István Takács, Zsolt Baranyai

Szent István University in Gödöllő, Hungary

ROLE OF TRUST IN COOPERATION OF FARMERS FROM THE ASPECTS OF NEW INSTITUTIONAL ECONOMICS

ROLA ZUFANIA WE WSPÓŁPRACY ROLNIKÓW Z PUNKTU WIDZENIA NOWEJ EKONOMII INSTYTUCJONALNEJ

Abstract. The competitiveness of agriculture in countries of the Central-Eastern European region depend not only on the quality of production but also on the organization of product marketing. The producers of the region should face the fact that the Western European producers are usually better at organizing all the phases of production process (purchase, production partnerships, processing, marketing). The key element of cooperation is trust. The article, starting from some theoretical foundations of institutional economics (relations of agency theory and moral hazard), and adapting Sholtes' trust model [1998] we tested the issues of trust and cooperation willingness on the basis of the data of a Hungarian survey in order to find out the degree of cooperation that can be identified in the machine use which has key role in production process and, how it depends on the level of existing trust among farmers.

Introduction

The integration into the new unified European market has required the Central-Eastern European agriculture to review the arguments of market competitiveness. The agricultural production demands technology and, due to the technical development, it needs capital investment which goes with slow returns and significant capital lock up in case of crop production, horticultural farming and animal husbandry, too. Event the slightest improvement of efficiency of capital goods and productivity can significantly increase the profitability of production and, as a result, the competitiveness of producers. The productivity of farms and the efficiency of applied tools in the Central-Eastern-European countries is behind the EU average which indicates considerable competitive disadvantage [Takács et al. 2008].

There are a lot of institutionalized forms of joint and efficient utilization of technical resources that are used in production processes. The Western European experiences have proved of these forms that they can be adequate tools in the fulfillment of technical-technological needs of farms. Following the political transition, these solutions have turned up in the countries of the region. In regards to Hungary, these initiatives, following an early enthusiasm, have died away due to many reasons.

Cooperation is a wide concept – even when narrowed down to the area of machine use – and can have a lot of forms. These forms of cooperation create a structure connected with the degree of trust and dependence felt by the farmers (Fig. 1).

In the research we started from the theoretical relations of the New Institutional Economics, which focuses on the analysis of institutions that give the framework for economic procedures (e.g. markets, organizations, legal norms). Its objective is to explain the structure and efficiency of economic institutions and the economic behaviour of people [Schumacher 1990].

In each theoretical approach (theory of transaction costs, theory of ownership rights, agency theory), different aspects of partnership agreements are in the focus which are very useful for their differentiated analysis. In regards to the discussed research topic, the direction of agency theory is the most relevant.

The general agency theory focuses on the agreement and its role in the relation of the principal and the agent [Kieser 2002]. In order to realize his interests, the principal delegates certain tasks
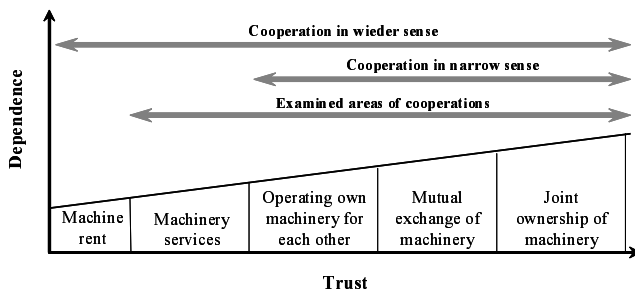
Figure 1. Partnership of farmers in machine use, in the space of trust and dependence levels
Source: own illustrated.

and decision competencies to the agent in the frames of an agreement. The agent receives some counter service for his services. This relation is, on the one hand, advantageous for the principal because he can exploit the specialized labour and extra information (expertise) of the agent for his own purposes. On the other hand, however, it raises some problems. Due to the insufficient knowledge (asymmetric information) of the principal, it is risky that the agent will not act or not only in the interest of the principal, but also for his own sake, sometimes putting the principal at a disadvantage. The agency theory is based on three important principles.

1. It regards the organizations and their environmental relations as the network of agreements, made by the parties for the regulation of their economic exchange activities. At the same time it is also presumed that the contracting parties usually cannot exactly and comprehensively (perfectly) define the frame conditions of agreements due to the deficient information and the uncertainties of the future.

2. In the behavioural models of participants there are individual profit maximizing efforts in the behaviour models of the actors; the possibility of opportunistic practices, including the possibility of frauds and deceits; the unequal information which assumes the information lead of the agent; the differences in the interests, which ultimately lead to the agent problems; and the different risk assumption attitude.

3. The agency cost, as key factor of the agreement, which actually mean that the principal chooses the most advantageous form of agent relation on the basis of the agency cost. Agency cost means those costs which can be due to the fact that the principal-agent relation differs from the fictious, ideal state of perfect exchange in neoclassical sense [Kieser 2002].

It is obvious that trust is the key element of a contractual relationship, therefore it is highly prioritized in business relations as well as in the partnership of farmers. The trust presumes the existence of uncertainty or risk [Rousseau et al. 1998].

Out of the research examining the motives of trust, Elster's work [1989] is distinguished in which he drafts that the self interest and the normative obligations (social norms) together contribute to the development of trust, determining the human acts that contribute to the stability of society and cooperation. Gambetta [1988] also considers trust as the precondition for cooperation: if the partner can be trusted, the cooperation with him can be considered.

Sako [2000] distinguishes three types of trust concerning the business relations: (1) contractual trust: it is based on the joint norm of honesty and keeping the promises, (2) trust in expertise: expectations of the business partner concerning the other party's technical and management competency which is required for the fulfillment of the task undertaken, (3) goodwill trust: no explicit promises and no fixed professional standards. There is an understanding between the parties concerning the principles of the „fair" behaviour.

The first two elements of the above classification can be well identified in the Scholtes [1998] model, which puts the trust in the matrix of loyalty and abilities. If both loyalty and the abilities get high value among the partners, the trust can be developed (tab. 1).

Based on the Scholtes model, Albisser [2007] declared that the fear from mutual dependence is one of the main obstacles

Table 1. Development of trust among business partners on the basis of loyalty to each other and the presumed abilities

Degree		Degree of ability "I trust that my partner is well trained and talented"	
		low	high
Degree of loyality „I trust that my partner likesme and helps me in the future"	high	Sympathy	**Trust**
	low	Distrust	Honour

Source: on the basis of Sholtes 1998.

of cooperation among farmers. That's why the farmers give a try to a weaker type of cooperation before they would enter the most intensive forms of partnership. These positive experiences lead towards the tightening of relations. This process is the familiarity effect. As the result of trust, the possibility of conflicts as well as the costs of administration and communication (transaction costs) decrease significantly.

The existence of trust is a source of competitive advantage [Barney-Hansen 1994]. In case of medium trust and controllable business risk, the role of trust, as source of competitive advantage, is decisive, financially it is the worthiest. The building of trust in this case goes with more profit than cost, therefore it is economically rational.

Hansen et al. [2002] used questionnaire survey to examine the issues of trust within organizational framework (marketing cooperatives). The trust was approached from two perspectives: trust on rational basis (cognitive), which is actually an objective trust, in other words, the inclination to trust is based on practical experiences, and the affective trust, which is subjective and can be described as an emotional tie among people.

Following the American examples, many research projects were performed in Hungary from similar approaches, with the same methodology. Bakucs et al [2008] proved on the basis of questionnaire survey made at Mórakert Cooperative, that the affective trust has more decisive role in the success of cooperation. The affective trust appears in stronger group cohesion, higher satisfaction and better performance. The authors also pointed out that the feeling of group cohesion also determines the performance and satisfaction of members within the community. In the countries of Central-Eastern Europe the general trust in institutions and the relations among people reaches only a low level [Lovell 2001]. This phenomenon is usually explained with those changes which followed the events in 1989: post-socialist transformation and general uncertainty.

The objective of research is to examine the relations between trust and cooperation willingness with mathematical-statistical methods, on the basis of a questionnaire survey and deep interviews made in a microregion with significant agricultural traditions. The basis of the examination is the model constructed by Sholtes [1998].

The hypothesis of the examination is that trust has a key role in machine use cooperation: both the trust in loyality (*contractual trust)* and in competency (*ability-based trust)* is important, independent from the form of cooperation.

Material and methods

The sample was selected with random sampling and the so-called snowball method. The survey was made between November 2008 and October 2009. The condition of getting into the sample was the use of at least one hectare agricultural area and the possession of one technical resource (engine or or machine) which can (also) be utilized for agricultural purposes. The farms should have been privately owned.

Altogether 132 private farms gave information in the forms of questionnaires, out of them deep interviews were made on 23 farms.

Connected with the current research, the respondents evaluated the following questions in the questionnaire, on a scale from 1 to 7:
– how much do you usually trust in your fellow beings? (1 – not at all, 7 – very much),
– how much do you usually trust in your fellow farmers? (1- not at all, 7 – very much),
– please evaluate the following statements! (1 – not at all, 7 – maximally agree).
   The answers were:
– I think my fellow farmers definitely keep their words,
– I think my fellows would never do any harm to me if the conditions of farming changed,
– I trust that if any of my fellow farmers provides any machine work to me, the quality of his work will be the best possible under the given conditions,
– I trust that if any of my fellow farmers provides any machine work to me, it will be done at the most appropriate time, under the given conditions,
– I trust that if i lend a machine or tool to any of my fellow farmers, he will use it with the due precautions,
– I think the cooperations also gave me the feeling of belonging to a community.

As against to the model applied by Sholtes, where the scale of trust has two levels (high and low), the model we used had three levels: level 1-2=low, level 3-5=medium, 6-7=high (note: the definition of the categories was preceeded by a histogram-analysis, which proved the relevance of levels through the peaks of frequencies. Applied indices:

$$COOP\_1 = \sum_{i=1}^{n} v_i \qquad\qquad i= 1, 2, 3 \dots n \qquad\qquad (1)$$

where:
COOP_1 = activity rate of machine work based on mutuality in case of given observation unit [-],
v_i = the frequency response given to operation No. i [0-3 interval],
n = number of operations [pcs].

$$COOP\_2 = \sum_{i=1}^{n} v_i \qquad\qquad i= 1, 2, 3 \dots n \qquad\qquad (2)$$

where:
COOP_2 = activity rate of lending machines and equipment in case of a given observation unit [-],
v_i = frequency response given to agricultural machine No. i [0-3 interval],
n = number of machines [pcs].

$$COOP\_3 = \sum_{i=1}^{n} v_i \qquad\qquad i= 1, 2, 3 \dots n \qquad\qquad (3)$$

where:
COOP_3 = the activity rate of joint ownership and operation in case of given observation unit [-],
v_i = value of response given to agricultural machine No. i [0, 1],
n = number of machines [pcs].

$$EH - ráta = \frac{COOP\_1 \cdot A_{COOP\_1} + COOP\_2 \cdot A_{COOP\_2} + COOP\_3 \cdot A_{COOP\_3}}{A_{COOP\_1} + A_{COOP\_2} + A_{COOP\_3}} \qquad (4)$$

where:
EH-rate = the aggregated index of cooperation activity in case of the given observation unit [-],
COOP_x = the value of activity rates typical in some areas of machine use cooperations within the given observation unit [-],
A_{COOP_x} = the linear correlation coefficient of cooperation arrangements with principal component (A matrix of PC-1) [-].

The principal component (PC-1) given as a result of principal component analysis made in SPSS explained almost 2/3 of all the variances. Furthermore the value of communalities also exceeded 0.5 in case of all the three variables, which means that it determined the value of all the three variables of constructed principal component at significant – but first of all acceptable – degree.

Results

The testing of Sholtes-model was made with variance analysis on the basis of the following assumptions: the starting premiss was that the cooperation among farmers is more probable if they trust each other. According to Sholtes [1998], the trust develops if the level of trust both in loyality and abilities is high enough. It is easy to realize that the cooperation actually is the most evident at the high level of contractual and competency trust. Later on these questions were examined.

The trust scales concerning the faith in loyality and abilities, as well as the values of average activity rate (EH rate) are summarized in table 2. The methods of descriptive statistics prove that the presumption based on Sholtes model was right, because the average activity values are lower at the low trust levels and higher at high trust levels. The rates were actually between the two extreme values in the other trust level combinations.

Control examinations were made in order to validate the results. The cell averages were compared with one-way ANOVA model complemented with post-hoc tests. Groups should have been formed for carrying out the examinations. Eight groups were distinguished among the farms on the basis of „trust cells": (1) – (8) (no farm was put in one cell, that's why there was no group 9). The univariate model of variance analysis was run for these groups. The results we got revealed that there is a difference between the expected values at 0.004 significance level. All the above, however, prove only that, in general,

Table 2. Average values of cooperation activity rates in each dimension of trust

Dimensions of trust		Degree of trust in expertise			
		low	medium	high	total
Degree of contractual	low	0.42 s=0,51); (1)	1.17 (s=0,90); (2)	1.32 (s=1,20); (3)	0.99 (s=0,91)
	medium	0.33 (s=0,51); (4)	1.28 (s=0,96); (5)	1.66 (s=1,41); (6)	1.24 (s=1,06)
	high	– –	1.56 (s=1,16); (7)	1.99 (s=1,33); (8)	1.71 (s=1,22)
	total	0.39 (s=0,50)	1,31 (s=0,99)	1,72 (s=1,31)	**1.27 (s=1,08)**

Source: own study.

there is a difference between cell averages, but no detailed information is given between which of them. Post-hoc tests help to find the solution. The most conservative, therefore the most reliable Scheffe test reveals on the basis of F sample dispersion that there is not any group average where the expected values would significantly differ from each other. By sort of „softing" the tests with LSD test, which uses t-test to check the differences between averages, we could already present significant results.

The findings have called for further research. The above presumption could be checked with a relatively simple methodology. If we observe the aggregated average values of the categories of two trust dimensions, it can be seen that the individual types of trust have different impact on cooperation willingness. In case of contractual trust, the value of 0.99 belongs to the lowest trust level and 1.71 to the highest, while in case of competency trust these values are 0.39 and 1.72. It is clear that if we described the average cooperation activity curves graphically, their slope would be different. The average slope defined with the simplest estimation process – according to the $\Delta y/\Delta x$ relation – is 0.24 in case of contractual trust and 0.44 in case of trust in expertise, for the whole x domain). It means that one unit of change in competency trust will evoke bigger change in cooperation willingness (EH-rate) than the contractual trust.

Conclusions

The results proved that the cooperation willingness of those with perfect distrust (1) and unconditional trust (8) – using the titles of the original Sholtes model – significantly differs from each other. In case of group 3, which represents the honour to the fellow farmers, the expected value of activity rate is not different from the average of any other group. None of the farmers belongs to the category of pure sympathy, such combination could not be identified in the examined sample. The experiences obtained in the groups of conditional, that is medium, trust level prove that the approach of trust based on Sholtes model is not able to give perfect explanation for the cooperation activity of farms, but the validation of the model can be regarded successful.

Considering the results it can be declared that the trust both in loyality and abilities has an important role in the partnerships for machine use, although the model also proves that the importance and share of different types of trust is different. It means that one unit of change in competency trust will evoke bigger change in cooperation willingness (EH-rate) than the contractual trust. On the basis of the above, the research hypothesis is partly proved. The empirical experiences have proved the role of both types of trust in cooperation, but also pointed out that their weight is different in each field of cooperation.

The examinations have revealed that out of the machine use cooperations only those solutions will be implemented among the responding farms in the near future – due to the generally low level of trust – in which the dependence of farmers is weak. The most suitable form to meet the external capacity need of farms is the machine lease service as quasi cooperation. Following the political transformation in Hungary, the distrust have appeared in the relations among farmers and induced the worst possible responses to the occurring problems. It motivated the farmers to be independent instead of joining forces which further worsened the already difficult situation. It is, however, a positive sign that there is a young farmer generation which is more open to cooperation and concentration of forces.

Bibliography

Albisser G. 2007: Structural adjustment processes of farming enterprises: The role of trust for cooperation and collaboration strategies. 1st international european forum oninnovation andsystem dynamics in food networks. (EAAE), Innsbruck-Igls, Austria.

Bakucs L.Z., Fertő I., Szabó G.G. 2008: The impact of trust on cooperative membership performance and satisfaction in the hungarian horticulture. Studies on the Agricultural and Food Sector in Central and Eastern Europe. no. 44(1), p. 382-393.

Barney J.B., Hansen M. H. 1994: Trustworthiness as a source of competitive advantage. *Strategic Management Journal*, no. 15, p. 175-190.

Elster J. 1989: The cement of society. Cambridge University Press, Cambridge.

Gambetta D. 1988: Trust. Making and breaking cooperative relations. New York – Oxford, Basil Blackwell.

Hansen M.H., Morrow J.J.L., Batista J.C. 2002: The impact of trust on cooperative membership retention, performance, and satisfaction: an exploratory study. *International Food and Agribusiness Management Review,* no. 5, p. 41-59.

Kieser A. 2002: Organization theories. 5. Edition. W. Kohlhammer. Stuttgart.

Lovell D.W. 2001: Trust and the politics of postcommunism. Communist and Postcommunist. Studies, no. 34, p. 27-38.

Rousseau D.M., Sitkin R.S., Burt C.B, Camerar C. 1998: Not so different after all: a cross-discipline view of trust. *Academy of Management Review*, no. 23(3).

Sako M. 2000: Does Trust Improve Business Performance. [In:] Trust within and between organziations (ed. C. Lane, R. Bachmann). New York: Oxford University Press.

Scholtes P.R. 1998: The leader's handbook: Making things happen – getting things done. New York, McGraw-Hill.

Schumacher E.F. 1990: Small is beautiful. A study of economics as if people mattered. London, Abacus, p. 256.

Takács I., Baranyai Z., Takács E. 2008: Factors of efficiency change of assets on the EU-15 and hungarian farms from 1990s. Studies on the Agricultural and Food Sector in Central and Eastern Europe, no. 44(2), p. 581-590.

Streszczenie

Wpracy dokonano analizy roli zaufania we współpracy między węgierskimi rolnikami, wykorzystując założenia nowej ekonomii instytucjonalnej w modelu Sholetsa.

Corresponding address:

István Takács, Ph.D.
Szent István University, Hungary, Faculty of Social Sciences and Economics
H-2103 GÖDÖLLŐ, Páter K. u. 1. Hungary
phone: (36)-28-522-900/1024
e-mail: takacs.istvan@gtk.szie.hu
Zsolt Baranyai, Ph.D .
Szent István University, Hungary, Faculty of Social Sciences and Economics
H-2103 GÖDÖLLŐ, Páter K. u. 1. Hungary
phone: (36)-28-522-900/1953
e-mail: baranyai.zsolt@gtk.szie.hu