

# Financial ratios in the function of business risk assessment

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## Abstract

*The paper discusses the need and the practical importance of the development of the business analysis theory on the basis of financial indicators - financial ratios. The common practice today is to calculate financial indicators on the basis of the positions from the financial statements, and, based on that, to analyze different aspects of the financial state: liquidity, solvency, coverage, efficiency, leverage. The financial indicators are used by companies for internal analytical needs, but also by agencies for rating estimation, by bankers for the credit-worthiness of potential loans, by analysts on the securities market for risk estimation. However, the financial indicators are not standardized - the problem highlighted by J.O.Horrigan in the Sixties. The consequence is that various authors and institutions form the list of indicators as they choose. It should be stressed that certain indicators which are calculated and published by a number of companies are not calculated in accordance with methods of the International accounting standards board (IASB). The second issue is that the value calculated as an average for a whole sector is used as the only benchmark in the analysis. However, neglecting of the organizations' structure whose benchmarks are calculated, may result in inaccurate estimation of business success i.e. business risk. The paper concludes that, for an efficient use of financial indicators in financial standing estimation, it is necessary to develop a theory of financial ratios analysis. Furthermore, median and quartile values should be used instead of average values for calculation of benchmarks.*

**Keywords:** financial indicators, financial ratios analysis, benchmarks for financial indicators.

## Introduction

Analysis based on financial ratios is presented within the report on the financial condition of economic and financial institutions and with determining their solvency. Financial ratios are used in their analysis by both executives in companies, and bankers, in determining the creditworthiness of potential borrowers, and analysts and institutions on securities markets for financial instruments risk assessment. In our country analysis on the basis of financial ratios is often referred to as ratio analysis and financial indicators as ratio numbers. The literal translation of ratio in English means the number, so we could translate these terms as an analysis of the numbers or number number. However, in business language, it is not just a number, but an indicator that is calculated by the correlation between the particular two items from the same year from the balance sheet or income statement selected depending upon which business principle is to be analyzed (liquidity, profitability, coverage, market value).

The author, who was among the first to write about the financial ratios was an American Horrigan. Even today, Horrigan's observations from the sixties seem to be very relevant. The problem is that financial ratios are not yet standardized by type, so that different authors and institutions, relying essentially on Horrigan, are supplementing his list of ratios according to their own choice and their own research requirements and determination of so-called benchmark or benchmark sizes as the standard required for the comparative analysis based on financial ratios.

Practically, after the stage of formation and development of a number of financial ratios it was not followed by the stage of their generalization and creation of the theory of business analysis based on financial ratios, but they are still analyses scattered in different areas.

Growing use of financial ratios contributed to the adoption of international accounting standards by a large number of countries, creating the conditions for the creation of a broad comparative basis for financial ratio calculation and ensured comparability of the calculated financial ratios. However, it should be noted that there are financial ratios, calculated and publicly announced by a number of companies, which are not calculated according to the methods of the International Accounting Standard Board.

Considering that for the practical use of financial ratios and comparative analysis between different organizations in the same activities benchmark size is required, it should be noted that the usual comparisons with benchmark quantities calculated as average values can be misleading and that for the benchmark size calculation it is more appropriate to use median and quartiles.

In addition to the introductory remarks and concluding observations, the Paper contains four chapters. The first chapter presents the basics of the analysis theory based on financial ratios established by Horrigan in the 1960s, stating financial ratios used by the Registry of financial statements of the Republic of Serbia. The second chapter presents the significance of financial ratios and the method of their calculation according to the American Association of Managers Risk Management, a prominent institution whose sole purpose is to promote the successful implementation of risk management principles. This chapter specifically explains financial ratios often used in practice that are not calculated according to the methods of the International Accounting Standards Board. The third chapter presents the manner in which it should establish and present benchmark-sized financial ratios required to compare two organizations and suggests that the analysis based on ratios should be complemented with other instruments. The fourth chapter presents the financial ratios that are presented by the Business Registers Agency of the Republic of Serbia in their Report for the year 2013. The Paper aims to encourage the formulation of the analysis theory on the basis of financial ratios, companies and entrepreneurs to calculate and use financial ratios to analyze their own business, for comparison with others in both the same business and the economy as a whole and for assessing business risks and to refer potential creditors and investors to the practical importance of these types of instruments.

### **The basis for the operations analysis theory based on financial ratios**

Today, it is common, on the basis of data from financial statements, to analyze different aspects of the financial situation of the company by calculating financial ratios. In the 1960s, according to Horrigan: "The financial ratios for analyzing financial statements are a unique product of the evolution of accounting in the United States of America (USA). These ratios were originally developed as analytical instruments for short-term loans and their origin can be traced back to the late nineteenth century. In the first decades of the twentieth century, various analysts have developed various financial ratios, and by the end of the 1920s they were being used by a large number of individuals and institutions. It seems that the next stage should be the development of the empirical generalizations corps, which would be used to formulate a hypothesis for the development of the analysis theory using financial ratios. However, this did not happen. This

does not mean that there are not enough data on financial ratios, on the contrary over the years a lot of data was made, but they remained scattered in a different literature (Horrigan, 1965). For this reason Horrigan in his work tried to gather the scattered data and provide a framework synthesis of the empirical basis for the analysis based on financial ratios, highlighting the issue of non comparability due to the application of different accounting standards. Within this division Horrigan stated probably the most used in those days and emphasized that it would be very useful to explore the question of their ability to predict bankruptcy, which should be possible because the computers would allow the use of non aggregated data and more sophisticated statistical techniques, as well as the development of cash flows ratios. Furthermore, there is another fundamental reason for determining the usability of financial ratios, and that is - it is inconceivable that the accounting data can be analyzed without having to transform the financial ratios." (Horrigan, 1965) The reason is because the nominal amounts in the financial reports haven't often been used for the analysis within the organization if it operates in the economy with a high rate of inflation.

From the sixties till today special theory analysis was not formed using financial ratios, so that the research on them is still scattered across different literature. The adoption of international accounting standards by a large number of countries created the conditions for the formation of a broad comparative basis for the calculation of financial ratios and ensured comparability of calculated financial ratios. However, the problem remained; financial ratios have not yet been standardized, nor are their development compulsory, so that different authors and institutions, relying essentially on Horrigan, supplemented the list according to their own choices and needs of their own research and determination of so-called benchmark or benchmark size as the standards required for comparative analysis. Today, financial ratios have been used in their analysis by executives in companies, as well as bankers in determining the creditworthiness of potential borrowers and credit risk, Agencies for calculating the solvency and analysts and institutions on securities markets for risk assessment of financial instruments.

In Serbia, many firms report the values of financial ratios within the Annual Business Report. Types of ratios are not defined, but are a matter of choice left to the companies themselves. Serbian Business Registers Agency - Financial Statements Register has developed a Methodology (Business Register Agency, 2014a), and therein defined the types of financial ratios that will be used in determining the solvency and scoring calculation, among others, for companies and entrepreneurs. The data on the credit-worthiness included the following financial ratios:

- ratios of asset structure (intensity of investment in fixed assets, financial investment intensity, the intensity of investment in current assets, the rate of write-off of fixed assets, annual write-off of fixed assets),
- ratios of business activity (turnover ratio of fixed assets, turnover ratio of total assets, turnover ratio of accounts receivable, the average time of collection of accounts receivable, inventory turnover ratio, average time in inventory, the coefficient of trade payables, the average time for payables),
- ratios of capital structure (equity capital ratio, ratio of debt capital, the level of total debt),

- liquidity ratios (coverage of fixed assets with own capital, the coverage of fixed assets with long-term funding sources, the coverage of fixed assets and stocks with long-term sources of financing, cash liquidity ratio, current liquidity ratio, current ratio, net working capital, the rate of coverage of the stock with net working capital, repayment durability, cash flow),
- profitability ratios (operating profit rate, the rate of net income, return on equity - before and after tax, rate of return on assets - before and after tax, profit margin, the rate of distribution, the rate of return on assets, the price of other sources of funds, the effect of financial leverage, interest coverage ratio, the growth rate of equity capital),
- ratios of market value (earnings per share, dividend rate, the book value per share, the stock exchange price of shares, the ratio price / earnings per share, dividend payment ratio), while these ratios are not calculated for entrepreneurs,
- ratios of future growth (the growth rate of the company, the level of investment in the modernization of facilities),
- other ratios in accordance with internationally accepted standards of financial analysis; (Business Register Agency, 2014a).

In 2014 Methodology - general part was innovated, however, still the method of determining and the meaning of certain financial ratios, that was stated to be determined in the old Methodology - general part, it is not publicly presented. For this reason, a way of calculating and the meaning of the ratios, except for market value ratios, we will take from the American Association of Risk Management Managers.

### **The list of financial ratios used by the American Association of Risk Managers**

The American Association of Risk Management Managers presented, in their Annual report, the method of calculation and interpretation of each financial ratio which is used in the risk assessment (The Risk Management Association [RMA], 2013).

**I / Liquidity ratios** - Liquidity is the measure of quality and adequacy of liquid assets to meet the current obligations when due. Liquidity ratios indicate whether the firm can quickly replace their assets into cash - without loss of value - to meet its current and short term liabilities. Liquidity ratios provide information to creditors how much they can be sure that in the event of liquidation of the debtor they would be able to collect their debts.

1. The current ratio = current assets / current liabilities - This is a rough indicator of the ability of the company to meet its current obligations on time. Generally, the greater the indication is the larger is the company's ability to meet its obligations. Although larger ratio indicates that a large number of balance sheet items of current assets exceed those of current liabilities, the key factors for analyzing liquidity of each company are the composition and quality of the current assets. The values of the current liquidity ratio can range in the interval from the largest positive to the lowest positive value.

2. Quick liquidity ratio =  $\text{cash} + \text{cash equivalents} + \text{receivables} / \text{total current liabilities}$  - This is a more conservative measure of liquidity than the current ratio and shows the degree to which the current liabilities of the firm are covered by the most liquid current assets, assets that can be quickly converted into cash for the amount that would have deviated minimally from the book value. Stocks and other less liquid current assets are excluded from this ratio. Generally, when the ratio has a value in the range of less than 1 to 1 it means that the ability of the company to settle current liabilities depends on stock and other less liquid current assets.
3. Annual number of accounts receivable turnover =  $\text{revenue} / \text{accounts receivable}$  - This ratio shows how many times over the years the receivables turned in relation to income. The higher is the turnover of receivables, the shorter is the time in which the company collects the goods sold. When account receivable is zero the ratio will not be defined, which expresses the best condition. The values of ratios vary therefore from undefined to larger or smaller values. The ratio value can be zero only when the income is low, in which case the quotient is rounded to zero. By definition, this ratio cannot have a negative value.
4. Average number of days for the collection of receivables =  $365 / \text{annual number of accounts receivable turnover}$  - This ratio represents the average number of days during which receivables are not collected. Generally, the larger the number of days for which claims have not been collected, the greater is the likelihood of delays with accounts receivable. Comparing the data on the average number of days to collect receivables it can be seen to which extent the company successfully controls the collection and receivables.
5. The annual number of stock turnover =  $\text{Cost of selling goods} / \text{stock}$  - This ratio provides information about the number of times during which the stock is turned. High turnover of stocks may indicate a greater liquidity and a good sale on the one hand, and on the other to indicate the lack of necessary stocks for sale. Small stock turnover on the one hand can be interpreted as a small liquidity due to overload stocks or obsolete stocks, and on the other hand it can mean a planned stockpiling in case of shortages. When the quotient is zero, then the ratio is undefined and this is the best state. The quotient will be zero when the data on operating expenditure are very small, so that the quotient is rounded to zero. Values of ratios are starting with zero and moving toward higher values.
6. Average number of days during which the stock is turned =  $365 / \text{number of annual stock turnover}$  - This ratio shows the average number of days during which the goods are stored.
7. The annual number of accounts payables turnover =  $\text{Cost of goods sold} / \text{accounts payable}$  - This ratio shows how many times during one year the account payables are being turned over. The higher is the turnover the shorter is the time between purchase and payment. When this ratio of the company is slower than the branch one, it means that the firm may have a shortage of cash, disputed invoices from suppliers, longer payment terms or deliberately extending the commodity loan. If a company buys with the payment

period of 30 days, it is reasonable to expect that this relationship is to be reversed for approximately 30 days.

8. Average number of days for which the debts are paid =  $365 / \text{annual number of account payables turnover}$  This ratio shows the number of days during which the payables are not paid.
9. The ability to finance current operations =  $\text{operating income} / \text{net working capital}$  - This ratio shows how to effectively use the net working capital. Net working capital is not a balance sheet category, but analytical construction which is calculated as the difference between current assets and current liabilities. Net working capital shows how big is the company's ability to finance current operations and how the claims of creditors are protected. The small value of the ratio (close to zero) - can point to inefficient use of working capital. Great value of the ratio (either positive or negative) often shows too much volume of activities in terms of resources and is not favorable to creditors. When analyzing this ratio, attention should be paid to working capital rather than income. Revenue cannot be negative, however, but the working capital can. When working capital has a large positive value, then the value of the ratio will be small and positive, which is good. Since the negative working capital is a bad sign, when the working capital is negative the value of the ratio will be small and negative, which is not good. Therefore, the smallest positive value of the ratio is the best and the lowest negative ratio value is the worst position. When the working capital has a small negative value, then the ratio will have a huge value, which is the best position in the event of a negative working capital.

**II/ Coverage ratios** - Coverage ratios measure the company's ability to service its debts. In other words, it measures how well the flow of funds is covering the financial obligations in the short term period. Unlike liquidity ratios that are focused on the possibility of liquidating the company, the coverage ratios provide information to the creditors about the extent of recoverability of debts which is based on the belief that the company will remain profitable.

1. **Net profit increased with expenditures according to interest expense and income taxes (Earnings Before Interest and Taxes -EBIT) / interest expense** - This ratio measures the ability of a firm to meet its obligations according to the interest. Ratio's great value may indicate that a borrower can easily fulfill his interest obligations under the loan obtained. Also, this ratio may indicate the company's ability to borrow further. The values of the ratios are in the range from the highest positive to the lowest negative value and from the lowest negative to the highest negative value.
2. **Net profit + depreciation costs / long-term debts from the remaining time to maturity** - This ratio expresses how well the cash flows arising from operating activities is covering the value of long-term debt from the remaining time to maturity. Since the cash flow is a primary source to repay the debt, this ratio measures the company's ability to service payments of principal and to additionally borrow. Although it is wrong to believe that all cash flows are available for debt service, this is a valid ratio for assessing the company's ability to service long-term debt. The values of the ratio are ranged from the highest to the lowest positive and from the lowest to the highest negative values.

**III / Leverage ratios** - Ratios of leverage measures how much company's property protects creditors' claims. Firms with high leverage have a large amount of debts relative to their net value. These firms are more sensitive to the downturn in business from firms that have little value of leverage. Although leverage ratios help to measure this sensitivity, it should be borne in mind that they greatly vary, depending on the parameters of various economic sectors. The values of the leverage ratios, such as values of income ratios / working capital are collated in nonlinear series that are not moving from the highest positive to the highest negative values, as is the case with the linear series. The values of this ratio are from the lowest positive value to the highest positive value to the undefined value (when the value of tangible assets is zero), then from the most negative to the lowest negative values.

1. **Fixed assets / net tangible asset value** - This ratio is used to calculate how much of the share of capital is invested in a plant and equipment (fixed assets). Smaller value of the ratio means proportionally less investment in fixed assets in relation to net tangible asset value and at the same time means better protection of creditors in the event of liquidation, while the higher value of the ratio means the opposite. The presence of a large number of fixed assets taken on lease, which do not appear on the balance sheet may result in seemingly lower ratio.
2. **Total debt / net value of tangible assets** - This ratio shows how much the company owners protect their creditors. The higher is the ratio means the creditors are at greater risk. Lower ratio value generally shows greater long-term financial security. Unlike companies that have high levels of leverage, companies for which this ratio is usually small have more flexibility with borrowing in the future.

**IV / Operating ratios** - are designed to assist in the evaluation of the management performance.

1. **Profit before taxes / net value of tangible assets (in percent)** - This ratio expresses the rate of return on tangible equity. Although it can be used as a ratio of operating efficiency, it should be always used in conjunction with other ratios. The efficient work of leadership is normally associated with high returns that in fact could mean that the company does not have sufficient equity capital. And vice versa, a low returns is usually seen as a sign of lack of operating management efficiency, and it would actually have to reflect the high value of equity capital, and conservative management of the company. Values of ratios may be lower starting from undefined, then from the highest to the lowest positive value and finally from the lowest to the highest negative values.
2. **Profit before taxes / total assets (in percent)** - This ratio expresses the return on total assets before taxes and measures the effectiveness of management in employment of available factors of production. This ratio may be deformed if the equipment is much depreciated, if there is a large value of intangible assets, or if there are unusually large balance sheet items of income or expenses. When a pre-tax profit is zero, the quotient is zero. When a pre-tax profit is negative, the quotient is negative. The values of this ratio are from the highest to the lowest positives and then from the lowest to the highest negative values.

3. **Income / Net value of fixed assets** - This ratio is calculated as the ratio of income and net value of fixed assets. It measures the productivity of the use of the fixed assets of the company. Deformation in the value of this ratio can cause large depreciation of fixed assets or labor-intensive nature of the company's activities. When the net value of fixed assets is zero, the quotient is undefined. In a series of values for this ratio, zero will occur only when the income is small or close to zero. The value of this ratio cannot be negative. Values of ratios can be from the undefined and then from the highest to the lowest positive value.
4. **Income / Total Assets** - This ratio measures the ability of a company to, on the basis of total assets, generate income. It should be used only for comparisons within an industry and that in determining the degree of effectiveness of employing assets it should be used in conjunction with other ratios of operating efficiency. This indicator cannot be negative and it can be zero only if the income is small or moving around zero. Its value can range in a series from the highest to the lowest positive values.

**IV / Ratios of the relations between expenses and revenues** - the next two ratios are connecting expenses with revenues and are expressed in percentages. Comparisons are appropriate because the item of revenue is used as a constant. The differences in the values of this ratio are mostly expressed between capital and labor intensive economic activities: **1 Depreciation expense / 2 Revenues and second value of wages, salaries and other remunerations of employees, directors and owners / Revenue**- The value of ratios can vary between the lowest and the highest positive values.

Due to the fact that financial ratios are used also by debtors - companies and entrepreneurs for their own needs, but also creditors, it should be noted that potential creditors - lenders and investors in debt securities, in addition to the general interest for both active and passive side of the balance, put emphasis to the ratio analysis of the profitability of the project when funded, while share buyers put the focus on the analysis of the company's profitability (Slovic, 1991). For the share buyers, ratios of ownership or the market value of the company are primarily important : 1 earnings per share, 2 the dividend rate, 3 book value per share, 4 stock exchange price of shares, 5 ratio of the relation of the market price and earnings per share, 6 ratio of dividend payments.

1. Earnings per ordinary share - calculated as the quotient between net profit after deducting preference dividends and the total number of shares in circulation. This ratio may appear even in a diluted variant. In the diluted variants, net profit decreased by the preferred dividend is divided by the total number of shares in circulation increased by the number of issued financial instruments with the right to be exchanged for ordinary shares (options on shares, convertible bonds, preferred shares). The available earnings per share is showed, which may be distributed to shareholders in the form of dividends.
2. Dividend rate - calculated as the quotient of the dividend per share and the market price of shares. Dividend rate shows the current return that a shareholder is to realize in a percentage of the market value of the shares. This information is important for future shareholders, especially those who prefer payments of dividends, rather than an increase in capital gains.



3. Book value per share - calculated as the quotient between the total equity capital and the number of ordinary shares in circulation. Book value per share shows which amount will be charged to holders of ordinary shares in case of liquidation. This information is subject to criticism because for its calculation we are using data from the balance sheet and that does not consider the interdependence of the market value of the company.
4. Stock exchange rate of a share (Current price of a stock) is the price at which shares are currently traded on the stock market in real time. The market price of stocks (Market Price of a Stock) is the stock price which is formed in a free market based on supply and demand.
5. Ratio of market price and earnings per ordinary share relation is calculated as the quotient between the market price of shares and earnings per ordinary share. The obtained data shows how much the future shareholders are willing to give monetary units for a single share, based on which they would earn one dinar. The higher is this ratio the higher are expectations of potential investors, the higher is future earnings growth, and vice versa.
6. Dividend payment ratio is calculated as the quotient between the dividend paid and earnings per share and multiplied by 100. Obtained data shows the percentage of earnings paid to shareholders in the form of dividends, and the rest to 100, the percentage of net income that is retained, i.e. accumulated.

### **Financial ratios that are not calculated according to the method of committee for the international accounting standards**

Some of the financial ratios that are calculated and publicly announced by a number of companies, which are not calculated according to the methods of the Committee for the International Accounting Standards are: 1 Ratio of the amount of cash generated by a company from operating activities (Operating Cash Flow), 2 Profit of a company calculated as the difference between revenues and expenditures excluding interest, taxes, depreciation and amortization, or in other words the net profit plus interest, taxes, depreciation and amortization (EBITDA- Earnings Before Interest, Taxes, Depreciation and Amortization) or 3 Projected or fictitious earnings (Pro - Forma Earnings) (Investopedia, 2013).

1. Ratio of the amount of cash generated by a company from operating activities - Cash flow from operating activities is important because it shows whether the company is able to generate sufficient positive cash flow from operating activities to maintain or increase their business, or it needs external financing. Financial analysts sometimes prefer to use ratios of cash flows because they eliminate the accounting effects so it is considered to provide a clearer picture of the current real business operations. For example, bookkeeping information about a large amount of sales provide a major revenue boost, but if the company is having difficulties to collect then it is not a ratio of real economic benefits for the company. On the other hand, based on cash flows, the company can be highly profitable, but it might have a small net profit because there are a lot of fixed assets for which the accelerated depreciation is being calculated.

2. Profit of the company calculated as the difference between revenues and expenditures excluding interest, taxes, depreciation and amortization or net income plus interest, taxes, depreciation and amortization) - This ratio is used to analyze and compare profitability between companies and economic branches because it eliminates the accounting effects and the effects of financing decisions. This ratio is not in accordance with the ratios supported by the International Accounting Standards Committee and Financial Reporting Standards, so that in its calculation it is possible to change a greater degree of discretion. Due to this fact, companies can often change positions included in its calculation. EBITDA has come to be used in the 1980s when it started to demonstrate the company's ability to repay the debt (principal and interest) on maturity dates. After that this ratio has become popular in economic branches with expensive assets that had to be written off in the long run. Today, this ratio is calculated and published by many companies, especially in the technical sector - even when it is not justified. A common misconception is that EBITDA is a good measure for assessing the cash receipts. It is however good for profitability assessment, but not for cash flows. When calculating, EBITDA excludes the money needed to fund working capital and for the old equipment replacement, which may be of interest. Consequently, EBITDA is often used as an accounting trick to beautify profit of a company. When using this ratio, investors should focus on other business indicators to make sure that the company is not trying to hide something through EBITDA.
3. Projected or fictitious profits- Calculation of this ratio is based on a series of assumption and is often used when presenting a business plan. In Latin *pro forma* means *for the sake of form*. This ratio refers to the profits from which expenses are excluded that do not occur regularly (non-reoccurring items). Expenses such as depreciation, goodwill, depreciation, restructuring costs, interest, taxes are often excluded from the projected profit. Company is justifying the exclusion of these expenses with the need to show data clearly to investors. This explanation is quite debatable because it is often the case that a positive projected earnings after the application of international accounting standards shows to be negative. For this reason, this ratio got the "nickname" earnings excluding bad stuff (earnings excluding bad stuff).

Since the financial ratios, as well as financial statements, can be very useful but also a complex and obscure instrument for the assessment of risk, it is in the interest of all parties to use financial ratios that are consistent with the rules of IAS, and are comparable with competing firms.

### **Benchmark size determination for the analysis between different organizations**

First of all, it should be noted that the financial ratios although very useful are not perfect and sufficient instrument for business analysis. In the Brigham's words "it is very dangerous to use financial ratios mechanically and without thinking because: 1. Large companies can have a production that is ranked in various economic braches, so it is very difficult for them to calculate a set of ratios that would be comparable. Therefore, the analysis based on financial ratios is more

useful for small, production-oriented enterprises; 2. The vast majority of companies want to be better than the average which does not always mean it's good. It is better to compare itself with the leaders in the industry. In this sense, the analysis based on the benchmark values (calculation of quartiles and medians) can help; 3. The inflation can distort the balance sheet and cause that reported values deviate from the "true" values. For this reason, in times of inflation it is required to do an additional evaluation of data for comparative analysis of one or various companies over a certain period; 4. Analysis based on financial ratios can be deformed by the impact of certain seasonal factors (for example, the impact of the stock); 5. Sometimes, the company are "dressing up" their financial statements (*window dressing techniques*) to make it look stronger than they are; 6. Analysis especially between different companies can be deformed by different accounting practices used for depreciation for example, as well as the different extent of use of equipment on leasing, which requires additional assessment; 7. It is not always possible to take a general view that the value of a ratio is good or not good. For example, a large value of the current ratio can be interpreted as good because it means strong liquidity of the company, but at the same time as bad because it's a sign of keeping too much money in the bank account which does not bring the return; 8. In some companies there may be a situation that they have some financial ratios of "good" and some of "bad" so that it is impossible to tell whether they are having strong or weak balance sheets. For this reason, additional use of different statistical techniques is useful. " (Brigham, Gapenski, and Ehrhardt, 1999).

Most of the authors and institutions agree upon the opinion that for calculation of benchmark values for comparison of the different companies' financial condition it is better to use the median and quartiles rather than the average value of financial ratios. Such an approach prevents the influence of extremely large or small values on the standard values of financial ratios and provides an insight into the extent to which the range of financial ratios of firms and on the basis of their financial statements, financial ratios are prepared, i.e. their benchmark size. Through calculating the quartiles and the median it is possible that company based on the benchmark size of financial ratios performs a comparison with stronger or weaker, a larger or smaller company that is from the same economic branch or produces the same product. For example, the following table of companies engaged in the production of chemicals for agriculture can determine the quality of their own ratios of quick liquidity compared to the 45 other companies from the same economic branch that were involved in the analysis of the company Dun & Bradstreet (Brigham, Gapenski, Ehrhardt, 1999).

Table 1: Dun&Bradstreet Ratios for Selected Industries: Upper Quartile, Median and Lower Quartile :for quick liquidity ratio for producers of agricultural chemicals

	2,3
Chemicals for agriculture (45)	1,1
	0,6

The data in the table are calculated as follows: firstly we calculate the ratio of fast liquidity for each of the 45 companies, and then the resulting ratios are ranked by size from lower to higher values; a value which divides the series into two equal parts is called the median and presents the upper limit of the second quartile, which is in this case the coefficient of 1.1; Median value of 1.1, indicates that a quick ratio of liquidity of 50% company is 1.1% or less. Values above this coefficient are liquidity ratios that are higher than the median, and the values that are lower

present ratios lower than the median. Ratios of quick liquidity to the amount of 0.6 means that 25% of surveyed companies have the liquidity ratio of 0.6 or less. Ratio of quick liquidity to the amount of 2.3 means that 75% of surveyed companies has quick ratio of liquidity 2.3 or less than that.

### **Financial ratios as a component in the calculation of the solvency and scoring in the Serbian business registers agency and their average central tendencies**

For the credit-worthiness calculation, among others, for companies and entrepreneurs, the Serbian Business Registers Agency in its methodology determined the type of financial ratios that are being calculated and used. According to the methodology, ratios of solvency present the fifth derived level of time-series data and are calculated on the basis of accounting records of companies and entrepreneurs who were being previously classified according to the following criteria: the prevailing classification of activities (sector, region), territorial affiliation, and for companies according to the size (large, medium, small). Ratios for assessing the creditworthiness of companies include average central tendency, according to the above criteria.

In the Report on the functioning of the economy of the Republic of Serbia in the year 2013 - comparative data from financial statements for 2012 and 2013 (Business Register Agency - Register of Financial Statements, 2014b), the Agency has presented data on the financial ratios of the companies (Table 6 and Table 9 in Register p.13-14). Concerning the ratios used for calculation, the Agency presented the 5 key ratios for companies - in total and by sectors, as can be seen from the following table.

Table 2: Selected ratios of companies' operations with the data for the transport and storage with the most prominent negative tendencies

<b>Name of the ratio</b> <b>- For the transport and storage sector</b>	<b>The year 2013</b>	<b>The year 2012</b>
Return on assets (after taxes) - For the transport and storage sector	10,9%	0,4%
Return on equity (after taxes) - For the transport and storage sector	-0,5%	-1,9%
Equity Ratio - For the transport and storage sector	-19,2	-14,8
Current Ratio - For the transport and storage sector	36,6%	37,3%
Interest coverage Ratio For the transport and storage sector	37,7	44,6
	0,89	0,95
	0,67	0,82
	1,21	0,39
	-2,83	-6,85

Commenting the Table 6, the Agency points out: "The modest increase in the rate of return on assets over the previous year has been accompanied by improving compounding rates on equity capital, although it is still negative, leading to a narrowing of the imbalance of these rates. However, efficient use of capital is lacking, even in the year 2013, and companies even with borrowed financial resources have failed to achieve profitable operations, so that the cost of these resources still does not justify their use. The ability of companies to cover interest expenses

in 2013 were reinforced, which is manifested by the growing trend of the interest coverage ratio, which after last year's triple reduction, recorded an increase from 0.39 to 1.21. An increased risk due to the independence vulnerability of the companies suggests further weakening of already inadequate potentials of its own, which is reflected in the decline in the share of equity in total financing resources. Highly indebted economy was accompanied by deterioration of compliance resources and their sources of funding in terms of maturity; therefore the liquidity problem is even more alarming.

If the available data for the companies both in general and according to the specific criteria used in such a way that instead of mean value median and quartiles are to be calculated, that would provide the insight into the extent to which the range of financial ratios of firms based on their financial statements, financial ratios and their benchmark size are developed. Also companies could very easily find its place in the sector and take the necessary measures to improve business performance.

### **Closing remarks**

For effective use of financial ratios in the assessment of credit worthiness, business success and risk assessment of operations, it is necessary to construct a theory of business analysis based on financial ratios. Previous experience of countries that have a tradition of calculating financial ratios shows that for the calculation of benchmark sizes, instead of the average value it is better to use medians and quartiles. Adoption of international accounting standards by a large number of countries allows the international comparability of business performance. In such circumstances, financial ratios can become a very useful tool for the analysis and business risk assessment and comparison with other organizations in the sector of the economy as a whole and on an international scale. In our country, it's common practice that financial indicators are presented as a part of the annual reports. However, the real benefit of these data is limited due to the absence of benchmark size with which data can be compared with others in the economic branch or the economy as a whole, so their usefulness is reduced only to compare their own operations between the current and previous periods. The last few years the Business Registers Agency - Register for financial statements for purposes of calculating solvency and scoring has developing and improving their Methodology in which financial ratios are gaining more and more importance.

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### **Biography**

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