AN ANALYSIS OF THE FINANCIAL LIQUIDITY MANAGEMENT STRATEGY IN POLISH ALUMINUM PRESSURE FOUNDRIES DURING THE CRISIS

[1]Grzegorz ZIMON, [2]Ahmed Mohamed HABIB, [3,4]Md Hasanur RAHMAN

[1]*Rzeszow Univeristy of Technology, Al.Powstancow Warszawy, Rzeszow, Poland, EU, gzimon@prz.edu.pl*

[2]*Zagazig, Accounting and Finance, Independent Research, Zagazig, Egypt, dr_ahmedhabib@yahoo.com*

[3]*Sheikh Fazilatunnesa Mujib University, Jamalpur 2000, Bangladesh;*

[4]*Comilla University, Bangladesh, hasanur@sfmu.edu.bd*

https://doi.org/10.37904/metal.2024.4976

Abstract

The activity of each manufacturing company in conditions of high competitiveness and crises that have occurred in recent years is exposed to a number of risks that make it difficult to maintain high financial liquidity. In order to provide the continuity of ongoing economic processes and to be able to develop, entities are forced to build optimal financial management strategies for them. Enterprises can choose between a conservative, moderate and aggressive strategy, which is largely determined by the way they manage their current assets and short-term liabilities. In the case of manufacturing companies, it is also not without significance that they are particularly sensitive to fluctuations in the economic situation and changes in the macroeconomic environment, which imply the availability of funds. The aim of this paper is to analyze the financial liquidity management strategy in polish aluminum pressure foundries during the crisis in 2019-2022.

Keywords: Metallurgy, financial liquidity, risk, crisis

1. INTRODUCTION

The time of crisis, i.e. the period from 2020 to 2022 in Poland, caused many bankruptcies of enterprises. This was mainly due to the too risky liquidity management strategy. Many companies were not prepared for supply interruptions. Additionally, the governments of many countries have closed businesses, markets and even society. The difficult situation also affected manufacturing companies, which in several cases, e.g. the construction industry, were able to operate throughout the closure period. The research conducted in recent years has shown that those companies that operated during the crisis achieved high profits and profitability. Aluminum pressure foundries are also a group of enterprises that operated and made profits during the Covid pandemic. The companies under the analysis are the largest companies in this industry, and their market share is approximately 90 %. They were divided into SMEs and large enterprises to assess their cash flow management policies. This division will indicate whether the volume of sales turnover has an impact on financial liquidity management strategies. There are signals that most enterprises do not implement any financial liquidity management strategy during sudden crises but use “survival strategies“, which means that they conduct activities that are supposed to allow running their business and survive in the market. The aim of the article is to analyze the financial liquidity management strategies in polish aluminum pressure foundries during the crisis in 2019-2022.

2. FINANCIAL LIQUIDITY

The important role that liquidity management plays in Polish business environments is examined in this selection of articles, with a focus on industries including retail, transportation, and energy. Apart from this, In

the midst of financial downturns and crises like COVID-19, it explores liquidity solutions, examining the effects on profitability in addition to the difficulties in maintaining liquidity in changing economic conditions.

There are many articles describing financial liquidity management during the financial crisis, for example Bukalska and Król [1] presents at 8,784 quarter-company observations from a board taster of 183 firms that were registered in the Warsaw Stock Exchange between 2005 and 2016. Inclusively, Polish businesses have shown resilience in the face of the financial crisis, according to the study. Remarkably, during and after the crisis, businesses that relied heavily on bank funding had significant drops in profitability and financial liquidity. Generally, it underscores their susceptibility both now and in the future [1]. Particularly, the study also shows that there are variations in debt and liquidity across small, medium, and big furniture companies. Markedly, between 2009 and 2011, there was a negative trend of rising debt in addition to falling liquidity, which mostly affected smaller businesses [2]. Above and beyond, the research focuses on the fine balance between profitability in addition to liquidity. In particular, the research, which covers financial data from 2015 to 2018, attempts to offer insights into practical liquidity strategies in the face of changing business dynamics, as well as regulatory frameworks [3].

The next article discussed the detrimental effects of the COVID-19 pandemic on Poland's small and microbusinesses. Through the description of certain strategies small business managers employed in this crisis, the paper seeks to present a more comprehensive study project. It recognizes the short time horizon to evaluate the efficacy and quantifiable results of these tactics, paving the way for further studies to thoroughly review and improve liquidity management techniques in the face of continuous financial difficulties brought on by the epidemic [3-5]. The study concentrates on conventional liquidity measures, such as the existing ratio as well as quick ratio, using information from the EMIS database. In next study, financial liquidity management measures used by construction companies in Poland's Podkarpackie Province between 2017 and 2019 are examined. In particular, the findings show that, even within the same sector and geographic area, small and large businesses have different liquidity strategies. Besides, smaller businesses tend to take a more conservative strategy, whereas larger businesses choose a more moderate one. Predominately, the study also demonstrates that profitability and financial liquidity are inversely related [6,7]. This study examines the debt and liquidity levels of Polish furniture manufacturers between 2007 and 2012 [8].

Using exclusive data, this study investigates how businesses managed their liquidity throughout the covid and war crisis of 2020-2022. It examines credit line usage, features, and renewal or initiation challenges. It also examines how companies replaced internal liquidity with credit lines, influencing decisions made by the real world, such as hiring and investing. Moreover, the results suggest that credit strokes lessened the result of the predicament on business expenditure [3,8]. From the previously presented research can be concluded that profitability is not as significant as financial liquidity. Even in situations where a firm has strong financial liquidity but lacks short-term profitability, there is still room for a growth and performance improvement. There are many studies that confirm that a decrease in profitability correlates with an increase in financial liquidity [3,9-12].

Therefore, today managers are looking for a liquidity management strategy that will allow them to survive difficult times of crisis, even at the expense of a short-term loss of profitability.

3. RESULTS

The research was carried out on 18 groups of production companies - aluminum pressure foundries. The research period covered the years from 2019 to 2022, i.e. the time of crisis related to the war in Ukraine and the Covid pandemic. The enterprises were divided into two groups: SMEs (8 companies) and large companies (10 companies). **Table 1** presents the results of individual indicators.

Table 1 Descriptive statistics summary

Variables	Obs.	Mean	Std. dev.	Min	Max
IT	54	57.57	25.23	6	118
RT	54	66.50	46.50	20	257
LT	54	102.8	60.88	17	343
OC	54	21.24	67.28	-202	195
CR	54	1.983	1.157	0.30	6.30
QR	54	1.207	0.853	0.20	4.00
ROS	54	0.051	0.133	-0.12	0.90
IR	54	0.377	0.141	0.10	0.65
RR	54	0.419	0.149	0.09	0.77
Note: The variables include inventory turnover (IT), receivables turnover (RT), liabilities turnover (LT), operation cycle (OC), current ratio (CR), quick ratio (QR), return on sales (ROS), inventory to current assets ratio (IR), and receivables to current assets ratio (RR).					

Table 2 presents the results of individual indicators divided into SMEs and large companies. They mainly concerned the structure of current assets and inventory turnover ratios.

Table 2 Descriptive statistics summary concerning firm size

Variables	Size	Obs.	Mean	Std. dev.	Min	Max
IT	SMEs	24	47.04	24.12	6	87
	Large firms	30	66.00	23.17	37	118
RT	SMEs	24	81.13	63.78	20	257
	Large firms	30	54.80	20.17	22	103
LT	SMEs	24	115	81.56	40	343
	Large firms	30	93.1	35.73	17	153
OC	SMEs	24	13.17	93.43	-202	195
	Large firms	30	27.70	35.39	-48	96
CR	SMEs	24	1.929	1.042	0.30	4
	Large firms	30	2.027	1.257	0.70	6.3
QR	SMEs	24	1.279	0.847	0.20	3.20
	Large firms	30	1.150	0.867	0.40	4.00
ROS	SMEs	24	0.036	0.081	-0.12	0.22
	Large firms	30	0.063	0.164	-0.05	0.90
IR	SMEs	24	0.301	0.132	0.098	0.57
	Large firms	30	0.438	0.119	0.234	0.65
RR	SMEs	24	0.480	0.164	0.165	0.77
	Large firms	30	0.370	0.116	0.095	0.55
Note: The variables include inventory turnover (IT), receivables turnover (RT), liabilities turnover (LT), operation cycle (OC), current ratio (CR), quick ratio (QR), return on sales (ROS), inventory to current assets ratio (IR), receivables to current assets ratio (RR).						

Table 3 presents individual results divided into the period of Covid and the war in Ukraine. The results of the indicators are similar, with no significant differences noted.

Table 3 Descriptive statistics summary concerning crisis periods

Variables	Crisis	Obs.	Mean	Std. dev.	Min	Max
IT	COVID-19	36	57.89	25.46	14	118
	R-U war	18	56.94	25.48	6	117
RT	COVID-19	36	64.67	43.09	20	254
	R-U war	18	70.17	53.84	29	257
LT	COVID-19	36	98.44	56.29	17	316
	R-U war	18	111.6	70.07	34	343
OC	COVID-19	36	24.11	64.06	-189	195
	R-U war	18	15.50	74.92	-202	167
CR	COVID-19	36	2.153	1.297	0.40	6.3
	R-U war	18	1.644	0.728	0.30	2.7
QR	COVID-19	36	1.325	0.966	0.20	4
	R-U war	18	0.972	0.507	0.20	1.8
ROS	COVID-19	36	0.064	0.155	-0.06	0.90
	R-U war	18	0.025	0.070	-0.12	0.18
IR	COVID-19	36	0.371	0.138	0.10	0.63
	R-U war	18	0.390	0.150	0.16	0.65
RR	COVID-19	36	0.402	0.150	0.09	0.76
	R-U war	18	0.451	0.144	0.25	0.77

Note: The variables include inventory turnover (IT), receivables turnover (RT), liabilities turnover (LT), operation cycle (OC), current ratio (CR), quick ratio (QR), return on sales (ROS), inventory to current assets ratio (IR), and receivables to current assets ratio (RR).

Table 4 presents statistically significant differences that appeared in the case of three indicators regarding the structure and turnover of inventories in days. The result in **Table 4** confirms the preliminary results presented in **Table 2**.

Table 4 Analysis of differences concerning firm size

Null Hypothesis	Size	Mean rank	Z-value	Sig.	Decision
The distribution of IT is the same between firm sizes.	SMEs	21.56	-2.481	<0.05	Reject the null hypothesis.
	Large firms	32.25			
The distribution of RT is the same between firm sizes.	SMEs	30.94	-1.437	>0.05	Retain the null hypothesis.
	Large firms	24.75			
The distribution of LT is the same between firm sizes.	SMEs	28.29	-0.331	>0.05	Retain the null hypothesis.
	Large firms	26.87			

The distribution of OC is the same between firm sizes.	SMEs	27.83	-0.139	>0.05	Retain the null hypothesis.
	Large firms	27.23			
The distribution of CR is the same between firm sizes.	SMEs	28.23	-0.305	>0.05	Retain the null hypothesis.
	Large firms	26.92			
The distribution of QR is the same between firm sizes.	SMEs	29.04	-0.645	>0.05	Retain the null hypothesis.
	Large firms	26.27			
The distribution of ROS is the same between firm sizes.	SMEs	27.04	-0.192	>0.05	Retain the null hypothesis.
	Large firms	27.87			
The distribution of IR is the same between firm sizes.	SMEs	19.08	-3.516	<0.05	Reject the null hypothesis.
	Large firms	34.23			
The distribution of RR is the same between firm sizes.	SMEs	33.67	-2.576	<0.05	Reject the null hypothesis.
	Large firms	22.57			
Note: The table shows the results of the Mann-Whitney U test. The variables include inventory turnover (IT), receivables turnover (RT), liabilities turnover (LT), operation cycle (OC), current ratio (CR), quick ratio (QR), return on sales (ROS), inventory to current assets ratio (IR), and receivables to current assets ratio (RR).					

4. CONCLUSION

The conducted research showed that large enterprises under the analysis and those belonging to the SMEs group applied similar financial liquidity management strategies during the crisis. They used a safe or conservative strategy. This is evidenced by the high financial liquidity ratio, whose average results is 2.0. Quick liquidity ratios are also at a high level, average results are over 1.1. This is positive information since the share of the most liquid assets is at a high level, which is a very good security in the event of new short-term liabilities.

The most important differences observed in large and SMEs groups in current asset management concern inventories. The analysis showed that SMEs had a much faster inventory turnover compared to large enterprises. In SMEs, the average turnover cycle in days is 44 days, while in large entities it is 67 days. In the case of structure analysis, important differences were also observed because in SMEs the average share of inventories is low - about 0.34 % compared to large entities where the average share of inventories in current assets is 0.45. Obviously, the share of short-term receivables in SMEs is high and amounts to over 55 % compared to large entities where their share in current assets is approximately 45 %. In the analyzed groups, some differences in the area of current assets are visible, and this is caused by the size of sales turnover. Large enterprises buy inventories in larger quantities, thanks to which they obtain attractive offers from manufacturers. Profits from sales will cover the higher costs of maintaining inventory. This type of policy is beneficial for large companies, as evidenced by the results of profitability ratios, where the average results in this group are higher compared to SMEs. Above and beyond, the degree to which the following factors liquidity ratios, working capital and its demand, cash flow statement analysis, and profitability indicators are used in management decision-making was ascertained by the survey. Aside from this, the businesses that conducted the research provided information on the value of managing cash, inventories, liabilities, and receivables in the context of managing financial liquidity and profitability.

Contrary to the premise, statistical examination of these data shows that throughout the crisis, financial stability among businesses in this sector either improved or stayed unchanged. The study emphasizes how difficult it is to manage liquidity under unusual circumstances and how businesses need to be more conscious of the need to secure liquidity in the face of protracted uncertainty. Interestingly, the majority of businesses in the

industry fall short of suggested liquidity norms, indicating that average data has to be closely examined in this particular context [3,6].

The importance of this research is in its thorough analysis of liquidity management techniques used in important Polish economic sectors. Particularly, it has the influence in times of crisis and financial instability in organizations. Above and beyond, this study focuses on how companies overcome obstacles to maintain profitability and maximize liquidity, which provides insightful information for strategic decision-making. Besides, enhancing financial resilience and adjusting to unpredictable economic circumstances need a thorough understanding of these processes. Aside from this, the results add to the growing body of knowledge on good liquidity management techniques by educating investors, corporate executives, and legislators on risk-reduction and sustainable growth tactics.

In conclusion, it is clearly visible that the examined entities tried to secure financial liquidity during the crisis. Liquidity costs money, but it turned out to be more important for the managers to run the units in such a way that they could continue their operations without interruption in production in these difficult times.

REFERENCES

[1] BUKALSKA, E., KRÓL, M. Profitability – Financial Liquidity Relation under Bank Dependence During the Financial Crisis: Case of Polish Companies. *Journal of Applied Economic Sciences (JAES)*, 2020, *XV,* 67, pp.169-185.

[2] GRZEGORZEWSKA, E., STASIAK-BETLEJEWSKA, R. The influence of global crisis on financial liquidity and changes in corporate debt of the furniture sector in Poland. *Drvna Industrija,* 2014, *65,* 4, pp.315-322.

[3] ZIMON, G., NAKONIECZNY, J., CHUDY-LASKOWSKA, K., WÓJCIK-JURKIEWICZ, KOCHAŃSKI, K. (2021). An Analysis of the Financial Liquidity Management Strategy in Construction Companies Operating in the Podkarpackie Province. *Risks*, 2021, 10*,* 1.

[4] SALEHI, M., MAHDAVI, N., ZAFIR AGAHI DARI, S., TARUGHI, H. Association between the availability of financial resources and working capital management with stock surplus returns in Iran. *International Journal of Emerging Markets*, 2019, 14, 2, pp.343–361.

[5] ZHANG, D. Is working capital management value-enhancing? Evidence from non-listed Chinese firms' performance and financial constraints. *The Kyoto* Economic Review, 2016, 85, 1/2,pp. 69–103.

[6] AHMAD, M., BASHIR, R., WAQUAS, H. Working capital management and firm performance: Are their effects same in COVID-19 compared to financial crisis 2008? *Cogent Economics & Finance*, 2022, 10, 1, 2101224.

[7] MOURAD, N., HABIB, A. M., THARWAT, A. Appraising healthcare systems' efficiency in facing COVID-19 through data envelopment analysis. *Decision Science Letters*, 2021, 10, 3, pp.301–310.

[8] LUDWICZAK, A., CZARNECKI, M. Financial Liquidity Management During Crisis. *European Research Studies Journal*, 2022, *XXV* (Special Issue 3), pp.232–244.

[9] CAMPELLO, M., GIAMBONA, E., GRAHAM, J.R, HARVEY, C.R. Liquidity Management and Corporate Investment During a Financial Crisis. *Review of Financial Studies*, 2011, *24,* 6, pp.1944–1979.

[10] LAZARADIS, I., TRYFONIIS, D. Relationship between working capital management and profitability of listed companies on the Athens stock exchange. *Journal Financial Management Analysis*, 2006, 19, pp. 26–35.

[11] MAZANEC, J. Working capital management as crucial tool for corporate performance in the transport sector: A case study of Slovakia and the Czech Republic. *Mathematics*, 2022, 10, 15, 2584.

[12] ZIMON, G., SALEHI, M., The impact of ISO 9001 on financial liquidity of smes operating in the renewable energy sector in the Podkarpackie Province, *Modern Management Review,* 2023, 28. 3, pp. 89-99.