

PROBLEMS WITH THE APPLICATION OF CONVENTIONAL FINANCIAL RATIOS IN CORPORATE RISK MEASUREMENT

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Abstract: One of the enterprises' biggest fears is a potential bankruptcy situation. This is the reason there are a lot of people who try to anticipate it. To be aware of the actual and expected future situation of a company is in the interest of all those who are related. This topic has come to the fore after the economic and financial crisis of 2008. Companies, their creditors and internal stakeholders should be aware of the liquidity and solvency situation of a given company, because its deterioration can cause serious problems for all of them. During the financial analysis of companies, the problem of liquidity indicators showing bad signals can often be experienced, although there is no visible sign of difficulty in their operation. In other cases, the situation is just the opposite, i.e. liquidity ratios are adequate, but still, the business faces payment issues. How could it happen? The purpose of this study is to present indicators which can measure more accurately and reliably the actual liquidity position of a company.

Keywords: liquidity, adjusted liquidity, risk, cash conversion cycle, net working capital

Introduction

The economic crisis evolved from the international financial crisis highlighted the need of risk management. In the past years and recently, almost every company – either big or small – had the bitter experience of the crisis and its aftermath. There are numerous companies in worse conditions than before. Some of them bankrupted some of them are still fighting for survival. Companies and creditors and potential investors, e. g. venture capital investors (Nagy, 2004) should be aware of their own and their clients' liquidity position, because its deterioration can cause serious difficulties for both of them. Internal stakeholders also want to be aware of the current liquidity situation, because their present and future positions are also largely affected. Based on the above-mentioned problems, there is a strong and increasing demand for solutions that can forecast default risks in advance. Different financial indicators and models can be used for the forecasts. So far, numerous financial indicators have been developed and there are different prediction models, too (Chorafas 2002).

Traditional financial ratios cannot be emphasized enough to be used very cautiously. We should keep in mind that their signals can show the opposite of the actual situation. We also need to know that an accurate forecast can only be done by combining different ratios, and by developing complex forecasting models.

As a result of the uncertainties emerged and came to the fore in the economy, risk measurement and risk management have an ever greater role in corporate governance. Risk measurement has easier and also more complicated methods that the management can use to get indications of risks and whether it is growing or not.

Risk

According to Bélyácz (2004): 'Risk and uncertainty are two of the most controversial phenomena. Both of them affect business decisions, this has not ever been subject of debate, ...' In economics, the principle of 'No risk, no reward' is well-known. This is of particular importance in the corporate sector. In the last few years, corporate operational risks can be concluded to be significantly increased due to several components. As a result of the crisis, Hungarian small and medium-sized enterprises had to face liquidity problems. These factors confirm the necessity of risk management and draw attention to that it is not a simple issue. A myriad of books and scientific articles deal with risk, but we can state that the definition of risk is not completely clarified. By this definition of risk we mean the possibility of an event to happen which is unfavorable and cannot be fully predicted in advance. We can also say that, risk means the chance of an unfavorable outcome.

Knight (2009)¹ in his study distinguishes risk and uncertainty which still spark debates to date. There are people accepting Knight's views, and there are others who don't. According to Tarnóczy and Fenyves (2010) uncertainty in one of the components of risk, accepting the increasingly spreading – and in environmental protection modeling relatively widely used – view (Molak 1997; Cullen and Frey 1999), that risk has two components: uncertainty and variability. As for Wilson and Shlyakhter (Molak 1997), this approach of risk is quickly spreading and getting widely accepted. Different authors state that uncertainty is related to the lack of information, knowledge and incognizance and it can be reduced by gaining access to more information and, cognition and knowledge. (In practice leaders of organizations would think the same, according to Bácsné's (2011) Change Management Studies, in which she asked profit orientated companies' leaders about that.) Variability means the heterogeneity of values in time and space and is in connection with the organization. It follows from this that variability cannot be reduced by more information, knowledge or cognition.

Wilson and Shlyakhter said (Molak 1997)² uncertainty can be defined by probability distribution and variability by frequency distribution. Vose (2008) splits risk up into the mentioned two exact elements, but he defines variability as a special case of uncertainty and calls them together total uncertainty. According to Tarnóczy and Fenyves (2010) not the risk and uncertainty should be differentiated by measurability, but the risk itself could be defined measurable and non-measurable. This kind of risk split up is an important aspect of decision making because it requires different management approaches.

Economic risk has a different interpretation of domestic and international literature. There are several types (financial, legal/regulatory, operative, reputation risks) differentiated. In the context of the financial crisis, financial risk gains more and more importance both theoretically and practically. Thomson (2005) defines the financial risk group as a group of risks generating value. That is, if a company appreciates in value as the result of risk taking, we talk about financial risks. In a company's life cycle, financial risk is inevitable. It is hard to define an economic activity in which some type of financial risk is not included. Distribution, purchase, production, investment, borrowing, all of them are areas where some type of financial risk included. Both domestic- and international literature mention more components of financial risk, including market risk, liquidity risk and credit risk.

To define liquidity risk, first the definition of liquidity has to be clarified. The term liquidity means that a company is capable to fulfill its obligations due (Murphy 2008). Horcher (2005) meant by liquidity the financial capabilities of a company to pay its current liabilities. According to him, the company faces liquidity risks, when its liquid assets are not enough for daily operations. This situation largely affects the company's growth potential (Horcher 2005). The lack of

cash and cash equivalent assets manifests in a way that the time the receivables and current liabilities' payments are not synchronized. Practically, that means the accounts payable should be paid earlier than the accounts receivable is due. This difference in time between cash inflow and outflow can cause temporary payment difficulties. The liquidity position of a company can be consolidated by items from both sides of its balance sheet. On the assets side, more options are possible to adjust liquidity position. On the one hand, asset maturity dates can be mentioned, on the other, cash flowing from the sales. On the sources side of the balance sheet, attention should be paid on fall due dates of liabilities, credit structures and the sensibility of those two (Kulcsár, 2013). Liquidity risk has a double interpretation in English scientific literature. It means both surplus and shortage of cash. According to Lore and Borodovsky (2000), surplus of cash can also cause problems, but in my opinion, it is less significant than illiquidity. Actually, when a company has a surplus of cash and does not use it optimally (e.g.: keep it in bank deposits or invested in tangible, intangible or financial assets), it misses potential yields.

Working capital management – liquidity management and cash conversion cycle

Companies have to deal with ratios and company features much more thoroughly than they did before to be aware of their position, to know their financing facilities using their internal sources, to better utilize their own resources available. Ensuring internal sources at an appropriate level and continuous funding of company operations are topics closely linked to working capital management. Another reason of its importance these days – in conjunction with the previous – is that, nowadays companies work with ever longer payment periods, which means significantly longer term trade credits³ than before. Companies should be able to finance those longer timeframes.

Working capital management

Working capital is crucial to determine a company's short-term financial status. Significant changes in working capital provide important information to the stakeholders. It is especially true for net working capital. Working capital analysis is one of the methods of credit rating and it can also help to understand the normal business cycle of a given company.

Tarnóczy and Fenyves (2011) defined the terms of working capital and net working capital because in domestic (and seldom in international) literature there are various interpretations of these definitions⁴. *Working capital (it is also*

³By trade credit we mean credits the company gives during the sale of a product or service.

⁴I think it is important to differentiate working capital (gross working capital) and net working capital, because it makes easier to use them as measurement tools, and last, but not least the 'net' expression can be better understood.

¹The unaltered issue of the book published in 1921.

²The volume contains studies of different authors.

called as gross working capital) is the cash of the company that are invested in cash, accounts receivables, inventories and other current assets. Conventionally, working capital means a company's investment in current assets, which are expected to be converted to cash in less than a year.

An important indicator related to working capital management is net working capital which can be defined as the difference of current assets and current liabilities of the company, i.e. the part of current assets that is not covered by current liabilities. Net working capital can be considered as netting gross working capital (Figure 1). From a different point of view, net working capital means the part of current assets that are financed from long-term financial assets or shareholders' equity, i.e. financed from long-term sources.

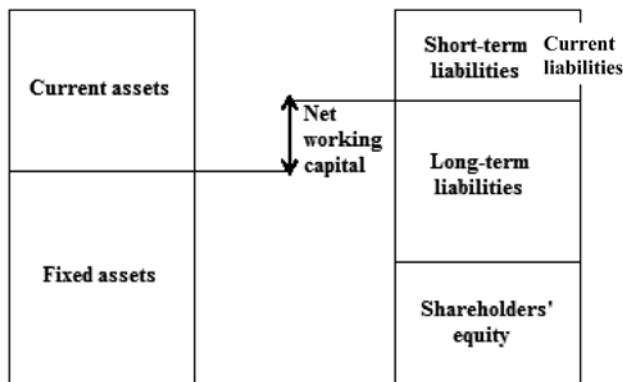


Figure 1: Net working capital

Net working capital can be split up in two: *net working capital need* and *net liquid balance*. Net working capital need is the sum of inventories and accounts receivables reduced by current liabilities excluding liabilities on bills and long-term loan payments due. Net liquid balance is the sum of cash and marketable securities reduced by bills and long-term loan payments due. We can calculate *sales to net working capital ratio* by dividing net working capital with sales. If the ratio has a high value, it shows a relatively high net working capital need compared to the level of sales. We need to keep monitoring working capital need continuously to know whether we have enough sources to cover operating expenses. Working capital related analyses cannot be separated from liquidity management and cash conversion cycle introduced in the following paragraphs because we can only get answer to the question if the company has adequate and sufficiently effective working capital management by the complex analysis of these three.

If we interpret working capital and net working capital as described above, then *working capital management* includes financing and managing current assets and controlling current liabilities of the company. Working capital management was originally appeared as a conventional financial controlling activity created for managerial purposes, to control the levels of current assets and current liabilities. Planning and controlling current assets usually requires the same, in some cases more proficiency and diligence, than dealing with fixed assets. Working capital management has a double purpose:

- to minimize the time period between utilizing initial inputs of materials and resources during the operational process and the final payment of goods and services obtained by customers, and
- to finance the most efficient assets primarily by optimizing the return on the capital invested.

One of the key elements of working capital management is liquidity management, that is, to maintain a company's ability to pay continuously because in the short-term, it ensures the company to stay afloat and in the long-term it justifies the its progress. Elimination of liquidity can cause a company ceased to exist (Chorafas 2002). Accordingly, one of the most important corporate financial risks, the non-payment or default risk is related to liquidity management. Basically, the main tasks of liquidity management are to minimize risks, or we might as well say the development of an optimal financial structure.

Liquidity management

The effective liquidity management – beyond securing their survival – helps companies to reach higher profitability by reducing their input needs. Furthermore, it grants strategic advantages in the economically difficult time periods. In general, traditional liquidity ratios are used to measure the company's ability to pay (Table 1).

Table 1: Traditional liquidity ratios

Current ratio	Quick ratio	Cash ratio
$\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$	$\frac{\text{Cash} + \text{Securities}}{\text{Current liabilities}}$

If we look into the formula of the current ratio, an obvious correlation can be found with the net working capital. The current ratio is also called working capital ratio. As a result of this correlation, if the company meets the required level of current ratio, the net working capital will be positive. We can also conclude that current ratio should not be less than 1 to have a positive net working capital ratio. Current ratio was formerly called as a 2:1 ratio indicator, but these days its value between 1.3–1.7 is acceptable – depending on the sector. If the lower bound of this ratio is concerned, one can conclude that at least 30% of current assets have to be financed by long-term sources. This is the evidence that net working capital can be used as a liquidity indicator, i.e. inadequate net working capital shows illiquidity risk of a company.

With positive net working capital we can assume that the company will be able to comply with its obligations during the fiscal year, it is solvent. This is not necessarily always true, because net working capital – just like current ratio – is not the most accurate indicator to determine liquidity, because only cash and short-term investments (securities) are truly liquid assets. High net working capital can be a result of highly invested accounts receivable (as a result of customers' delayed payments or non-payments) and/or because of increased

inventories. Logically, due diligence is needed during the interpretation of liquidity ratios. Changes in net working capital ratio can be a result not only of changes in current assets and current liabilities, but shareholders' equity, long-term liabilities and fixed assets also affect.

Therefore, it is worth considering and calculating with all three indicators, because this is the only way to avoid bad decisions and to be aware of the company's liquidity risk. In my opinion, cash ratio is the most important to calculate a company's liquidity position. Normally this ratio does not have a minimal threshold level, but I think – considering the method it is calculated – the 0.25–0.3 level is acceptable. It means the company could pay 25–30% of its current liabilities immediately.

Traditional liquidity ratios should be also noted not being accurate in all cases. It comes from the basic characteristics of financial statements. They do not always show a true picture regarding the liquidity of a company, overestimation and underestimation can also occur. Liquidity ratios would be important to follow precisely but this would require companies to close accounting records monthly or quarterly.

Liquidity ratios (Table 1) do not focus on cash-flow timing and synchronicity sufficiently. As cash outflows and inflows are usually not synchronized, insufficient attention on timing could mean handicaps in liquidity analysis. The cash conversion cycle, knowledge of cash cycle and its analysis can help to solve these problems.

Cash conversion cycle

Essentially, the definition of cash conversion cycle covers almost the whole field of working capital management, including inventory-, receivables- and debt management, but it is also closely related to funds management. If we want to shortly define the principle of cash conversion, we could summarize it as the following: get the money other companies owe you as soon as possible and try to delay the payments due as long as possible (Nobanee and AlHajjar 2009). It is quite obvious, that everybody knows this and it is also clear that it is not that simple. There are a lot of factors affecting its implementation. However, everybody has to deliberate on it and conclude whether one has done everything he possibly could to comply with this principle. The shortening of cash conversion cycle results in releasing cash which free cash can be invested in different areas. However, a bad cycle shortening can also cause problems: inventory shortages and loss of customers who buy on trade credit can result in decreased profitability.

It is very important to note that cash conversion cycle is one of the tools to measure liquidity. Its essence is the measurement of the difference between cash inflow and outflow and additional funding requirements. The conventional cash conversion cycle also has weaknesses. It does not assign the proper amounts of working capital required to the days of conversion periods, nor does it express the effects of liquidity on profitability.

Admitted receivables and inventory turnover ratios are better indicators for liquidity management in the operating

cycle. The definition of operating cycle acknowledges that the financial costs of production and the products' sales revenue are neither instant nor synchronized. The cumulated turnover period (days) of inventories and liabilities of a company sets the length of the operating cycle (Figure 2).

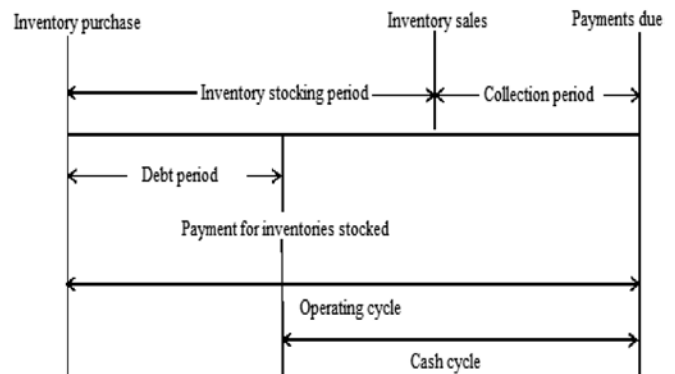


Figure 2: Cash conversion cycle

The operating cycle starts with the purchasing of raw materials and services that are used up during the process of production along with semi-finished and unfinished products to become finished ones. Operating cycles can largely differ company by company. Operating cycle has two parts. The first is the so called *inventory stocking period*, which lasts from the purchase of resources needed for the production till the sales of the resulting products and services. The second part is the so called *collection period*, which lasts from the sale of products on credit until the money is received.

A simple extension of the concept of operating cycle leads to the *cash conversion cycle* (cash cycle), which can be defined as the time period from the payment of raw material and service purchases and lasts until the company is paid for finished and sold products and services. These activities create a network of cash inflows and outflows. These flows are not synchronized and uncertain. They are not synchronized, for example, because the time of payment of raw materials and services differs from the time the company receives money for its products sold. They are uncertain, because future sales and costs cannot be precisely predicted. In conclusion, the operating cycle is the period of time that is needed for inventory stocking, product sales and cash collection.

In essence, operating cycle shows how a product moves between current asset accounts. Step by step, the product gets closer to become cash, or we could also say it gets ahead in the liquidity preference.

Nor cash-flows and other events are synchronized. The period of days we have not paid for the inventories received is called *debt period*. If the company sells some of its inventory later on but does not receive cash for it instantly, it has to manage the financing from somewhere else (cash cycle). *Cash cycle* measures how long (how many days) the cash assets of a company are tied in the production and product sales periods. According to this definition, *cash cycle is the difference between operating cycle and debt period*. Figure 2 shows that short-term of financial management is needed

for the interval between cash inflows and outflows, which are related to the length of the operating cycle and the debt period. The gap between short-term money inflows and outflows can be filled by loans or by holding liquid reserves (cash or marketable securities). In other words, the gap can be reduced by shortening inventory stocking-, collection- and payment periods (Ross *et al.*, 2008).

Based on the above mentioned the question arises whether there is a chance to develop an optimal cash conversion cycle. Optimal cash conversion cycle can only be calculated if we are able to define the optimal size of its components. To determine the optimal sizes, we can use Economic Order Quantities (EOQ) applied in inventory management (Ross *et al.* 2008). Using this model we can define the optimal inventory stocking- and collection period, which together equates the optimal operating period. After calculating the optimal debt period we can get to the optimal cash cycle, too. To compile such a model we need the combined use of econometric and optimizing models.

Modified indicators (adjusted liquidity index and modified cash conversion cycle)

Adjusted liquidity index

Liquidity ratios are closely related to bankruptcy situations but they do not sufficiently take into account how long their components are tied to the operation of the company. However, the time it is tied or it is working can substantially affect how quickly a company can fulfill its payment obligations and it also alters the of liquidity ratios values, too. To solve this problem, the components of current assets and current liabilities should be adjusted first, and these numbers should be used during liquidity calculations. The balance sheet items used during liquidity calculations should be adjusted by the time those are in the operating cycle, what conventional liquidity ratios ignore. An adjusting factor (1) has to be calculated for each item to be adjusted. By multiplying the item with the adjusting factor we get the adjusted value:

$$\text{Adjusting factor} = 1 - \frac{1}{\text{turnover rate of an asset or source}} \quad (1)$$

In case of current assets only inventories and accounts receivables are adjusted. In short-term liabilities, liabilities of bills and current portion of long-term debt should not be adjusted. After the adjustment, we can calculate the values of the adjusted current assets and adjusted current liabilities which we can use to calculate the adjusted liquidity ratio (2):

$$\text{Adjusted liquidity ratio} = \frac{\text{adjusted current assets}}{\text{adjusted current liabilities}} \quad (2)$$

This ratio (2) can be improved by increasing the turnover ratio of inventories and accounts receivables and decreasing the turnover ratio of current liabilities, i.e. by improving the

asset- and resource management of a company. This indicator can have a higher or lower value than the liquidity ratio has. However, if a company manages its current assets and current liabilities efficiently, then the value of the adjusted liquidity ratio will be higher than the liquidity ratio. (Gangadhar 2003).

By using the adjusted current assets and current liabilities, the rest of the liquidity ratios can also be calculated.

Liquidity indicators are also closely related to the cash conversion cycle, because its main components are inventory stocking periods, collection periods and debt periods. We can also conclude that by increasing the adjusted liquidity ratio, cash conversion cycle will be shorter, which ultimately leads to more effective cash management.

Modified cash conversion cycle

The weakness of conventional cash cycle is that it cannot properly express the days of a conversion period in net working capital need, which is measured in cash. On the top of that, the model does not distinguish the sales in cash and credit properly. This can cause problems for example in cases when two companies have the same claiming period but a different proportion of sales is in credit. In the conventional model both companies have the same cash cycle but in reality the one that sold products in cash payment will have a better position to pay its obligations in time. As a result, it will be able to get the majority of its sales revenue faster and more safely than the other (Matz and Neu 2007).

The conventional cash cycle model does not deal with the impact of profitability on liquidity. The model only calculates the difference between the resources used for generating operating income and the revenue received. It does not take into account that the revenue gained will be higher than the expenses by the margin of profit. As the profit is a surplus of sources to cover expenses, profitability can be deemed as a total company liquidity supporting factor. It is clear from the foregoing that the gross return on sales profitability and the "sales on credit/total sales" ratio should be included in the cash cycle model. The resulting adjusted cash cycle model can be used to calculate net working capital which is defined in monetary terms, i.e. to determine the amount of net working capital in cash required for operation.

In conclusion, the modified cash cycle can be calculated by adjusting inventory stocking periods by gross return on sales profitability (3) and the modified collection period by adjusting collection period with the proportion of sales on credit (4):

$$\text{adjusted stocking period} = \text{stocking period} * (1 - \text{gross return on sales}) \quad (3)$$

$$\text{adjusted collection period} = \text{collection period} * \text{proportion of sales on credit} \quad (4)$$

In formula (3) in the numerator to calculate gross return on sales there is the difference between sales and expenses of products sold and it does not include other incomes and company operation related expenses.

Materials and method of analysis

Risk and liquidity have a prominent role in a business's operation, as follows in case of an agricultural business too, so that liquidity was analysed as a risk factor based on the data of the chosen agricultural companies' annual reports. Database of the investigation has been chosen in a way that a relatively high number of companies are present in the given agricultural field, which provides a sufficient number of data for the analysis. The analysed companies are selected out of the Hungarian agricultural companies whose main activity is denoted "*Growing of cereals and other crops n.e.c.*". Selection of companies was taken place in OPTEN company information system and the analysed data, data of the annual reports, were downloaded from the Electronic Annual Report's Portal (e-beszamolo), where the substantial part of data are available in „html”⁵ format. Data of the agricultural company's annual reports were collected in a period of 5 years, from 2008 to 2012. In Hungary altogether 1700 companies denoted the mentioned activity as their main professional activity. The analysed sample's scope was reduced based on two criteria: firstly, the amount of revenue, secondly, the number of employees. Accordingly, the analysis only involved companies having revenue of 100 million Forints or more and at least 10 employees. Out of the selected 1700 companies, 1290 did not satisfy the two conditions and the annual reports of 180 companies were only available in a “pdf” format. Out of the 230 annual reports 101 were subtracted from the sample, because they were abridged annual reports. The data of the remaining 129 companies were analysed with the help of the box plot chart and 47 companies having extreme data were also eliminated from the sample. This way the annual report of 82 companies provided the actually processed sample, which accounted for 4,82% of the total companies dealing with "*Growing of cereals and other crops n.e.c.*". The analysis carried out was built on R Statistics, as a solver program. In R Statistics contains packages (modules), which were necessary for the analysis. R Statistics is an open-source software having countless options for analysis, representation and modelling, and it can be linked to Excel spreadsheet program, by which it is easier to handle databases.

Liquidity analysis based on agricultural companies

The analysis regarding trends of liquidity ratio and adjusted liquidity ratio will be presented. Based on the calculations, 82 companies analysed show a high volatile image concerning homogeneity. Analysing statistical characteristics of the ratios, it is apparent, that the value of standard deviation is growing in all four examined areas; ratios' relative standard deviation is over 60% in every case.

In the examined 5 years values of liquidity ratio and adjusted liquidity ratio regarding 82 agricultural companies

were classified in 8 categories. Table 2 shows the defined categories.

Table 2: Categories defining classification of liquidity ratios

Category	Value
1.	< 1
2.	1–2
3.	2–3
4.	3–4
5.	4–6
6.	6–8
7.	8–10
8.	10–

Table 3 indicates an allocation among categories after the correction. In case of liquidity ratio companies belonged to the category 1 represented 10–12% of the total, while in case of the adjusted liquidity ratio the same value is 20–22%. It demonstrates that after the allocation among each category adjusted liquidity ratios have lower values, so that the companies' liquidity has deteriorated. In case of both liquidity ratio and adjusted liquidity ratio considering the first 4 category together, in all the examined 5 years; approximately 70% fell into this category in 2008, but this value was only about 50% in 2012. Looking at the last two categories, we can also discover the growth of the rate of liquidity ratio in this second category. Overall, we can conclude that the allocation took place in a way, that the ratio of the businesses having lower liquidity worsened, while the businesses having high liquidity improved their results.

It is also confirmed by the result of the descriptive statistics (*Tables 3 and 4*). During the comparison of the statistical characteristics of liquidity ratio and adjusted liquidity ratio, it is observed, that the indicators below the average is lower, while the indicators above the average is higher in case of adjusted liquidity ratio.

Analysing the values of average (*Tables 3 and 4*), it can be noticed that the values of adjusted liquidity ratio are higher, the liquidity of businesses improved, and the difference between the two ratios are growing over the examined time.

Table 3: The values of liquidity ratios' statistical characteristics

	2008	2009	2010	2011	2012
Minimum	0,37	0,33	0,27	0,50	0,61
1st quartile	1,48	1,36	1,56	1,55	1,84
Median	2,66	2,37	3,12	3,30	4,02
Average	4,55	4,56	6,39	5,95	7,50
3st quartile	4,22	5,24	6,13	7,71	7,23
Maximum	37,15	32,05	94,46	44,26	90,42
Standard deviation	6,16	5,92	11,64	7,22	12,89

⁵„html” format allows a faster, programmed recovery of data and also the building table forms, while in case of „pdf” format data should be recorded again.

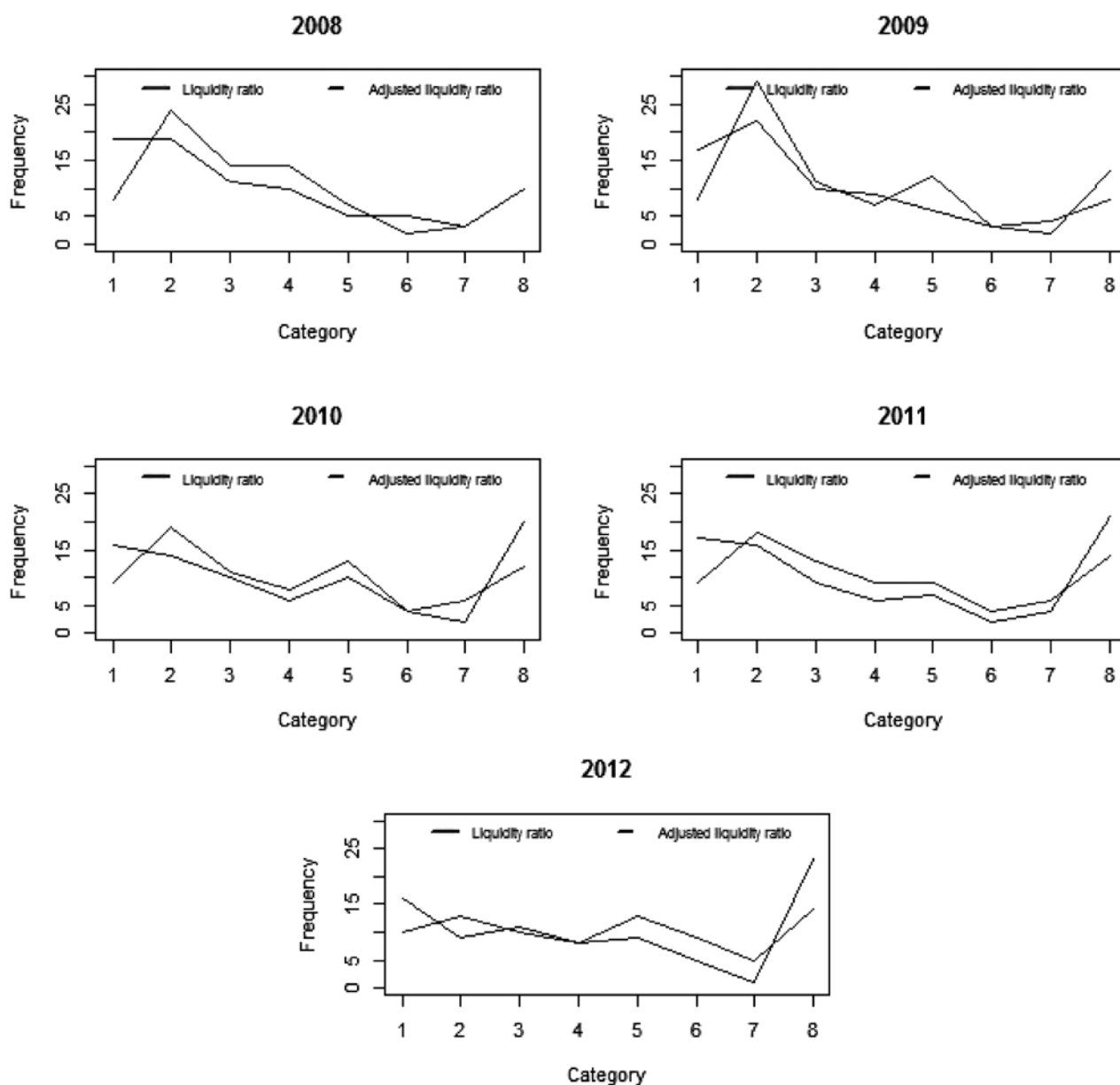


Figure 3: Changes in the values of liquidity ratio and adjusted liquidity ratio (2008–2012)

Table 4: The values of adjusted liquidity ratios’ statistical characteristics

	2008	2009	2010	2011	2012
Minimum	-0,42	-3,35	-13,85	-66,58	0,11
1st quartile	1,18	1,15	1,17	1,23	1,38
Median	2,25	2,17	3,13	2,93	3,55
Average	5,46	5,19	8,97	8,19	15,92
3st quartile	5,62	5,54	9,48	10,03	11,33
Maximum	47,99	37,30	147,40	70,74	227,00
Standard deviation	8,60	7,62	18,52	16,32	36,22

Table 4 demonstrates that there are negative values in 4 years regarding the minimum of adjusted liquidity ratio. Adjusted liquidity ratio can have a negative value, if the

turnover ratio of the items to be adjusted (inventories, accounts receivable, current liabilities) has a value lower than 1. Tables 5 and 6 indicate that there are values below 1 concerning the turnover ratio of inventories and accounts receivable.

Table 5: The values of the inventory’s turnover ratios’ statistical characteristics

	2008	2009	2010	2011	2012
Minimum	0,67	0,59	1,06	0,54	0,83
1st quartile	1,85	1,75	2,14	1,92	1,93
Median	2,88	2,83	3,31	2,87	3,05
Average	3,48	3,74	4,02	3,46	3,88
3st quartile	4,21	4,55	4,56	4,71	5,19
Maximum	17,65	14,86	19,99	12,09	26,67
Standard deviation	2,64	3,00	3,04	2,15	3,40

The value of turnover ratio under 1 refers to effectiveness problems of the companies' working capital management. Because high value of turnover ratio is one of the indicators assessing the company's effective working capital management. At the same time, the average of adjusted liquidity ratios (Tables 3 and 4) showed a higher value than the average of the liquidity ratio in every year, which means that in general the companies' working capital management is effective. Even though there are inefficient and efficient businesses included in the sample, the rise tipped the scale for the latter one.

Table 6: The values of the accounts receivables' turnover ratio statistical characteristics

	2008	2009	2010	2011	2012
Minimum	0,75	0,59	0,44	0,36	1,40
1st quartile	3,73	3,52	3,89	3,12	3,17
Median	5,24	5,19	6,32	5,40	5,16
Average	7,30	7,36	9,51	7,59	9,97
3st quartile	8,11	9,70	11,52	8,32	8,01
Maximum	47,63	39,53	58,42	61,06	259,80
Standard deviation	6,58	6,56	9,94	8,39	28,59

Conclusion

The companies, their creditors and internal stakeholders should be all aware of the given company's liquidity, which can be analysed by different liquidity ratios. Conventional liquidity ratios do not consider properly how long are the assets tied in companies operation, which largely affects the value of the liquidity ratios. As for the results of the adjusted liquidity ratio, based on the analysis, I conclude that the values of companies having lower liquidity worsened, while companies fell into higher categories improved their liquidity.

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