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WORKING CAPITAL MANAGEMENT STRATEGY AND SELECTED MEASURES OF FINANCIAL SECURITY FOR DAIRY COOPERATIVES IN POLAND

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ABSTRACT

The article evaluates select financial security indicators from groups of dairy cooperatives, and examines the relationship between the net working capital ratio and these indicators, in order to illustrate the strength of the relationship between pursued strategies and financial security. Most of the surveyed entities pursued a conservative strategy in the area of working capital management. The greatest relation between the share of net working capital in current assets and financial security ratios was found in the case of financial liquidity (according to the literature and the author's expectations), where this relation was close to unity. A negative strength in the relationship was noted between the ratio of working capital share in current assets and trading in inventories in days in all groups of cooperatives, regardless of the working capital strategy applied.

Key words: dairy cooperatives, working capital, financial security **JEL codes:** P12, Q13, Q14

INTRODUCTION – LITERATURE REVIEW

According to Delas et al. [2015], the financial security of its companies is one of the main elements of national security in each country, because companies are taxpayers who create the revenue side of the budget and create jobs. Financial security is particularly important for cooperative business entities, due to the specificity of their activity, which is expressed in the timely fulfilment of current obligations towards their owners, farmers – in this case, suppliers of dairy raw materials. These entities are not strictly focused on increasing financial results, but on maintaining financial liquidity [Ganc 2020].

Financial security has been defined as the ability of a company to maintain its capability to meet its current liabilities and high efficiency [Franc-

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-Dąbrowska 2006]. In contrast, Wędzki [2002] stresses that the higher the surplus of current assets over current liabilities, the greater the financial security of the company.

Research on the financial security of companies was conducted, among others, by Franc-Dąbrowska [2006], Szczecińska [2007], Kagan and Ziętara [2009]. These researchers looked mainly at agricultural enterprises. Maintaining financial security affects the financial surpluses that are generated. However, the direction of this impact may be disputed. On the one hand, an aggressive financing strategy and low levels of liquidity ratios result in a higher return on equity, and on the other hand, according to studies by Franc--Dąbrowska [2006] and Szafraniec-Siluta [2013], maintaining financial security may result in a higher return on equity.

Research by Zaporozhtseva et al. [2017], apart from the current financial liquidity ratio, did not indicate the accelerated and immediate liquidity ratio, nor the inventory cycle in days, the receivables cycle in days, the liabilities cycle in days or the working capital cycle. However, it highlighted the need to examine the rotation rates of current receivables and current liabilities. Zuba [2006, 2010] also included the cash conversion cycle in this group of indicators and noted the measurement of solvency, including inter alia, the debt service coverage ratio, and the interest liabilities coverage ratio (i.e. similarly to Pawłowicz), or the debt ratios. Pawłowicz [2005] and Zaporozhtseva et al. [2017] also pointed to the measurement of the long--term debt ratio as one of the factors shaping financial security. This indicator is also relevant for cooperative dairy farmers, who use long-term debt as their main financing source. Among the measures of financial security assessment presented by Franc-Dabrowska [2006] and Duraj [2013], there were also asset structure indicators, which were used in the study to determine the working capital management strategy of the investigated cooperatives.

The literature distinguishes three ways of financing activities with working capital: conservative, moderate and aggressive [Czekaj and Dresler 1997, Sierpińska and Wędzki 1998, Krzemińska 2000, Bień 2002, Wędzki 2002, Kaczmarek 2012, Szymańska 2017]. The conservative strategy is to finance current assets, practically all of them with fixed capital, thus engaging in the cooperative long term. This strategy pays particular attention to maintaining a high level of liquidity and minimizing the risk of insolvency. This strategy is generally more costly than the others because it is based on equity and long-term liabilities. However, this results in a significant reduction in the return on equity. By adopting a conservative strategy, the company seeks to maintain its credibility and market position.

An aggressive strategy accepts higher levels of risk and profit maximization in the long term. During the implementation of this strategy, the dairy cooperative shows greater capital needs, mainly in foreign capital. Funding for operations is obtained from outside and liquidity is kept low, which may threaten insolvency. The profitability of equity is high and involves lower costs of obtaining short-term loans than for long-term loans. There is a possibility to use high leverage and tax shielding effects. The financial risk associated with over-indebtedness increases and the current solvency ratios decrease with it.

A moderate strategy takes into account the characteristics of an aggressive and conservative strategy. The fixed capital finances all fixed assets used in the cooperative. The net working capital is zero or takes low positive values. Such a financing concept enables the synchronization of cash flows, related to spending and generating revenue. At the same time, this fact helps to maintain the company's liquidity and financial balance at an average level.

PURPOSE AND METHODS

The study identified the relationship between the working capital management strategy applied and the dairy cooperatives' financial security. An attempt was made to verify the hypothesis that dairy cooperatives with a conservative working capital management strategy are the financially safest. The research used financial data of 66 dairy cooperatives in Poland. The analyzed collection can be described as "quasi" representative because of its nearly 80% share in the national milk collection market, which means that the research results can be generalized to the entire population of dairy cooperatives. Other entities, not accepted for analysis, have a marginal share in the milk market in Poland.

The strategy was defined using two indicators calculated for each cooperative: W_1 means the share of current assets in total assets, W_2 means the share of current liabilities in total liabilities. If $W_1 > W_2$, a conservative working capital strategy has been defined. If $W_1 = (\text{approx.})^1 W_2$, a moderate strategy was adopted. If $W_1 < W_2$, an aggressive working capital strategy has been defined.

In groups of cooperatives separated in terms of working capital management strategy, the profitability of equity and assets, current and immediate financial

¹ The indicators in the study were not created equal, but had very similar values, for example: $W_1 = 49.3$, $W_2 = 50.7 - \text{in such}$ a situation, the cooperative was qualified as applying a moderate strategy of working capital management.

liquidity, as well as the efficiency of inventory, receivables and liabilities management were assessed. Profitability indicators that do not constitute measures of financial security were adopted for analyses in order to illustrate the specificity of the dairy cooperative, which manifests itself in low profitability of operations [Wasilewski and Chmielewska 2006]. The research period covered the years 2016–2019. The number of cooperatives in each group is shown in Table 1.

Table 1. The number of cooperatives in groups in termsof working capital management strategy in 2016–-2019

| Strategy | 2016 | 2017 | 2018 | 2019 |
|----------|------|------|------|------|
| С | 36 | 38 | 38 | 36 |
| М | 18 | 16 | 18 | 17 |
| А | 12 | 12 | 10 | 13 |
| Total | 66 | 66 | 66 | 66 |

C – conservative working capital strategy, M – moderate working capital strategy, A – aggressive working capital strategy. Source: Author's own study. Due to the small differences in the extreme values of indicators assigned to a given strategy, a test was carried out on the significance of Kruskall–Wallis differences, as more than two groups of companies were under investigation. The value of the statistics was H(3, N=66) = 177.420, p = 0.0000 (at the significance level p = 0.05), the null hypothesis of the cumulative distribution equality in the compared subgroups was rejected. There are statistically significant differences between the compared groups of cooperatives.

This test has shown the validity of separate groups of cooperatives. In addition, the analysis of the financial security links with working capital was deepened by assessing the correlation (Spearman's rank-order correlation) between the ratio of net working capital share in current assets and selected financial security indicators in the analyzed groups of cooperatives.

RESULTS

Table 2 presents the development of selected financial condition indicators in groups of dairy cooperatives. In all years, the highest profitability of this fund was observed in cooperatives with a conservative working

Table 2. Financial condition ratios in groups of cooperatives distinguished in terms of the working capital management strategy in 2016–2019

| Ratio | 2016 | | | 2017 | | 2018 | | | 2019 | | | |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|
| | С | М | А | С | М | А | С | М | А | С | М | А |
| ROE (%) | 2.2 | 2.1 | -5.3 | 2.1 | 0.4 | -4.6 | 3.7 | 2.4 | 2.0 | 7.9 | 3.9 | 5.9 |
| ROA (%) | 1.4 | 1.0 | -1.9 | 0.9 | 0.3 | -2.3 | 2.3 | 1.2 | 0.9 | 3.2 | 2.4 | 3.0 |
| FL (%) | 0.8 | 1.1 | -3.4 | 1.2 | 0.1 | -2.3 | 1.4 | 1.2 | 1.1 | 4.7 | 1.5 | 2.9 |
| CL | 1.72 | 0.90 | 0.83 | 1.64 | 1.04 | 0.87 | 1.65 | 1.07 | 0.86 | 1.66 | 1.06 | 0.88 |
| CLR | 0.31 | 0.03 | 0.01 | 0.25 | 0.02 | 0.01 | 0.24 | 0.05 | 0.02 | 0.27 | 0.13 | 0.10 |
| IT (days) | 20 | 24 | 17 | 24 | 25 | 35 | 20 | 21 | 15 | 21 | 19 | 13 |
| RT (days) | 32 | 30 | 39 | 40 | 32 | 40 | 41 | 42 | 33 | 35 | 36 | 27 |
| LT (days) | 55 | 74 | 69 | 60 | 76 | 98 | 63 | 70 | 59 | 57 | 68 | 56 |

ROE – own fund profitability ratio, ROA – asset profitability ratio, FL – financial leverage ratio, CL – current liquidity ratio, CLR – cash liquidity ratio, IT – inventory turnover, RT – receivables turnover, LT – liabilities turnover.

C – conservative working capital strategy, M – moderate working capital strategy, A – aggressive working capital strategy. Source: Author's own study.

capital management strategy. The highest return on equity in this group of cooperatives occurred in 2019 and amounted to 7.9%, with a growing trend since 2017 (by 5.8 p.p.). Cooperatives with a moderate strategy were also effective in terms of using their own funds, with a level approximately twice lower in 2018–2019, and the biggest difference in this respect occurred in 2017, when the profitability of these funds in these cooperatives was only 0.4%. In cooperatives with aggressive working capital policy in the years 2016–2017, the equity fund was not used effectively, as a net loss was found in these cooperatives. In the following years, these cooperatives were profitable in terms of using their own funds. In 2019, this profitability amounted to 5.9% and was higher by 2 p.p. than in the cooperatives with a moderate strategy. This means that a more aggressive financing strategy can be cost-effective. Rationally employed outside capital significantly increases the return on equity, which is related to the leverage effect. Moreover, dairy cooperatives use mainly long-term liabilities as sources of financing or use their own funds as a tax-free source of financing their activities [Dworniak 2008].

The profitability of the assets was calculated as the relation of the net profit (loss) to the value of the assets of the cooperative. The relationships in this respect were similar to those for the return on equity. In cooperatives with an aggressive working capital management strategy in 2016–2017, the use of assets was not effective, while in 2019, the profitability of the employed assets increased to 3.0%. In 2019, this profitability was by 0.6 p.p. higher than in the cooperatives from the group with a moderate strategy. In cooperatives with conservative and moderate strategies, assets were profitable, although at a relatively low level.

The leverage ratio reflects the effectiveness of foreign capital commitment as a source of funding. The greatest benefit in this respect was recorded in cooperatives with a conservative working capital management strategy, where the highest ratio occurred in 2019 and amounted to 4.7%. The lowest was in 2016 (0.8%), and in the group of cooperatives with a moderate strategy, the lowest level was only 0.1% in 2017. The relationships that were found proved the low effectiveness of the use of foreign capital in the groups of cooperatives under analysis. This may be in part due to the underutilization of this capital in business, often due to a lack of liquidity and thus a lack of creditworthiness. In cooperatives with an aggressive strategy, in the years 2016–2017, a loss was recorded due to foreign capital involvement in the financing process, at the level of 3.4% and 2.3%, respectively. In dairy cooperatives, measures should be taken to increase foreign capital efficiency through, for example, more favorable credit terms (use of preferential credit, lower interest rates, grace period for loan or interest payments, etc.). The increasing level of leverage in cooperatives with an aggressive strategy proves that they are increasingly benefiting from the involvement of foreign capital. This may be due to the need to makes investments to adapt to the EU, which make cooperatives more efficient by modernizing production technology. The financial leverage in this group of cooperatives was higher than in those with a moderate strategy in 2019 (2.9%) and slightly lower (1.8 p.p.) than in those with a conservative strategy. The rational use of foreign capital also contributes to the efficiency of the equity fund.

Current liquidity was found to decline as the working capital management strategy became more aggressive. It can be seen that in conservative cooperatives, current liquidity was maintained at the level of 1.64–1.72. In cooperatives with a moderate strategy, the level of current liquidity was much lower and oscillated between 0.90 and 1.09. This means that these cooperatives were at risk of losing their current liquidity. An even greater threat in this respect concerned cooperatives with an aggressive strategy, where the size of the analyzed indicator remained at a relatively similar level in the analyzed years. It should also be stressed that the difference in this respect compared to cooperatives with a moderate strategy was not large (approx. 0.17). This means that only a conservative approach to working capital management during the period considered allowed dairy cooperatives to maintain their current liquidity. In terms of immediate liquidity, the situation of the surveyed cooperatives was even more unfavorable than in terms of current liquidity. Assuming an optimum immediate liquidity ratio of 0.5, it was found that the size of the ratio was already twice as low as the recommended level in the group of cooperatives

with a conservative strategy. However, given the low profitability of the dairy sector, a level of 0.2 of this indicator can be assumed to be satisfactory, especially as there has been a slight upward trend in this respect.

In the group of cooperatives with an aggressive strategy, the level of immediate liquidity increased slightly, from only 0.01 in 2016–2017 to 0.10 in the last audited year. In all the years under analysis, in cooperatives with a strategy of moderate working capital management, the level of the analysed indicator was only slightly higher than in those with an aggressive strategy. Therefore, the aggressive strategy did not differ significantly from the moderate strategy in terms of immediate liquidity loss, which depends on the skill of the cooperatives' managers in this respect. However, it should be stressed that there is a high risk of loss of immediate liquidity in groups of dairy cooperatives with a more aggressive approach to financing their activities, through greater use of foreign capital. In cooperatives with a conservative strategy, a stable level of immediate liquidity was found. The fact of their effective functioning proves that the amount of 0.2 of the immediate liquidity ratio is sufficient to maintain financial liquidity in the dairy sector.

Inventory management in the surveyed cooperatives should be assessed positively. Except for 2017, the turnover was the fastest in cooperatives with an aggressive working capital management strategy, as it ranged between 13 and 17 days, which can be considered a very favorable figure. Such dependence is justified by the need to repay current liabilities, and excessive inventory freeze funds. Only in 2017 did the turnover in this group of cooperatives last 35 days, which was mainly due to high inventory in one of the surveyed cooperatives in this group. The most stable inventory management policy was that of cooperatives with a conservative strategy (approx. 20-24 days), whereas in the group of cooperatives with a moderate strategy, the difference between the extremes of the inventory trading period was 6 days. Dairy cooperatives produce products with a short shelf life, which justifies their quick sale.

The management of receivables in the surveyed cooperatives should be assessed positively, as their turnover did not generally exceed 42 days. The most favorable situation in this respect in the years 2016--2017 concerned cooperatives with a moderate strategy, while in the remaining years of those with an aggressive strategy, in which the shortest trade in receivables in the period in question occurred (27 days in 2019). The differences between the separated groups of cooperatives in this respect were relatively small, and the highest was in 2018 between the first and the third group of cooperatives and amounted to 8 days. Only in the third group of cooperatives was a uniform tendency (since 2004) to decrease the receivables turnover ratio seen in the analyzed years (by 13 days), which is justified by the need to obtain cash as a result of the threat of losing immediate financial liquidity. In general, it can be concluded that in the surveyed cooperatives there were no major problems with the payment of receivables by product recipients. This is mainly due to the stability in cooperation with certain regular customers, which secures against a high risk of losing any payments that are due.

In all groups of cooperatives, the period for regulating short-term liabilities was longer than for regulating receivables, which should be regarded as a generally beneficial relationship. The biggest difference in this respect occurred in the third group of cooperatives in 2017 and amounted to 58 days, while the smallest was in the first group of cooperatives in 2016 (23 days). The most stable level of the difference between the period of receivables and liabilities settlement was characterized by cooperatives with the conservative strategy of working capital management (20–23 days). This is a positive phenomenon, as the cooperatives in this group paid the debts received in a short period of time, which may have resulted from good payment relations with the recipients of dairy products.

The longest turnover of liabilities in the years under review was in the third group of cooperatives in 2017, and was 98 days, which should be considered too long. In the following years, there was a significant shortening of the period of regulating liabilities in this group of cooperatives. The managers of these cooperatives in 2018–2019 extended the deadlines for the settlement of liabilities to a lesser extent than cooperatives with a conservative strategy and moderate working capital management.

The ratio of the share of net working capital in current assets shows how much of the company's current assets are financed by net working capital. The higher the level of the ratio, the better the company's financial liquidity assessment. A clear trend was found in the development of the ratio of the share of net working capital in current assets along with a change in the strategy of managing this capital. The highest level in this respect was recorded by cooperatives with a conservative strategy, while the lowest (negative) level was recorded in those with an aggressive strategy. According to the literature on the issue and expectations, the greatest relationship between the share of net working capital in current assets was found in the case of financial liquidity, where this relation was close to unity (Table 3).

The strength of the relationship between the current ratio and the audited working capital measure was the lowest in the cooperatives with a moderate net working capital management strategy, while the highest (close to unity) was in those with an aggressive strategy. Similar relationships were observed in the case of the immediate liquidity ratio. However, the lowest correlation strength occurred in this case in cooperatives with an aggressive strategy in the audited period (0.67 in 2016, 0.65 in 2017, 0.61 in 2018, 0.60 in 2019), while in other groups of cooperatives, the correlation coefficient between the ratio of the share of net working capital in current assets and the immediate liquidity exceeded 0.8.

A negative strength in the relationship was noted between the ratio of working capital share in current assets and trading in inventories in days in all groups of cooperatives regardless of the working capital strategy applied. A similar dependence occurred in the case of the share of working capital in current assets and

| Year | NWK/CA | Strategy | CL | CLR | IT | RT | LT | FL |
|------|--------|----------|------|------|----------------------|-------|-------|-------|
| | 0.41 | С | 0.89 | 0.92 | -0.45 | -0.66 | -0.77 | -0.38 |
| 2016 | 0.01 | М | 0.65 | 0.96 | -0.59 | -0.73 | -0.69 | 0.26 |
| | -0.20 | А | 0.99 | 0.67 | 0.23 | -0.54 | 0.09 | 0.67 |
| 2017 | 0.40 | С | 0.98 | 0.91 | -0.49 | -0.51 | -0.76 | -0.41 |
| | 0.04 | М | 0.91 | 0.89 | -0.34 | -0.68 | -0.67 | 0.32 |
| | -0.14 | А | 0.97 | 0.65 | 0.22 | -0.60 | 0.07 | 0.66 |
| 2018 | 0.38 | С | 0.87 | 0.82 | -0.51 | -0.61 | -0.81 | -0.41 |
| | 0.06 | М | 0.72 | 0.81 | -0.34 | -0.71 | -0.74 | 0.44 |
| | -0.16 | А | 0.98 | 0.61 | 0.61 0.24 -0.56 -0.4 | -0.09 | 0.65 | |
| 2019 | 0.39 | С | 0.92 | 0.93 | -0.48 | -0.63 | -0.69 | -0.43 |
| | 0.06 | М | 0.61 | 0.84 | -0.62 | -0.60 | 0.82 | 0.27 |
| | -0.13 | А | 0.99 | 0.60 | 0.24 | -0.53 | 0.11 | 0.70 |

Table 3. The level of the ratio of the share of net working capital in current assets and the strength of the relationship between this ratio and selected measures of financial security of dairy cooperatives in 2016–2019^a

^a The interpretation of the test results assumed: when r = 0, variables are not correlated; when 0 < r < 0.1, variables' correlation is very weak; when 0.1 < r < 0.3 variables' correlation is weak; when 0.3 < r < 0.5, variables' correlation is average; when 0.5 < r < 0.7, variables' correlation is high; when 0.7 < r < 0.9 variables' correlation is very high; when 0.9 < xy < 1, variables are fully correlated.

NWK/CA – net working capital/current assets, CL – current liquidity ratio, CLR – cash liquidity ratio, IT – inventory turnover, RT – receivables turnover, LT – liabilities turnover, FL – financial leverage ratio.

C – conservative working capital strategy, M – moderate working capital strategy, A – aggressive working capital strategy. Source: Author's own study.

the ratios of receivables turnover in days and liabilities turnover in days (except for 2019, in cooperatives with a moderate and aggressive strategy, where the dependence was positive). The negative correlation proves that in the surveyed cooperatives, an increase in the ratio of the share of net working capital in current assets is accompanied by a decrease in the rotation of inventories, receivables and liabilities in days.

Moreover, it is worth noting that the strength of the relationship between the ratio of the share of working capital in current assets in this respect was average or high in cooperatives with a conservative and moderate strategy of managing working capital, and weak in those with an aggressive strategy. In cooperatives pursuing a conservative and moderate strategy in terms of working capital, there was a high or very high correlation between the ratio of the cycle of liabilities in days and the share of net working capital in current assets, while in cooperatives with an aggressive strategy, the strength of the relationship in this respect was weak or insignificant.

In the case of correlation coefficients between the leverage ratio and the share of net working capital in current assets, a large variation was observed, both in the strength of the relationship and the direction. In cooperatives with a conservative strategy, there was a negative correlation in this respect, while in the remaining groups of cooperatives a positive correlation was found.

CONCLUSIONS

The managers of cooperatives should rationalize the level of their assets in relation to the scale of purchasing and processing raw milk material. This is because in some cooperatives the level of purchase is much higher than the processing capacity, and in some cases the situation is the opposite. Therefore, it is important that managers be able to match the production potential with their ability to use it effectively. To sum up, it can be stated that the efficiency of asset use in the investigated dairy cooperatives was relatively low, which is a standard situation in the case of cooperative enterprises in the milk market, which are characterized by low profitability of assets and capital [Soboh et al. 2011]. Cooperative managers finance their activities to a large extent from their own funds if they need external financing sources and use less risky long-term foreign capital. Hence, most of the surveyed entities pursued a conservative strategy of working capital management. Moreover, in dairy cooperatives, most of the current liabilities are future payments to ownerfarmers-suppliers, which determines high liquidity maintenance in these entities.

Given the relatively low profitability and liquidity, a change in working capital management strategy could be considered as a way to seek greater financial security in the dairy industry. Working capital management is one of the most important areas for financial decision-making. Activities undertaken in this area are primarily aimed at maintaining financial liquidity and optimizing current assets' size and structure.

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STRATEGIA ZARZĄDZANIA KAPITAŁEM OBROTOWYM A WYBRANE MIERNIKI BEZPIECZEŃSTWA FINANSOWEGO SPÓŁDZIELNI MLECZARSKICH

STRESZCZENIE

Dokonano oceny wybranych wskaźników bezpieczeństwa finansowego w grupach spółdzielni mleczarskich oraz zbadano zależności występujące między wskaźnikiem udziału kapitału obrotowego netto a tymi wskaźnikami w celu zobrazowania siły związku między realizowaną strategią a bezpieczeństwem finansowym. Większość badanych podmiotów realizowała strategię konserwatywną w zakresie zarządzania kapitałem obrotowym. Największy związek między udziałem kapitału obrotowego netto w aktywach obrotowych a wskaźnikami bezpieczeństwa finansowego stwierdzono przy płynności finansowej (zgodnie z literaturą i oczekiwaniami autora), w przypadku której ta zależność była bliska jedności. Ujemną siłę związku zauważono między wskaźnikiem udziału kapitału obrotowego w aktywach obrotowych a obrotem zapasami w dniach we wszystkich grupach spółdzielni niezależnie od stosowanej strategii w zakresie kapitału obrotowego.

Słowa kluczowe: spółdzielnie mleczarskie, kapitał obrotowy, bezpieczeństwo finansowe