Management
2013
Vol.17, No. 2

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The influence of the selected factors on the financial liquidity of the enterprises quoted on the NewConnect market

1. Introduction

The liquidity determines the easiness, with which a company is able to change a given element of assets into other form of assets, mainly into cash, while keeping the same value of the given asset in the new form or with a small loss (Olzacka, Pałczyńska-Gościniak 2002, p. 82). Whereas, the financial liquidity shows the ability of the given company to pay its short-term liabilities, i.e. the ones, whose payment deadlines do not exceed one year (Sierpińska, Jachna 2009). It is also defined as „…the ability of an enterprise to achieve cash flows enabling settling due liabilities and covering unexpected cash expenses" (Wędzki 2003, p. 34).

The financial liquidity is one of most important factors, which determines the existence of any enterprise on the market. Loss of the financial liquidity is an introduction to bankruptcy. The experience of highly developed countries indicates that the main reason of bankruptcies of enterprises (including small and medium-sized ones - SMEs) is the loss of the financial liquidity

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and not generating losses by them. It is in France and Great Britain that the loss of the liquidity causes bankruptcies of 60-80% enterprises (Sierpińska, Wędzki 2001, p. 7).

The issue of the financial liquidity maintenance has become particularly relevant in the recent years, because it is since 2007 that the global economy has been struggling with the biggest financial crisis since the 30s of the 20th century. In Poland, the first symptoms of the global crisis could have been noticed in the first half of 2008. A decline in industrial production, a slowdown in investment processes and stopping positive changes on the labour market were recorded in Poland in consecutive years. Although, according to many economists[1], the Polish economy has been recorded one of the best economic performance in Europe since the beginning of the crisis, the worldwide crisis had its impact on Polish enterprises (Jędrzejczak-Gas 2010; Jędrzejczak-Gas 2011). Due to increase in the risk, banks reduced access to credit to many enterprises. In order to maintain the financial liquidity, enterprises had to look for other, off-bank sources of financing. It turned out that bonds and short-term securities were better option for them. Moreover, many enterprises reduced their investment activity and they started to allocate their equity capital coming from profits earned for financing current business.

Due to the crises, Polish enterprises, similarly to other enterprises worldwide, had to adapt to new and more difficult reality, which is characterized by higher volatility and higher risk. The persons managing corporate finances have to pay special attention to decisions, which determine the ability of the company to pay its current liabilities towards different kind of creditors.

It is for evaluation of the financial liquidity that financial liquidity ratios are applied; in particular the current ratio, which is a relation of current assets to current liabilities. However, this indicator does not provide wide interpretative possibilities in synthetic terms. It allows only to determine if the achieved financial liquidity is an effect of a high level of current assets or of a low level of current liabilities. It is a structural system, which is called „a pyramid of indicators", that provides much greater interpretative possibilities and allows for determining, among others, the following cause-and-effect relations (Jerzemowska 2004, p. 127):

1 W. Orłowski, R. Pasternak, K. Flaht K., D. Szubert D., O. Grygier-Siddons (Orłowski, Pasternak, Flaht, Szubert 2010, s. 25, 27; Raport z transformacji 2009, s. 22; Raport z transformacji 2010, s. 22).

- an explanation of directions and possibilities for achieving the determined goals in the system through an appropriate synthetic indicator,
- a presentation of positions of individual indicators in the system, and thus indirectly also in economic reality.

The purpose of this article is to present a proposal of a system of factors shaping the financial liquidity and to examine the strength and the influence direction of these factors on the financial liquidity of the companies quoted on the NewConnect stock exchange and ranked among construction companies. It is in order to accomplish this objective that the correlation analysis and the linear regression methods were applied.

2. The factors shaping the financial liquidity of enterprises

The determinants of the financial liquidity are classified according to various criteria in the literature on the subject. D. Wędzki (2003, p. 72) applies the type criterion and divides the factors shaping the financial liquidity into the factors dependent on the enterprise and the factors independent of the enterprise. The factors dependent on the management of the enterprise include above all:

- strategies for financing the enterprise,
- the level of the generated financial result,
- changeability of cash flows,
- rates of return on operating assets,
- quality of the management.

Whereas the factors independent of the enterprise are in particular:

- the current and future economic condition,
- the tax system of the given state,
- the inflation rate,
- the level of interest rates,
- the availability of specific sources of financing.

It is in the literature that the factors affecting the financial liquidity are also divided into three following groups (Skoczylas, Bogacka 2009; Wojciechowska 2001, pp. 21-24):

1. The macroeconomic factors, i.e. the factors independent of the operations of the company such as: the monetary policy, the fiscal policy, the tax system, economic conditions, the level of the development of financial markets.
2. The sectoral (industry) factors, that is the factors also independent of the enterprise, i.e.: the stage of the sector development, the level of the

operational risk, the modernity and prospects of the sector development, the specificity of the real economy.

3. The microeconomic factors that is the factors dependent on the operating way of the enterprise, i.e. the market position of the enterprise, pricing strategies, connections with the international market, the inventory policy, the choice of forms of financial settlements, the level of the implementation of investment projects.

It is as factors affecting the financial liquidity that W. Gos (2001, p. 18) indicates example decisions of a business entity, which affect an increase or decrease in the level of the financial liquidity. He ranks amongst the decisions reducing the level of the financial liquidity:

- write-downs on receivables and inventories,
- the evaluation of inventories at purchase prices not higher than current market prices,
- not charging interest on receivables,
- ranking securities amongst „long-term investments", although they were purchased for resale.

Whereas, the decisions increasing the level of the financial liquidity are:

- lack of write-downs on doubtful receivables (bad debts) claimed in court,
- evaluation of inventories at historical prices, which can be higher than current market prices,
- charging interests on receivables,
- ranking securities amongst „short-term financial assets" although they were purchased as a permanent investment.

The determinants of the financial liquidity can be also presented as in the following model (Sierpińska, Jachna 2009, p. 149).

$$\frac{\text{current assets}}{\text{current liabilities}} = \frac{\text{current assets}}{\text{total assets}} \times \frac{\text{total assets}}{\text{total liabilities}} \times \frac{\text{total liabilities}}{\text{current liabilities}}$$

It results from the presented model that the financial liquidity depends on:

- the structures of assets - the higher the share of current assets in total assets is, the higher the financial liquidity is,
- the structures of sources of financing - the higher the ratio of total assets to total liabilities is, the greater the ability is to cover current liabilities,
- the time structure of debt - the lower the share of current liabilities in total

liabilities is, the higher the value of the relation of total liabilities to current liabilities is that results in the higher current liquidity.

M. Sierpińska and T. Jachna (2009) suggested also another set of factors affecting the financial liquidity. It can be affected by the structure of assets (current assets/total assets), the level of the coverage of the long-term liabilities with assets (total assets/long-term liabilities) and the relation between the long-term debt and the short-term debt (long-term liabilities/short-term liabilities). The higher the value of the presented indicators, the higher financial liquidity measured with the current ratio is.

It is below that other proposal for a cause and effect relation amongst the factors affecting liquidity is presented, in which the liquidity level is determined by the structure of assets, the rotation of current liabilities, the indicator of coverage of sales revenues with external capital and the structure of sources of financing of assets. These factors can be presented as in the following model:

$$\frac{\text{current assets}}{\text{current liabilities}} = \frac{\text{current assets}}{\text{total assets}} \times \frac{\text{sales revenue}}{\text{current liabilities}} \times \frac{\text{total liabilities}}{\text{sales revenue}} \times \frac{\text{total assets}}{\text{total liabilities}}$$

$$CR = CAR \times CLTR \times CSR \times RTA$$

where:

CR = CA/CL – current ratio
CAR = CA/TA – current assets ratio
CLTR = SR/CL – current liabilities turnover ratio
CSR = TL/SR – coverage of sales revenue with external capital
RTA = TA/TL – ratio of total assets financing sources
CA – current assets
CL – current liabilities
TA – total assets
TL – total liabilities
SR – sales revenue

The presented model shows that the financial liquidity is affected by:

- the structure of assets - the higher the share of current assets in total assets is, the greater the possibilities of covering the current liabilities by the company are,

- current liability turnover ratio - the higher the sales revenue achieved as a result of using current liabilities is, the higher the financial liquidity can be,
- the ratio of the coverage of sales revenue with external capital - the lower the value of this ratio is, the higher the financial liquidity is,
- the structure of sources of financing of assets - the higher the ratio of the total assets to the total liabilities is, the greater the ability to cover the current liabilities is.

The cause and effect analysis model presented above was used to analyse the financial liquidity of the selected companies quoted on the NewConnect stock market. It is in the analysis that the data from the financial statements of the construction companies were used.

3. The financial liquidity of the chosen companies quoted on the New Connect

The NewConnect stock market has been working since 2007. It was established by the Stock Exchange in Warsaw for the sector of small and medium-sized enterprises (SMEs). The NewConnect is a modern market financing the development of SMEs being on various stages of the development and operating in different industries. At the very moment, there are 30 companies belonging to the construction industry quoted on this market. Out of this group, there were 15 companies selected for the needs of this study, because they met the selection criterion, which was the publication of the financial data for the period 2009-2012.

It is in the table 1 that the basic descriptive statistics of the current ratio (current liquidity ratio) of the examined companies were presented.

Table 1. Descriptive statistics of the current liquidity ratio of the companies belonging to the construction industry for the years 2009-2012

Year	*Average value*	*The minimum value*	*The maximum value*	*Quartile 1*	*Quartile 2 (median)*	*Quartile 3*	*Coefficient of variation (%)*
2009	1,42	0,40	5,80	0,71	1,05	1,46	93,89
2010	2,15	0,42	7,21	1,36	1,69	2,44	74,11

2011	1,54	0,43	3,42	1,01	1,36	2,01	55,27
2012	1,31	0,34	2,62	0,79	1,21	1,69	50,74

Source: own study based on the annual reports of the companies analysed

The data presented in the table 1 show that the average level of the financial liquidity in the construction industry in the years 2009-2012 fluctuated from 1,31 up to 2,15. It means that the current assets covered the current liabilities on average in 131-215% in that period; i.e. at the level considered to be a standard. However, there were important differences in this respect amongst the companies belonging to the construction industry. For example, it was in the Alumast company that the current liquidity ratio was the lowest and ranged on the level from 0,42 up to 0,69, while, it was in the Aqua company that the current assets covered the current liabilities from 2 up to 6 times. Similar conclusions can be drawn from the analysis of the applied statistical measures. In the light of the coefficient of variation (50,74-93,81%), the companies belonging to the construction industry were strongly diversified in terms of current liquidity and their distribution according to the level of the current liquidity ratio was upward asymmetrical (mean > median). It means that the current liquidity was considerably lower than the average current liquidity for all companies belonging to the construction industry in more than in half of the companies.

4. The correlation coefficient in the financial liquidity analysis

The best known and the most applied indicator of a relation between two variables is the classic Pearson's correlation coefficient (Zeliaś 2000, p. 80). However, it should be remembered that a simple linear correlation coefficient can be considered as an indicator of the relationship strength between the variables only in the case, when simultaneously:

1. The independent variable is the only factor affecting the dependent variable.
2. The relation between the examined variables is linear.

If any of the two conditions mentioned above is not met, the interpretation of the correlation coefficient as a measure of the relationship strength of the dependent variable is not justified (Guzik 2008, pp. 55-56).

It is in the analysis presented in this article that the first condition is not met, since the financial liquidity depends on more than one variable. Therefore, the

correlation coefficient can be used only to measure the similarity of the direction of changes of the both examined variables and the degree of their progression harmonization.

The correlation coefficients between the variables used in the model were presented in the table 2. This coefficient takes values from the range <-1;+1>. The sign indicates the correlation direction and the value informs about the strength. It is assumed that if the coefficient is (Zeliaś 2000, p. 82):

- less than 0,2 - there is no linear correlation between the examined variables,
- from 0,2 to 0,4 - there is a linear relationship between the variables but it is very small,
- from 0,4 to 0,7 - the linear relationship is moderate,
- from 0,7 to 0,9 - the linear relation is significant,
- above 0,9 - the linear relation is very strong.

Table 2. Pearson correlation coefficients between the variables used in the model

	CR (CA/CL)	CAR (CA/TA)	CLTR (SR/CL)	CSR (TL/SR)	RTA (TA/TL)
CR (CA/CL)	1,000	0,148	**0,528**	-0,130	**0,681**
CAR (CA/TA)	0,148	1,000	0,343	**-0,490**	-0,275
CLTR (SR/CL)	**0,528**	0,343	1,000	**-0,538**	0,104
CSR (TL/SR)	-0,130	**-0,490**	**-0,538**	1,000	-0,170
RTA (TA/TL)	**0,681**	-0,275	0,104	-0,170	1,000

Source: own study based on the annual reports of the companies analysed

The analysis of the correlation coefficients indicates that it was in the analysed period in the companies belonging to the construction industry that:

- the directions of the financial liquidity and the turnover of current liabilities changes were significantly similar (harmonized); the increasing (decreasing) financial liquidity was accompanied by the significantly increasing (decreasing) turnover of current liabilities,
- the directions of the financial liquidity changes and the changes of structures of sources of financing of assets were significantly similar (harmonized); the increasing (decreasing) financial liquidity was accompanied by the significantly increasing (decreasing) relation of total assets towards total liabilities,

- there was no linear relationship between the financial liquidity and the structure of assets as well as between the financial liquidity and the indicator of financing sales revenues by external capital.

However, the calculated Pearson's correlation coefficient cannot be treated as an estimation of the relationship strength between the financial liquidity and CAR (CR and CLTR, CR and CSR, CR and RTA), as the fundamental condition is not met - the financial liquidity does not depend only on CAR, or only on CLTR, or only on CSR, or only on RTA.

5 The econometric (regression) model of many variables in the liquidity analysis

It is in order to examine the strength and the direction of the influence of the structure of assets, of the turnover of current liabilities, of the level of financing the sales revenue with external capital and of the structure of financing the assets on the financial liquidity that also the multivariable regression can be applied (Borkowski, Dudek, Szczesny 2003).

The table 3 shows the coefficients of the linear regression between the value of the current liquidity ratio and statistically significant explanatory variables (for $\alpha = 0,05$) and additional regression statistics. Moreover, it is in the analysis that the beta coefficient was applied, which informs on the relative significance of the independent variables for the explanation of the dependent variables (Goldberger 1964). The data presented in the table 3 are the basis for the synthetic evaluation of the strength and direction of the influence of the structure of assets, of the turnover of current liabilities, of the financing level of sales revenue with external capital and of the structure of sources of financing of assets on the financial liquidity of the companies quoted on the NewConnect market and belonging to the construction industry.

Table 3. The linear regression coefficients between the current ratio (Y) and the statistically significant independent variables Xi in the years 2009-20012

Independent variables X_i	Coefficient	Standard error	β	Student's t-test
X_1	2,1109	0,2910	0,4465	7,2526
X_2	0,4547	0,0453	0,5810	10,0421

X_3	1,4010	0,1682	0,5443	8,3306
X_4	0,2570	0,0166	0,8360	15,4380
Constant	-2,4619	0,3013		-8,1711
Determination coefficient - R2 (%)	87,13			

X_1 – CAR = CA/TA
X_2 – CLTR = SR/CL
X_3 – CSR = TL/SR
X_4 – RTA = TA/TL
Y – CR = CA/CL

Source: own study based on the annual reports of the companies analysed

It is from the data presented in the table 3 that the following conclusions can be drawn:

1. The independent variables (Xi) used in the regression model explained the changeability of the level of the financial liquidity in the companies belonging to the construction industry to a large extent (87%).
2. All the independent variables used in the model (X_1 - X_4) proved to be statistically essential.
3. In absolute terms, these were the share of current assets in the total assets (X_1) and the level of financing sales revenues with external capital (X_3) that affected the financial liquidity the most.
4. The estimated parameters of the regression function show that it was in the years 2009-2012 that the increase of the share of the current assets in the total assets, the growth of the turnover of the current liabilities and the increase in the ratio of the total liabilities to sales and of the total assets to total liabilities by 1 percentage was translated on average into the increase in the current liquidity ratio by about: 2,11; 0,45; 1,4; and 0,26 respectively.
5. From the point of view of the β ratio, it was the structure of sources of financing assets in the examined companies (X_4) that was most essential for the financial liquidity.

6. Conclusion

The presented analysis of the determinants of the financial liquidity in companies belonging to the construction companies and quoted on the NewConnect market allows for drawing the following conclusions:

1. The financial liquidity is one of most important factors, which determine the existence of any enterprise on the market. The issues related to maintaining the financial liquidity have become particularly important during the current economic crises.
2. There are many factors affecting maintaining or losing the financial liquidity of an enterprise. It is in the literature that there are mentioned sectoral and microeconomic factors as well as factors dependent and independent of the operation way of an enterprise.
3. It was in the analysed period that the macroeconomic conditions were disadvantageous for the construction industry. The main reason behind the deteriorating financial condition of construction companies was the financial crisis that had started in the United States in 2007 and the resulting difficulties with obtaining credits as well as the investment demand being at a very low level. However, the effects of the crisis were perceived differently by enterprises operating in different areas of construction business. The adverse effects of the current crisis affected mainly the housing industry and some types of the non-residential construction business.
4. It was in the analysed period that the financial liquidity of the construction industry was affected also by the tender procedures within public tenders, in which the criterion of the minimum price is applicable. The strong competition caused that the companies giving offers below the cost estimates of the investor won the tenders that resulted in problems with obtaining adequate profitability of the given projects (Informacja 2013, p. 38).
5. The determination of the factors shaping the financial liquidity of an enterprise and the recognition of the direction and strength of their impact are essential for management of the enterprise.
6. The main indicator applied in the evaluation of the current liquidity is the current ratio, which is a relation of the current assets to the current liabilities. However, it does not create a wide range of interpretative possibilities in the synthetic terms. Much more interpretative possibilities and the possibility of the determination of the cause-and-effect relations are created by the pyramidal models.
7. A proposal for a cause-and-effect combination of the factors shaping the liquidity is a model, in which the liquidity level is determined by the structure of assets, the turnover of current liabilities, the indicator of financing the sales revenue with external capital and the structure of sources of financing assets.
8. It is in the financial liquidity analysis that it is very easy to apply the correlation coefficient. However, it should be noted that it can be used only for

measuring the similarity of the directions of changes between the financial liquidity and the factors shaping it as well as the degree of their progression harmonization.

9. It results from the analysis of the correlation coefficient that the directions of changes of the financial liquidity and of the turnover of the current liabilities as well as of the financial liquidity and of the structure of the sources of financing the assets were significantly similar (harmonized). However, there was no linear correlation between the financial liquidity and the structure of assets as well as between the financial liquidity and the indicator of financing the sales revenue with external capital.
10. The regression model created on the example of the enterprises belonging to the construction industry showed that the most important factor shaping the level of the financial liquidity is the share of the current assets in the total assets (X_1).
11. It is from the point of view of the β ratio that the structure of sources of financing assets (X_4) is the most essential for the financial liquidity.

Summary

The influence of the selected factors on the financial liquidity of the enterprises quoted on the NewConnect market

It is for evaluation of the financial liquidity that financial liquidity ratios are applied; in particular the current ratio, which is a relation of current assets to current liabilities. However, this indicator does not provide wide interpretative possibilities in synthetic terms. It is a structural system, which is called „a pyramid of indicators", that provides much greater interpretative possibilities and allows for determining.

The purpose of this article is to present a proposal of a system of factors shaping the financial liquidity and to examine the strength and the influence direction of these factors on the financial liquidity of the companies quoted on the NewConnect stock exchange and ranked among construction companies. It is in order to accomplish this objective that the correlation analysis and the linear regression methods were applied.It results from the analysis of the correlation coefficient that the directions of changes of the financial liquidity and of the turnover of the current liabilities as well as of the financial liquidity and of the structure of the sources of financing the assets were significantly similar (harmonized). However, there

was no linear correlation between the financial liquidity and the structure of assets as well as between the financial liquidity and the indicator of financing the sales revenue with external capital. The regression model created on the example of the enterprises belonging to the construction industry showed that the most important factor shaping the level of the financial liquidity is the share of the current assets in the total assets (X_1). It is from the point of view of the β ratio that the structure of sources of financing assets (X_4) is the most essential for the financial liquidity.

Key words: *financial liquidity, factors shaping financial liquidity, the correlation analysis, the regression analysis.*

Streszczenie

Wpływ wybranych czynników na płynność finansową przedsiębiorstw notowanych na rynku NewConnect

Do oceny płynności finansowej powszechnie wykorzystywane są wskaźniki płynności finansowej, w tym przede wszystkim wskaźnik bieżącej płynności finansowej, który jest relacją aktywów obrotowych do zobowiązań bieżących. Wskaźnik ten w ujęciu syntetyczny nie stwarza jednak szerokich możliwości interpretacyjnych. Znacznie większe możliwości interpretacyjne i określenie zależności przyczynowo-skutkowych stwarza układ strukturalny, określany „piramidą wskaźników".

Celem niniejszego artykułu jest przedstawienie propozycji układu czynników kształtujących płynność finansową oraz zbadanie siły i kierunku wpływu tych czynników na płynność finansową spółek zaliczanych do budownictwa notowanych na rynku akcji NewConnect. Do realizacji tak postawionego celu wykorzystano analizę korelacji oraz metodę regresji liniowej. Z analizy współczynnika korelacji wynika, że kierunki zmian płynności finansowej i rotacji zobowiązań bieżących oraz płynności finansowej i struktury źródeł finansowania aktywów były znacząco podobne (zharmonizowane). Nie było natomiast związku liniowego między płynnością finansową a strukturą aktywów oraz między płynnością finansową a wskaźnikiem finansowania przychodów kapitałem obcym. Skonstruowany na przykładzie przedsiębiorstw zaliczanych do budownictwa model

regresji wykazał, że najważniejszym czynnikiem kształtującym poziom płynności finansowej jest udział aktywów bieżących w aktywach ogółem (X_1). Z punktu widzenia miary β, podstawowe znaczenie w kształtowaniu płynności finansowej w badanych spółkach ma struktura źródeł finansowania aktywów (X_4).

Słowa klucze: *płynność finansowa, czynniki kształtujące płynność finansową, analiza korelacji, analiza regresji.*

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