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## THE LOCAL INSTITUTIONS AND TRANSACTION COSTS OF PUBLIC AID IN THE PROCESS OF AGRICULTURE MODERNISATION

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### Abstract

*The main goal of the paper was to determine local institutions (organizations) and assessment of the level of private transaction costs incurred by beneficiaries of public aid related to the modernization of farms. The research was held in 2012 among 129 farms, which in 2004-2011 benefited from public financial aid in their investment activity. The selected farms were researched with the use of interview questionnaire concerning organisation of farms, obtained economic results, assessment of executed investments and relations of farmers with local institutions of the agricultural environment and the level of transaction costs. An estimation of the level of private transaction costs related to the public aid received in the investment activity was made, on the basis of information obtained from farmers as part of the interview conducted using the questionnaire.*

*It was found that for farmers the most important in the modernization process of farms were the Centre for Advisory Agricultural Service (CASS) and The Agency for Restructuring and Modernization of Agriculture (ARMA). According to the farmers' opinion, the main barriers to cooperation with local organizations were the high costs of using their services and the difficult access to the institutions. The estimated level of private transaction costs incurred by the beneficiaries in relation to the acquired investment subsidies was low and should not constitute a barrier to obtaining public aid in the process of modernization of farms. On farms characterized by a lower value of investment outlays, the level of private transaction costs in relation to the acquired investment subsidies was higher than in other groups of farms. The largest share in the structure of estimated private transaction costs was related to the costs of collecting documentation and filling in applications.*

**Keywords:** local institutions, transaction costs, public aid.

**JEL codes:** D23, O17, H25.

## **Introduction**

The institutional environment plays a fundamental role in the modernisation of agriculture. The institutional system has a vital impact on the transformation processes of this sector. At the same time, within the institutional system, the literature draws attention to the importance of local institutions which, due to close contact with the farmer, have the opportunity to intensively influence their behaviour in the modernisation of farms (Czudec, Kata, Miś and Zajac, 2008). Their influence on the efficiency of the process of modernisation of agriculture manifests itself mainly in (Kołodziejczyk, 2008; Zajac, 2009):

- the possibility of obtaining information, knowledge, experience and know-how;
- improvement of the process of adjusting to changing farming conditions, both in the market and legal area;
- higher level of participation in the re-transfer of income within the framework of solutions applied in the area of agricultural policy, in particular the European Union Common Agricultural Policy (EU CAP);
- engaging in effective market activity;
- the possibility of limiting the risk of management;
- being conducive to obtaining financial resources for development;
- improved access to the land market;
- achievement of progress in agricultural activity;
- access to information;
- reduction in transaction costs.

The lack of certain institutions or their weakness significantly limits the possibilities of structural changes and development of agriculture. Institutions, especially local institutions – organisations within the meaning of the new institutional economics – operating in the immediate environment of agriculture, can significantly determine the efficiency of the process of modernisation of agriculture. Their impact should be reflected in efficiency changes (taking over of economic rent) but also taking over of political rent (related to participation in support instruments under the EU CAP). In the aspect of changes in agriculture, the role of the institutional environment in inspiring and helping farmers in applying for the EU funds under the CAP successfully takes on particular importance. In this area of cooperation between farmers and institutions, the possibilities of participation in the so-called political rent are particularly important. However, this requires an active attitude of the farmer, both in the economic area and in the area of relations with institutions. On the other hand, the disability of institutions, despite the active attitude of a farmer, can be a serious barrier limiting the development of agriculture. In addition, barriers hindering and reducing farmers' cooperation with the institutional environment generate unnecessary transaction costs. The identification of administrative barriers and the level of transaction costs allows for assessing the effectiveness of the applied agricultural policy instruments. Moreover, it allows for eliminating barriers which is an important element limiting transaction costs and contributing to accelerating the pace of implementation of agricultural development support instruments and maximising the results obtained.

### **Research objective, materials and methodology**

The purpose of the work was to determine the role of local organisations and assess the level of private transaction costs incurred by beneficiaries of public aid related to the modernisation of farms.

The basic source of information used in the research was empirical data collected on the basis of an interview questionnaire among randomly selected farms. Due to the fact that production investments are of particular importance in the process of modernisation of farms, the subject of research were farms meeting the following criteria:

- farms that modernised the production workshop by incurring capital expenditures on tangible fixed assets in 2004-2008,
- farms that benefited from financial support under the Sectoral Operational Programme (SOP) Restructuring and modernisation of the food sector and rural development 2004-2006, Measure 1.1. Investment in agricultural holdings in their investment activity,
- farms where the investment exploitation phase lasted at least four years (the investment exploitation phase started in 2008 at the latest).

The research was carried out in the Podkarpackie Voivodeship. In the voivodeship selected for the research, there were 482 farms which benefited from the investment subsidy under the SOP Restructuring and modernisation of the food sector and rural development 2004-2006. The choice of Measure 1.1 Investments on farms from among all the EU CAP instruments was based on the fact that this measure was focused directly on the modernisation of agriculture and constituted a significant share within the framework of the SOP Agriculture 2004-2006. In the research 129 farms were selected (with a 95% confidence level, such a sample gives an estimation error of 3.2%) at random (simple random sampling – random sampling without replacement). A study was carried out on selected farms in 2012 using an interview questionnaire on the organisation of farms, economic results obtained, evaluation of completed investments, as well as farmers' relations with local institutions of the agricultural environment and the level of transaction costs. The analysis covered the period between 2004 and 2011.

The subject of research were the relations of farmers with local institutions of the agricultural environment and the level of private transaction costs related to the investment subsidies obtained as part of Measure 1.1 Investments on farms of the SOP Agriculture 2004-2006. The research assumed that local institutions are those located close to agriculture and having a direct contact with farmers, interacting directly with farmers and shaping specific conditions for the operation of farms (Czudec et al., 2008). Due to such an approach to the perception of local institutions, the concept of institutions was understood as formal local organisations. The research does not take into account legal norms, rules and procedures, behavioural patterns, and ways of thinking which are included in the category of institutions by the economy through institutional trends.

The research assessed the level of private transaction costs related to the received public aid in investment activity. Measurement of transaction costs is complicated and coupled with considerable difficulties. As emphasised by Daniłowska (2007), the absolute level of transaction costs alone is not important but what is vital is the relative ranking of transaction costs related to organisational differences and contractual choices. As indicated by Drygas (2011), there are four main factors affecting the volume of transaction costs incurred by applicants for the EU support. These are: legibility of the EU legislation on the CAP in national legislation, efficiency of public administration responsible for the implementation of programmes, efficiency of beneficiaries' service, and differences in organisational structures in individual countries. These factors are immeasurable, difficult to quantify, which makes it impossible to precisely measure them. This results in the need to estimate them. The assessment of the level of transaction costs borne by the beneficiaries in the research was made based on information obtained from farmers in the framework of the interview conducted with the use of a questionnaire. Transaction costs refer to all costs incurred by the parties to the contract related to its conclusion and execution. They include:

- costs of searching for and obtaining information about the possibility of concluding a contract;
- costs of negotiating terms of the contract; in the case of aid programmes, these are costs associated with the preparation of documentation necessary to obtain support (potential beneficiaries);
- costs of controlling and executing the terms of the contract.

The following variables were selected to estimate the level of transaction costs:

- the number of visits to institutions to obtain financial assistance;
- distance from the institutions with which the farmer cooperated in order to obtain financial assistance;
- the cost of commuting related to the assistance received (PLN) (value estimated by the farmer), time devoted to obtaining and accounting for financial assistance expressed in the number of hours (number of hours estimated by the farmer);
- the cost of documentation and filling out the application (PLN).

Some variables were quantitative and some were expressed in money. The costs estimated this way were compared to the value of public aid received in investment activities in the framework of the SOP 2004-2006, Measure 1.1 Investments on farms. In the research, total value of transaction costs incurred by farmers was estimated by summing up the costs of commuting, costs related to time spent on obtaining and accounting for the received assistance, as well as costs of documentation and completing the application. Costs related to the time allocated were calculated as the product of the average net salary in the national economy per one hour of work and the number of hours devoted by the farmer. This way, the estimated transaction costs allowed capturing the relation of transaction costs between the studied objects. The solution adopted is a significant simplification of the analysis of transaction costs, but as Daniłowska (2007) points out, such a method is characterised by comprehensiveness, relative simplicity, relatively low costs of obtaining and processing this information.

The studied farms were divided into five groups according to the value of completed investments. One of the methods of cluster analysis – k-means clustering, belonging to non-hierarchical methods, was used to divide farms. This method, for a number of clusters determined in advance, groups variables so that the clusters are as homogeneous as possible and at the same time differ from each other to the maximum. Thus, this method seeks to obtain the most significant results of the analysis of variance. The following five groups of farms were distinguished:

- 1<sup>st</sup> group – very low level of capital expenditures,
- 2<sup>nd</sup> group – low level of capital expenditures,
- 3<sup>rd</sup> group – average level of capital expenditures,
- 4<sup>th</sup> group – high level of capital expenditures,
- 5<sup>th</sup> group – very high level of capital expenditures.

The number and structure of farms with division into particular groups is presented in Table 1, while the border values of capital expenditures in individual groups of farms studied are presented in Table 3.

Table 1

*The number and structure of the studied farms by individual groups*

Group of farms	The number of farms in the group (piece)	Share (%)
1 <sup>st</sup> group	42	32.5
2 <sup>nd</sup> group	33	25.6
3 <sup>rd</sup> group	26	20.2
4 <sup>th</sup> group	23	17.8
5 <sup>th</sup> group	5	3.9
Total	129	100

Source: own calculations.

In order to determine the variation of the analysed variables in the studied farms divided by the level of capital expenditures, the non-parametric Kruskal–Wallis test of variance was used. The Wilcoxon test was used to assess the non-accidental nature of changes in selected variables over time.

### Research results

The process of modernisation of agriculture and the fact that it is closely related to the need to complete production investments often leads to structural changes. The scope of these changes may vary. They may be superficial, but these are also major changes leading to the emergence of a new reality. They concern many aspects and, above all, equipment in production factors.



In the studied farms, the average utilised agricultural area in 2004 was 36.6 ha, and in 2011 it was 44% larger (Table 2), and these differences were statistically significant (the value of  $p$  of the Wilcoxon matched-pairs test for the variables “Utilised agricultural area in 2004” and “Utilised agricultural area in 2011” was 0.0000). It is worth noting that in all the groups of farms studied over the analysed period, the utilised agricultural area increased (only in the group of farms with a very high level of investment this change was not statistically significant). This points to the fact that possibilities of increasing production potential are of key importance in the process of modernisation of farms. In this context, institutional solutions improving the functioning of the land market in Poland, especially in the field of land lease, should also be sought. The significance of the lease is indicated by a relatively large share of this form of land possession in the ownership structure of utilised agricultural areas. In 2004, it was 33.6%, while in 2011 it was 36.4%. The share of lease on farms with very low, low and average level of investment increased, while on farms with the highest level of investment it decreased (Table 2). This was due to the fact that farms with a high and very high level of investment rather tended to increase own land resources by purchasing land so far leased. This strategy allows increasing the stability of management compared to the lease, but it causes a greater financial burden related to the investment in the purchase of land. The ability of farms to make an effort to modernise the production workshop largely depends on their production potential and economic strength. One of the main barriers to development and modernisation of farms is the small scale of production. Large farms adopt new technologies faster and easier. They also have easier access to them due to greater opportunities to use external sources of funding (Carter, 1988). In addition, larger farms have the potential to fully use modern production techniques, and farmers managing larger farms are able to accept higher investment risk and can afford the costs of an experiment with new production technology (Barrett, Carter and Timmer, 2010).

Table 2

*Characteristics of the studied farms*

Parameter	Total		Investment level									
			very low		low		average		high		very high	
Year	2004	2011	2004	2011	2004	2011	2004	2011	2004	2011	2004	2011
Utilised agricultural area (ha)												
$\bar{x}$	36.6	52.7	17.8	23.5	31.2	43.3	43.5	51.3	45.1	90.3	155.1	195.1
Me	23.3	39.7	14.1	18.1	23.5	39.7	37.3	51.8	23.2	88.8	111.2	191.2
Vs	114.4	91.4	64.9	73.3	70.2	63.7	76.6	56.2	123.1	57.9	42.5	18.3
min.	2.8	5.4	2.8	5.4	2.9	9.2	12.8	12.2	12.0	19.7	100.0	140.0
max.	248.4	247.4	49.4	75.7	90.0	120.7	132.3	108.6	248.4	247.4	228.7	228.7
The value of $p^a$ for the Wilcoxon matched-pairs test for the variables “Utilised agricultural area in 2004” and “Utilised agricultural area in 2011”												
$p$	0.0000 <sup>a</sup>		0.0006 <sup>a</sup>		0.0000 <sup>a</sup>		0.0173 <sup>a</sup>		0.0001 <sup>a</sup>		0.1088	
Share of lease in the ownership structure of land resources (%)												
$\bar{x}$	33.6	36.4	20.8	35.3	19.9	34.9	15.6	19.9	57.2	51.4	58.0	31.1
The number of annual work units (AWU/100 ha of UAA)												
$\bar{x}$	11.0	8.4	16.6	12.9	9.0	7.0	8.9	8.5	7.4	3.2	1.8	1.7
Me	7.8	6.0	14.2	10.0	6.6	4.2	7.2	5.3	7.0	2.7	2.0	1.9
Vs	86.4	95.5	70.4	69.1	77.8	86.8	75.4	97.7	64.2	71.1	19.1	43.0
min.	1.0	0.8	2.0	1.5	1.7	1.4	1.5	2.4	1.0	0.8	1.4	1.0
max.	42.6	37.0	42.6	37.0	28.7	23.4	27.5	32.7	20.2	8.2	2.1	2.9
The value of $p^a$ for the Wilcoxon matched-pairs test for the variables “The number of annual work units per 100 ha of UAA in 2004” and “The number of annual work units per 100 ha of UAA in 2011”												
$p$	0.0000 <sup>a</sup>		0.0024 <sup>a</sup>		0.0055 <sup>a</sup>		0.4386		0.0002 <sup>a</sup>		0.5002	
Gross value of fixed assets per annual work unit (PLN thousand/AWU)												
$\bar{x}$	167.0	351.5	132.7	182.9	142.5	291.0	194.9	405.6	181.1	581.6	406.8	827.9
Me	137.2	303.2	109.0	161.9	150.0	300.3	163.9	393.3	167.2	508.5	331.5	524.6
Vs	72.7	66.6	53.7	51.0	36.3	32.2	82.7	28.4	66.9	43.1	59.2	57.6
min.	17.1	72.5	43.8	72.5	47.8	113.6	27.3	221.0	17.1	254.3	81.0	397.5
max.	878.0	1348.4	334.3	499.6	266.8	481.3	878.0	600.3	421.0	1297.7	647.3	1348.4
The value of $p^a$ for the Wilcoxon matched-pairs test for the variables “Gross value of fixed assets per annual work unit in 2004” and “Gross value of fixed assets per annual work unit in 2011”												
$p$	0.0000 <sup>a</sup>		0.0000 <sup>a</sup>		0.0001 <sup>a</sup>		0.0000 <sup>a</sup>		0.0431 <sup>a</sup>		0.0000 <sup>a</sup>	
Gross value of fixed assets per 1 ha of utilised agricultural area (PLN thousand/ha)												
$\bar{x}$	15.3	21.4	20.1	20.3	12.3	17.0	17.4	32.7	9.9	18.8	6.9	11.9
Me	10.0	14.8	16.7	17.3	9.3	12.0	10.0	18.9	9.8	12.1	7.0	11.4
Vs	99.4	86.7	90.3	61.9	85.4	72.1	108.0	87.3	63.6	99.8	46.0	18.3
min.	1.1	4.5	5.3	4.9	2.5	5.9	1.0	7.2	1.3	4.5	1.6	9.8
max.	107.1	92.5	107.1	49.6	39.1	52.1	87.8	92.5	20.6	92.3	9.4	14.2
The value of $p^a$ for the Wilcoxon matched-pairs test for the variables “Gross value of fixed assets per 1 ha of UAA in 2004” and “Gross value of fixed assets per 1 ha of UAA in 2011”												
	0.0000 <sup>a</sup>		0.0085 <sup>a</sup>		0.0001 <sup>a</sup>		0.0001 <sup>a</sup>		0.0062 <sup>a</sup>		0.0431 <sup>a</sup>	

<sup>a</sup> significant at  $p < 0.05$ .

Source: own calculations.



The investments completed on farms result not only in the increase in production potential, but also changes in the relations of production factors, i.e. the type of production techniques used. In the conditions of a fast increase in labour costs compared to other production factors (Runowski and Ziętara, 2011), it becomes necessary to implement labour-saving production techniques resulting in an increase in the relation of capital to labour. Analysing changes which took place in the studied farms, one can notice a decrease in the number of annual work units per 100 ha of utilised agricultural area and an increase in the technical equipment of labour and technical equipment of land (Table 2). These changes were statistically significant except for the change in the number of annual work units per 100 ha of UAA on farms with an average ( $p=0.4386$ ) and very high ( $p=0.5002$ ) level of investment. Changes regarding the relations of production factors which occurred in the studied farms should be considered beneficial.

On the analysed farms, the value of investments carried out in 2004-2011 was at the level of PLN 515.8 thousand (Table 3). As regards the assessment of the value of capital expenditures on farms divided by the level of investment, the differences between groups of farms were statistically significant (Table 3). On farms with a very high level of capital expenditures, the value of investment was 19.7 times higher than on farms with a very low level of investment. There were also statistically significant differences between all analysed groups of farms (Table 1 in the Annex). This data indicates a large scale of diversification of investment activity of the studied farms. In the case of the value of capital expenditures per one annual work unit, comparison of farms with very small and very high level of investment indicates that the differences were significant – over 11.3 times (Table 3). The statistical analysis shows that statistically significant differences in the level of this indicator were not found in the case of farms with an average and low, as well as average and high and very high level of investment and in the case of farms with a high and very high level of capital expenditures (Table 2 in the Annex). This points to the fact that on farms with a higher level of completed investments, substitution of labour with capital occurred to a greater extent than on farms with a lower level of investment. In turn, when analysing the value of capital expenditures per 1 ha of utilised agricultural area (Table 3), the level of completed investments was statistically significantly different between the specified groups of farms (Kruskal–Wallis test  $p=0.0000$ ). At the same time, statistically significant differences were noted between farms with a very low level of investment and those with an average and high level of investment, as well as between farms with a low level of investment and those with an average and high level of investment (Table 3 in the Annex). It is worth noting that on farms with a very high level of completed investments, this indicator did not differ significantly from other groups. This is due to the fact that despite a significant level of investment in this group of farms, these were also farms characterised by a much larger utilised agricultural area which resulted in a smaller increase in technical equipment of land.

Table 3

*Capital expenditures incurred on the analysed farms in 2004-2011*

Parameter	Total	Investment level					Value of $p^a$ for the Kruskal–Wallis test
		very low	low	average	high	very high	
The value of capital expenditures (PLN thousand)							
$\bar{x}$	515.8	109.8	289.6	674.0	1,044.1	2,167.6	0.0000 <sup>a</sup>
Me	305.8	105.0	270.0	639.7	1,038.7	1,760.0	
Vs	96.6	35.8	23.6	12.6	12.3	28.5	
min.	23.4	23.4	201.5	567.0	875.0	1,681.0	
max.	2,850.4	189.5	451.3	841.2.0	1,423.1	2,850.4	
The value of capital expenditures per one annual work unit (PLN thousand/AWU)							
$\bar{x}$	242.7	61.1	174.9	267.2	545.7	693.6	0.0000 <sup>a</sup>
Me	189.0	53.1	161.2	270.5	500.0	696.1	
Vs	89.7	62.6	45.7	28.1	35.8	24.1	
min.	21.0	21.0	70.7	107.1	226.5	440.0	
max.	1,108.0	212.4	401.0	466.2	1,108.0	850.5	
The value of capital expenditures per 1 ha of utilised agricultural area (PLN thousand/UAA)							
$\bar{x}$	11.7	6.2	9.6	19.2	16.1	11.1	0.0000 <sup>a</sup>
Me	9.0	5.5	6.7	14.0	11.8	12.5	
Vs	87.1	54.2	66.7	71.6	71.2	18.2	
min.	1.5	1.5	3.7	6.6	5.2	8.8	
max.	55.0	17.0	24.9	50.8	55.0	12.6	

<sup>a</sup> significant at  $p < 0.05$ 

Source: own research.

When analysing the type of completed investments, it was found that they concerned mainly machinery and equipment as well as tractors (Table 4). The advantage of these investments over others results from the fact that these investments bear less risk due to their mobile nature. They are characterised by a higher degree of reversibility and higher degree of liquidity. In the case of the analysis of the type structure of the completed investments on farms diversified in terms of the level of capital expenditures, some differences can be noticed (Table 4). On farms with a very high level of investment, purchase of land had the largest share in capital expenditures, while on farms with an average level of investment these were buildings and structures, and on farms with very low level of investment, investments in tractors dominated (Table 4).

Table 4

*Type of investments carried out on the studied farms in 2004-2011  
(% of capital expenditures)*

Specification	Total	Investment level				
		very low	low	average	high	very high
Land	16.32	2.61	4.38	4.99	21.01	40.45
Plantings	0.17	-	-	0.57	0.06	-
Buildings and structures	21.15	21.53	19.44	37.28	13.75	12.84
Tractors	29.35	42.94	34.70	28.37	31.75	15.24
Means of transport	1.22	3.55	1.41	0.11	1.24	1.84
Machines and devices	30.78	27.15	38.55	27.19	31.51	29.62
Basic herd animals	0.64	0.46	1.46	0.58	0.69	-
Technical infrastructure	0.36	1.76	-	0.91	-	-
Computers and software	0.01	-	0.06	-	-	-

Source: own research.

The analysis of the sources financing investments on the studied farms indicates a significance of public financial support in investment activity. Equity had the greatest importance in financing investment in the analysed farms (39.1%), followed by funds obtained from the EU support funds (33.77%), preferential loans (15.7%), commercial loans (11.23%) and loans (0.2%) (Table 5). While analysing the sources of financing investment activities on farms divided by the level of completed investments (Table 5), it can be noticed that the significance of the EU support funds decreased with the increase in the level of investment (in the group of farms with a very low level of investment, it was 45.28% of the value of capital expenditures, with a low level – 41.64%, average level – 34.55%, high – 34.04%, and very high – 20.2%). This was partly due to the limits for aid for a single farm which, especially on farms which completed large investments, limited the possibility of financing investments from this source. However, it is also worth noting that on farms with the highest level of investment, the share of preferential loans in financing investments was greater than in other groups. This may be related to the type of investments completed (Table 4). In this group of farms, dominating investments were those in land the purchase of which could be financed under preferential credit lines or liabilities could be spread over instalments when buying land so far leased from the Agricultural Property Agency.

Table 5

*Sources of funding investment on the analysed farms (%)*

Sources of funding	Total	Investment level				
		very low	low	average	high	very high
Equity	39.10	43.24	43.43	36.58	36.29	43.86
Commercial loan	11.23	8.98	7.89	19.56	11.18	1.73
Preferential loan	15.70	0.93	6.39	9.31	18.49	34.20
Loan	0.20	1.58	0.65	-	-	-
SAPARD	0.29	0.00	0.00	0.18	0.26	0.92
SOP 2004-2006 Measure 1.1 Investment in agricultural holdings	20.90	42.71	32.46	24.37	13.99	11.33
SOP 2004-2006 Measure 2.4 Diversification of agricultural activities and activities close to agriculture to provide multiple activities or alternative incomes	0.62	-	-	1.14	0.89	-
RDP 2004-2006 Adaptation of farms to EU standards	0.58	0.81	2.61	0.57	-	-
RDP 2007-2013 Modernisation of farms	10.42	1.76	6.57	7.58	17.59	6.11
RDP 2007-2013 Diversification into non-agricultural activities	0.96	-	-	0.71	1.31	1.84

Source: own research.

The institutional system constituting a group of institutions and organisations supporting market processes is the essential element of the environment of the agriculture. Nowadays, agriculture cannot function efficiently without institutions. Thanks to institutions, the benefits of business activity increase as they coordinate behaviours, reduce the risk of management, regulate the principles of interpersonal contacts and create better conditions for development of business entities (Czudec et al., 2008). In the literature, the institutional system is divided into “norms,” “markets” and “organisations”. Norms mean legislation, defining the principles of functioning of the economy, concluding contracts and enforcing them. With regard to markets, the following are taken into account: financial market, labour market and market for goods and services, in the sense of infrastructure enabling connections with these markets and increasing the mobility of production factors being the subject of transactions concluded there. The category of organisations concerns mainly institutions distinguished according to various criteria, e.g. legal norms, both governmental and non-governmental organisations fulfilling various functions and tasks in the society and the economy, including in agriculture and in rural areas. Properly prepared institutions are a prerequisite for improving competitiveness of the Polish agriculture as well as for obtaining financial resources from administrative and political structures, especially funds needed for restructuring and modernisation (Czudec et al., 2008; Czyżewski and Matuszczak, 2008; Miś, 2008).

Institutions which can support transformation processes in agriculture at the local level include (Czudec et al., 2008):

- local authorities,
- institutions of basic markets, i.e. financial, insurance and labour markets,
- agricultural self-government organisations,
- agricultural unions, associations and industry organisations,
- organisations in the field of agricultural advisory, both private and public.

Table 6

*Farms specified by the level of completed investments benefiting from various forms of assistance of institutions in the process of modernisation (% of farms)*

Form of support	Institutions	Total	Investment level				
			very low	low	average	high	very high
Assistance in obtaining the EU funds	AAC	91.5	95.2	87.9	92.3	91.3	80.0
	Bank	1.6	-	-	-	8.7	-
	Private consulting	4.6	-	6.1	-	8.7	40.0
Consulting, training	AAC	76.7	80.9	84.8	57.7	82.6	100.0
	Private consulting	1.6	-	3.0	3.8	-	-
	Enterprises providing means for agricultural production	10.6	-	6.1	11.5	21.7	40.0
	Agricultural Chamber	2.3	-	-	-	4.3	40.0
	Industry organisations	1.6	-	-	-	8.7	-
	AAC	86.0	83.3	93.9	76.9	91.3	80.0
Assistance in preparing business plans	Bank	3.9	-	3.0	11.5	4.3	-
	Private consulting	4.7	-	12.1	-	8.7	-
Assistance in preparing a loan application	AAC	45.7	40.5	63.6	38.5	39.1	80.0
	Bank	24.8	21.4	9.1	26.9	39.1	40.0
	Private consulting	3.1	4.8	6.1	-	-	-
Access to market information in the area of innovation	AAC	38.0	38.1	36.4	38.5	34.8	80.0
	TV, Internet	11.6	7.1	18.2	7.7	13.0	-
	Agricultural Chamber	1.6	-	-	-	8.7	-
Introduction of new technologies	AAC	45.0	61.9	45.4	42.3	34.8	60.0
	Enterprises providing means for agricultural production	2.3	-	-	-	13.0	-
	Scientific institutes	0.8	-	-	-	4.3	-
Introduction of new products and services	AAC	11.6	16.7	6.1	7.7	8.7	40.0

Source: own research.

In own research, the assessment of cooperation of the studied farms with the institutional environment allowed noticing that the most important institution for the farmers with which they cooperated was the Agricultural Advisory Centre (AAC) (Table 6). This data indicates that the AACs play a significant role as an institution supporting modernisation processes on farms. In all farms, irrespective of the level of completed investments, the AAC played an important role in obtaining support funds from the EU. Similar results were also obtained in the studies by Czudec and co-authors (2008) and by Czubak and Sadowski (2010). This indicates that in the process of obtaining public funds farmers have a great trust in public agricultural consultancy, much greater than in private consulting companies. Only 4.6% of farmers indicated the use of services of private entities. A significant role in the process of modernisation of agriculture is also played by institutions responsible for the penetration of progress and its adaptation. According to own research, the AACs play an important role in this case as well. The services of this organisation are used by farmers primarily in the field of consulting in making investment decisions, seeking information about technical innovations or implementing new technologies (Table 6). In addition to the AACs, the role of enterprises providing resources for agricultural production is also noticeable in the area of progress adaptation. Moreover, farmers are also looking for information on their own, using contemporary mass media, especially the Internet.

The intensity of relations between farmers and local organisations also proves the importance of these organisations in the process of modernisation of farms. The possibility of benefiting from cooperation with organisations largely depends on the farmers' willingness to make contacts and start cooperation. Data on the intensity of farmers' relations with the institutional environment confirms the importance of the AACs in the process of modernisation of farms. Farmers maintained the most intensive relations with the AAC, followed by communal offices, ARMA and banks (Table 7). High level of intensity of relations with these organisations resulted from the fact that they are of great importance in the process of raising funds for investment activities and having information about these funds. It is also worth noting that the level of completed investments did not have a statistically significant impact on the level of contacts between farmers and these institutions. Statistically significant differences in relations between groups of farms divided this way were noted only in the case of local organisations, such as the Agricultural Property Agency (APA) and the Agricultural Chamber. In the case of the APA, the intensity of relations was statistically significantly higher on farms with a high and very high level of investment than on farms with a low level (Table 4 in the Annex). On farms with a high and very high level of investment, the utilised agricultural area increased and the share of the lease in the ownership structure of UAA decreased (Table 2), which was related to investment in land purchase and the necessity of contacts with the APA. This indicates great importance of this organisation in development of farms and limiting the imperfections of the land market related mainly to its immobility. The APA should be included among institutions which increase liquidity and adaptability of production factors. In turn, in the case of the

Agricultural Chamber, statistically significant differences in the intensity of relations occurred between very large farms and very small and small farms (Table 5 in the Annex). At the same time, farmers did not indicate a significant level of intensity of relations with agricultural self-government (Table 7).

In own research, farmers also expressed their opinions on the importance of individual institutions in the process of modernisation of farms (Table 8). In the opinion of the studied farmers, the AACs and ARMA, followed by banks, played the largest role in the process of modernisation of agriculture. This means institutions which belong to the group of institutions supporting farmers in the absorption of the EU funds (the AACs and ARMA) and financial institutions facilitating access to capital. Institutions which mediate in farmers' participation in the EU funds are of particular importance in the aspect of modernisation of agriculture. The research indicated that the AACs were the main institution successfully implementing this type of task. This group also includes ARMA, which is a paying agency for the EU programmes. Farmers who want to benefit from the EU CAP instruments must have frequent contacts with this institution. In the case of the analysis of the obtained assessments, depending on the level of investment (Table 8), the highest scores in all groups of farms were also obtained by the AACs, and these assessments were not statistically significantly diverse. This underlines the importance of this organisation in the possibilities of efficient and effective access to diverse groups of farms. Statistically significant impact of the level of completed investments was noted in the case of farmers' assessments regarding ARMA, the agri-food industry and industry organisations. In the case of ARMA, statistically significant differences in assessments were recorded only between farms with a low and average level of investment (Table 6 in the Annex), while in the case of the agri-food industry, the assessments varied between farms with a very low, average and high level of investment (Table 7 in the Annex). In the case of industry organisations, statistically significant differences in assessments occurred only between two groups of farms – with a low and very high level of investment (Table 8 in the Annex). At the same time, the importance of industry organisations, according to farmers, was assessed low. Maintaining relations with paying agencies, agricultural advisory entities, local government and financial institutions is obligatory or brings measurable benefits. It is in the case of industry organisations, associations, scientific institutions that these relations do not bring farmers direct material benefits in the short term (Czudec et al., 2008). However, it should be emphasised that these relations are important in the process of development of agriculture, especially in the field of access to knowledge, information and experience, i.e. improvement of human capital, which is currently the main element of success in the process of modernisation of farms.



Table 7

*Intensity of relations between the analysed farmers and institutions in the process of modernisation of agriculture<sup>a</sup>*

Detailed list	Total	Investment level					Value of $p^b$ for the Kruskal–Wallis test
		very low	low	average	high	very high	
Agency for Restructuring and Modernisation of Agriculture							
$\bar{x}$	3.7	3.3	3.8	3.8	3.9	4.4	0.0516
Me	4.0	3.0	4.0	4.0	4.0	4.0	
Vs	29.0	29.5	31.5	25.1	28.4	12.4	
min.	1	2	1	2	2	4	
max.	5	5	5	5	5	5	
Agricultural Advisory Centre							
$\bar{x}$	4.8	4.7	4.9	4.8	4.6	5	0.1212
Me	5.0	5.0	5.0	5.0	4.0	5.0	
Vs	14.2	13.7	14.3	10.8	19.3	0.0	
min.	1	3	1	3	1	5	
max.	5	5	5	5	5	5	
Commune Office							
$\bar{x}$	4.0	4.0	3.8	4.0	4.1	4.0	0.8868
Me	4.0	4.0	4.0	4.0	4.0	4.0	
Vs	28.6	30.7	34.1	28.3	21.0	0	
min.	1	1	1	1	1	4	
max.	5	5	5	5	5	4	
Agricultural Property Agency							
$\bar{x}$	1.6	1.3	1.1	1.3	2.0	2.2	0.0000 <sup>b</sup>
Me	2.0	1.0	1.0	1.0	2.0	2.0	
Vs	56.7	52.0	22.8	42.0	60.6	74.7	
min.	4	1	1	1	1	1	
max.	4	3	2	3	4	4	
Bank							
$\bar{x}$	3.8	3.5	3.6	3.8	4.2	4.4	0.5909
Me	4.0	3.0	4.0	4.0	4.0	4.0	
Vs	40.6	47.1	46.5	37.2	29.4	12.4	
min.	1	1	1	1	1	4	
max.	5	5	5	5	5	5	
Agricultural Chamber							
$\bar{x}$	1.6	1.2	1.4	1.9	1.7	3.6	0.0000 <sup>b</sup>
Me	2.0	1.0	1.0	2.0	2.0	3.0	
Vs	72.3	49.9	71.6	68.9	76.0	37.3	
min.	1	1	1	1	1	2	
max.	5	3	5	5	5	5	
Industry organisations							
$\bar{x}$	1.2	1.1	1.1	1.2	1.5	2.6	0.0573
Me	1.0	1.0	1.0	1.0	2.0	3.0	
Vs	73.9	24.3	62.1	68.0	90.5	84.3	
min.	1	1	1	1	1	1	
max.	5	2	5	5	5	5	

<sup>a</sup> assessment scale from 1 to 5: 1 – no relations, 5 – very frequent relations

<sup>b</sup> significant at  $p < 0.05$

Source: own research.

Table 8

*The importance of institutions in the process of modernisation of agriculture  
in the opinion of the studied farmers<sup>a</sup>*

Detailed list	Total	Investment level					Value of $p^b$ for the Kruskal–Wallis test
		very low	low	average	high	very high	
Agency for Restructuring and Modernisation of Agriculture							
$\bar{x}$	4.0	3.9	3.6	4.4	4.1	3.8	0.0057 <sup>b</sup>
Me	4.0	4.0	4.0	4.0	4.0	3.0	
Vs	21.0	19.5	25.6	11.4	21.0	28.8	
min.	1	2	1	4	3	3	
max.	5	5	5	5	5	5	
Agricultural Advisory Centre							
$\bar{x}$	4.5	4.5	4.3	4.7	4.5	4.6	0.2219
Me	5.0	5.0	4.0	5.0	5.0	5.0	
Vs	13.6	13.3	17.0	9.6	11.3	19.4	
min.	3	3	3	4	4	3	
max.	5	5	5	5	5	5	
Commune Office							
$\bar{x}$	2.9	3.1	2.6	3.4	2.6	2.4	0.0570
Me	3.0	3.0	2.0	3.0	3.0	2.0	
Vs	34.9	27.5	36.6	28.3	40.0	63.2	
min.	1	1	1	2	1	1	
max.	5	5	4	5	5	4	
Agri-food industry							
$\bar{x}$	2.3	1.8	2.1	3.0	2.6	2.4	0.0002 <sup>b</sup>
Me	2.0	2.0	2.0	3.0	3.0	2.0	
Vs	44.0	46.8	33.6	31.4	44.3	22.8	
min.	1	1	1	2	1	2	
max.	5	4	3	5	5	3	
Bank							
$\bar{x}$	3.3	3.3	3.0	3.7	3.3	3.6	0.0923
	3.0	3.0	3.0	4.0	3.0	4.0	
Vs	27.3	28.0	27.1	27.5	24.8	15.2	
min.	1	1	1	2	1	3	
max.	5	5	5	5	5	4	
Agricultural Chamber							
$\bar{x}$	2.2	2.1	2.1	2.4	2.1	2.8	0.0888
Me	2.0	2.0	2.0	2.0	2.0	3.0	
Vs	42.8	41.8	43.7	34.3	59.6	16.0	
min.	1	1	1	1	1	2	
max.	5	4	4	4	5	3	
Industry organisations							
$\bar{x}$	2.0	2.0	1.7	2.2	1.9	3.4	0.0149 <sup>b</sup>
Me	2.0	2.0	1.0	2.0	2.0	3.0	
Vs	50.3	39.7	56.6	50.7	57.1	16.1	
min.	1	1	1	1	1	3	
max.	4	3	4	4	4	4	

<sup>a</sup> assessment scale from 1 to 5: 1 – not significant, 5 – very significant

<sup>b</sup> significant at  $p < 0.05$

Source: own research.

Farmers' relations with the institutional environment may be disrupted or even not occur as a result of the existence of a number of barriers (limitations) in this respect. They may be related to the institutional environment or be on the side of the farmers themselves (Czudec et al., 2008). In the case of limitations on the institutional side, these are mainly factors related to inefficiency of institutional structures, mismatch of their actions to the needs of farms and evolving socio-economic reality, excessive conservatism and focus on own interest, etc. On the other hand, on the farmer's side, there are limitations resulting from the psychosocial features of farm users. In particular, the quality of the relations between the farmer and the institutional environment is influenced by features of farmers, such as their level of education, professional preparation, participation in courses and training, openness to cooperation and new solutions, readiness for change, trust in others. Other factors are related to the production potential of an farm (utilised agricultural area, production volume, economic results, financial situation, market position, development stage of the farm, etc.) and organisational features of the farm (access to the Internet, direction of production, degree of specialisation, degree of connection with the environment, etc.).

The surveyed respondents as the most important barrier to cooperation with local institutions pointed to barriers on the side of institutions, such as: high costs of services (mainly commercial services) and difficult access to institutions (especially long distance, but also opening hours and absence of some institutions in rural areas), which can also determine the costs of using even non-commercial services, and the lack of cooperation offer (Table 9). However, it is noteworthy that farmers had access to information on the assistance offered by the institutions and a small percentage of farmers pointed to the low quality of the assistance offered. Only 9.3% of farmers indicated lack of experience in contacts with institutions, and for 27.1% of farmers there were no barriers to cooperation. This indicates high competence and experience of farmers in establishing cooperation with various entities of the institutional environment. This is the result of functioning within the framework of the EU CAP and the need to maintain regular relations with institutions. The analysis of farmers' responses according to the criterion of the level of completed investments indicated that the largest number of barriers in cooperation with institutions was recorded in the group of farms with a high and very low level of investment (Table 9). In the remaining groups of farms a much larger percentage of farmers pointed to the lack of barriers. It is also worth noting that on the farms with the highest level of completed investments, the largest number of farmers pointed to the high costs of using the services. This may be due to the fact that this group of farms used private consulting in obtaining funds from the European Union the most often. Moreover, in this group the percentage of farmers indicating low quality of the offer and lack of incentive to cooperate with the institution was the highest.

Table 9

*Barriers hindering cooperation of farms with institutions  
in the opinion of the studied farmers (% of farms)*

Barriers to cooperation with institutions	Total	Investment level				
		very low	low	average	high	very high
High costs of the services	24.3	31.0	21.2	11.5	26.1	40.0
No cooperation offer	17.8	19.0	21.2	15.4	17.4	-
Hindered access to the institution	18.6	21.4	21.2	19.2	13.0	-
No first contact person with the farmer	2.3	4.8	-	-	4.3	-
Insufficient information on the offer from the institution	7.8	9.5	3.0	15.4	4.3	-
Low quality of the offer from the institution	7.0	14.3	6.1	-	-	20.0
Offer not adapted to the needs of the farm	14.7	14.3	9.1	15.4	26.1	-
Lack of incentive in establishing cooperation with the institution	14.0	7.1	15.2	15.4	21.7	20.0
Lack of experience in cooperation with the institution	9.3	11.9	12.1	7.7	4.3	-
No barriers	27.1	21.4	30.3	38.5	17.4	40.0

Source: own research.

According to Wieliczko (2010), identification of administrative barriers of the EU CAP is a key issue affecting the efficiency of implementation of agricultural policy instruments, but also determines the level of transaction costs both on the part of beneficiaries and the state administration. Drygas (2011), examining the level of transaction costs borne by ARMA, pointing to factors affecting the reduction or increase of transaction costs and administrative barriers, lists the complexity and extensive nature of the institutional system involved in the implementation of the EU support programmes, still extensive bureaucracy of implementation procedures, verbal simplification with the actual pursuit of imposing larger and larger commitments on the beneficiaries, not the best communication on the line beneficiary – institutions, generating additional, sometimes unnecessary transaction costs, in principle the adoption of the “lack of trust” towards the beneficiaries – also often generating unnecessary transaction costs, and still too little willingness to innovation and the use of information technology. In the light of this information, the identification of the level and scale of transaction costs and administrative barriers allows assessing the efficiency and cost-effectiveness of the policy supporting development of agriculture. Elimination of barriers to cooperation between beneficiaries of support and institutions

is an important condition for reduction of transaction costs, but it also contributes to accelerating the pace of implementation of support programmes and maximisation of the scale of achieved effects.

Neoclassical economics assumes that transaction costs associated with market transactions amount to zero. A conclusion which follows is that institutional framework conditions are irrelevant to the economic process, institutions are neutral in terms of allocation. However, real decision-making entities – as opposed to hypothetical ones, characteristic of neoclassical economics – always operate inefficiently which results from the asymmetry of information and the tendency to make mistakes. Transaction costs are the result of this inefficiency (Lowsz, 2003). It is possible to distinguish several types of transaction costs borne by entities operating on the market, related to the concluded transactions, which mainly consist in the costs of seeking information about possible partners, their offer, concluding a transaction and monitoring its implementation. The use of support as part of the instruments provided for in the EU CAP is associated with the occurrence of transaction costs both on the part of support beneficiaries and public institutions involved in the implementation of these measures. Considering high complexity of the institutional system related to the EU CAP instruments, the level of transaction costs can be significant in relation to the funds available for distribution (Drygas, 2011). From the point of view of the public interest but also considering the effectiveness of the implemented agricultural policy, the scale of transaction costs borne by the state is important. In turn, transaction costs incurred by the applicants for subsidies determine the attractiveness of individual measures (Wieliczko, 2010).

The transaction costs of the agricultural sector support policy can be divided into two main groups depending on the entity incurring them: public and private transaction costs. Public transaction costs are costs related to the implementation of specific measures as well as initial and final costs related to research and information, project preparation, consensus building and evaluation. On the other hand, private transaction costs are borne by the participants: farmers and agricultural organisations, and in the case of farmers related mainly to costs of filling out applications, while in the case of agricultural organisations these are costs related to lobbying, training, administrative support, etc. (Wieliczko, 2010). However, as emphasised by Daniłowska (2007), there is a difficulty in translating the concept of transaction costs into acceptable measurement standards. The operationalisation of the concept of transaction costs is difficult and problematic, because they occur together with the production costs and are at least partly determined by similar factors.

Table 10

*Private transaction costs incurred by the studied farmers related to the public aid received under the SOP Measure 1.1 Investment in agricultural holdings*

Detailed list	Total	Investment level				
		very low	low	average	high	very high
The number of visits to institutions to obtain financial assistance per PLN 1 thousand of assistance						
$\bar{x}$	0.071	0.109	0.062	0.042	0.060	0.015
Me	0.055	0.095	0.047	0.029	0.037	0.016
Vs	77.41	49.23	66.26	96.98	95.02	36.06
min.	0.004	0.036	0.010	0.007	0.004	0.010
max.	0.225	0.221	0.148	0.194	0.225	0.023
Distance from the institutions with which the farmer cooperated in order to obtain financial assistance per PLN 1 thousand of assistance (km)						
$\bar{x}$	0.305	0.430	0.268	0.199	0.273	0.216
Me	0.193	0.360	0.161	0.145	0.125	0.123
Vs	92.56	70.65	102.18	92.91	111.71	77.65
min.	0.017	0.038	0.032	0.017	0.017	0.080
max.	1.200	1.200	1.124	0.658	1.000	0.399
The cost of commuting to the value of financial assistance received (%)						
$\bar{x}$	0.128	0.173	0.097	0.094	0.143	0.054
Me	0.094	0.138	0.093	0.051	0.065	0.023
Vs	96.11	77.21	86.54	114.20	105.22	90.15
min.	0.002	0.036	0.006	0.007	0.002	0.015
max.	0.600	0.600	0.333	0.467	0.430	0.112
Time devoted to obtaining and accounting for financial assistance (h/PLN 1 thousand)						
$\bar{x}$	0.154	0.231	0.140	0.097	0.123	0.040
Me	0.110	0.180	0.132	0.073	0.080	0.037
Vs	84.82	67.77	65.85	108.89	77.99	27.23
min.	0.022	0.074	0.038	0.022	0.032	0.030
max.	0.867	0.867	0.315	0.526	0.421	0.052
The cost of documentation and filling out the application to the value of financial assistance received (%)						
$\bar{x}$	0.787	1.150	0.675	0.472	0.690	0.567
Me	0.782	0.949	0.388	0.395	0.800	0.599
Vs	71.29	44.48	85.65	78.51	75.75	59.24
min.	0.000	0.631	0.000	0.000	0.000	0.233
max.	2.564	2.564	2.022	1.316	1.685	0.999
Total value of estimated transaction costs to the value of financial assistance received (%)						
$\bar{x}$	1.080	1.572	0.923	0.670	0.965	0.664
Me	0.097	1.498	0.632	0.568	0.939	0.767
Vs	68.35	42.82	75.85	77.57	75.77	56.68
min.	0.057	0.795	0.146	0.057	0.057	0.284
max.	3.200	3.200	2.631	2.102	2.476	1.159
The value of $p^a$ for the Kruskal–Wallis test of the variable “Total value of estimated transaction costs to the value of financial assistance received (%)”						
$p$	0.0000 <sup>a</sup>					

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 10 presents the estimated level of private transaction costs related to the support received in investment activities under SOP 2004-2006 Measure 1.1 Investment in agricultural holdings. The level of transaction costs (being the sum of costs of commuting, the cost of time spent to obtain and account for assistance, costs of documentation and filling out the application) incurred by the studied farmers was 1.08% in relation to the received public aid. Costs related to documentation and filling out applications had the largest share in transaction costs estimated this way. While analysing the level of private transaction costs on farms divided by the level of completed investments, it was found that the highest level of transaction costs was recorded on farms with the lowest level of investment (Table 10). Differences in the level of transaction costs between groups of farms distinguished this way were statistically significant (Kruskal–Wallis test  $p=0.0000$ ), while the main differences are observed between the group of farms with a very low level of completed investments and the remaining groups of farms (Table 9 in the Annex). Performed analysis indicates that the level of private transaction costs incurred by the beneficiaries in relation to the value of aid received is low (when compared, for example, to interest on investment loans) and should not constitute a barrier to applying for the EU support funds.

### **Summary**

Conducted research allowed formulating the following summary statements:

1. Institutions, especially local institutions (organisations) which help implementing innovative solutions, adapting farms to the requirements of the environment and indicating the possibility of obtaining financial resources, are of particular importance in inspiring and stimulating the process of modernisation of agriculture. In the opinion of the studied farmers, the AACs and ARMA were the most important in the process of modernisation of farms. High costs of using the services of local organisations and hindered access to the institutions turned out to be the main barriers in cooperation with them. The elimination of administrative barriers should be considered one of the most important elements favouring the reduction of transaction costs and the improvement of the effectiveness and scale of coverage of the implemented programmes.
2. The level of private transaction costs incurred by farmers compared to the subsidies obtained was low and should not constitute a barrier to obtaining public aid in the modernisation of farms. On farms with a lower value of completed investments, it was at a higher level than in other groups of farms, and even in this group of farms the share of private transaction costs in the value of the subsidy obtained was low. Costs related to documentation and filling out applications had the largest share in the structure of estimated private transaction costs.



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## ANNEX

Table 1

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"The value of capital expenditures"*

Level of completed investments	very low	low	average	high	very high
<b>very low</b>		0.0002 <sup>a</sup>	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>
<b>low</b>	0.0002 <sup>a</sup>		0.0252 <sup>a</sup>	0.0000 <sup>a</sup>	0.0015 <sup>a</sup>
<b>average</b>	0.0000 <sup>a</sup>	0.0252 <sup>a</sup>		0.0234 <sup>a</sup>	0.0354 <sup>a</sup>
<b>high</b>	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>	0.0234 <sup>a</sup>		0.0389 <sup>a</sup>
<b>very high</b>	0.0000 <sup>a</sup>	0.0015 <sup>a</sup>	0.0354 <sup>a</sup>	0.0389 <sup>a</sup>	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 2

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"The value of capital expenditures per one annual work unit"*

Level of completed investments	very low	low	average	high	very high
<b>very low</b>		0.0001 <sup>a</sup>	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>
<b>low</b>	0.0001 <sup>a</sup>		0.3085	0.0000 <sup>a</sup>	0.0117 <sup>a</sup>
<b>average</b>	0.0000 <sup>a</sup>	0.3085		0.0741	0.4238
<b>high</b>	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>	0.0741		1.0000
<b>very high</b>	0.0000 <sup>a</sup>	0.0117 <sup>a</sup>	0.4238	1.0000	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 3

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"The value of capital expenditures per 1 ha of utilised agricultural area"*

Level of completed investments	very low	low	average	high	very high
<b>very low</b>		0.2397	0.0000 <sup>a</sup>	0.0000 <sup>a</sup>	0.1575
<b>low</b>	0.2397		0.0021 <sup>a</sup>	0.0268 <sup>a</sup>	1.0000
<b>average</b>	0.0000 <sup>a</sup>	0.0021 <sup>a</sup>		1.0000	1.0000
<b>high</b>	0.0000 <sup>a</sup>	0.0268 <sup>a</sup>	1.0000		1.0000
<b>very high</b>	0.1575	1.0000	1.0000	1.0000	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 4

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"Intensity of relations between the farmers and the Agricultural Property Agency"*

Level of completed investments	very low	low	average	high	very high
very low		1.0000	1.0000	0.3823	0.1429
low	1.0000		1.0000	0.0432 <sup>a</sup>	0.0361 <sup>a</sup>
average	1.0000	1.0000		0.7694	0.2092
high	0.3823	0.0432 <sup>a</sup>	0.7694		1.0000
very high	0.1429	0.0361 <sup>a</sup>	0.2092	1.0000	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 5

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"Intensity of relations between the farmers and the Agricultural Chamber"*

Level of completed investments	very low	low	average	high	very high
very low		1.0000	0.2662	1.0000	0.0066 <sup>a</sup>
low	1.0000		0.9328	1.0000	0.0179 <sup>a</sup>
average	0.2662	0.9328		1.0000	0.3021
high	1.0000	1.0000	1.0000		0.1182
very high	0.0066 <sup>a</sup>	0.0179 <sup>a</sup>	0.3021	0.1182	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 6

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"The importance of the Agency for Restructuring and Modernisation of Agriculture  
in the process of modernisation of agriculture in the opinion of farmers"*

Level of completed investments	very low	low	average	high	very high
very low		1.0000	0.0888	1.0000	1.0000
low	1.0000		0.0089 <sup>a</sup>	0.5397	1.0000
average	0.0888	0.0089 <sup>a</sup>		1.0000	1.0000
high	1.0000	0.5397	1.0000		1.0000
very high	1.0000	1.0000	1.0000	1.0000	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 7

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"The importance of the agri-food industry in the process of modernisation  
of agriculture in the opinion of farmers"*

Level of completed investments	very low	low	average	high	very high
very low		1.0000	0.0004 <sup>a</sup>	0.0408 <sup>a</sup>	1.0000
low	1.0000		0.0911	1.0000	1.0000
average	0.0004 <sup>a</sup>	0.0911		1.0000	1.0000
high	0.0408 <sup>a</sup>	1.0000	1.0000		1.0000
very high	1.0000	1.0000	1.0000	1.0000	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 8

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"The importance of the industry organisations in the process of modernisation  
of agriculture in the opinion of farmers"*

Level of completed investments	very low	low	average	high	very high
very low		1.0000	1.0000	1.0000	0.1760
low	1.0000		1.0000	1.0000	0.0139 <sup>a</sup>
average	1.0000	1.0000		1.0000	0.3415
high	1.0000	1.0000	1.0000		0.0629
very high	0.1760	0.0139 <sup>a</sup>	0.3415	0.0629	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

Table 9

*Result of the post hoc multiple comparison test (Dunn's Test) for the variable  
"Total value of estimated transaction costs to the value of financial assistance received (%)"*

Level of completed investments	very low	low	average	high	very high
very low		0.0008 <sup>a</sup>	0.0000 <sup>a</sup>	0.0076 <sup>a</sup>	0.0468 <sup>a</sup>
low	0.0008 <sup>a</sup>		1.0000	1.0000	1.0000
average	0.0000 <sup>a</sup>	1.0000		1.0000	1.0000
high	0.0076 <sup>a</sup>	1.0000	1.0000		1.0000
very high	0.0468 <sup>a</sup>	1.0000	1.0000	1.0000	

<sup>a</sup> significant at  $p < 0.05$

Source: own research.

## INSTYTUCJE LOKALNE I KOSZTY TRANSAKCYJNE POMOCY PUBLICZNEJ W PROCESIE MODERNIZACJI ROLNICTWA

### Abstrakt

*Celem pracy było określenie roli lokalnych organizacji oraz ocena poziomu prywatnych kosztów transakcyjnych ponoszonych przez beneficjentów pomocy publicznej związanej z modernizacją gospodarstw rolniczych. Badania przeprowadzono w 2012 roku wśród 129 gospodarstw rolniczych, które w latach 2004-2011 w działalności inwestycyjnej korzystały z publicznego wsparcia finansowego. W wytypowanych gospodarstwach zrealizowano badania z wykorzystaniem kwestionariusza wywiadu dotyczącego organizacji gospodarstw, uzyskanych wyników ekonomicznych, oceny zrealizowanych inwestycji, a także relacji rolników z lokalnymi instytucjami otoczenia rolnictwa oraz poziomu kosztów transakcyjnych. Na podstawie informacji uzyskanych od rolników w ramach wywiadu przeprowadzonego z zastosowaniem kwestionariusza oszacowano poziom prywatnych kosztów transakcyjnych związanych z otrzymaną pomocą publiczną w działalności inwestycyjnej.*

*Stwierdzono, że dla rolników największe znaczenie w procesie modernizacji gospodarstw rolniczych miały ośrodki doradztwa rolniczego i Agencja Restrukturyzacji i Modernizacji Rolnictwa. Głównymi barierami w opinii rolników we współpracy z lokalnymi organizacjami okazały się wysokie koszty korzystania z ich usług i utrudniony dostęp do instytucji. Oszacowany poziom prywatnych kosztów transakcyjnych ponoszonych przez beneficjentów w porównaniu z uzyskanymi subsydiami był niski i nie powinien stanowić bariery w pozyskiwaniu pomocy publicznej w procesie modernizacji gospodarstw rolniczych. W gospodarstwach charakteryzujących się niższą wartością zrealizowanych inwestycji był na wyższym poziomie niż w pozostałych grupach gospodarstw rolniczych. Największy udział w strukturze oszacowanych prywatnych kosztów transakcyjnych miały koszty związane z dokumentacją i wypełnianiem wniosków.*

**Słowa kluczowe:** instytucje lokalne, koszty transakcyjne, pomoc publiczna.

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