

## WORKING CAPITAL MANAGEMENT STRATEGIES OF FAMILY FARMS IN POLAND

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**A b s t r a c t:** The aim of this work was to define the working capital management strategies in two types of farms: dairy and arable. These groups of farms were taken from the FADN database. The same farms were investigated in the years 2004-2011. The share of circulating assets and current liability indicators in total assets, cash flow indicators and the share of liquid assets in circulating assets were used to define the strategies. Due to family farms having one “cash till” monetary means transferred to the family farm were used to calculate the share of liquid assets in circulating assets. The research confirmed that Polish family farms use a conservative asset management approach. This was proven by liquidity indicators and the high share of monetary means in assets. Farmers were also conservative in their approach toward short-term debt.

### INTRODUCTION

The management of working capital plays a significant role for business entities. This is because solvency is to a large degree decided by working capital itself. Family farms should pay attention to this fact, especially since their business (as far as Polish conditions are concerned) is their main source of income<sup>1</sup>.

If the farm is affected by financial problems – an inability to pay off debts – the family is also adversely affected. This may cause farmers (family breadwinners) to decide to maintain a high share of working capital. These farmers are often unaware of the fact that they are implementing a working capital management strategy. Moreover, does the type of production “dictate” the level of working capital and influence short-term debt? The aim of this work will be to define the working capital management strategy in two different types of production<sup>2</sup>, i.e. arable and dairy cow ones. To fully achieve the main aim, the following

<sup>1</sup> Of course we have in mind only those entities which make a living from market produce and not those which are listed as family farms but whose members are inactive in animal and plant production.

<sup>2</sup> According to the FADN the type of farm is classified on the basis of the participation of the enterprise in creating standard gross margin (until 2008), however since 2009 the basis of farm type classification is standard production. For the purposes of this work (after the analysis of the period 2004-2008) it is assumed that those classified farms will continue to do the same in the years 2009-2011.

will be investigated: the level and changes in the value of working capital (from a nominal and updated perspective), the share of the most liquid assets and current liabilities in the structure of assets, and financial liquidity indicators. Furthermore, a thesis was formulated stating that Polish farmers apply a conservative approach to working capital management and maintain a relatively large share of the most liquid assets in circulating assets and a relatively low level of short-term debt.

## LITERATURE REVIEW

The management of net working capital is a key-area of financial decision-making faced by corporations and the owners of small and medium sized businesses. Working capital determines the continuity of the production cycle. Its management depends on the strategy applied. [Konieczna 2008]. It seems this is true of large entities whereas smaller ones such as family firms are less likely to build any form of strategy. It is often the case that owners are unable to define the very term: working capital. In academic literature it is defined in gross and net categories [Ryś-Jurek 2011, Sierpińska, Jachna 2007, Szyszko, Szczepański 2003, Wasilewski, Zabolotnyy 2009], as well as financial and accounting perspectives [Gołębiowski 2004]. In financial terms it is seen as the difference between fixed capital and fixed assets. The important role working capital performs in an enterprise is proven in works attempting to identify those factors which decide about its level in a particular business entity [Horrigan, 1965, Zhou 1995], but as B.A. Renjith Appuhami points out, less attention is paid to working capital than capital budgeting and capital structure. This seems inappropriate because working capital is the consequence of decisions made in the scope of financing the enterprise and a factor exerting an influence on short-term budgeting, and wider financial planning.

Moreover, A. Eljelly [2004] refers to the fact that efficient management of working capital gives more control over current assets and liabilities because it minimizes the risk of insolvency. It is worth remembering that financial security is especially important for small family businesses which are the family's main source of income. This problem is especially noticeable in Polish family farms. Decisions made by the management or owners in the scope of working capital management affect the value for stakeholders [Shin, Soenen 1998], and the enterprise's profitability [Gill et al. 2010]. As research shows, attaining appropriate returns is not only important in large firms [Appuhami 2008], but also small businesses [Sunday 2011].

In academic literature concerning financial management [Czekaj, Dresler 2006, Franc-Dąbrowska 2008, Rutkowski 2007, Sierpińska, Wędzki 1997] the issues of working capital management are associated with implementing either an aggressive or conservative strategy in the management of current assets and liabilities. A separate classification of strategies concerning current assets and liabilities may cause various combinations of managing working capital, for example, conservative management of current assets with a large share of current assets and a dominating involvement of short-term debts or conversely. Other combinations of the conservative strategy of assets and aggressive liability strategy are also possible. Figure 1 presents working capital strategies.

As far as Polish farms are concerned, the question of working capital strategy is rarely undertaken, however such an attempt was made by Ryś-Jurek [2011]. This author's research concludes that in EU-27 farming, a conservative-aggressive strategy was applied in 2007.

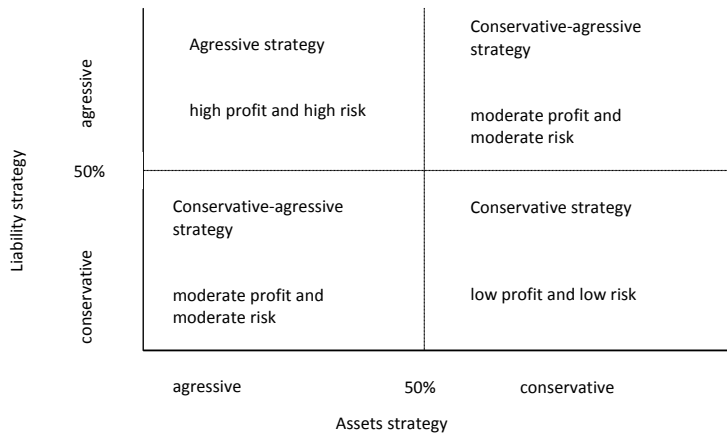


Figure 1. Working capital strategies

Source: own work based on [Franc-Dąbrowska 2008, Sierpińska, Wędzki 1997, Czekaj Dresler 2006].

The studies confirmed differences in households of different farming types. Households specializing in arable and dairy cow farming showed a slight (not exceeding 20%) share of circulating assets in total assets and around a 4% share of short-term debts. Therefore, it can be supposed that farmers will manage working capital similarly in those two farming types. Will family households behave similarly to farmers from other European countries despite inferior technology and a different way of organization? Taplin [2012] claims that organizational changes reduce income by lowering working capital size. Hayemi, Ruttan [1970] state that technology is included in fixed and circulating capital and increases productivity. Though Polish farming remains relatively inefficient and traditional, an improvement has been observed in recent years. These changes may influence working capital management.

## WORK METHODOLOGY

The research concerned the period between 2004-2011 and was derived from the database of “collecting accounting data from farms.” This database represents 740 thousand commercial farms in Poland. To verify how farmers changed their approach to collecting working capital, only repeated farms were chosen from the database. In order to qualify to a farming group, those farms which belonged to the same farming type for the whole period of studies were selected. From amongst 8 farming types 2 were chosen, namely dairy cow (KM) and arable farm (UP). The selection was dictated by the fact that these are quite popular in Polish family farms and are characterized by certain similarities and differences. What was similar was that the investigated farms possessed a significant (for Polish conditions) arable land surface area. The differences concerned production organization, mainly within the scope of the necessity to maintain stock and possessing building inventory facilities.

After selection, it occurred that there were 292 dairy farms and 859 farms specializing in arable farming. The following indicators determined the strategy in the distinguished groups:

- A.1: the share of circulating assets in total assets <sup>3</sup>, which was calculated as the ratio of circulating assets increased by money flowing into the household, to total assets,
- A.2: the current liabilities to total assets ratio, which can measure the level to which the farm's estate is financed by short-term foreign capital,
- A.3: the cash flow indicator calculated as the ratio of cash flow from the operational activity to negative cash flow from financial activity ,
- the share of the most liquid assets to trading assets calculated as the ratio of the size of monetary means transferred from the farm to the farming household <sup>4</sup> increased by remaining circulating assets except for stocks and live inventory<sup>5</sup>.

Due to changes in the value of money over time, discounting was used to calculate updated values of working capital. Thus, it was possible to express the capital at base year value which enabled the comparison of changes in time. The price index of consumer goods and services published annually by the Central Statistical Office was used as the discount rate, whilst the procedure of updating value is expressed as follows:

$$KON_{2005(A)} = \frac{KON_{2005(N)}}{(1 + i_{2005})}$$

$$KON_{2006(A)} = \frac{KON_{2006(N)}}{(1 + i_{2005}) \cdot (1 + i_{2006})}$$

$$KON_{2007(A)} = \frac{KON_{2007(N)}}{(1 + i_{2005}) \cdot (1 + i_{2006}) \cdot (1 + i_{2007})}$$

*ect.*

$$KON_{2011(A)} = \frac{KON_{2011(N)}}{(1 + i_{2005}) \cdot (1 + i_{2006}) \cdot (1 + i_{2007}) \cdot (1 + i_{2008}) \cdot (1 + i_{2009}) \cdot (1 + i_{2010}) \cdot (1 + i_{2011})}$$

where:  $KON$  = net working capital calculated as fixed capital – fixed assets,

( $A$ ) – updated value,

( $N$ ) – nominal value.

The Kolmogorov-Smirnov test was used to verify the differences between groups of farms. Non-parametric tests were used because the investigated variables were not of normal distribution.

<sup>3</sup> This is not a typical perspective due to the fact that money privately owned by the farmer and his family is included. However, because there is "one cash till" in the family farm it has been acknowledged that such monetary means can be treated as a part of the family farm's estate.

<sup>4</sup> This is an amount which the family receives at the end of the year. However, it is worth remembering that these means are often used in the farming enterprise, as the family farm has "one cash till".

<sup>5</sup> Due to the fact that it is not possible to establish the amount of monetary means remaining in the family farm it has been established that a measurable way is information about cash flow, which indicates the difference between income and expenditures of the farm. Due to the fact that short and long-term liabilities paid off in a given year are included as current liabilities it has been assumed that the best indicator of such information is negative cash flow which shows expenditures used to pay-off the debt.

## A DESCRIPTION OF INVESTIGATED SUBJECTS

Table 1 presents numerical data for basic factors of production in the groups of farms (land, capital, labour and economic results).

Those farms whose main source of income came from arable farming possessed more resources in basic factors of production. They had a twofold greater area of land and a 40% greater value of capital at their disposal in comparison with dairy cow groups. As far as labour was concerned<sup>6</sup> for every 100 ha UR the involvement of workers was similar, which results from the fact that the farmer's family constitutes the main source of labour. One can observe a 1-1.5 higher working unit in the case of dairy cow farms. This is the result of a low level of technological means still observed in family farms.

The level of farming income attained, indicated (on average) a 50 % greater value for arable farming. However, in the next years these values varied significantly. This could be the result of instability on the farming produce market and high fluctuations of prices for milk and crops. Despite these values being seeming more favourable for arable farms – this is only from a relative perspective. For every 1 ha UR – better economic results were obtained by dairy cow farms. Their average farming income being 2405 PLN/ha in comparison with 1970 PLN/ha for the arable farming group. Therefore farmers making a living from milk production, made better use of their land. This was a consequence of milk market regulations (milk quotas), which reduced livestock, the number of producers and increased productivity [Seremak-Bulge 2011].

Table 1. Basic factors of production in the groups of farms and economic results obtained in a given period

Year	Land [ha UR]		Labour [AWU/100 ha UR]		Assets [thous. PLN]		Revenue [thous. PLN]	
	UP	KM	UP	KM	UP	KM	UP	KM
2004	49,4	20,8	9,5	11,3	518,0	359,0	49,0	35,0
2005	50,9	21,5	9,5	11,2	493,0	383,0	40,0	43,0
2006	50,5	22,0	9,5	11,0	540,0	410,0	65,0	52,0
2007	52,8	22,3	9,3	11,0	636,0	458,0	98,0	62,0
2008	53,4	23,0	9,1	10,8	665,0	476,0	71,0	53,0
2009	54,5	23,6	9,0	10,5	1351,0	783,0	72,0	36,0
2010	55,6	23,5	8,7	10,2	1363,0	809,0	119,0	66,0
2011	57,0	23,8	8,8	10,2	1502,0	867,0	138,0	81,0
Average	53,0	22,5	9,2	10,8	888,0	568,0	82,0	53,0

Source: own calculations based on FADN PL data.

<sup>6</sup> In Polish family farming labour is presented in converted units, AWU is a unit expressing the amount of work per person employed in the farm. For 1 AWU it is assumed that 1 person works 2200 hours per year on the farm. These units include both hired and family workers.

## RESULTS OF RESEARCH

Table 2 compares numerical data concerning the level of working capital from a nominal and updated perspective.

All the farms, irrespective of their group, achieved an average positive value of net working capital in each of the analyzed years. This means that mainly long-term capital was used to finance fixed assets. According to research carried out by Bereźnicka [2013] this was mainly own capital<sup>7</sup>. Thus, farmers limited financial risk and at the same time resigned from achieving additional benefits from leverage. Financial security is fundamental for Polish farmers in a market economy. This seems understandable, especially when the farm constitutes the whole family's main source of income. One must however add, that after Poland joined EU structures i.e. (since 2004), farmers took advantage of external financing to a greater extent in comparison with earlier years.

An incentive for long-term debt may be the possibility to take advantage of loans with preferential interest rates, as well as the urge to obtain investment financing from EU funds directed towards agriculture. A higher value of working capital was observed in farms with a greater area of farming land and capital. These differences disappear when calculating per unit of land. This indicates a similar approach of farmers in their quest to collect working capital. These differences were not statistically significant, recording a significance level of 0,05 – confirmed by Kolmogorov-Smirnov tests. One must note, that during the research period, working capital increased in both nominal and updated value. These changes occurred slowly in the price change perspective.

Table 3 compares data necessary to define working capital management strategy – the share of circulating assets in the estate and the share of short-term debt used to finance assets.

The share of circulating assets in total assets indicated a slightly higher value for the arable farming group. This may confirm assumptions about a relatively lower value of fixed assets for those farms and indicate the gathering of stock. It is worth paying attention to the fact that in 2009 the share of stock failed to achieve 20 % of the total value of assets in any group (similarly as in EU-27 countries). This was the result of a new method of estimating

Table 2. The level of net working capital in investigated groups between the years 2004-2011

Year	Net working capital (nominal value PLN)				Net working capital (updated value PLN)			
	arable farming (UP)		dairy cows (KM)		arable farming (UP)		dairy cows (KM)	
	PLN/ farm	PLN/ha	PLN/ farm	PLN/ha	PLN/ farm	PLN/ha	PLN/ farm	PLN/ha
2004	75863	2130	34122	1800	75863	2130	34122	1800
2005	69461	2050	33707	1800	69315	2000	33014	1700
2006	80533	2300	41487	2100	78093	2200	40232	2030
2007	98908	2600	49717	2500	93309	2400	46863	2300
2008	104401	2600	52372	2500	94522	2400	47416	2300
2009	111432	2700	55512	2600	97473	2400	48558	2300
2010	127689	3100	63424	2900	108866	2700	54075	2500
2011	156129	3400	83089	3700	127629	2800	68578	3000

Source: own calculations based on FADN PL data.

<sup>7</sup> In the years 2004-2008 the share of own capital used to finance the estate ranged between 88-90%.

Table 3. Indicators used to define working capital management strategy for the groups of farms investigated in the years 2004-2011

Indicator	2004		2005		2006		2007		2008		2009		2010		2011	
	UP	KM	UP	KM	UP	KM	UP	KM	UP	KM	UP	KM	UP	KM	UP	KM
A.1 [%]	24	19	32	22	27	21	28	21	27	21	16	14	18	16	19	17
A.2 [%]	5	2	4	2	4,3	2,1	4	2	8	6	2	1	2	1	2	1
A.3	0,5	5,5	4,5	9,5	1,3	2,1	6,4	2,5	4,3	7,8	2,7	9,2	2,4	6,0	1,2	9,1

Source: own calculations FADN PL data.

the value of land (according to market prices) not the effect of decisions (made by farmers) to leave less stock. This led to a significant increase in the value of fixed assets. On the other hand, this situation was caused by a drop in prices of farming produce, which had an impact on the value of gathered stock. Nevertheless, for plant producing farms, the share of circulating assets was 2 p.p. higher in comparison with the dairy cow group. By taking this indicator into consideration, it should be stated that Polish farmers had an aggressive approach to assets limiting the share of working capital. Such an assumption is not entirely true, but is rather a consequence of equipping farms excessively with fixed assets. Moreover, farmers do not gather stock because they frequently are unable to store it. In turn, short-term debt financed from 1-8% of assets, with a tendency of being nearer to the lower range. Arable farms had a relatively higher level of debt in comparison with dairy farms. This was probably due to a greater demand for working capital, obtained in the shape of working capital loans.

This is because farmers of this group possessed a larger area of land. Despite this, it was stated that farmers opted for short-term debts cautiously, to ensure the feeling of financial security. This is proven by a high cash flow indicator. It is obviously fair to assume that dairy farmers obtained higher indicator values (from 2.5-9.5), in UP group farms these ranged from 0.5 to 6.4. The results confirm that farmers opted for a conservative approach to managing working capital. An analysis of the structure of circulating assets was made to further the research and obtain confirmation for the conservative approach of farmers to managing assets. The results are presented in Figure 2. Figure 2 shows that Polish farm-

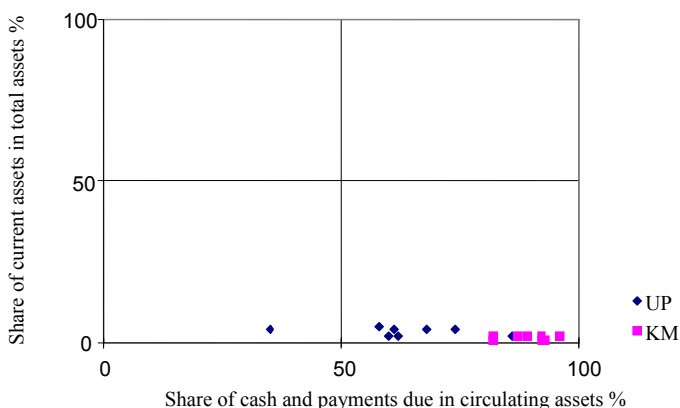


Figure 2. Asset and liability management strategies in the investigated groups of farms  
Source: own calculations based on FADN data.

ers have a conservative approach to working capital management irrespective of the type of production. The results confirm a high regard for financial security. Such behaviour is understandable especially since the farm is the family's main source of income. It can be stated, that arable farms are close to applying an aggressive approach in the scope of asset management – and even achieve such a level in one of the analyzed years. This does not mean a change in the approach of farmers towards taking advantage of short-term loans and the re-disposal of money accumulated in the farm.

Most probably, the consequence of such behaviour in the farmers' management of working capital is obtaining a lower income (Fig. 1).

## CONCLUSIONS

The researched groups of farms varied on account of factors of production. This had an impact on their level of net working capital. In both groups, farmers achieved a positive value of working capital which was shown by a positive rate of growth in nominal and updated perspectives. Despite differences in the total value of working capital, similar values were observed per surface unit. This means similar decisions are made by farmers concerning the size of circulating assets and level of short-term debt.

By taking into consideration the structure of assets and the share of short-term debt in liabilities it should be stated that polish farmers have an aggressive approach to the management of assets and a conservative one to managing liabilities (similarly to UE-27). However, this was not confirmed after researching financial liquidity. It was stated that arable and dairy cow farms possessed a conservative approach to managing circulating capital which is not only proven by high liquidity indicators but also by the structure of circulating assets.

The farmers conservative approach is most probably a result of the need to minimize financial risk and ensure financial security for the family. To define working capital management strategy in farming households, attention should be placed on the structure of circulating assets. This is due to the fact that the productive characteristics of these units require a high level of fixed assets. This has an impact on the relatively small share of circulating assets in total assets. In analyzing the structure of circulating assets one must take into consideration the monetary means transferred to the family farm. This is because they constitute financial background for the farm (despite not appearing in the balance sheet).

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STRATEGIE ZARZĄDZANIA KAPITAŁEM OBROTOWYM W GOSPODARSTWACH  
RODZINNYCH W POLSCE

Streszczenie

Celem opracowania było określenie strategii zarządzania kapitałem obrotowym w dwóch typach rolniczych - krowy mleczne i uprawy polowe. Grupy gospodarstw wyodrębniono z bazy FADN i były to gospodarstwa powtarzające się w okresie 2004-2011. Dla wyznaczenia strategii wykorzystano wskaźniki udziału aktywów obrotowych i zobowiązań bieżących w aktywach ogółem, wskaźnik płynności gotówkowej oraz udział najbardziej płynnych aktywów w aktywach obrotowych, do obliczenia którego wykorzystano także środki pieniężne przekazywane do gospodarstwa domowego, ze względu na występowanie w gospodarstwach rodzinnych tzw. „jednej kasy”. Badania potwierdziły, że polskie gospodarstwa rodzinne realizują konserwatywne podejście do zarządzania aktywami. Przesądziły o tym wskaźniki płynności oraz wysoki udział środków pieniężnych w aktywach. Rolnicy także konserwatywnie pochodzili do zadłużania się w krótkim okresie.

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