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Sources of Financial Flexibility and Investment Activity in Family Farms in Poland

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Abstract

Theoretical background: Financial flexibility is a manifestation of the ability to finance investments resulting from the need. The sources of flexibility may be different. These are own money (savings) and financial leverage. The approach to investments is not clear, because they are understood in very different ways and have a diverse nature. Research shows that the higher the financial flexibility, the greater the investment opportunities and the greater the investment activity.

Purpose of the article: The aim of the research was to identify investment activity in entities such as family farms, in groups separated according to financial flexibility, and to identify factors that influence the amount of investment expenditure. The idea was to indicate whether this process involves periods of increased activity or is rather a continuous process, how this process takes place in separate groups, and which sources of flexibility are most important for meeting the needs of farmers.

Research methods: The research covered approximately 12,000 family farms. Financial flexibility groups were separated based on cash resources and the level of financial leverage. There are 4 groups: HC_HL (highly flexible), HC_LL, LC_HL, LC_LL (lowly flexible). The work uses comparative analysis and panel methods (estimation by weighted averages).

Main findings: The research showed that investment activities were carried out with varying intensity at intervals depending on financial flexibility. In groups with greater flexibility, they were more cyclical (there were periods of low activity), in groups with lower flexibility this process was continuous (no periods of a clear reduction in investment expenditure). The main factor that had a positive impact on investment outlays were financial flows from operating activities, but also financial leverage and cash, but only when farmers used credit at the same time. However, the factors that had a negative impact on investment activity were subsidies for investment activities (exception: HC_LL group) and the share of cash in assets. To sum up, it should be stated that credit, as a source of financial flexibility, is the driving force behind investment activities in Polish family farms.

Introduction

Investment and financing activities intermingle, and it is difficult to pinpoint which is primary, the financing opportunity (financial flexibility) or the need (necessity) for investment. Although at first glance it is difficult to give a clear answer, it seems that it is the need that is the initial stage in the decision-making process for investment spending. Admittedly, the need cannot be realized when there are no such opportunities, but it sets in motion a mechanism for finding ways to finance it. The element that can link financial capacity and the level of investment is financial flexibility. Availability of funds is precisely, according to Gryko (2015), a manifestation of financial flexibility, and its source can be accumulated own cash (savings) or those resulting from the leverage used.

Sun and Geng (2023, p. 98), on the other hand, point out that financial flexibility can help meet capital requirements and improve the efficiency of investments and ensure the growth of a company. It is possible to think that this is because, as Liu and team argued, greater flexibility results in greater investment value. And it is common knowledge that investments are necessary for growth (Liu et al., 2020), and Szymańska and Dziwulski came to similar conclusions, stating that an increase in capital expenditures contributes to increased labor and land productivity on farms (Szymańska & Dziwulski, 2021, p. 382).

Most often, the issue of flexibility is considered in the context of resilience and the ability to access finance in periods of crises (e.g. Teng et al., 2021), the mechanism of the course of investment in “normal” periods is still not fully studied. Most of the studies that are devoted to the issues of investment activity are mainly concerned with the assessment of the expected benefits of the funds involved (Szczyński & Śliwa, 2010, p. 129), that is, researchers undertake the assessment of the mutual impact of the investment activities undertaken on the performance of the enterprise, while less often there is work related to resolving the link between the intensity (activity) of investment in the context of financial opportunities.

The issue of farm investment has been raised quite often. However, this problem has not been sufficiently recognized in the context of financial flexibility. This is all the more important because agriculture (that is, also family farms) faces a number of environmental challenges which will cause farmers to make necessity investment

decisions and confront them with the possibilities of financing them (especially within the framework of so-called green finance). In addition, it is interesting to deal with such entities as family farms, which have their own characteristics (and it is not about working with living organisms or weather conditions).¹

Gaps in research can be found, for example, in indicating the periods of cash spending, whether it is continuous or rather occurs in intervals. As Dykas and Misiak (2016, p. 198) argue, investments are largely dependent on the economic situation and thus assume a cyclical character (p. 208), and this means that they are made periodically. This claim is in opposition to the approach found in neoclassical economics, which points to the countercyclical nature of investment. In this context, it seems interesting to recognize how farmers who carry out investment activities behave. A manifestation of prosperity at the farm level is the achievement of better financial results, a dimension of which can be cash flow in operations. And according to research by Rodet and Smyth (2020, p. 294), greater liquidity results in greater interest in investing. The purpose of this study is to identify changes in the amount of fixed capital expenditures depending on the sources of financial flexibility of farms. It was hypothesized that investment expenditures run periodically with different intensity in financially flexible groups, where the source of flexibility is credit, and in those where the source of flexibility is earned own funds they are continuous, as a result of lower investment activity.

The paper is divided into several parts. In the first part I try to present the achievements of researchers on the issues under consideration. The second part includes a description of the selection of family farms for the study, and the method used to distinguish groups of financial flexibility. In this part, a model describing the sources of investment financing in groups of farms was defined. In the third part, an analysis of the interrelationships and factors affecting investment with regard to the sources of flexibility was carried out. In the last part, conclusions are presented and areas for further research are suggested.

Literature review

Enterprises now face complex in business markets that force them to take more risks. Financial flexibility provides businesses with different options for dealing with future unpredictable investment and financing needs (Yang & Pan, 2019, p. 125).

¹ According to Pietrzak and Zięta, family farms are the most widespread form of agriculture, regardless of the level of economic development. And when we consider the predominant position of family farms in agriculture and agricultural production, there is a need to recognize this type of agricultural production as a specific phenomenon. In their opinion, it is necessary that to fully for understand the essence and behavior of a family farm (production plants) by referring to the family that runs it. This is due to strong ties between family farms and the institution of the family, which makes them a system that forms a whole with features different from those that make up the parts considered independently (Pietrzak & Zięta, 2022, p. 44).

Some studies suggest that low financial flexibility leads to under-investment due to financial constraints (Dong & Mao, 2016, p. 95), while high financial flexibility can result in over-investment, especially from an agency cost perspective (Agha & Faff, 2014, p. 41). Both examples support the thesis that financial flexibility can negatively affect corporate performance. Between the two components of flexibility, namely cash and leverage, it is the latter that appears to be the main driver of higher capital expenditures during periods of crisis. The results obtained by Özgür et al. (2014, p. 212) suggest that cash is treated more as a form of hedging against financial distress and bankruptcy. Only it should be noted that this has to do with current activity, not investment, and the most important of the long-term problems in the operation and development of enterprises in a market economy is investment, or more precisely, the choice of optimal options (Gawron, 1997, p. 5). A similar approach is presented by Sierpińska and Jachna (2004, p. 324), who argue that the basic condition for ensuring the position and expansion of a company in the market is not only the efficiency of current management, but also making optimal decisions on development and its sources of financing. Investment covers a wide range of forms of activity, so in the literature we are confronted with many criteria and definitions of investment activity. As Rogowski (2008, p. 30) or Michalak (2007, p. 20) points out, investment is a category that is understood ambiguously. This is mainly due to the fact that they can have very different dimensions (nature). Thus, one can distinguish, by type, tangible, intangible and financial investments. In agriculture, tangible, and especially productive investments play a special role in the modernization process and in the operational activities of farms (Kusz, 2021, p. 265). It can be considered that investment activity, involves the active engagement of monetary resources to obtain benefits in the future (Jaworski, 2010, p. 291; Gorczyńska & Znaniecka, 2011, p. 169), similarly considered by Nowak et al. (1999, p. 160).

Financial flexibility, in turn, is recognized as “a company’s ability to access and restructure financing at low cost” (Gamba & Triantis, 2008, p. 2263), and also represents “a company’s ability to respond effectively to unforeseen shocks to its cash flow or investment opportunities” (Bancel & Mittoo, 2011, p. 180). More specifically, financial flexibility is a company’s ability to acquire or adjust resources in a timely manner, to seize investment opportunities (Yi, 2020, p. 20; Zhang et al., 2020, p. 1811; Erdoğan, 2019, p. 232; Opler et al., 1999, p. 4; Graham & Harvey, 2001, p. 188; Denis & McKeon, 2012, p. 1896; Byoun, 2011, p. 2; DeAngelo et al., 2011, p. 237; Ma & Jin, 2016, p. 2046; Cherkasova & Kuzmin, 2018, p. 138), providing resilience to any future unexpected events, and contributing to the maximization of corporate performance. It is assumed that the manifestation of financial flexibility is to maintain relatively high balances of liquid assets (cash and cash equivalents) or to maintain a reserve of debt capacity (Damodaran, 2007), so the components of flexibility are cash and leverage. This may mean that where there is greater availability of cash resources there is greater ability to make capital expenditures.

Marchica and Mura (2010, p. 1362), studying a sample of British small and medium-sized firms, document that financially flexible firms show increased investment capacity. Their results show that an average company that maintains unused credit capacity for at least three consecutive years can increase its capital expenditures by 37%. Ferrando et al. (2014, p. 35) concluded that financial flexibility status allows companies to reduce the negative impact of liquidity shocks on their investment decisions, the study looked at companies in nine European countries. Similarly, de Jong et al. (2012) found that U.S. firms with high levels of utilized credit capacity invest significantly more than firms with low levels. In contrast, Mahmood et al. argue that unused credit capacity is a good source of financial flexibility (Mahmood et al., 2021, pp. 485–508). This finding suggests that credit as a source of financial flexibility translates into greater financing intensity.

Data and methods

The data sources for the study were obtained from the Farm Accounting Data Network (FADN) database and came from the farms of farmers who participated continuously in the system in the period 2010–2021. The farms for which data were collected were more than 3,000 per year. At the same time, not all of them realized investments. In order to achieve the goal, from the entire base, 1,051 farms were selected for further analysis, in which investment expenditures exceeded PLN 10 thousand in 2010. In the end, the studied collective consisted of more than 12 thousand farms. The final number of farms included in the study was determined by eliminating those units whose owners (users) declared investment outlays in the amount of a few, a dozen or a few hundred Polish zlotys. This is because it is difficult to talk about investing when the level of expenditure is so small. There were about 60% of such households in 2010.

The minimum value of investment outlays was based on the definition of fixed assets according to the tax law for small businesses. The groups were separated taking into account two sources of flexibility, namely the share of cash and the share of long-term loans in the balance sheet total. Farms that showed a large (above average) share of both formed the HC_HL (high cash – high leverage) group, in the study they will be called highly flexible, the second group was made up of farms with a high share of cash and low credit (HC_LL), the third was a group of farms whose holders did not accumulate high cash, but made extensive use of long-term credit (LC_HL), and the group with poor financial flexibility was made up of farms where farmers did not show cash and did not use credit (LC_LL). The numbers in each group are shown in Figure 1.

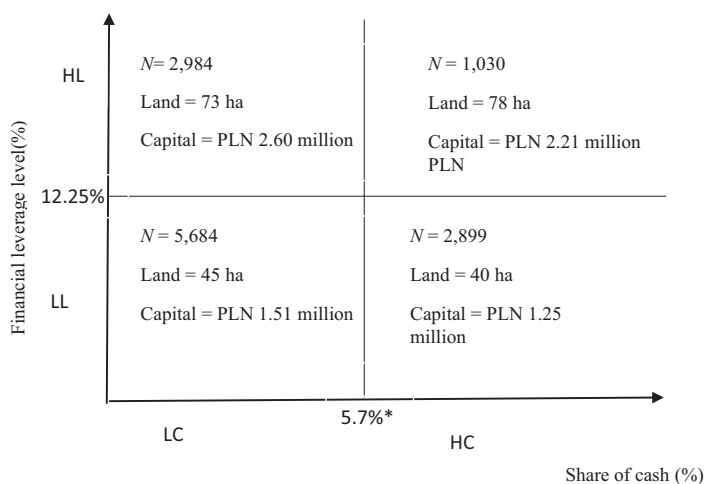


Figure 1. Size of the separated groups according to their endowment of land (ha) and capital (million PLN)

*average for the community

Source: Author's own study based on the FADN data.

Based on the figures in Figure 1, it can be seen that the extreme groups, i.e. highly flexible and poorly flexible, differ significantly in size. There were 1,030 and about 5,700 entities, respectively, while the groups that differed in their sources of flexibility numbered about 2,900–3,000 farms in favor of those whose source of flexibility was leverage. This is a picture of Polish farms, which are dominated by farmers with little cash resources and, at the same time, characterized by an aversion to debt. It is worth noting that such farmers did not have the smallest resources of land (45 ha) and capital (PLN 1.51 million). The endowment of these factors was twice as high in groups with high long-term debt. Farmers maintaining relatively high monetary resources and low leverage on their farms had similar resources of the main factors of production to those with low flexibility. This variation in resources should result in an investment approach. Factor equipment affects the level of performance, Figure 2 summarizes in addition to the operating cash flow achieved, data that show in more detail the characteristics of the separated groups.

Land is the most valuable resource, and its value is a consequence of the area owned. Farms having a high share of credit as a component of flexibility and differing in cash resources show similar values of this factor of production, and the situation is similar in groups of farms that shape their flexibility based on their own money. It turns out, however, that farmers in groups with similar acreage had different capital (without the value of land). Explicitly spend it in groups with high leverage. Farmers in the LC_HL group had 2 times the value of assets compared to those in HC_HL. Farmers in the HC_HL group, on the other hand, showed assets at a level similar to the low flexibility group (LC_LL), which shows an unfavorable capital/land ratio and

may result in a lack of investment needs in the LC_LL group, which should translate into investment intensity (amount of investment spending). On the other hand, farms in the extreme groups, i.e. HC_HL and LC_LL, so with different elasticities, had assets (without land) of similar value (despite the difference in the area of UR), which should show the behavior of farmers of the investment area. Between these groups, there are preliminary differences in the level of cash and credit, as well as the amount of operating cash flow, which may limit the LC_LL group's financial capacity. The farms in the HC_LL group are the least well-equipped, although they have relatively high cash, but due to their rather small acreage, they are unlikely to show the need to carry out investments of significant values. Assessing the level of debt, it oscillates around the amount of PLN 400 thousand and is a consequence of investment spending in previous years. It applies only to groups where the source of flexibility is credit (HL), while, as the survey shows, Polish farmers have an aversion to indebtedness (in the sample analyzed, farmers without credit accounted for more than 60%). The reluctance of farmers to go into debt is also confirmed by research conducted by Franc-Dąbrowska and Bereznička (2018, p. 79) and Kata (2020, p. 37). Achieved cash flow is higher in groups, indebted, but this is a consequence of larger acreage.

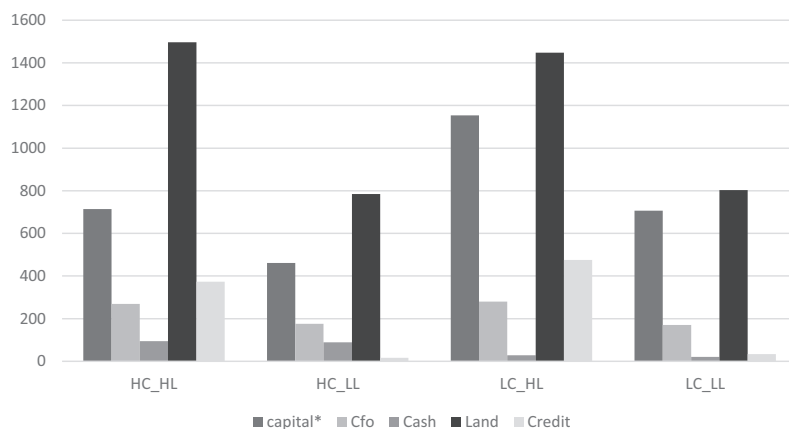


Figure 2. Value of selected characteristics of groups of farms separated according to financial flexibility

*capital value without land value

Source: Author's own study based on the FADN data.

Taking into account the initial situation of the farms and wanting to know the mechanism of investment financing, panel models were built,² and estimation was carried out using the weighted least squares method (after Breusch–Pagan and Haus-

² The choice of the panel method is due to the fact that some investments have the nature of a one-time purchase (e.g. machinery), and some are spread over time (e.g. construction).

man tests, it was not possible to use a fixed or random effects model). The general formula describing the model is presented in equation 1:

$$w_i y_i = \beta_0 w_i + \beta_1 (w_i x_{1i}) + \beta_2 (w_i x_{2i}) + \dots + \beta_n (w_i x_{ki}) \text{ for } i = 1, 2, 3, \dots, n \quad (1)$$

In turn, the weights (w) are determined by formula 2:

$$w = 1/\sigma_i^2, \text{ where } \sigma_i^2 = e^{h_i} (e_i^2) \quad (2),$$

(Borkowski et al., 2003, p. 122).

A model, taking into account the considered sources of flexibility and their impact on investment intensity, would be as follows:

$$INV = \beta_0 + \beta_1 CFo + \beta_2 cash + \beta_3 credit + \beta_4 LEV + \beta_5 C/A + \beta_6 SE406$$

The variables that were considered were related to investment financing and were: cash flow from operating activities (CFo), the state (cash) and share (C/A) of cash, the state (credit) and share (LEV) of long-term loans, the amount of subsidies for investment activities (SE406). Due to the occurrence of the phenomenon of heteroskedasticity of variables, logarithmic data was used as a method to reduce this unfavorable phenomenon. For this reason, the natural logarithm of the variable operating flow (L_CFo), the level of debt (L_credit), the value of cash (L_cash) and the amount of subsidies to investments (L_SE406) were used in the model. The dependent variable will be the value of investments, which was also logarithmized (L_INV). In addition to the econometric solution used, the paper uses descriptive and comparative methods.

Research results

Figure 3 presents the average value of capital expenditures in the following years.

As the data in Figure 3 show, the investment process in the separated groups proceeded in different ways. Family farms with greater flexibility, which was driven by financial leverage, allocated larger amounts to investment spending. Such an observation is consistent with the results of Yung et al. (2015), who found that financially flexible firms in emerging economies have higher levels of investment activity. The result obtained is consistent with the results of a study by Szymańska and her team, which shows that the main factor influencing the level of investment is the amount of long-term liabilities and, in a dynamic investment model, the amount of soft loans (Szymańska et al., 2021).

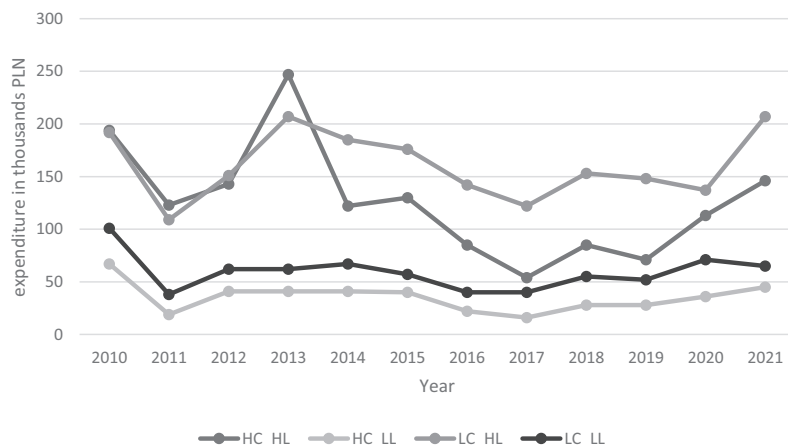


Figure 3. Average value of investment in fixed assets in the period 2010–2021

Source: Author's own study based on the FADN data.

Family farms that created flexibility also from their own cash after very large expenditures in 2013 showed a systematic decline in subsequent years (deepest in 2017), and a systematic slow increase from 2019. The reason for these changes may have been the unfavorable situation in agriculture, resulting from the decline in farmers' incomes (both at current and constant prices) (Kulawik et al., 2020, pp. 122–124). Similar mechanisms occurred in the highly flexible group (HC_HL), but the reduction in investment spending (intensity) was not so profound. It should be recalled that this group had the largest capital (assets), so the observed changes are an expression of still large needs in the purchase of fixed assets. Changes in the level of investment spending in these highly leveraged flexible groups show some fluctuations due to investment activity at intervals which shows their pro-cyclical nature. Observing the course of changes in capital expenditures in the low leverage groups (HC_LL and LC_LL groups), it should be noted that farmers incurred investment expenditures over almost the entire period under study at a similar level, and fluctuations in investment activity were not large. These results indicate that investment expenditures assumed small values, but were incurred systematically. Such behavior is justified in the case of the LC_LL group, since farmers lack cash resources and relatively had an unfavorable ratio of capital value to acreage. On the other hand, in farms with flexibility, the source of which was their own monetary resources and poor endowment of foreign capital is surprising. The behavior of this group should be considered, on the one hand, as a manifestation of the realization of farmers' investment needs, but at the same time as limited financial capabilities. The result obtained is a bit surprising, because, as Baraniak's (2017) research shows, the main source of investment financing is self-financing. Assessing the course of changes in the level of investment expenditures in these groups, it should be noted that they do not show a cyclical character. The results obtained are different from

those presented by de Jong et al. (2012), for farmers with unused leverage invested significantly smaller amounts than those who used leverage. Farmers using their credit capacity made investments with higher values, but at the same time the credit “marked” periods, increased activities in this regard. Investment activity in agriculture is also related to budget support in this area. Farmers, in order to receive reimbursement for part of the money spent and wanting to take advantage of this financial support, take out loans (to make up for financial shortfalls) and carry out investments. A certain relationship is evident in the research between these elements, because in the years ending the financial perspective (i.e. 2013, 2021) there were expenditures of higher value. Investment activity is related to financial capabilities, the manifestation of which is the value of earned financial surpluses obtained from current (operating) activities. Figure 4 summarizes the level of investment in relation to the generated cash flow from operating activities.

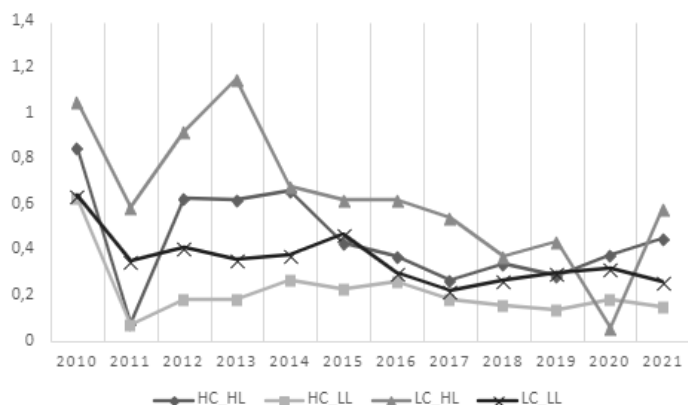


Figure 4. Relationship of the value of capital expenditures to operating cash flow from 2010 to 2021

Source: Author's own study.

The value of capital expenditures in relation to operating flow developed differently in the separated groups, but also in subsequent years. The greatest fluctuations in the relationship in question were seen in groups whose source of flexibility was loans. The relatively highest amounts allocated for investment occurred in 2013. Farmers with very high flexibility invested about 60% of the value of financial surpluses generated from operating activities, while 1.2 times the operating flows were allocated by farmers in the LC_HL group. Thus, the funds generated from current operations did not represent savings, but were transferred to investment activities. In subsequent years, the share fluctuated between 40–50%, and in the LC_HL group it decreased to nearly 0%, to reach 60% in 2021. These data confirm the earlier observation indicating that there is some periodicity in undertaking investment activity in these groups. The lowest values of capital expenditures were characterized by

farms that had significant cash resources, but did not use credit (HC_LLL), and they allocated about 20–30% of achieved operating cash flow to asset renewal. Farms that can be considered financially flexible, but with unused debt capacity distributed evenly the funds generated from current operations allocating them to fixed asset purchases. This group is evidence of less investment activity. The results obtained can be considered consistent with those obtained by Kołoszycz (2017, p. 84), as the production potential in this group was the lowest (cf. Figure 1). A possible reason for this behavior was that farmers are more cautious about using their own funds, which is confirmed by the research of Śmiglak-Krajewska (2023, p. 304).

Table 1 summarizes the correlation matrix of the variables,³ which are sources of financial flexibility and with investment. The table summarizes the interrelationships, considered issues in the entire population.

Table 1. Correlation matrix of variables related to financing and investments

Variables	INV	CFo	SE406	credit	C/A	LEV	cash
INV	1	0.3760	0.1549	0.4308	-0.0994	0.3546	0.0532
CFo		1	0.2624	0.5474	-0.0310	0.1955	0.3005
SE406			1	0.1969	-0.1035	0.0716	0.0640
credit				1	-0.0959	0.6286	0.0977
C/A					1	-0.0411	0.5123
LEV						1	0.0051
cash							1

Source: Author's own study based on the FADN data.

The largest linear relationships occurred between the variables investment and credit. It is to be expected that this source of flexibility will determine investment activity. This is understandable, since long-term credit is dedicated to investment activity. Therefore, leverage is also important. This is confirmed by the high correlation coefficient between LEV and credit (0.6286). Cash flow from operations is also an important source with an impact on investment. The SE406 variable shows a slightly lower strength of association with investment. This is due to the fact that not all farmers showed that they received such support. All of these sources of flexibility are positively correlated, so they should be expected to indicate a positive effect on the dependent variable. The value of cash has a small but positive effect on investment, while the share of cash is negatively correlated with investment.

The autocorrelation occurring between some variables (credit_LEV, cash_C/A) did not result in the elimination of variables, as these variables were not always significant in the models depending on the group. Table 2 summarizes the coefficients of the model built for the explained variable (capital expenditures).

³ The presented correlation matrix applies to all surveyed households without taking into account the division into financial flexibility groups. This approach was chosen due to the fact that the calculations carried out for the groups showed similar dependencies in terms of direction, but the differences concerned the strength of the impact.

Table 2. Model parameters for the value of capital expenditures in groups according to financial flexibility – WLS estimation

Variables	Groups			
	HC_HL	HC_LL	LC_HL	LC_LL
const	2.5702*** (4.500)	-0.3922 (-1.6064)	2.8460*** (10.59)	-3.1057*** (-19.87)
L_CFo	0.3239*** (4.363)	0.6859*** (15.90)	0.7192*** (28.51)	1,0064*** (67.55)
LEV	2.0544*** (15.06)		1.5511*** (13.73)	
L_credit		0.1597*** (7.454)		0.2465*** (58.58)
L_SE406	-0.0810** (-2.266)	0.1179** (2.211)	-0.0684*** (-2.912)	-0.0878*** (-6.117)
C/A	-7.2450*** (-8.528)	-1.9384*** (-4.430)	-5.3018*** (-7.272)	
L_cash	0.4893*** (5.812)			-0.0375*** (-7.710)
R ² (adjusted R ²)	0.723 (0.718)	0.810 (0.808)	0.840 (0.840)	0.887 (0.886)
F statistic	155.15	305.47	1609.72	1949
p-value for F statistic	0.0000	0.0000	0.0000	0.0000
Number of observations	303	290	1,218	998

Significance level: *** $p = 0.01$; ** $p = 0.05$; * $p = 0.1$

Source: Author's own study.

Operational cash flow showed a positive effect on the amount of capital expenditures regardless of the group, with the coefficient assuming the smallest magnitude in the most flexible group (HC_HL) and the largest in the LC_LL group. This result ejst a consequence of the scale of realized investments in relation to achieved flows, the farmers in this group (LC_LL), due to the lack of accumulated money (and thus low flexibility), had to make greater use of the cash generated on an ongoing basis. On the other hand, the variable of leverage also showed a positive impact, but this occurred only in groups showing high levels of leverage (HL). In contrast, in groups with low levels of debt, leverage was not a factor entering the model, but the amounts of credit that farmers used (on a small scale) also showed a positive impact on investment spending. A surprise is the negative impact of investment subsidies. According to Szymańska and her team's research, investment activity depends on the possibility of obtaining funds from EU programs dedicated i.a. the development of farms (Szymańska et al., 2021). In turn, Płonka's research shows that Polish farms are less dependent on state support compared to other European countries (Płonka, 2021, p. 47). This may mean that Polish farmers did not take advantage of the opportunity to increase investment activity.

Only the HC_LL group showed a positive sign with the coefficient. The reason for this is the small value of investment expenditures, which indicates the lack of a small amount of investment subsidy. In the other groups, purchases of fixed assets were at

a much higher level and the support received was also of higher value. However, the magnitude of the coefficients indicates that this is not a factor that could determine the activity of fixed asset purchases, but with self-financing slightly more important. The C/A variable was also a factor that negatively affected investment activity, while the LC_LL group was not significant. The result obtained in the HC_HL and HC_LL groups is not surprising, since a higher share of cash in assets results in lower shares of other resources and farmers accumulating cash do not transfer it to make investment expenditures. A negative coefficient in the LC_HL group indicates that investment activity is based on credit, and cash is of secondary importance. The impact of the variable L_cash is interesting, it is a factor that acts favorably on investment activity (0.4893) – in the HC_HL group, while negatively affecting it in the LC_LL group. The result shows that high values of cash holdings, however, are a positive complement to loan funds, while low cash holdings and reluctance (or lack of creditworthiness) to raise funds from outside is a limiting factor for flexibility and investment activity. Only current activity is a source of undertaking fixed asset purchase activities.

Conclusions

The research conducted shows how the intersecting issues of being able to finance (financial flexibility) and undertaking investment activity are complicated. This is due to the diversity of approaches to investing. The research showed that investment activities were carried out with different intensity at intervals depending on financial flexibility. In groups with higher flexibility, they were more cyclical (there were periods with low activity), while in groups with lower flexibility, the process was continuous (no periods with a clear reduction in investment spending). The main factor that exerted a favorable influence on capital expenditures was cash flow from operations, but also leverage and cash, but only when farmers simultaneously used credit. In contrast, the factors that adversely affected investment activity were subsidies for investment activities (HC_LL group is an exception) and the share of cash in assets. In summary, it should be said that credit as a source of financial flexibility is the “engine” driving investment activity on Polish family farms. Cash, even relatively high, did not have a very high value which limited investment activity and indicates that farmers set aside cash rather for the current operation of their farms, followed by investments.

The analyzes carried out do not exhaust the issue of combining financing with investing, especially in the area of family farms, due to the mutual penetration of the family and the farm and the division of funds between the household and agricultural and investment activities. This is a limitation that does not allow for full recognition of the mechanism of cash distribution (in a sense, financial flexibility). For this reason, an interesting area of research may seem to be the identification of

the relationship between the need to invest and consumption in the context of the financial flexibility of the family economy considered as a whole system. Additionally, agriculture faces challenges related to environmental protection, which will require the implementation of new (seems expensive) investments as a consequence of assessing financial possibilities. These assumptions are confirmed by the statement of Czubak et al. (2021, p. 8) about the need for specific investments that will be able to be implemented by those who have the appropriate potential. Therefore, this fits into a further area of research also related to financial flexibility.

References

- Agha, M., & Faff, R. (2014). An investigation of the asymmetric link between credit re-ratings and corporate financial decisions: “Flicking the switch” with financial flexibility. *Journal of Corporate Finance*, 29, 37–57.
- Bancel, F., & Mittoo, U.R. (2011). Financial flexibility and the impact of the global financial crisis: Evidence from France. *International Journal of Managerial Finance*, 7, 179–216.
- Baraniak, M. (2017). Investment activity of Polish farms including own funds. *Annales Universitatis Mariae Curie-Skłodowska – Sectio H*, 51(6), 21–30. <https://doi.org/10.17951/h.2017.51.6.21>
- Borkowski, B., Dudek, H., & Szczesny, W. (2003). *Ekonometria. Wybrane zagadnienia*. Warszawa: Wyd. Nauk. PWN.
- Byoun, S. (2011). *Financial Flexibility and Capital Structure Decision*. <https://ssrn.com/abstract=1108850>
- Cherkasova, V., & Kuzmin, E. (2018). Financial flexibility as an investment efficiency factor in Asian companies. *Gadjah Mada International Journal of Business*, 20, 137–164.
- Czubak, W., Pawłowski, K.P., & Sadowski, A. (2021). Outcomes of farm investment in Central and Eastern Europe: The role of financial public support and investment scale. *Land Use Policy*, 108, 105655. <https://doi.org/10.1016/j.landusepol.2021.105655>
- Damodaran, A. (2007). *Finanse korporacyjne. Teoria i praktyka*. Helion.
- DeAngelo, H., DeAngelo, L., & Whited, T.M. (2011). Capital structure dynamics and transitory debt. *Journal of Financial Economics*, 99, 235–261.
- de Jong, A., Verbeek, M., & Verwijmeren, P. (2012). Does financial flexibility reduce investment distortions? *The Journal of Financial Research*, 35(2), 243–259.
- Denis, D.J., & McKeon, S.B. (2012). Debt financing and financial flexibility evidence from proactive leverage increases. *Review of Financial Studies*, 25, 1897–1929.
- Dong, L., & Mao, N. (2016). Excess cash holding’ managerial discretion and investment distortion – the effect of spare liability capacity from the perspective of financial flexibility theory. *Modern Economic Science*, 38, 94–102.
- Dykas, P., & Misiak, T. (2016). Cykliczność inwestycji w modelu wzrostu gospodarczego – ujęcie teoretyczne oraz symulacje numeryczne. *Studia Prawno-Ekonomiczne*, C, 197–209.
- Erdoğan, S.B. (2019). Financial flexibility and corporate investment: Does financial flexibility affect sustainability of firms? In U. Akkucuk, *The Circular Economy and Its Implications on Sustainability and the Green Supply Chain* (pp. 230–245). IGI Global Publisher of Timely Knowledge.
- Ferrando, A., Marchica, M., & Mura, R. (2014). Financial flexibility across the euro area and the UK. *European Financial Management*, 23, 87–126. <https://doi.org/10.1111/eufm.12091>
- Franc-Dąbrowska, J., & Bereżnicka, J. (2018). Ufinansowanie gospodarki a zakres i skala zadłużenia gospodarstw rolniczych. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 533, 73–82.
- Gamba, A., & Triantis, A. (2008). The value of financial flexibility. *American Finance Association*, 63(5).

- Gawron, H. (1997). *Ocena efektywności inwestycji*. Akademia Ekonomiczna.
- Gorczyńska, M., & Znaniecka, K. (2011). *Zarządzanie finansami przedsiębiorstw*. Stowarzyszenie Księgowych w Polsce.
- Graham, J.R., & Harvey, C.R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics*, 60, 187–243.
- Gryko, J. (2015). Elastyczność finansowa a zdolność do inwestycji w czasie kryzysu finansowego na przykładzie spółek publicznych w Polsce. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 386.
- Jaworski, J. (2010). *Teoria i praktyka zarządzania finansami przedsiębiorstw*. CeDeWu.
- Kata, R. (2020). Independences of farmers in Poland in light of structural changes and economic fluctuation in agriculture. *Polityki Europejskie, Finanse i Marketing*, 23(72), 33–44.
<https://doi.org/10.22630/PEPIM.2020.23.72.3>
- Kołoszycz, E. (2017). Zmienność cen mleka a kształtowanie się nadwyżki na samofinansowanie inwestycji w gospodarstwach mlecznych. *Zagadnienia Ekonomiki Rolnej*, 2(351), 77–93.
<https://doi.org/10.5604/00441600.1240390>
- Kulawik, J., Płonka, R., & Wieliczko, B. (2020). Zmiany sytuacji dochodowej gospodarstw rolnych z pola obserwacji polskiego FADN w latach 2004–2018. *Zagadnienia Ekonomiki Rolnej*, 4(365), 108–1034.
<https://doi.org/10.30858/zer/130053>
- Kusz, D. (2021). *Pomoc publiczna a procesy modernizacyjne*. Wyd. Politechniki Rzeszowskiej.
- Liu, X., Yn, L., Zhong, Y., & Chao, Y. (2020). Spatial spillover effect of financial flexibility on investment in China's convention and exhibition listed companies. *Mathematical Problems in Engineering*, 2020.
<https://doi.org/10.1155/2020/3926747>
- Ma, C.A., & Jin, Y. (2016). What drives the relationship between financial flexibility and firm performance: Investment scale or investment efficiency? Evidence from China. *Emerging Markets Finance and Trade*, 52, 2043–2055.
- Mahmood, Y., Rashid, A., & Rizwan, M.F. (2021). Do corporate financial flexibility, financial sector development and regulatory environment affect corporate investment decisions? *Journal of Economic and Administrative Sciences*, 38(3), 485–508. <https://doi.org/10.1108/JEAS-10-2019-0109>
- Marchica, M.T., & Mura, R. (2010). Financial flexibility, investment ability, and firm value: Evidence from firms with spare debt capacity. *Financial Management*, 39(4), 1339–1365.
- Michalak, A. (2007). *Finansowanie inwestycji w teorii i praktyce*. PWN.
- Nowak, E., PieliCHATy, E., & Poszwa, M. (1999). *Rachunek opłacalności inwestycji*. PWE.
- Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52, 3–46.
- Özgür, A., Florackis, C., & Ozkan, A. (2014). Financial flexibility, corporate investment and performance: Evidence from East Asian firms. *Review of Quantitative Finance and Accounting*, 42, 211–250
- Pietrzak, M., & ZiętaRa, W. (2022). Beyond the black box: Towards a systems theory of farming family and family farm. *Problems of Agricultural Economics*, 370(1), 42–86. <https://doi.org/10.30858/zer/143079>
- Płonka, R. (2021). Sytuacja dochodowa oraz poziom wsparcia publicznego towarowych gospodarstw rolnych w wybranych krajach UE. *Wiadomości Statystyczne*, 66(12), 24–53.
<https://doi.org/10.5604/01.3001.0015.5594>
- Rodet, C., & Smyth, A. (2020). Competitive blind spots and the cyclical investment: Experimental evidence. *Wiley Southern Economic Journal*. <https://doi.org/10.1002/soej.12446>
- Rogowski, W. (2008). *Rachunek efektywności inwestycji*. WoltersKluwer Polska.
- Sierpińska, M., & Jachna, T. (2004). *Ocena przedsiębiorstwa według standardów światowych*. PWN.
- Sun, S., & Geng, C. (2023). Financial flexibility and investment efficiency based on empirical data of listed companies in the new generation of information technology industry. *Pacific International Journal*, 6(1), 98–103. <https://doi.org/10.55014/pij.v6i1.316>
- Szczęśny, W., & Śliwa, J. (2010). *Budżetowanie operacyjne, finansowe i kapitałowe w przedsiębiorstwie*. C.H. Beck.
- Szymańska, E.J., & Dziwulski, M. (2021). The impact of fixed asset investments on the productivity of production factors in agriculture. *European Research Studies Journal*, 24(1), 382–394.

- Szymańska, E.J., Dziwulski, M., & Kruszyński, M. (2021). Determinants of fixed asset investment in the Polish farms. *Sustainability*, *13*, 13741. <https://doi.org/10.3390/su132413741>
- Śmiglak-Krajewska, M. (2023). Behavioral aspects of investment decisions in agricultural households. *Annals PAAAE*, *25*(3), 303–3016. <https://doi.org/10.5604/01.3001/0053.8837>
- Teng, X., Chang, B.-G., & Wu, K.-S. (2021). The role of financial flexibility on enterprise sustainable development during the COVID-19 crisis – a consideration of tangible assets. *Sustainability*, *13*(3), 1245. <https://doi.org/10.3390/su13031245>
- Yang, L., & Pan, Z. (2019). Dynamic relationship between financial flexibility and performance-moderating effect of financing constraint and agency cost. *Resource Economic Management*, *40*, 125–144.
- Yi, J. (2020). Financial flexibility, dynamic capabilities, and the performance of manufacturing enterprises. *Journal of Research in Emerging Markets*, *2*, 19–32.
- Yung, K., De Qing, D.L., & Yi, J. (2015). The value of corporate financial flexibility in emerging countries. *Journal of Multinational Financial Management*, *32–33*, 25–41.
- Zhang, H., Zhang, Z., & Steklova, E. (2020). Do companies need financial flexibility for sustainable development? *Sustainability*, *12*(5), 1811.