FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 12, N° 2, 2015, pp. 157 - 170

CORPORATE LIQUIDITY MANAGEMENT: IMPLICATIONS AND DETERMINANTS

UDC 658.14.011.1

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Abstract. *Corporate liquidity is influenced by many factors which derive both from the company itself, as well as from the company's environment. This paper focuses on the internal determinants of corporate liquidity. The aim of this paper is to show which company performance indicators are the main determinants of the liquidity of selected companies in Serbia, Croatia and Montenegro, and whether these determinants are specific only to the companies in this region. The companies that make the sample are non-financial companies whose shares are parts of regional capital market indices - BELEX15, CROBEX10 and MONEX20. The values of the liquidity indicators of these companies indicate solid liquidity. The most important determinants of corporate liquidity are firm size, leverage and capital structure. The results show that the dominant motive of holding liquid assets in our sample is precaution, which indicates the way the crisis has affected the business operation of the analyzed companies.*

Key words: *liquidity indicators, determinants, post-crisis period, market index.*

INTRODUCTION

Companies are imposed by creditors' requirements to maintain financial solvency. A more liquid company gives them greater assurances that their liabilities will be met in full and on time. Therefore, companies have to establish and hold liquidity reserves in the form of cash or marketable parts of the assets at a level that guarantees liquidity. Holding liquidity reserves means that some parts of assets are disconnected from operating activities, and the explicit cost of that is the loss of yield that could be achieved in the case that the liquidity reserve is directly involved in operating activities. The essence of liquidity management stems from the fact that the company's maturing liabilities, under normal circumstances, may be paid only in cash. The cash required for the payment can be provided in through purchase of products, services, or other parts of marketable assets, as well as from sources outside the company. In this context, the liquidity of the company

Received March 13, 2015 / Accepted October 5, 2015
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is usually identified with the convertibility of certain parts of the asset into cash. Cash represents the absolute liquid asset. In the literature it is stated that it is "the asset over assets", because it is the criterion by which the liquidity of all other parts of the asset is determined. The liquidity of any asset reflects the ease and speed of its conversion into cash without significant transaction costs and loss in value. To what extent will a particular kind of asset be liquid depends on the characteristics of this asset (type and divisibility), the conditions on the market, price stability, costs of sales, etc.

Liquidity can be analyzed using liquidity ratios, which represents the static analysis of liquidity, or by using cash-flow analysis, which is a dynamic analysis of liquidity. In this paper, liquidity is measured by the ratios that give answer to the question whether the company has sufficient cash and marketable assets to meet its matured liabilities. These indicators are current ratio, quick ratio (acid-test) as well as the value of net working capital.

The objective of this paper is twofold: firstly, to assess liquidity of the leading domestic companies and companies from two neighboring countries, and secondly, to estimate the main determinants of firms' liquidity in the period immediately after the global economic crisis.

The paper is structured as follows. In the next section, we summarize theoretical determinants of corporate liquidity. Based on the available literature, and in accordance with the business conditions of companies from the sample, hypotheses for research are set. In section 3 we present and characterize the data and construct variables used in our empirical analysis. In sections 4 and 5, estimation results of determinants of liquidity for Serbian, Croatian and Montenegrin companies are presented respectively. In the final section, we summarize results and give a conclusion.

1. Theoretical Aspects of Corporate Liquidity Determinants

The optimal amount of liquid assets of a company is determined by the trade-off between the low yield on liquid assets and the benefit of minimizing the need for costly external financing. Determinants of corporate liquidity can be considered as micro and macro determinants, given that the level of the company’s liquidity is affected not only by the factors that come from the company itself, but also by the macroeconomic conditions. This paper focuses on the micro determinants of liquidity. These determinants relate to the performances of the company, the management decisions, structure of assets, model of financing, capital structure, etc. Further on in this text, hypotheses for research are set up in the form of the expected influence of each of the potential determinants of liquidity on company's liquidity.

Company's liquidity is affected by firm size. Regarding this determinant of corporate liquidity, there are authors who have come to the conclusion that there is an inverse relationship between it and corporate liquidity, but there are also those who have concluded the opposite. The first conclusion stems from the fact that large companies have a variety of investment opportunities instead of holding cash. On the other hand, a positive correlation can be explained so that the majority of large companies have cash on hand in order to avoid liquidating their assets. The study conducted on a sample of French companies (Saddour, 2006: 15) shows that positive correlation existed in companies at the maturity stage of the life cycle, whereas the opposite referred to growing companies.

Ferreira and Vilela (2004) in a study on a sample of 400 companies from the countries of the European Monetary Union conclude that larger firms hold less liquid assets (Ferreira, Vilela, 2004: 317).

Therefore, *the first hypothesis in this research is that firm size and liquidity of a company are in an inverse relationship.*

The total debt of companies proved to be a significant determinant of the liquidity in the research conducted on a sample of Dutch non-financial companies (Bruinshoofd, Kool, 2002: 14). Higher indebtedness of the company increases moral hazard and marginal costs of borrowing. It increases the uncertainty of access to financial markets in the future. To measure the level of liabilities in this paper, the total debt will be put in relation to total assets. This measure of indebtedness showed an inverse correlation with liquidity (Ferreira, Vilela, 2004: 309). *The second hypothesis is set that companies that have a higher ratio of total debt to total assets have lower liquidity.*

Companies that have a large amount of short-term debts will hold more liquid assets due to uncertainty of refinancing (Bruinshoofd, Kool, 2002: 4). In our sample in the third part of the paper we examine whether *companies that have a higher amount of short-term debts have a higher value of the liquidity ratios*.

The indebtedness ratio of the company, which presents the share of borrowed sources of financing in long-term sources of financing, is used as one of the measures of indebtedness. It is expected that this ratio is negatively correlated with liquidity. As company's indebtedness ratio grows, the costs of investing in liquidity also grow, so liquidity reduces. In addition, some authors argue that firms with better access to debt market can use borrowing instead of holding liquid assets. Companies that are more likely to fall into financial problems are expected to have a lower liquidity level (Kim, Mauer, Sherman, 1998: 348). In connection with the foregoing, we examine the following hypothesis: *Companies with higher indebtedness ratio are less liquid.*

The maturity structure of the debt can be represented as a share of short-term debt in total debt. Companies that have a larger share of short-term debt in total debt should be more liquid. This effect comes from the uncertainty of refinancing, that informationally affects the increase in the costs of external financing and companies in this situation should hold more liquid assets (Bruinshoofd, Kool, 2002: 14). The study conducted on a sample of companies in Portugal showed that companies with more long-term debt hold less liquid assets, which is consistent with previous observations (Pastor, 2010: 44). Thus, we hypothesize the following: *For any amount of the total debt, shorter average maturity of the debt, or more short-term debt in total debt, increase liquidity.*

As a potential determinant of liquidity, this paper also examines the capital structure. The ratio of capital structure represents the relationship of long-term debt and own capital. This determinant indicates the risk of financing of the company. More long-term debt in relation to its own capital increases the risk for investors. Also, we analyze two indicators, that show the share of long-term debt and own capital in total long-term sources of financing. In line with the previous analyzes of the determinants of liquidity related to indebtedness, it is expected that the companies, that are dominantly financed by borrowed funds, have lower liquidity ratios. Hypothesis for research is that *there is a positive correlation between the share of own capital in the capital structure and liquidity of a company*.

If a company finances its operations from external sources, the permanent interest expenses appear. Those expenses should be covered from operating profit. As a potential determinant of liquidity the interest coverage ratio should be examined. Due to the fact that in the countries in which companies in the sample operate, interest rates are relatively high, the amount of this financial expense and its covering can significantly influence company's profit and probably liquidity. Therefore, we set the following hypothesis: *A higher interest coverage ratio leads to greater liquidity of the company.*

To analyze the solvency of companies, we use the equity to fixed asset ratio. The available literature does not deal with this determinant, but in this article we examine its potential effect on liquidity. We hypothesize the following: *A more solvent company is more liquid.*

The profitability of the company should be associated with liquidity and more profitable companies should be more liquid. Company's profit is a source of cash flow. However, the profit achieved in one year does not automatically mean more cash. Despite this fact, those companies that have a higher profit are more likely to be more liquid (Benjamin, Samuel, 2012: 124). The research conducted in Nigeria shows a positive relationship between profitability and liquidity (Lawrencia, Sunday, Samuel, 2012: 54). The rate of return on equity and the rate of return on total assets are taken as indicators of profitability. *The hypothesis that we investigate is that companies which record higher rates of return have more liquid assets.*

Another variable whose impact on liquidity is considered in this paper is operating profit margin or commercial margin, which puts in ratio operating profit and sales revenue. It is expected that higher rate of operating profit leads to greater liquidity of a company. This assumption was confirmed in the study of the determinants of liquidity of small medium-sized enterprises in the US (Faulkender, 2002: 27). *Therefore, there is a positive correlation between operating profit margin and liquidity of a company.*

The last potential determinant of liquidity is the ownership concentration, measured by the percentage of capital that is held by three largest shareholders of the company. The concentration of ownership may have a positive impact on performances and liquidity of the company, when the management of the company is better coordinated, due to less dispersion of ownership. However, capital concentrated in a small number of owners may also lead to the situation where these large shareholders actually lead the company and that the lack of professional management worsens the financial situation of the company. A research done in Switzerland shows that companies with less concentrated ownership hold more liquid assets (Jani, Hoesli, Bender, 2004: 19). The study in Pakistan confirms the view that less liquid funds are run by companies with a high concentration of ownership, because the problem of asymmetric information is less expressed (Anjum, Malik, 2013: 100). Accordingly, we examine *the hypothesis that the concentration of capital and liquidity of a company are in an inverse relationship*.

2. DATA AND VARIABLE DEFINITION

The sample used for empirical research of determinants of liquidity consists of non-financial companies, whose shares are parts of Belgrade Stock Exchange index BELEX15, Zagreb Stock Exchange index CROBEX10 and Montenegro Stock Exchange index MONEX20. The data from Belgrade Stock Exchange have been analyzed for twelve companies, the data from Croatian stock exchange are taken for nine companies and the data from Montenegrin stock exchange cover eighteen companies. For all calculations we used the officially published financial reports of the companies.

The research covers a three-year period from 2010 to 2012, the period immediately after the global economic crisis, which has certainly had an impact on the liquidity and financial positions and results of companies in the sample. Therefore, it was particularly interesting to estimate the liquidity of the leading companies in the chosen countries and to see whether and how their liquidity changed during the period. A relatively small size of the sample and short period of analysis, appear as limiting factors for the data analysis. However, given the previously mentioned characteristics of the sample, that it covered the most successful companies in these national economies and that the period after the crisis is considered, this research gains its importance.

In the next part of the paper, we firstly consider indicators of the liquidity of companies in the sample, then we explain the variables that are used as potential determinants of liquidity and we analyze the determinants of liquidity separately for companies from BELEX15, CROBEX10 and MONEX20. In order to analyze the determinants of liquidity, a simple linear regression model is used.

2.1. Liquidity ratios of analyzed companies

In the observed period the domestic companies from the sample recorded current ratio from 0.64 up to 11.89. This ratio is mainly stable for all companies, with a small decline in 2012. If we look at the rigorous Quick ratio of these companies during the same period, we see that the value of this ratio ranges from 0.49 to 10.10. In the observed period the companies whose shares are in the CROBEX10 recorded a current ratio of 0.89 to 6.08. The analysis of data on more stringent and better liquidity ratio, Quick ratio, shows that its value ranges from 0.30 to 5.93. Also, two companies from the sample recorded a negative amount of net working capital. The companies from Montenegrin stock exchange recorded a current ratio of 0.24 to 5.88. A more precise measure of liquidity, Quick ratio gets values from 0.03 to 5.94. Eight of the eighteen companies have negative net working capital in two years at least. These liquidity ratios derived from high current liabilities of the company. Current ratios and Quick ratios for all companies from the sample are given in Table 1.

The data on liquidity indicators of companies from the sample show that there are large fluctuations in the level of liquidity and there occurs a challenge - to examine what factors influence these fluctuations. For comparison of liquidity of Serbian, Croatian and Montenegrin companies, the median for liquidity ratios for all three groups of companies is calculated. The results are given in Table 2. We point out that the companies from Serbia and Croatia have significantly more favorable liquidity than the companies from Montenegro. The median of current ratio for companies in the BELEX 15 is slightly lower than the median for companies from CROBEX10, where the median of Quick ratio for both groups of companies is above 2, which is a relatively good indicator. Given that the observed period is a period of crisis in business, these results are somewhat surprising. However, these are mostly large companies, which take special care of their liquidity out of precaution.

Table 1 Current ratio and Quick ratio of the companies whose shares are parts of indices BELEX15, CROBEX10 i MONEX20 for the period from 2010 to 2012

SE	Company	Current ratio			Quick ratio		
		2010	2011	2012	2010	2011	2012
B	NIS a.d., Novi Sad	1.05	1.79	1.69	0.49	1.07	0.98
B	Energoprojekt holding a.d., Beograd	3.90	4.45	2.89	3.90	4.45	2.64
B	Aerodrom Nikola Tesla a.d., Beograd	9.72	10.46	6.94	9.43	10.10	6.64
B	Soja protein a.d. , Bečej	2.40	3.15	1.99	1.26	1.55	1.02
B	Imlek a.d. , Beograd	1.42	1.47	0.64	1.11	1.12	0.54
B	Metalac a.d. , Gornji Milanovac	2.67	1.94	2.24	2.66	1.92	2.22
B	Galenika Fitofarmacija a.d. , Zemun	10.32	11.89	5.33	5.22	7.23	2.91
B	Messer Tehnogas a.d. , Beograd	4.98	4.58	6.87	4.50	4.15	6.31
B	Jedinstvo a.d. , Sevojno	2.13	1.69	1.65	1.95	1.42	1.40
B	Alfa plam a.d. , Vranje	5.47	5.28	5.18	3.68	3.41	3.70
B	Goša montaža a.d. , Velika Plana	1.51	1.51	2.27	1.28	1.37	2.09
B	Veterinarski zavod Subotica a.d, Subotica	1.84	2.72	2.28	1.17	1.92	1.76
Z	Adris grupa d.d.	4.26	4.17	5.51	3.59	3.56	4.72
Z	Atlantic Grupa d.d.	1.40	1.97	1.84	0.96	1.34	1.26
Z	Ericsson Nikola Tesla d.d.	6.08	6.07	2.48	5.87	5.93	2.40
Z	HT d.d.	3.22	3.30	3.42	3.09	3.20	3.32
Z	INA d.d.	0.89	1.03	0.82	0.52	0.54	0.43
Z	Končar - elektroindustrija d.d.	2.72	2.57	2.87	2.09	1.96	2.20
Z	Valamar Adria Holding d.d.	1.15	1.04	1.66	1.12	1.00	1.61
Z	Ledo d.d.	3.01	3.52	1.57	2.27	2.69	1.34
Z	Podravka d.d.	1.15	1.70	1.70	0.73	1.05	1.07
Z	Petrokemija d.d.	0.90	1.11	0.98	0.30	0.42	0.43
M	Crnogorski Telekom AD Podgorica	2.08	2.58	2.95	1.99	2.50	2.86
M	Elektropriveda Crne Gore AD Nikšić	3.34	2.04	1.95	3.02	1.78	1.71
M	13. jul - Plantaže AD Podgorica	2.14	2.01	3.31	0.72	0.67	1.11
M	Jugopetrol AD Kotor	4.07	4.68	5.41	2.89	2.52	2.82
M	Crnogorski elektroprenosni sistem AD	2.12	5.88	4.84	1.87	5.68	4.69
M	Kontejnerski terminali i generalni tereti	1.01	0.83	0.74	0.81	0.56	0.54
M	HTP Budvanska rivijera	1.40	1.07	0.71	1.34	0.92	0.61
M	Luka Bar AD Bar	1.33	1.86	1.95	1.30	1.82	1.90
M	Rudnik uglja AD Pljevlja	0.42	0.31	0.35	0.29	0.22	0.26
M	Solana Bajo Sekulić AD u stečaju Ulcinj	0.55	0.49	0.46	0.44	0.39	0.37
M	Zetatrans AD Podgorica	4.90	3.40	4.16	4.84	3.36	4.13
M	Institut Simo Milošević AD Igalo	0.99	0.83	0.44	0.97	0.78	0.42
M	Kombinat aluminijuma AD Podgorica	0.46	0.08	0.06	0.20	0.03	0.03
M	Jadransko brodogradilište AD Bijela	0.48	0.51	0.67	0.22	0.15	0.42
M	HTP Ulcinjska rivijera AD Ulcinj	1.87	0.54	0.30	1.71	0.41	0.24
M	Barska plovidba AD Bar	3.84	2.32	1.33	3.48	1.84	1.07
M	CMC AD Podgorica	2.99	3.71	6.11	2.97	3.10	5.94
M	Lutrija Crne Gore AD Podgorica	0.24	0.40	0.58	0.08	0.23	0.39

Legend: B – Belgrade Stock Exchange, Z – Zagreb Stock Exchange, M – Montenegro Stock Exchange
Source: The indicators are calculated based on the data from the published financial statements.

For a full assessment of the liquidity of these companies, the average indebtedness of these groups of companies is also taken into consideration, and the median ratio of total debt to total assets is calculated for all three groups of companies, which is also given in

Table 2. The result shows that these companies are not very indebted, which may be associated with the period of research, given that lending by banks decreased due to the crisis.

Table 2 Median current ratio and Quick ratio and total debt to total asset ratio for the period from 2010 to 2012

	Median current ratio	Median quick ratio	Median total debt to total asset ratio
BELEX15 companies	2.54	2.02	22%
CROBEX10 companies	2.65	2.15	28%
MONEX20 companies	1.36	1.02	13%

Source: Calculated based on the data about liquidity indicators from Table 1.

2.2. Definition of potential determinants of liquidity

As potential determinants of liquidity, we research operating income, total assets, fixed assets, inventories, short-term debt, indebtedness ratio, capital structure ratio, long-term debt to long-term sources ratio, the share of equity in the long-term sources, the ratio of total debt to total assets, the maturity structure of debt, interest coverage ratio, equity to fixed asset ratio, rate of return on equity, rate of return on total assets, operating profit margin and ownership concentration. Potential determinants of liquidity, together with their expected relationship with the company's liquidity, are given in Table 3.

Table 3 Potential determinants of liquidity

Potential determinant	Measure	Expected relationship
Company size	Operating income	Positive
	Total Assets	
	Fixed Asset	
Indebtedness	Ratio of borrowed sources to long term sources	Negative
	Short-term debt	Positive
	Total debt to total assets	Negative
Maturity structure of debt	Share of short-term debt in total debt	Negative
Covering of interests	Ratio of operating income to interest expenses	Positive
Capital structure/Solvency	Ratio of own capital to long-term sources	Positive
	Equity to fixed asset ratio	
Profitability	Rate of return on equity	Positive
	Rate of return on total assets	
	operating profit margin (ratio of operating profit and sales revenue)	
Ownership concentration	Percentage of capital held by three largest shareholders of the company	Negative

3. The Analysis of Determinants of Corporate Liquidity in Serbia

Using simple linear regression method, we find that the most significant determinants of liquidity measured by the current ratio for the Serbian companies are operating income, fixed assets, short-term debt, equity to fixed asset ratio, the ratio of total debt to total assets and rate of return on total assets. Table 4 shows the regression coefficients and their statistical significance. Operating income, fixed assets, equity to fixed asset ratio, ratio of total debt to total assets have a positive impact on the current ratio. A negative relationship exists between current ratio and the rate of return on total assets and short-term debts.

Table 4 Determinants of liquidity measured by current ratio for companies whose shares are part of BELEX15

Determinant of current ratio	Regression coefficient	Significance
Operating income (ln)	.602***	.000
Fixed asset (ln)	1.518***	.000
Short-term debt (ln)	-1.854***	.000
Equity to fixed asset ratio	1.078***	.000
Rate of return on total assets	-.154*	.077
Total debt to total assets ratio	.444***	.006

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

The first two determinants represent the size of the company. Thus, we can conclude that the larger a company, the more liquid assets it has, which is contrary to the set hypothesis. However, theoretical considerations allow this conclusion, because large companies can hold more liquid assets, in order to be not forced to liquidate their assets. A larger amount of short-term debt means lower liquidity of the company. However, looking at the total debt in relation to total assets, we came to the opposite conclusion. Companies with a higher indebtedness ratio have higher liquidity ratio. The reason could be that companies that have a large amount of long-term debt, due to fears that they could fall into trouble if it was necessary to borrow further, hold more of their assets in the form of liquid assets. The regression coefficient of profitability ratios indicates that more profitable companies have lower liquidity, which at first seems as an illogical conclusion. However, profitable companies have less concern about debt, and therefore they are able to hold less liquid assets as a precaution. Equity to fixed asset ratio is an indicator of the solvency of the company and conclusion from the research is consistent with expectations that the more solvent a company is, the more liquid it is.

It is known that a rigorous Quick ratio is a better indicator of liquidity. This research shows that highly significant correlations with Quick ratio have two variables, total debt to total assets ratio and equity to fixed asset ratio. Indebtedness indicator, ratio of total debt to total assets shows an opposite effect on Quick ratio compared to the current ratio. The negative regression coefficient indicates that firms that are more indebted have a lower ratio. This is the consequence of a high share of stocks in liquid assets of the companies in the sample. It is also shown that solvency of companies affects the quick ratio in the same way as the current ratio. The higher value of this ratio indicates greater liquidity of the company. If the company is able to meet their long-term obligations, the company will be able to settle short term obligations too. Other variables that showed statistically significant correlations with quick ratio, but at a lower level of statistical significance are total assets, fixed asset and debt ratio. Firm size presented by total assets and fixed asset shows a positive correlation with liquidity of the company.

Table 5 Determinants of liquidity measured by Quick ratio for companies from BELEX15

Determinants of Quick ratio	Regression coefficient	Significance
Total assets (ln)	.179*	.098
Fixed asset (ln)	.255*	.089
Equity to fixed asset ratio	.357***	.001
Total debt to total assets ratio	-.777***	.000

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

The third measure of liquidity is net working capital. As the most important determinant of net working capital regression analysis highlights the indebtedness ratio, which represents the share of borrowed sources in long-term sources. The more long-term funding company provides by borrowing, liquidity measured by net working capital is lower. High correlation with net working capital indicates also variable that measures size of the company, fixed asset. The negative relationship that arises here shows that companies with higher value of fixed assets have less net working capital.

Table 6 Determinants of liquidity measured by net working capital for companies from BELEX15

Determinants of net working capital	Regression coefficient	Significance
Fixed asset (ln)	-.309*	.086
Indebtedness ratio	-.414**	.023

* significance level 0.1 **significance level 0.05 ***significance level 0.01

Summarizing the results of regression analysis for companies whose shares are part of BELEX15, the conclusion is that a company's liquidity depends primarily on the firm size, its indebtedness, solvency and profitability.

4. The Analysis of the Determinants of Corporate Liquidity in Croatia

In analyzing data of the companies constituting CROBEX10, regression model set as main determinants of liquidity measured by current ratio the following: operating income, fixed asset, total assets, short term debt, the share of equity in the long-term sources, total debt to total assets ratio and operating profit margin. Regression coefficients and levels of significance for these determinants are given in Table 7.

When it comes to the determinant which presents the size of company, the conclusion is that when a company has greater total assets, it is more liquid. This conclusion coincides with the conclusion gained through analysis of Serbian companies. However, contrary to the conclusion obtained analyzing companies from the Belgrade Stock Exchange, the operating income and fixed asset indicate a negative correlation with liquidity of companies, but their regression coefficients are significantly lower than the coefficient for total assets. Thus, the final conclusion is that larger firms are more liquid. Next determinant of liquidity, operating profit margin, shows negative correlation with the current ratio of Croatian companies. Companies that do business better can borrow at more favorable terms so they can hold less liquid assets. The capital structure indicator, as a share of equity in the long-term sources, shows a positive correlation with current ratio.

Table 7 Determinants of liquidity measured by current ratio for companies from CROBEX10

Determinants of current ratio	Regression coefficient	Significance
Operating income (ln)	-.180**	.024
Fixed asset (ln)	-.658***	.001
Total assets (ln)	2.921***	.000
Short-term debt (ln)	-2.245***	.000
Share of equity in the long-term sources	.510***	.000
Total debt to total assets ratio	.433***	.000
Operating profit margin	-.353***	.000

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

The variables that are shown to be significant determinants of liquidity measured by Quick ratio are total assets, short-term debt, the share of equity in the long-term sources, the ratio of total debt to total assets, equity to fixed asset ratio and rate of return on equity (Table 8).

Regarding Quick ratio, the analysis shows that the size of the company (measured by total assets) is positively correlated to liquidity. With respect to debt indicators, two determinants, short-term debt and the ratio of total debt to total assets, have negative relationship with liquidity, which is an expected result. Capital structure, measured as a share of equity in the long-term sources has a positive impact on the Quick ratio. Companies with higher share of own capital in the long-term financing sources are more liquid, although this relationship is at lower level of statistical significance. Also, companies with fixed asset covered by a higher amount of own capital are more liquid. The last determinant relates to profitability, and it is the rate of return on equity. Companies with a higher rate of return on net assets are characterized by lower liquidity. A similar situation has already been discussed. More successful companies can, due to their sound financial position, hold less of their assets in the form of liquid assets.

Table 8 Determinants of liquidity measured by Quick ratio for companies from CROBEX10

Determinants of Quick ratio	Regression coefficient	Significance
Total assets (ln)	1.209***	.000
Short-term debt (ln)	-1.351***	.000
share of equity in the long-term sources	.185*	.076
Total debt to total assets ratio	-.225**	.011
Equity to fixed asset ratio	.375***	.000
Rate of return on equity	-.215***	.000

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

The analysis of potential determinants of net working capital of Croatian companies established following significant determinants: short-term debt, the ratio of capital structure, rate of return on equity and capital concentration (Table 9). Short-term debt is expected determinant and correlation is negative, which is consistent with the influence of this determinant on other measures of liquidity. With a lower level of statistical significance, the ratio of capital structure affects net working capital so that a larger amount of long-term debt as opposed to their own sources leads to greater liquidity. That means that these companies are likely to hold more liquid assets as a precaution. The negative regression coefficient indicates that higher concentration of capital decreases company's liquidity. Much capital concentrated in a small number of owners has a negative impact on company's liquidity. It is possible that these large shareholders play a crucial role in leading the company and that they are prone to investment, rather than holding assets in the form of liquid assets.

Table 9 Determinants of liquidity measured by net working capital for companies from CROBEX10

Determinant of net working capital	Regression coefficient	Significance
Short-term debt (ln)	-.270**	.024
Ratio of capital structure	.217*	.051
Rate of return on equity	.691***	.000
Ownership concentration	-.427***	.001

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

Summarizing the results of regression analysis for companies whose shares are in the CROBEX10, the conclusion is that the company's liquidity primarily depends on the size of the company, its indebtedness, capital structure, solvency, profitability and concentration of ownership.

5. The analysis of the determinants of corporate liquidity in Montenegro

The third group of companies included in this research is represented by the companies whose shares are the part of the index of the Montenegro Stock Exchange - MONEX20. The findings of the regression analysis of the determinants of liquidity measured by the current ratio point out to the following determinants: indebtedness ratio, the ratio of total debt to total assets, interest coverage ratio and equity to fixed asset ratio. The results of the analysis are shown in Table 10. Among the indebtedness indicators, a higher value of the regression coefficient and a higher level of significance has the ratio of total debt to total assets. It shows that the more indebted company is more liquid, which was also proven it the analysis of previous companies. For the first time, interest coverage ratio appears in the analysis as a determinant of liquidity. This indicator is positively related to the current ratio. More liquid is a company in which every monetary unit of interest expense is covered with greater amount of operating profit. Finally, the equity to fixed asset ratio, as in the previous analyses, is positively associated with the current ratio.

Table 10 Determinants of liquidity measured by current ratio for companies from MONEX20

Determinant of current ratio	Regression coefficient	Significance
Indebtedness ratio	$-.217^{*}$	.062
Total debt to total assets ratio	$.953^{***}$	.000
Interest coverage ratio	$.151^{*}$	.093
Equity to fixed asset ratio	1.491^{***}	.000

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

Quick ratio of Montenegrin companies is determined by equity to fixed asset ratio and ownership concentration. Equity to fixed asset ratio affects the rigorous ratio in the same way as in the previous analyses. Between them there is a positive relationship and this is an expected result. Concentration of ownership as a determinant of liquidity appeared already on the sample of Croatian companies, but with the opposite impact. This relationship is positive, indicating that most of the capital in the hands of a small number of shareholders helps better coordination of management of the company, and this has a positive impact on the company's operations and liquidity.

Table 11 Determinants of liquidity measured by Quick ratio for companies from MONEX20

Determinants of Quick ratio	Regression coefficient	Significance
Equity to fixed asset ratio	$.626^{***}$	.000
Ownership concentration	$.248^{**}$	.021

* significance level 0.1 **significance level 0.05 ***significance level 0.01

The remaining analysis of the determinants is the analysis of determinants of net working capital of Montenegrin companies. The regression model indicates three determinants of liquidity: fixed asset, debt ratio and equity to fixed asset ratio. The results show that their relation to the net working capital is exactly as expected. More liquid companies have higher amounts of fixed asset. Indebtedness indicator is negatively connected with net working capital. Solvency indicator shows that firms that are more solvent are at the same time more liquid.

Table 12 Determinants of liquidity measured by net working capital for companies from MONEX20

Determinant of net working capital	Regression coefficient	Significance
Fixed asset (ln)	$.430^{***}$	.000
Indebtedness ratio	$-.259^{**}$	.017
Equity to fixed asset ratio	$.809^{***}$	.000

* significance level 0.1 ** significance level 0.05 *** significance level 0.01

Summarizing the results of regression analysis for companies whose shares are part of MONEX20, we conclude that the liquidity of the company depends on the size of the company, debt ratio, solvency, interest coverage ratio and concentration of ownership.

CONCLUSION

The paper analyzes the micro determinants of corporate liquidity by using a sample of 40 companies operating in the real sector whose shares are parts of the stock market indexes of three stock exchanges - Belgrade, Zagreb and Montenegro Stock Exchange. On the basis of obtained liquidity ratios in the sample, we can conclude that the companies whose shares are part of BELEX15 and the CROBEX10 have better liquidity ratios compared to Montenegrin companies, which have shown unsatisfactory liquidity, but also less indebtedness.

The analysis of the determinants of liquidity of companies in our sample indicates similar determinants of liquidity of the companies from Serbia, Croatia and Montenegro. These variables are also emphasized in other empirical studies of the determinants of liquidity on both developed and undeveloped capital markets. Firm size has proved to be an important determinant and in our sample relation with liquidity is positive - larger companies have higher liquidity, which is contrary to the first hypothesis. In analyzed markets, companies cannot still count on the fact that they will always be able to borrow conveniently due to the many risks they face, especially political risks. In the period after the global economic crisis, at the time of instability of financial markets, large companies, wherever they are located, must be mindful of their liquidity, instead of believing that they can borrow easily. Indebtedness of the company, as a determinant of liquidity, gave different results depending on the chosen measure of how much the company was indebted. However, more variables pointed to the fact that companies out of precaution hold more liquid assets. Profitability has proved to be a significant determinant in Croatian companies, while in the Serbian and Montenegrin case showed no great importance.

Finally, we would like to address some limitations inherent to this study. In the first place, there are limitation concerning the sample size and the analyzed period. In this respect, future research should comprise a more comprehensive set of explanatory variables (including cash-flow indicators), should be based on a larger and comprehensive database and should include the period after 2012, which will allow a deeper analyses of the impact of post-crisis market conditions on company liquidity management.

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UPRAVLJANJE LIKVIDNOŠĆU PREDUZEĆA: IMPLIKACIJE I DETERMINANTE

Na likvidnost preduzeća utiču brojni faktori, koji potiču kako iz samog preduzeća, tako i iz okruženja. Ovaj rad bavi se internim determinantama likvidnosti preduzeća. Cilj rada je da pokaže od kojih pokazatelja poslovanja preduzeća zavisi likvidnost preduzeća u Srbiji, Hrvatskoj i Crnoj Gori i da li su te determinante specifične za preduzeća na ovim prostorima. Preduzeća koja čine uzorak su nefinansijska preduzeća čije su akcije u sastavu berzanskih indeksa berzi u regionu - BELEX15, CROBEX10 i MONEX20. Vrednosti pokazatelja likvidnosti ovih preduzeća upućuju na solidnu likvidnost. Najznačajnije determinante likvidnosti su veličina preduzeća, zaduženost i struktura kapitala Rezultati pokazuju da je dominantan motiv držanja likvidnih sredstava u našem uzorku predostrožnost,što pokazuje na koji način je kriza uticala na analizirana preudzeća.

Ključne reči: *pokazatelji likvidnosti, determinante, post-krizni period, tržišni indeks*