and the availability (duration) of their sources of funding. Permanent liquidity, primarily depends on the parallelism of the mobilization of short-term assests and the maturities of short-term obligations.

The ratio 1: 1 shows the existence of long-term financial equilibrium. Disruption of this ratio shows an excess of long-term assets and a lack of capital and long-term debts, leading to disruptions in liquidity (insolvency), because the long-term assets are partly financed from the short-term sources of funding. Excess capital and long-term debt over the long-term assets does not endanger the liquidity but increases it, because a part of equity and long-term debt can be used for this purpose. On the other hand, it shows the irrationality of investment in fixed assets and inventories.

Figure 2. Long-term financial equilibrium of The Ugljevik Power Plant

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Long-term assests¹</i>	<i>443.320.344</i>	<i>449.191.866</i>	<i>462.352.776</i>	<i>468.667.535</i>	<i>504.203.441</i>
<i>Permanent and leng-term capital²</i>	<i>496.621.601</i>	<i>481.298.204</i>	<i>469.887.251</i>	<i>457.168.005</i>	<i>510.649.412</i>
<i>Long-term financial equilibrium</i>	<i>0,89</i>	<i>0,93</i>	<i>0,98</i>	<i>1,03</i>	<i>0,99</i>

Source: The Ugljevik Power Plant financial statements

Analysis of long-term financial equilibrium shows that the long-term assets related to all the years analysed are smaller than the permanent and long-term sources of funding, while the ratio of the long-term financial equilibrium is less than 1. It further points to the fact that the company has a safe permanent liquidity maintenance, because in the difference of amount of permanent and long-term sources of funding and long-term assets, short-term assests are funded from the permanent and long-term sources of financing.

¹ Long-term assests are: unpaid capital, fixed assests and inventories.

² Permenent and long-term capital are: capital, long-term provisions and long-term liabilities.

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That is, if for any reason the company fails to make the mobilization of short-term assets (claims) to the moment of the maturity of short-term liabilities, the liabilities will be paid from the funds originating from the difference between permanent and long-term sources of funding and long-term assets. However, this was not the case in 2015 when this ratio is greater than 1, which indicates that the company during that year was financially unstable with significant permanent illiquidity.

Current liquidity is obtained by the ratio of current assets and short-term liabilities and therefore shows the coverage of short term liabilities with current assets. In the scientific literature (especially the US literature) it is considered that the company is liquid if the ratio of current liquidity is 2 or more than 2. However, this opinion could not be accepted from our point of view. Namely, if the ratio of current liquidity is 2, this means that base stocks are half of current assets, while in business base stocks may be greater and less than half of current assets. If base stocks are higher than half of current assets, and if the ratio of current liquidity is 2 this does not guarantee the liquidity of the company. And vice versa, if base stocks are less than half of current assets, the liquidity ratio of 2 can not guarantee the liquidity of the company. In this analysis the ratio 2 will be used as a reference value.

Figure 3. Current liquidity of The Ugljevik Power Plant

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Current assests</i>	95.438.701	80.962.398	59.114.203	51.094.426	77.905.548
<i>Short-term liabilities</i>	19.504.127	19.577.503	18.181.419	27.735.533	34.809.204
<i>Current liquidity ratio</i>	4,89	4,14	3,25	1,84	2,23

Source: The Ugljevik Power Plant financial statements

The Ugljevik Power Plant had a ratio of the current liquidity which was higher than a reference value (2), which means that the current assets covered the short-term liabilities, and furthermore the company was able to establish a current state of liquidity. However, in 2015 a decrease in the current assets and an increase in short-term liabilities brings about a reduction in overall liquidity ratio below the reference value at 1.84. This means that the company, in the course of 2015, may occasionally come in a situation that it can not meet its short-term obligations from its current cashflow.

Quick ratio is a ratio between cash & short-term receivables and short-term liabilities. In this ratio stocks are not included, because it takes more time to get them converted into cash, which is the case with other current assests.

There are two opposite opinions on quick ratio: the first one, if the quick ratio is 1 or greater than 1 the company is liquid, and if it is lower than 1 the company is insolvent. The second opinion, since there is a risk of depositing short-term receivables and short-term securities, quick ratio should be higher than 1 so that it could be confirmed that the company will be liquid.

Figure 5. The Ugljevik Power Plan Quick ratio

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Short-term receivables + securities + cash</i>	52.441.374	42.840.737	20.190.015	13.229.888	34.677.980
<i>Short-term liabilities</i>	19.504.127	19.577.503	18.181.419	27.735.533	34.809.204
<i>Quick ratio</i>	2,69	2,19	1,11	0,48	0,99

Source: The Ugljevik Power Plan financial statements

Quick ratio of the company is greater than 1 in the period from 2012 to 2014, with a marked tendency to fall in 2014, which means that its liquid assets are greater than current liabilities. That is, the company was able to settle its short-term debts. However, in 2015 the company had a quick ratio significantly smaller than 1 and it fell to 0.48. This confirms earlier findings about permanent insolvency of the company in this business year. The ratio on the border of the reference (0.99) in 2015 means that the short-term obligations, at times, were higher than short-term receivables and cash. In such situations, the company could not settle overdue short-term liabilities from the current inflow.

Around the understanding of the concept of solvency and liquidity sometimes in the scientific literature, and in the economic legislation there are contrary opinions. In fact, sometimes the two concepts are identified and equalized, which is definitely wrong. Solvency, unlike the liquidity, means the ability of the company to pay all its obligations, not within the maturity for payment, but at any time, even from the bankruptcy or liquidation estate.

Solvency is a ratio between operating assets and total debts. Although there are no rules of how this ration should look like to make the company solvent, but, if the ratio is less than 1 then the company is insolvent. Therefore, the solvency of the company is insofar acceptable if the ratio of operating assets and total debts is more than 1. This means that the company is not indebted, for the remaining part of the assets is financed through equity. Long-term solvency is related to the ability of the company to survive longer periods of time, or many years.

Figure6. The Ugljevik Power Plant solvency

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Equity</i>	420.755.027	419.895.309	428.954.467	433.809.112	467.553.068
<i>Debts</i>	48.878.232	48.094.963	51.153.049	42.103.156	62.659.051
<i>Solvency ratio</i>	8,60	8,73	8,38	10,30	7,46

Source: The Ugljevik Power Plant financial statements

During the observed years The Ugljevik Power Plant had a solvency ratio several times larger than 1. This means that the company, several times, had the value of the business assets greater than the total liabilities, and that it was impossible for the company

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to make such a loss and bring itself into a state of insolvency. Despite the fact that the solvency of the companies was better in the previous years before 2016, it can be concluded that the company was in a state of extreme solvency.

Indebtedness of the company is assessed through the structure of balance sheet liabilities from the standpoint of ownership. Liabilities affects the security, viability and autonomy of the debtor. The level of indebtedness of the company establishes itself as " the relationship between their own sources of financing (equity) and borrowed funds (liabilities) ".According to the traditional rule acceptable financial structure for the company is if the equity is 50%, and debt is also 50% of the sum of liabilities. This means that the ratio of own and borrowed capital is 1:1, and that the ratio of equity and debt is 2:1. Respecting this rule provides sufficient security for the creditors in terms of debt collection. However, in business practice, this ratio may be different from the one that is 2:1.

Figure 7. The Ugljevik Power Plant indebtedness

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Equity</i>	446.268.323	439.748.834	424.695.543	406.207.771	439.363.581
<i>Debts</i>	48.878.232	48.094.963	51.153.049	42.103.156	62.659.051
<i>Equity/Debts</i>	<i>9,1:1</i>	<i>9,1:1</i>	<i>8,3:1</i>	<i>9,6:1</i>	<i>7,1:1</i>

Source: The Ugljevik Power Plant financial statements

From the indicators presented in Table 7, it can be concluded that the ratio of debt and equity in the structure of liabilities of The Ugljevik Power Plant was extremely favorable. Namely, the ration between equity and debt start at 10.42% (9.6:1) in 2015, up to 14% (7.1:1) in 2016. Despite the fact that the equity had a tendency of decrease, while the debts grew faster (especially in 2014 and 2016), the debts do not exceed a little more than 14% of the equity (2016), while in other business years this ratio was better. Such structure of liabilities, and a very favorable ratio between the owned the borrowed funds, certainly provides a high level of security with creditors (banks and suppliers) who do business with the company. It should be noted that the high content assets (the ratio between fixed and current assets of 5.19:1 in 2013 to 8.50:1 in 2015) causes high fixed expenditures in amortization and thus increases the risk of accomplishing the company's business goals. Thus it is better that the company has the ratio between its equity and debt set this way.

In order to evaluate The Ugljevik Power Plant position, an analysis of efficiency was conducted. Efficiency is calculated through the ratio between total income and average assets. It is expressed as an efficiency ratio that shows how the revenue on each unit invested was achieved in observed business years.

Figure 8. The Ugljevik Power Plant efficiency ratio

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>Total income</i>	157.573.840	151.889.938	139.113.515	142.730.286	145.903.972
<i>Average assets</i>	423.686.604	420.325.168	424.424.888	431.381.790	450.681.090
<i>Efficiency coefficient</i>	<i>0,37</i>	<i>0,36</i>	<i>0,33</i>	<i>0,33</i>	<i>0,32</i>

Source: The Ugljevik Power Plant financial statements

In the observed period the company had a low level of efficiency, regardless of the fact that the efficiency coefficient is greater than 0. The coefficient of efficiency shows a tendency to decrease in the last three business years. Its value is the lowest in 2016 and falls to 0.32. This means that 1 KM (convertible mark) invested in operating assets generated the revenue of 0.32 KM.

Calculating The Ugljevik Power Plant profitability coefficient includes the analysis of: 1) the ratio between revenues and expenses, 2) the structure of revenues and expenses, and 3) cost-effectiveness.

Figure 9. The Ugljevik Power Plant revenue and expenses ratio

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>A) Business revenues</i>	147.325.255	137.653.171	135.439.839	140.903.522	141.327.082
<i>B) Business expenses</i>	142.589.038	143.144.980	146.075.807	155.982.035	137.465.166
<i>Operating result (A-B)</i>	<i>4.736.217</i>	<i>(5.491.809)</i>	<i>(10.635.968)</i>	<i>(15.078.513)</i>	<i>3.861.916</i>
<i>Business revenues/expenses (A/B)</i>	<i>103,32%</i>	<i>96,16%</i>	<i>92,72%</i>	<i>90,33%</i>	<i>102,81%</i>

Source: The Ugljevik Power Plant financial statements

Analyzing the relationship of business revenues and expenses it can be noted that the first dominate over the other only in 2012 and 2016 in which there was a positive operating result. In other business years, the expenses are higher than income, which resulted in a negative result. The negative operating result is the most pronounced in 2015 when the expenses were higher than income by 9.67%, while the negative business result was the lowest in 2013 when the expenses were higher than the income by 3.84 %.

In addition to the income and expenses analysis, it is necessary to more fully examine the current structure of revenues and expenses, as well as their impact on the financial result of the observed company. Typically, a company needs to have a dominant share of operating revenue (over 90%) in total revenue. This is so because the company's main activity is to produce or to provide services, and therefore revenues from sales of products, goods and services must prevail in the total revenue. Operating expenses show the load of operating income with certain types of expenses. Typically, an operating business in its total expenses needs to have the largest share of floating material expenses (cost of materials, cost of fuel and energy, producing costs and acquisition costs of goods).

Figure10. The Ugljevik Power Plant revenue and expenses structure

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>1. Operating revenues</i>	147.325.255	137.653.171	135.439.839	140.903.522	141.327.082
<i>2. Financial revenues</i>	3.398.323	4.227.774	855.752	515.189	948.066
<i>3. Other revenues</i>	6.850.262	10.008.993	2.817.924	1.311.575	3.628.824

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TOTAL REVENUES	157.573.840	151.889.938	139.113.515	142.730.286	145.903.972
4. Operating expenses	142.589.038	143.144.980	146.075.807	155.982.035	137.465.166
5. Financial expenses	1.232.892	2.008.665	1.994.352	1.942.434	1.896.259
6. Other expenses	349.804	2.595.617	1.048.184	2.624.654	3.551.543
TOTAL EXPENSES	144.171.734	147.749.262	149.118.343	160.549.123	142.912.968

Source: The Ugljevik Power Plant financial statements

Comparing the total revenues of the observed company, it can be concluded that in their structure predominant are the business operating revenues of more than 90% in each fiscal year, which is a characteristic of a typical manufacturing enterprise. The operating revenues are predominant in 2015 with 98.70%, while they are the least represented in the structure of total revenues in 2013, with only 90.60%. Starting from this fact, the structure of total revenue indicates that a company should effectively operate and achieve positive financial results. The share of financial income in the total income of the company is very small and ranges from 0.60% in 2014 to 2.80% in 2013. Unlike financial income, the other revenues are much more represented in the total revenue structure of the observed company. This is especially seen in 2012 (4.35%), 2013 (6.60%) and in 2016 (2.50%). The growth in these revenues is the result of write-offs and the emergence of surplus, excluding surpluses of products in stock.

On the other hand, if the structure of total expenses is considered, it can be concluded that the expenses did not follow the operating revenues. In the first two business years these expenses were significantly higher than the operating income, respectively in 2012 they increased by 5.4 index points, and in 2013 by 6.3 index points. Despite the fact that the operating costs dominate in the total expenses of over 96%, the very same operating costs record a declining tendency in the period from 2012 to 2016. On the other hand, the participation of financial expenses is slight in the structure of total expenses, as they were more or less the same in the amount as the financial income, which is very convenient for the company. Other expenses have a particularly pronounced growth from 2012 to 2016. During 2016 as compared to 2015 an increase of 35,33% was recorded. A sudden increase of sudden expenses of 50,35% was recorded in 2015 as compared to 2014. These increases are due to increased revaluation and write-offs in the mentioned business years.

The common denominator of the profitability of capital or operating assets (or business assets) is reduced to the power of earning. Consequently, earning capacity indicator, or earning power, is the best preferred indicator of profitability. This indicator shows the level of competence of a given investment to reject a contribution from its use.

Measurement and analysis of rentability is performed from the standpoint of: (1) the own capital, (2) the total capital and 3) the invested capital. Profitability of own capital is obtained in the ratio of net income and average own capital. In total own capital rentability it is necessary to distinguish between the profitability of the total own capital and the profitability of shared capital. Profitability of total capital is obtained from the ratio

of net yields and average total capital. Profitability of invested capital is obtained from the ratio of net return on total capital and the average invested capital.

Figure 11. The Ugljevik Power Plant rentability

<i>POSITION</i>	<i>2012.</i>	<i>2013.</i>	<i>2014.</i>	<i>2015.</i>	<i>2016.</i>
<i>1. Net income/loss</i>	<i>11.948.164</i>	<i>3.004.472</i>	<i>(11.015.543)</i>	<i>(18.240.293)</i>	<i>2.815.404</i>
<i>2. Interest expenses</i>	<i>565.202</i>	<i>1.461.856</i>	<i>381.061</i>	<i>249.771</i>	<i>893.374</i>
<i>3. Net return on total capital (1+2)</i>	<i>12.513.366</i>	<i>4.466.328</i>	<i>-</i>	<i>-</i>	<i>3.708.778</i>
<i>4. Average own capital</i>	<i>444.988.962</i>	<i>443.008.578</i>	<i>432.222.188</i>	<i>415.451.657</i>	<i>422.785.676</i>
<i>5. Average total capital</i>	<i>515.317.952</i>	<i>508.525.718</i>	<i>494.463.188</i>	<i>486.486.104</i>	<i>515.181.077</i>
<i>6. Average invested capital</i>	<i>496.689.601</i>	<i>481.280.204</i>	<i>469.887.251</i>	<i>457.168.005</i>	<i>489.548.394</i>
<i>7. Own capital rentability (1/4)x100</i>	<i>2,68%</i>	<i>0,68%</i>	<i>-</i>	<i>-</i>	<i>0,67%</i>
<i>8. Total capital rentability (3/5)x100</i>	<i>2,43%</i>	<i>0,88%</i>	<i>-</i>	<i>-</i>	<i>0,72%</i>
<i>9. Invested capital rentability (3/6)x100</i>	<i>2,52%</i>	<i>0,93%</i>	<i>-</i>	<i>-</i>	<i>0,76%</i>

Source: The Ugljevik Power Plant financial statements

The indicators presented in Figure 11 point to the fact that The Ugljevik Power Plant had a very low rate of return of the total capital, except in 2012 when it achieved the highest net profit. Such low rates of return are the result of the low value of the net profit in relation to average total capital in other business years, while it is useless to comment the rates of return in the years during which the company operated with a loss (2014 and 2015). Similar situation is with the profitability of its own and invested capital, whose values are greater than 1% only in 2012.

4. Calculating the company's credit score using modern methods

The previous analysis of The Ugljevik Power Plant creditworthiness, was carried out by using traditional methods. If we want to complete the image and status of its creditworthiness, it is necessary to conduct an analysis using newer methods, or z-score and ZETA analysis.

Z-score analysis' aim is to calculate a single “Z” indicator on the basis of synthesized measurements of a greater number of selected performance indicators. The obtained value of this indicator points to the company's financial position that reflects a healthy business, the minimum solvency or bad credit score of which leads to bankruptcy. By calculating the “Z” indicator for a particular company, a zone of financial

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position can be constituted that reflects: (a) a healthy operations, (b) the minimum business performance and (c) a poor business performance which leads into bankruptcy. Critical values of "Z" indicators are the following: (a) $Z > 2,99$ a healthy business zone, (b) $1,81 < Z < 2,99$ the minimum business performance zone and (c) $Z < 1,81$ the bankruptcy zone.

ZETA analysis is especially reliable for long-term predictions. This analysis is a term that defines the model of a company's bankruptcy risk identification based on five variables that classify companies with good, and bad business performances or those at risk of bankruptcy.

Figure 12. The Ugljevik Power Plant z-score and ZETA analysis – the old model

No.	POSITION	2012.	2013.	2014.	2015.	2016.
1.	Equity	446.268.323	439.748.834	424.695.543	406.207.771	439.363.581
2.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X1 (1/2)	0,647	0,700	0,643	0,615	0,601
3.	Net income	11.948.164	3.004.472	(11.015.543)	(18.240.293)	2.815.404
4.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X2 (3/4)	0,017	0,004	-	-	0,003
5.	Gross income	13.402.106	4.140.676	(10.004.828)	(17.818.837)	2.991.004
6.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X3 (5/6)	0,019	0,006	-	-	0,004
7.	Market value of equity	256.013.165	256.013.165	256.013.165	256.013.165	256.013.165
8.	Total liabilities	48.878.232	48.094.963	51.153.049	42.103.156	62.659.051
	X4(7/8)	5,238	5,323	5,004	6,080	4,085
9.	Sales revenues	145.141.436	132.702.149	124.669.931	138.787.587	136.640.096
10.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X5(9/10)	0,210	0,205	0,189	0,210	0,188
"Z"	$1,2X1 + 1,4X2 + 3,3X3 + 0,6X4 + X5$	4,22	4,29	3,96	4,59	3,38
ZETA	$0,012X1 + 0,014X2 + 0,033X3 + 0,006X4 + 0,999X5$	0,23	0,24	0,23	0,25	0,22

Source: The Ugljevik Power Plant financial statements

The z-score analysis gives the coefficients value whose Z indicators, in each observed business year, is greater than 2.99. This means that the company is in the area of business health. However, ZETA model does not give that impression, because the value of Z indicators is well below 1.81 and is lower than 1 (closer to 0) in each fiscal year. If we take into account the fact that the value of capital was slightly declining, while the value of assets was growing, and that a slight gross and net profit was achieved in relation to the total assets and equity, and that the operating income could not cover the operating expenses, it is expected to have such Z indicator values. It should be noted that the ZETA analysis is more rigorous than the Z-score analysis, and therefore this analysis is difficult, almost impossible, to conduct in the domicile economic conditions. Naimly, a small number of companies would meet the extremely rigorous requirements of Altman ZETA model.

To complete the picture of The Ugljevik Power Plant creditworthiness and its Business perspective in the future, it is necessary to apply the latest z-score and ZETA model.

Figure 12. The Ugljevik Power Plant z-score and ZETA analysis – the new model

R.br.	POSITION	2012.	2013.	2014.	2015.	2016.
1.	Net working capital	72.750.639	51.665.841	25.715.894	16.236.003	41.228.175
2.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X1 (1/2)	0,105	0,077	0,039	0,025	0,057
3.	Retained earnings	53.126.981	54.968.182	59.669.417	56.227.153	50.441.807
4.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X2 (3/4)	0,077	0,082	0,090	0,085	0,069
5.	Earnings before interest and taxes	13.968.308	5.602.532	(10.004.828)	(17.818.837)	3.884.378
6.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X3 (5/6)	0,020	0,008	-	-	0,005
7.	Market value of equity	256.013.165	256.013.165	256.013.165	256.013.165	256.013.165
8.	Total liabilities	48.878.232	48.094.963	51.153.049	42.103.156	62.659.051
	X4(7/8)	5,238	5,323	5,004	6,080	4,085
9.	Sales revenues	145.141.436	132.702.149	124.669.931	138.787.587	136.640.096
10.	Total assets	689.924.912	672.810.906	660.900.631	660.352.698	725.243.404
	X5(9/10)	0,210	0,205	0,189	0,210	0,188
"Z"	$1,2X_1 + 1,4X_2 + 3,3X_3 + 0,6X_4 + 1,0X_5$	3,64	3,63	3,36	4,014	2,85
ZETA	$0,012X_1 + 0,014X_2 + 0,033X_3 + 0,006X_4 + 0,999X_5$	0,23	0,23	0,22	0,24	0,21

Source: The Ugljevik Power Plant financial statements

By comparative analysis, based on the indicators presented in Tables 11 and 12, it can be concluded that the newer Z-score and ZETA analysis are much more rigorous than the standard approach, and this can be seen from the value of the Z coefficient. Namely, in the position No. 1, instead of the category of capital, according to the old model, the listed category is the one of net working capital, according to the new model, which has a much lower value than the first category. The classification of the category of retained earnings in the third position, rather than the category of net profit from the old model, could not compensate the difference and influence the final result of the Z coefficient. If this company in the future does not increase its net working capital, does not reduce financial expenses, does not increase the market participation and sales, as well as market value of equity, it can expect a very bad business results in the future.

5. Conclusion

By analyzing key analytical indicators of The Ugljevik Power Plant joint-stock company Sokolac, and by using the traditional method, it can be concluded that this company has a solid financial, property and yield coefficient values, with the exception of

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2015 when a high negative business result occurred. Satisfactory values of these indicators are particularly seen in long-term and short-term financial equilibrium, general liquidity, solvency, indebtedness and profitability. This points to the fact that this particular company has sufficient credit score.

Z-score analysis results, as well as modern methods of credit scoring, show that The Ugljevik Power Plant is in the zone of a healthy business and owns creditworthiness, which is seen from the traditional methods of credit scoring analysis. On the other hand, the company "does not pass" the much more rigorous Altman ZETA model, which is difficult to apply in the domicile economic conditions, due to the transition processes and the overall state of the economy.

Finally, it could be concluded that The Ugljevik Power Plant joint-stock company Sokolac, despite the fact that it is in an area of business health, in recent years (2014 and 2015) exerts negative indicators of business activity. Therefore, this analysis is not an end in itself. Its primary goal is to determine the best operating characteristics of the observed company, but also to show the company's "less good" indicators of business activity. Following these indicators, the company's management could react on time and make adequate business decisions to the company's benefit and business system within which it performs economic (production) activity.

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OCJENA KREDITNOG BONITETA PREDUZEĆA PO TRADICIONALNIM I SAVREMENIM METODAMA

Apstrakt: Finansijska stabilnost predstavlja konačni izraz sposobnosti preduzeća da funkcioniše u složenom i nestabilnom tržišnom okruženju. U Republici Srpskoj je bilo neophodno da se preduzeća prilagođavaju novim promjenama, jer tržišna ekonomija favorizuje preduzeća sa dobrim, a potiskuje ona sa lošim kreditnim bonitetom. Polazeći od ove činjenice, u radu

je izvršena praktična obrada i analiza poslovanja ZP "Rudnik i Termoelektrana Ugljevik" a.d. Ugljevik u petogodišnjem periodu. Težište analize je bazirano na finansijski, imovinski i prinosni položaj preduzeća, odnosno performanse njegovog kreditnog boniteta. Shodno tome, primjenom tradicionalnih metoda, urađena je analiza finansijskog rezultata u uslovima pozitivnog poslovnog rezultata i u uslovima kada preduzeće ostvaruje gubitak iz redovne poslovne aktivnosti. Nasuprot tradicionalnim metodama korišćene su "Z score" i "ZETA" analiza, kao savremene metode ocjene kreditnog boniteta ZP "Rudnik i Termoelektrana Ugljevik" a.d. Ugljevik. Urađena je komparativna analiza dobijenih rezultata primjenom starog i novog "Z score" i "ZETA" modela. Cilj istraživanja jeste utvrđivanje kreditnog boniteta ovog preduzeća, kao preduslova njegove finansijske stabilnosti, ali i ocjene kvaliteta i sposobnosti menadžmenta da koristi informacije o kreditnom bonitetu radi efikasnijeg upravljanja finansijama u dotičnom preduzeću.

Ključne reči: finansijska stabilnost, likvidnost, rentabilnost, preduzeće, kreditni bonitet.