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The role of trust in contractual relationships

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Abstract *The paper investigates the opinion of small- and medium size enterprises in agri-food chain on the role of trust in contractual relationships using a survey in Central Hungarian region. Contrary to our expectations, a relatively high share of respondents poses written contracts. Estimations show that there are no significant differences between various levels of agri-food chain regarding to existence of written contract. Our results suggest that asset specificity, firm size and frequency of partner change increase the probability of written contract. Trust in most important partner has ambiguous impact upon the existence of a formal contract. Trust in public legal enforcement and the efficiency of the legal system also play important roles on the existence of written contract. Sectorial specificity has positive and significant effects on the written contract.*

Keywords: trust, contractual relationships, small and medium size enterprises

1. Introduction and motivation

There is a wealth of literature on the role of contracts in agri-food chains. Most theoretical and empirical research however focuses on developed countries' agriculture (e.g. Bogetoft and Olesen 2002; Goodhue et al., 2004; Fraser 2005; Fernández-Olmos 2008) whilst studies concentrating on the role of contracts in Eastern European transition agriculture are limited (Fertő 2009). It is usually assumed, that in transition countries public institutions are ineffective when it comes to ensuring contract enforcement, while price systems are generally still inefficient. In the absence of enforceable contracts longer-term business relationship between actors of the agri-food chain has become extremely difficult. Therefore, finding new long-run partners, for relation-specific investments has been associated with high transaction costs for market players. In those sub-sectors where any type of production contracts does exist, agricultural producers face hold-up problems (e.g. delayed payment for delivered products, or ex post price reduction by retailers). Although food processors and retailers have significant market power, they also struggle to establish long-term relationships with farmers.

The aim of the paper is to analyse the contracting choice of small and medium sized enterprises operating in Central Hungarian agri-food sector employing transaction cost economics framework. This research compliments some of our previous studies on Hungarian agri-food sectors (e.g. Bakucs et al., 2012, Bakucs et al., 2013) focusing on various aspects of contracting choice theory employing Hungarian survey data. The main novelty of this paper compared to previous research is that focuses on all three levels of the marketing chain. In the next section we present the theoretical background of the analysis, followed by the discussion of survey data and methodology. The core of this paper is the fourth part presenting empirical results, whilst section five concludes.

2. Theoretical background and methodology

The theoretical framework for the analysis of the various aspects of producer – buyer (processor or retailer) relationships can be divided into two groups. The first approach is contract theory; the

second one is based on the transaction cost economics. Transaction costs economics (TCE) claims that firm's vertical boundaries decisions are determined by characteristics associated with efficiency of the chosen form of organisation (Williamson 1985). Williamson (1991) identifies three alternate forms of transaction governance: market, hybrid and hierarchy. The core prediction of the TCE is that the governance mode (market, hybrid and hierarchy) that minimises transaction costs is the preferred option. Transaction costs (TC) are composed of two major groups. The *ex ante TC* are represented by costs of information gathering and processing with respect to a potential transaction, decision making (e.g. internal or external negotiations) generated costs and third party costs (e.g. government or various regulators). The *ex post TC* include monitoring, and the costs related to contract enforcement. Transaction costs include the costs of negotiating and writing contracts and the costs of monitoring and enforcing contractual performance. The theory focuses on identifying the characteristics of transactions that are best suited to a particular governance mode. The principal attributes of transactions, according to TCE are asset specificity (AS), uncertainty (U) and frequency (F). Together, these three attributes determine the following relationship (Ménard and Valceschini 2005) - signs show the predicted impact of a positive variation of each characteristic on transaction costs:

$$TC = f(AS, F, U) \tag{1}$$

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The main general hypotheses of TCE in the relevant empirical literature are the following. First, as asset specificity increases, hybrids and hierarchies become preferred over markets. Second, when asset specificity is present to a considerable degree, uncertainty raises the transaction costs associated with market governance. Third, when both asset specificity and uncertainty are high, hierarchy is the most cost-effective governance mode. The various aspects of contracts, including contract decision, duration and contract design are also central theme in the TCE. Needs to be mentioned however, that the structure of contractual relationships can easily change should the goals of partners, the available information with respect to contracts and their enforcement, or the strategic boundaries and their nature alter. Thus theory does not provide a standard structure for testing empirical hypothesis with regard to the choice of contract (Lyons 1996; Maten and Saussier 2000). In line with the literature focusing on contractual relationships in the transition economies, the following hypotheses are tested in this paper:

H1: The likelihood of formal (written) contracts increases with the value of asset-specific investments. It needs to be mentioned however, that written contracts are not only dependent on asset specific investments. Lyons (1994) discusses the importance of a number of other determinant factors.

H2: The likelihood of formal contracts increases with the size of the enterprises. Larger firms can easier bear the costs related to written contracts (e.g. legal advisers costs may be spread on a wider basis).

H3: The likelihood of formal contracts increases with the costs of changing business partners. Opportunistic business behaviour favours more frequent partner changes and of course costs.

H4: Trust decreases the likelihood of formal, written contracts. If partners expect they will do business in the future, than it is less likely they prepare from the start to the eventuality of court contract enforcement. One may expect that profits arising from mutually successful business relationships are sufficient warranty for non-legal enforcement. In sum, if business partners trust each other, they less likely need written contracts. Previous Hungarian research underlined the important role trust plays in agricultural producers' market relationships (e.g. Fertő 2006, Bárdos and Fertő 2006, Bakucs et al. 2013). In this paper we differentiate two levels of trust. The first, on micro level, refers to trust between firms (business partners). The second, on macro level, refers to firms' trust in economic and legal environment, more precisely on the contract enforceability through the judiciary system. Fernandez (2008) discusses a new possibility with respect to the relationship between trust and asset specificity. Following the logic of TCE, if there is trust between partners, than asset specific opportunism may be treated by more frequent use of informal mechanisms. If we accept the idea presented above, than trust between market partners may decrease the transaction costs of informal contracts, even in the presence of asset specific investments. To put is other way, trust decreases the effect of asset specificity on informal contracts. Thus, following the work of Fernandez (2008), two additional hypotheses are tested in this paper.

H5: In the absence of trust higher asset specificity increases the likelihood of written contracts.

H6: In the presence of trust the choice of written contract is independent of asset specific investment. Table 1. summarizes hypotheses tested in this paper.

Table 1. Hypotheses

<i>Hypothesis</i>	<i>Expected impact</i>
H1 Asset specificity	Positive
H2 Firm size	Positive
H3 Partner change switching costs	Positive
H4 Trust	Negative
H5 Asset specificity in the absence of trust	Positive
H6 Asset specificity in the presence of trust	Not significant

Besides testing the hypotheses listed in table 1., it should be interesting to control for the sectorial specificities with respect to the outcome. Thus 2 dummy variables were included in the model, controlling for producer and processor effects. Needs to be mentioned however, that we do not have any *a priori* expectations regarding the significance or direction of impact of the sectorial dummies.

3. The survey and key variables

The data was collected from SME's (defined as less than 250 employees) operating in the agri-food production, processing and retail sectors in the Central Hungarian region. 800 firms (300 processors, 300 retailers and 200 farmers) were selected into the sample from a total population of 2,800. Empirical data was obtained through a detailed survey answered by a total of 231 firms (64 producers, 59 food processors and 109 retailers). The main novelty of this paper is that contrary to most studies focusing on contracts, we do not only analyse firms located at a specific marketing level, but the chain as a whole, including farmers processors and retailers.

The main focus of our research is whether firms rely on written contracts or not. Accordingly, the dependent variable of this analysis is a dummy, taking the value of 1 if the given firm has written contracts and 0 otherwise. Only 51% of respondents possess written contracts, see descriptive statistics in table 2. The first independent variable with respect to asset specificity shows the dependency (importance) on the most important partner (1 worsens the respondents business position, 5 greatly improves performance). The mean value of this variable is 4.29, showing that the most important partner has a positive influence upon firm's performance. The

cost of partner shifts is proxied by the number of partner changes recorded in the past 5 years. As shown in the descriptive table, on average, firms changed their most important business partners twice during the 5-year period. The firm size is measured by a 9 level ordinary scale, based on their yearly gross turnover (1: below 1 million HUF; 9: above 1 billion HUF), the average turnover being between 10 and 50 million HUF. The main question is how trust affects contractual relationships. The answers were recorded on a scale from 1 (not really important) to 5 (very important). However since the mean of this variable, was quite high (4.3) and a Wald test did not show significant differences between 4 and 5, for the empirical analysis this variable was reduced to a dummy, taking the value of 1, should trust be important (>3 on the original scale), and 0 otherwise. Thus, as table 2 shows, 48% of respondents considered trust as a decisive factor when engaging in a relationship with the most important business partner.

Table 2. Descriptive statistics

Variable	N	Mean	Std. dev.	Minimum	Maximum
written contract	175	0.51	0.50	0	1
firm size	212	5.18	1.82	1	9
dependence on most important partner	182	4.29	2.11	1	5
frequency of partner change	203	2.18	1.35	1	5
trust	231	0.48	0.50	0	1
enforceability	231	0.59	0.49	0	1
contract enforcement is costly	191	4.03	1.10	1	5
contract enforcement is time consuming	191	4.66	0.71	1	5

Source: Own calculations

The next group of variables focuses on the trust into the legal system. The first variable in this group collects answers to the ‘to which extent are contracts enforceable through courts?’ A surprisingly high number of firms (59%) considered that contracts are enforceable through the legal system. The next two variables shed light to more detailed aspects of the efficiency of contract enforcement through the judiciary. First, to which extent legal enforcement is costly, and second, time consuming. Answers were recorded on a scale from 1 to 5 (1: not really, 5: very

costly/time consuming). The mean of these variables is above 4, emphasising that contract enforcement through the judicial system is both costly and time consuming. It is a straightforward issue whether the means of variables listed in table 2. are different when various levels of the marketing chain is considered. Variance analysis was used to assess this question. Bartlett test result emphasise that for only 4 out of the 8 variables, the F-test is reliable. The non-parametric Kruskal-Wallis test however, reinforced F-test results. Thus, there are no significant differences on the three levels of the marketing chain when assessing the importance of the existence of written contract, on the dependency on most important partner, legal contract enforceability and firm size. Of the variables showing significant differences on various market levels, the frequency of partner change is the highest for processors and lowest for producers. Trust is most important for producers and least an issue for retailers when opting for a business partner.

Table 3. Variables means by stages of food chain

	Processor	Retailer	Producer	Kruskall-Wallis test (p-value)
written contract	0.49	0.50	0.55	0.79
dependency on most important partner	5.89	4.20	4.43	0.48
firm size	5.56	5.60	6.13	0.70
frequency of partner change	2.72	2.20	1.78	0.01
trust	0.53	0.39	0.59	0.03
enforceability	0.55	0.63	0.57	0.54
contract enforcement is costly	4.22	4.50	4.13	0.42
contract enforcement is time consuming	4.83	4.85	4.78	0.20

Source: Own calculations, based on survey data

4. Empirical results

Since our dependent variable is binary, several discrete choice models were estimated. Discrete choice models are commonly estimated using Maximum Likelihood techniques, using *a priori*

chosen distributional assumptions. The semi-parametric models' literature however emphasises, that parametric estimations are extremely sensitive on distributional assumptions. A number of estimation algorithms were elaborated in the past decades, meant to correct the above-mentioned restrictive nature of parametric estimations. In this paper, we employ the semi non-parametric approach of Gallant and Nychka (1987) and the semi-parametric maximum likelihood technique of Klein and Spady (1993). Since however the first approach produced better results, only estimations using the Gallant and Nychka approach are reported here.

Trust between partners

First, the link between the occurrence of written contract and the nature of business relationship between partners is analysed, and results presented in table 4. In 3 out of the 5 models estimated, the dependency from the most important partner has positive and significant effect upon the choice of a written contract. To put it other way, results partly reinforce the first hypothesis, i.e. relation-specific investments increase the likelihood of written contracts. The firm size positively and significantly affects the existence of written contract, supporting hypothesis 2. The coefficient of frequency of partner change is also positive in all 5 specifications. Thus those firms that change more frequently their business partners are more likely to insist on having formal, written contracts.

Table 4. Models of trust between partners

	Model 1.	Model 2.	Model 3.	Model 4.	Model 5.
dependency on partner	2.801***	1.863***	1.629***	-1.347***	0.205
firm size	2.194***	0.164***	0.548***	0.425***	0.425***
frequency of partner change	3.724***	2.577***	1.877***	0.850***	0.850***
trust	-1.095***			7.502***	7.502***
dependency on partner*absence of trust		0.219***		1.552***	
dependency on partner*presence of trust			-0.178***		-1.552***
processor	3.965***	4.006***	2.146***	0.568**	0.568**

producer	5.768***	3.882***	2.809***	0.571***	0.571***
N	156	156	156	156	156

Source: Own calculations, based on survey data

Note: * significant on 10%, ** 5%, ***1%

In line with our expectations, trust affects negatively the occurrence of written contracts (model 1.), however when interactions are also considered, its effect changes to positive (models 4. and 5.). Results enforce hypothesis 5., that in the absence of trust, asset specificity positively affects the existence of written contracts (models 2. and 4.). Asset specificity in the presence of trust decreases the probability of written contracts, thus rejecting hypothesis 5 (models 3. and 5.). Sector specific dummies were significant in all models, being a producer or processor positively influences having formal, written contracts

Efficiency of the legal system

In the next three steps, we assess firms' trust in the Hungarian legal system. First, we inspect the general assessment of firms' trust in contract enforceability, than we consider two important aspects of court contract enforcement, the cost, and the time needed for judiciary procedures. Estimations are somewhat similar to models analysing the role of trust between business partners. The dependency on most important partner and the firm size positively influences the probability of written contracts (table 5.), enforcing hypotheses 1. and 2. Confirming hypothesis 3., the frequency of partner change also positively influences the existence of written contracts. The general trust in the judiciary procedure positively influences written contracts, suggesting that for firms it worth possessing written contracts since there is chances of enforcement through courts. The trust in legal contract enforcement in the presence of dependency on most important partner has opposite effects on written contracts, depending on whether enforceability is included in the model or not (models 3. and 5.). Similarly, dependency on most important partner in the absence of enforceability does not lead to robust results, since coefficient signs vary (models 2. and 4.). To put it other way, in neither case we cannot clearly accept or reject hypotheses 5 and 6.

Table 5. Models of trust in the judiciary procedure

	Model 1.	Model 2.	Model 3.	Model 4.	Model 5.
dependency on partner	1.294***	3.878***	2.776***	0.077	1.295***
firm size	1.384***	3.521***	3.521***	1.695***	1.364***
frequency of partner change	0.484**	0.246**	0.246**	0.767***	0.434***
enforceability	2.420***			8.720***	8.775***
dependency on partner*absence of enforceability		-1.103***		1.327***	
dependency on partner*presence of enforceability			1.103***		-1.324***
processor	1.664**	5.706***	5.706***	1.881***	1.656***
producer	2.281***	7.458***	7.458***	2.362***	2.267***
N	134	134	134	134	134

Source: Own calculations, based on survey data

Note: * significant on 10%, ** 5%, ***1%

The cost aspect models of court process reinforce the unambiguous results of trust between business partners and trust in legal enforceability models. More precisely, the dependency on most important partner and firm size increases the probability of written contracts (table 6.), supporting hypothesis 1 and 2. Similarly to results in tables 4 and 5, the frequency of partner change positively affects the occurrence of written contracts. The cost of legal enforceability however provides contradictory results when different models are considered (model 1. versus models 4. and 5.). Contrary to previous estimations, the models using interaction variables provide unambiguous results. The dependency on most important partner combined with an absence of belief that enforcement through courts is costly, has negative effect on the existence of written contract, i.e. if firms believe, that contract enforcement through the judiciary is not costly, they are less likely to rely on formal contracts. Similarly, if firms do consider that court

enforcement is costly, then the dependency on most important partner positively influences the occurrence of written contracts. As before, the sector specific control variables positively influence the choice of written contracts.

Table 6. Models of legal enforcement cost aspects

	Model 1.	Model 2.	Model 3.	Model 4.	Model 5.
dependency on most important partner	2.402***	2.061***	1.90***	1.465***	-1.840***
firm size	3.479***	2.861***	2.86***	1.644***	1.644***
frequency of partner change	1.587***	1.274***	1.27***	0.254*	0.254*
contract enforcement is costly	0.893***			-17.59***	-17.59***
dependency on partner*in absence of costly contract enforcement		-0.158***		-3.305***	
dependency on partner*contract enforcement is costly			0.15***		3.305***
processor	4.277***	3.467***	3.46***	2.831***	2.831***
producer	5.486***	4.341***	4.34***	1.795***	1.795***
N	135	135	135	135	135

Source: Own calculations, based on survey data

Note: * significant on 10%, ** 5%, ***1%

Finally, we assess the time consuming aspect of court contract enforcement. For the first 3 variables, results are as in line with previous models. The dependency on most important partner, firm size and frequency of partner change, all have positive coefficients (table 7.). The dependency on most important partner in the absence of belief in lengthy court process has a positive effect on the choice of written contracts. This is an interesting result, meaning that if firms consider that contract enforcement through the judiciary is not time consuming they still

opt for written contract. Conversely, if firms consider that legal contract enforcement is a lengthy process, than dependency on most important partner diminishes the likelihood of written contracts. As before, the sectorial dummies are significant and positive in all models.

Table 7. Models of time consuming effect of legal enforcement

	Model 1.	Model 2.	Model 3.	Model 4.	Model 5.
dependency on most important partner	1.421***	1.415***	1.496***	0.950***	2.303***
firm size	1.968***	1.979***	1.979***	1.242***	1.242***
frequency of partner change	0.658***	0.651***	0.651***	0.228***	0.228***
contract enforcement is time consuming	-0.329			4.729***	4.729***
dependency on partner*in absence of time consuming contract enforcement		0.081		1.353***	
dependency on partner*contract enforcement is time consuming			-0.081		-1.35***
processor	1.961***	1.984***	1.984***	1.442***	1.442***
producer	2.598***	2.641***	2.641***	4.276***	4.276***
N	136	136	136	136	136

Source: Own calculations, based on survey data

Note: * significant on 10%, ** 5%, ***1%

5. Conclusions

The growing importance of contracts in modern agri-food economics is a widely observable phenomenon. The formal contract can play important role in the development of efficiency within food chain. Business relationships have a profound effect of the investment activity, cost and profitability of firms. Empirical research into contractual relationships most often use transaction costs and trust as independent variables. Fernandez (2008) however emphasises the need to amend standard models with the assessment of relative role of trust. The results presented in this paper allow us to enforce one central element of transaction costs theory: asset specificity positively influences the existence of written contracts. In line with our second hypothesis, bigger firms are more likely to rely on written contracts. Surprisingly, the frequency

of partner change also positively relates to the occurrence of written contracts. This result may however be explained by the fact, that frequent business partner change increases the occurrence of negative experiences, and this in turn, induces firms to rely on written contracts even for shorter business relationships. Different aspects of trust have a discrepant effect on the likeliness of written contracts. The trusts in business partner and in the judiciary are more likely to positively affect the choice of a written contract. Interestingly, the two aspects of court enforcement have opposite effects. Whilst the lengthy, time consuming procedure rather increases, the cost aspect of enforcement decreases firms' choice of written contracts. Contrary to our expectations, we could only partially confirm the role of trust and asset specificity with respect to formal contracts.

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References

- Bakucs, Z., Fertő, I., and Szabó, G. G. 2012. Benefits of a marketing cooperative in transition agriculture: Mórakert purchasing and service co-operative. *Society and Economy*, Vol. 34(3), 453-468.
- Bakucs L.Z., Fertő, I., and Szabó G.G. 2013. Contractual Relationships in the Hungarian Milk Sector. *British Food Journal* Vol. 115(2), 252-261.
- Bárdos, K. and Fertő, I. 2006. The Contract Choice of Retailers in Hungarian Beef Sector. In: Fritz, M. and Rickert, U. – Schiefer, G. [eds.]: *Trust and Risk in Business Networks*. Bonn, Germany, Universität Bonn-ILB Press, 509–516.
- Beckman, V. and Boger, S., 2004. Courts and contract enforcement in transition agriculture: theory and evidence from Poland. *Agricultural Economics* Vol. 31, No. 2-3. 251-263.
- Fernández-Olmos, M. 2008. The moderating role of trust in contractual choice. *British Food Journal* 113 (3), 374-390.
- Fertő, I. 2006. The Contractual Relationships in Hungarian Horticultural Sector. In: Curtiss, J. – Balmann, A. – Dautzenberg, K. – Happe, K. [eds.]: *Agriculture in the Face of Changing*

Markets, Institutions and Policies. Challenges and Strategies. Leibniz Institute für Agrarentwicklung in Mittel- und Osteuropa, Halle, 184–193.

Fertő I. 2009. How can producers access the modern agri-food chain? A Central and Eastern European perspective. CAB Reviews, 4 (63)

Gallant, A. R., and D. W. Nychka. 1987. Semi-nonparametric maximum likelihood estimation. *Econometrica* Vol. 55. No. 2. 363-390.

Klein, R., and Spady, R. 1993. An efficient semiparametric estimator of the binary response models. *Econometrica* Vol. 61(2), 387-421.

Lyons, B.R. 1994. Contracts and Specific Investment: An Empirical Test of Transaction Cost Theory, *Journal of Economics and Management Strategy*, Vol. 3(2), 257–78.

Lyons, B.R. 1996., Empirical relevance of efficient contract theory: inter-firm contracts, *Oxford Review of Economic Policy*, Vol. 12(4), 27-52

Masten, S.E. and Saussier, S. 2000. Econometrics of Contracts: An Assessment of Developments in the Empirical Literature on contracting, *Revue D'Économie Industrielle*, Vol. 92(2-3), 215-236.

Ménard, C., and Valceschini, E. 2005. Institutions for governing agriculture and rural areas, *European Review of Agricultural Economics* Vol. 32(3),421-440.

Williamson, O.E. 1979. Transaction cost economics: the governance of contractual relations. *Journal of Law and Economics*, Vol. 22(2), 233–261.

Williamson, O.E. 1985. *The Economic Institutions of Capitalism*, Free Press, New York.

Williamson, O.E. 1991. Comparative Economic Organization: The Analysis of Discrete Structural Alternatives, *Administrative Science Quarterly*, Vol. 36(2), 269–296.