LIQUIDITY MANAGEMENT AND CORPORATE RISK

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The consequence of the economic crisis, the access of the external financing resources was narrowed significantly and lenders had became more cautious. This meant that the external source providers analyze more thoroughly the source claimants, and they also need to be more aware of their situation, to submit well founded loan applications to financial institutions. However, analysts should be aware of which are the ratios which should be paid a special attention and which ones are essential to assess a given situation, knowing them they can properly inform the leaders as well as to give an appropriate help to the decision makers. Liquidity measures are designed to provide information about the solvency and financial flexibility of the business enterprise. The traditional liquidity measures has been criticized because it mixes assets and liabilities that are quite different in terms of their maturity time. The problem with the traditional current ratio is that it treats all assets and liabilities as being of equal degree of liquidity. Similar problems were experienced in relation to the cash conversion cycle, which is also an important measure of the company's payment capability. This paper describes how should be modified these indicators in order to the decision makers able to draw correct conclusions.

Keywords liquidity management, liquidity ratios, modified liquidity ratio, modified cash conversion cycle
JEL code: G30, G32

1. Corporate liquidity risk

Volatile global markets, changing regulatory environments, and the improvement of new financial products have made the management of liabilities and of assets in the balance sheet a critical task. Today tools such as simulation, experimentation, and real-time financial reporting help in fulfilling this responsibility, but the whole assets and liabilities management strategy is changing under the weight of a fast-growing amount of debt. *(Charafas, 2002)*

The problems of last period caused in global finance markets have yielded new evidence for the importance of liquidity risk management as a sound business practice. A phenomenon that started as a narrow-minded financial market innovation regarding to increased riskiness in the subprime segment of real estate mortgage lending has since widened its effects to result in a worldwide liquidity crisis. As the Financial Stability Forum puts it, "The turmoil has brought to light interactions between credit, market liquidity, and funding liquidity risks that many regulated financial institutions did not anticipate." *(Preliminary Report to the G7 Finance Ministers and Central Bank Governors, 15 October 2007)*

The consequence of the economic crisis, the access of the external financing resources was narrowed significantly and lenders had become more cautious. The aspect is why the ratios presented in the study, the firms should be addressed much more thoroughly than ever before to have a much better understanding their situation, to recognize the sources of internal funding opportunities, and to use more efficiently the available internal resources. However, analysts should be aware of which are the ratios which should be paid a special attention and which ones

are essential to assess a given situation, knowing them they can properly inform the leaders as well as to give an appropriate help to the decision makers.
Liquidity is a complex concept defined by multiple factors, which are used by different ways. *Andrew Crockett (2009)* wrote in his study: „Liquidity is easier to recognize than to define." Basically, the terms of liquidity means how easy we can generate cash from assets. Cash may be generated either by using creditworthiness to obtain external funds, or by the sale of owned assets in the market. Liquidity is not depending on simply on objective, exogenous factors, but it is crucially influenced by endogenous ones, especially the reactions in contrast to uncertainty and asset value changes.
However, analysts need to know the relationships which are among the ratios to provide accurate information for the leaders of the firm. In each case the information communication must be such as to enhance the company's knowledge of firms' leaders and to contribute to the increasing of organizational knowledge. *(Palepu et al., 2004)*
Liquidity risk management is addressed through strategic and operational considerations. The strategic framework must create the corporate target for liquidity risk. This includes the extent how the corporation wishes to protect from a liquidity crisis. The operational consideration means that certain constraints could be imposed on short-term borrowings or asset mix to ensure the company is adequately protected. The asset/liability management must work closely with the cash management to define the short- and medium-term cash needs, the possible impacts of various liquidity scenarios, and determine actions required to address these issues.
The liquidity ratios, net working capital, cash flow analysis and the cash conversion cycle are the basis for liquidity risk measurement.

2. Working capital management
Many companies still underestimate the importance of working capital management. To ensure the appropriate level of internal resources the company's activity is continuous financing closely related to the working capital management. The other reason is why the working capital management coming into view - which is linked to the previous one - that longer and longer payment periods have emerged in the corporate sales, in point of fact there is a significant increase in commercial lending period, the companies must be able to finance this period. The working capital is essential for companies to determine their short-term financial positions. *(Preve-Sarria-Allende, 2010).* A significant change in working capital provides important information to the company's various stakeholders, and this is especially true for the net working capital. The working capital analysis is one way the company's creditability evaluation, and helps also to better understand the company's normal business cycle.
The term **working capital** (gross working capital) refers to a firm's short-term assets, ie current assets. Managing the firm's working capital is a day-to-day activity that ensures that the firm has sufficient resources to continue its operations. This involves a number of activities related to the firm's receipt and disbursement of cash. *(Ross et al., 2007)*
Net working capital is equal current assets less current liabilities. Thus, net working capital compares the amount of current assets (assets that should convert into cash within the next 12 months) to the current liabilities (debt that will be due within 12 months). *(Keown et al., 2005)*
Working capital management involves the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy both maturing short-term debt and upcoming operational expenses.
Implementing an effective working capital manage ment system is an excellent way for many companies to improve their earnings. The two main aspects of working capital management are ratio analysis and management of individual components of working capital.

3. Modified liquidity ratios (comprehensive liquidity index)

In finance, this term is used in respect to several assets that can be converted into cash at fair market price without loss. A good liquidity depends on the ability to instantly and easily trade assets. *(Chofaras, 2002)*

Liquidity analysis is the process of measuring a company's ability to meet its maturing obligations. Sometimes, a firm having difficulty paying off its current obligations is unlikely to be able to convert its accounts receivable or inventory quickly into cash without loss of value. Liquidity measurements are designed to provide information about the paying ability and financial flexibility of the firms. In particular, the firm's creditors are interested in the ability of the company to pay off its short-term obligations until their maturity. Also, these traditional measures fail to consider the cash flow generating ability of the firm's operations.

The traditional liquidity ratios do not sufficiently take into account that how long the assets or liabilities are hold in firm's operations. However, the length of holding or turnover period has a significant impact on how quickly the company can meet the payment obligations, or changes the value of liquidity ratios. To solve this problem will be adjusted certain components of the current assets and current liabilities, and we determine the liquidity ratios using these adjusted values. The balance sheet items used to the liquidity calculation are adjusted to take account, in the case of current assets and current liabilities how much time spend the given assets in the company's operating cycle, what is ignored by traditional liquidity ratios. *(Gangadhar, 2003)* In case of each adjusted assets and liabilites we have to calculate the correction factors:

$$\text{correction factor} = 1 - \frac{1}{\text{turnover ratio of assets or liabilities}} \tag{1}$$

The appropriate balance sheet item must be multiplied by the calculated factors, and so we get the adjusted liquidity values. The inventories and receivables will be only adjusted amongst the current assets. The bill (trade acceptance) obligations and the long-term debt part reclassified for the current year should not be adjusted amongst the short-term liabilities. After completing the corrections, the adjusted liquidity ratios are calculated using the adjusted values of current assets and current liabilities:

$$\text{adjusted current ratio} = \frac{\text{adjusted current assets}}{\text{adjusted current liabilities}} \tag{2}$$

The company can increase the value of its liquidity ratio to achieve a growth in receivables and inventories, and to reduce the turnover ratio of its current liabilities, ie to improve an efficiency of its asset and resource management. The value of adjusted current ratio can be higher or lower than the traditional current ratio. However, if the company effectively manages its current assets and current liabilities, then the adjusted current ratio value will be higher than the traditional current ratio. (Gangadhar, 2003)

Using the adjusted current assets and current liabilities we can calculate the other liquidity ratios such as quick ratio and cash ratio. However, it should also be noted that these ratioa are statics and they do not measure the company's cash flow generating capability.

The calculations were performed for a number of companies, but we present only two extreme examples in details. The most of the cases examined the direction of changes is very different, there are years with an increasing values and there are years with decreasing ones.

We present the changes of an agricultural enterprise's liquidity ratios in Table 1. The Table 1 shows that the values of liquidity ratios have improved in case of this agricultural company every year. There is a significant improvement in the level of cash ratio which is similar for all

companies with relatively high levels of cash and/or short-term securities, because they are not adjusted.
In Table 2 the liquidity ratios were calculated using data of an industrial manufacturing company. In this case, the values of liquidity ratios were decreased in all cases except the value of cash ratio. The value of cash ratios was improved by non-adjusted cash and near-cash assets in this case, but it was to a lesser extent due their lower rate.

3. Modified cash conversion cycle

The liquidity ratios are very closely related to the cash conversion cycle, since its main components are the inventory turnover period (inventory days), the receivable turnover period (receivable days) and the payable turnover period (payable days):

Title	2007	2008	2009
Inventory turnover ratio	2,34	2,36	2,91
Adjusting factor	0,5732	0,5763	0,6564
Receivables turnover ratio	6,95	8,39	3,97
Adjusting factor	0,8561	0,8809	0,7479
Turnover ratio of current liabilities	2,93	1,87	2,17
Adjusting factor	0,6584	0,4665	0,5393
Current assets	**1 101 777**	**1 328 662**	**1 150 028**
Adjusted current assets	***749 084***	***963 321***	***843 551***
Current liabilities	**593 861**	**1 005 973**	**777 497**
Adjusted current liabilities	***391 020***	***469 308***	***419 267***
Current ratio	1,8553	1,3208	1,4791
Adjusted current ratio	1,9157	2,0526	2,0120
Quick ratio	0,6058	0,5265	0,7333
Adjusted quick ratio	0,8279	1,0715	1,1042
Cash ratio	0,1844	0,3032	0,1863
Adjusted cash ratio	1,1821	1,4283	1,0764

Table 1.: Changing of liquidity ratios due the adjusting in case of an agricultural enterprise

Title	2005	2006	2007	2008	2009
Inventory turnover ratio	131,78	69,72	70,65	32,52	9,03
Adjusting factor	0,9924	0,9857	0,9858	0,9692	0,8892
Receivables turnover ratio	3,57	5,09	4,61	5,83	2,99
Adjusting factor	0,7197	0,8037	0,7832	0,8285	0,6660
Turnover ratio of current liabilities	3,64	7,09	4,04	4,43	1,48
Adjusting factor	0,7255	0,8590	0,7522	0,7745	0,3244
Current assets	**1 438 871**	**1 130 508**	**1 295 583**	**1 313 677**	**979 278**
Adjusted current assets	***1 046 781***	***923 978***	***1 038 178***	***1 125 999***	***732 959***
Current liabilities	**1 368 439**	**751 736**	**1 350 702**	**1 394 371**	**1 343 994**
Adjusted current liabilities	***998 115***	***653 932***	***1 026 578***	***1 089 531***	***466 294***
Current ratio	1,0515	1,5039	0,9592	0,9421	0,7286
Adjusted current ratio	0,7649	1,2291	0,7686	0,8075	0,5454
Quick ratio	1,0238	1,4021	0,9021	0,8058	0,5646
Adjusted quick ratio	0,7375	1,1288	0,7123	0,6754	0,3995
Cash ratio	0,0025	0,0098	0,0269	0,0454	0,0703
Adjusted cash ratio	0,2890	0,2845	0,2175	0,1800	0,2536

Table 2.: Changing of liquidity ratios due the adjusting in case of an industrial manufacturing company

$$\text{cash cycle} = \text{operating cycle} - \text{payable turnover period} \quad (3)$$

$$\text{operating cycle} = \text{inventory turnover period} + \text{receivable turnover period} \quad (4)$$

Based on the above relationships [(3)-(4)] it is also determinable that an increase in adjusted current ratio will reduce the cash conversion cycle to lead to more efficient cash management.
The cash conversion cycle is the number of days negotiated financing is needed to support the operating cycle of a business. The cash conversion cycle then is a measure of how efficiently a company operates. But more importantly, it's a measure of cash creation efficiency in the business. Calculating the cash conversion cycle, sometimes called the asset conversion cycle, tells you a lot more about ability to pay than the current or quick ratio. The cash conversion cycle, while a relatively new metric, is widely used in corporate finance.
It is the weakness of the traditional cash conversion cycle not to be adequately express the conversion period days in the net working capital requirement given in cash. In addition, it does not adequately distinguish between cash and credit sales, which can cause problems, ie. if two companies have the same receivable period, but they have different proportions of credit sales. In the traditional model, both companies will have the same cash conversion cycle, while the company with higher cash sales will be a better placed to fulfill its obligations on time. This is so, because it will have able quickly and safely to collect a greater portion of sales. The traditional cash conversion cycle model does not deal the profitability impact on the liquidity. Because the profit is a surplus resource what covers the liabilities therefore the profitability takes actually as a support factor of corporate liquidity. To determine the net working capital given in cash to be build in the „gross return on sales" and the "credit sales/total sales" ratios in the cash conversion cycle model. The net working capital what was determined in this way is necessary to the firm's operation.
The determination of the modified ratios

modified inventory turnover period = inventory turnover period *
(1 – gross return on sales) (5)

modified receivable turnover period =
receivable turnover period * proportion of credit sales (6)

As the gross return on sales is increasing, so is decreasing the operating working capital requirement. The cash flow difference between the beginning and end of the cash conversion cycle is the direct link to the profitability. This means that the more profitable business creates more cash flow from its operations.

We can see in Table 3 that both operating and cash cycle are decreased, for example there was a more than 20% decreasing in 2008. A high scale of change has already altered the position of the company's judgement. The cash conversion cycle was negative in 2008, which means that the firm's payable turnover period is greater than its operating cycle, ie the firm has its suppliers and creditors to finance himself. Whereas the company's short-term loans make up 40 % of current liabilities, therefore the firm was financed by its suppliers.

Title	2007	2008	2009
Inventory turnover period	156	155	125
Receivable turnover period	53	43	92
Operating cycle	**209**	**198**	**217**
Payable turnover period	125	195	168
Cash cycle	**84**	**3**	**49**
Gross return on sales	2,63%	8,63%	2,53%
Modified inventory turnover period	152	141	122
Credit sales ratio	85%	78%	83%
Modified receivable turnover period	45	34	76
Modified operating cycle	**196**	**175**	**199**
Modified cash cycle	**71**	**-20**	**31**

Table 3.: Modified cash conversion cycle of an agricultural company

We can see in Table 4 that the changes are to a lesser extents, however, the table also shows that the cash conversion cycle contains a fairly high negative values in 2009. The negative value of 2009 year can not be sure to derive from the fact that the firm is well able to enforce its interests, but rather it is an indicator of firm's payment problems. In this case the high negative value of the cash conversion cycle shows an increase in debt financing. The credit ratio inside the current liabilities is around 40% in the first year what started to increase in the next years and it was exceed more than 90% in 2009.

Title	2005	2006	2007	2008	2009
Inventory turnover period	2,8	5,2	5,2	11,2	40,4
Receivable turnover period	102,3	71,6	79,1	62,6	121,9
Operating cycle	**105,1**	**76,9**	**84,3**	**73,8**	**162,3**
Payable turnover period	100,2	51,5	90,4	82,3	246,6
Cash cycle	**4,9**	**25,4**	**-6,1**	**-8,5**	**-84,2**
Gross return on sales	6,10%	5,14%	4,40%	8,94%	-0,88%
Modified inventory turnover period	2,6	5,0	4,9	10,2	40,8
Credit sales ratio	100%	99%	100%	100%	100%
Modified receivable turnover period	102,3	70,9	79,1	62,6	121,9
Modified operating cycle	**104,9**	**75,9**	**84,1**	**72,8**	**162,7**
Modified cash cycle	**4,7**	**24,4**	**-6,4**	**-9,5**	**-83,9**

Table 4.: Modified cash conversion cycle of an industrial manufacturing company

4. Conclusions

Working capital management almost always determines the ability of a firm to earn profit. Efficiency with which a firm handles working capital ensures prosperity while neglect would spell danger for the survival of the firm. The managerial decision-making is needed to accurate ratios what describe the current situation of the firm, and they are also suitable for forecasting.

The traditional liquidity ratios, if we do not take into account the turnover periods, under- or overestimate the actual payment capability of the company. Incorrect liquidity values may lead to inappropriate management decisions. A similar situation exists in relation to the cash conversion cycle as well. The cash conversion cycle is the net time interval between the expenditure of cash in paying the liabilities and the receipt of cash from cellection of receivables. It is often a more accurate measure of overall liquidity than current ratio. The modified cash conversion cycle also shows that more resources will be used for enterprises non-operational purposes as if we make the calculation with the traditional cash conversion cycle. It is also shown that the increase in "credit sales proportion ratio" results an additional increase in net working capital demand, which is clearly follows from the fact that the ratio represents an increasing debt and sales levels. With the application of the presented ratios we get more opportunity to explore and analyze the financial situation.

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