Contract enforcement in Hungarian agri-food chain: the case of small and medium enterprises

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Abstract

The paper analyses small and medium firms' perceptions on contract enforcement along food chain in central region of Hungary using survey data. We find that 59 per cent of respondents believe that they could use court to enforce contracts with their partner. However we do not find significant differences along food chain. Our estimations suggest that contractual specificity and firm attributes, external linkages, efficiency of legal systems factors, buyer and seller specific factors significantly influence the opinion on contract enforcement. Interestingly, the impact of branch specific characteristics has no impacts. Acceptance of financial loss can be explained by contractual specificity, external linkages, and efficiency of legal systems. Buyer, seller and industry characteristics has not played role in the explanation of financial losses.

JEL: D2, Q13

1. Introduction

The mechanisms of contract enforcement play pivotal role for the efficiency of market exchange and economic development. Contracts are more increasingly important for modern agri-food systems via coordination of activity between various stages of food chain. The literature on the role of contracts in agri-food chain is ever increasing on agriculture in transition countries (see survey by Fertő 2009). Although the problem of hold up and contract enforcement has already recognised in early stage of transition, however studies concentrating on hold up isssues are limited (e.g. Cungu et al. 2008). Similarly, literature on contract enforcement issues is also scarce (e.g. Beckman and Boger 2004, Guo-Jolly 2008, Haji, 2010, van Herck et al. 2012). Contract breaches, delayed payments are well known issues in transition countries including Hungarian agriculture. The rapid concentration process in retail sector has had profound impact on market power within food chain. Consequently, farmers and processors have started to press politicians in order to make new legislation against market power of retail chains. Last decade Hungarian governments have modified two laws in this respect. First, resale below cost provisions was introduced in law on the agricultural regime that took effect in 2003. Second, Commercial Act in 2005 includes some additional provisions against exploitation of market power including maximisation of term for payment (90 days). The intention of these laws is to improve the bargaining position of small and medium size enterprises (SME) in Hungary. The aim of this paper is to analyse the opinion of the SME-s on contract enforcement by examining the Hungarian various food chains in central region of Hungary using survey data. Applying semi parametric and semi-nonparametric models, we present an empirical analysis of the key determinants of contracting enforcement. Contrary to previous studies which concentrated only on producers' behaviour we investigate three stages of food chain: producers, processors, and retailers. This approach allows us to get more insights to better understanding of food chain.

The rest of the paper is organised as follows. Next section provides a short literature review on contract enforcement literature and derivation of hypotheses. The sample and key variables are described in section 3. This is followed by presentation and discussion of the empirical results to explain contract enforcement issues. Final section concludes.

2. Literature review and hypotheses

There are two major strands to the study of relational contract enforcement: the theory of self-enforcing agreement and the experimental economics. We focus only former because this approach is still dominant in empirical literature. A self-enforcing agreement between two parties remains in force as long as each party believes himself to be better off by continuing the agreement than he would be by ending it (Klein 1996, Klein and Lefler 1981, Telser 1980). It is left to the judgment of the parties concerned to determine whether or not there has been a violation of the agreement. If one party violates the terms then the only recourse of the other party is to terminate the agreement after he discovers the violation. No third party intervenes to determine whether a violation has taken place or estimate the damages from that result from such a violation. Mechanisms to reduce the likelihood of contract breach include private sanctions and legal (court) enforcement (Hart and Moore 1990). Within the standard framework hold ups occur only when unanticipated changes shift the underlying market conditions outside the self enforcing range. However, reforms caused several institutional changes, which usually led to contract breaches in transition countries. In addition, in these countries public institutions work usually inefficiently in ensuring contract enforcement. Moreover, the limited use of public court enforcement might be related to the fragmented farm structure, and perishable nature of agricultural products causing supplementary costs for legal procedure (Maze 2005).

The main question is how are the costs and benefits of court or private enforcement determined? These depend on the value of the contract and on the efficiency of the courts and private mechanisms to enforce the contract. Williamson (1985) emphasises that that relationship specific investments make both court ordering and self-enforcement very costly. In other words, the potential importance of contract problems is directly related to the extent to which investments (or assets) are specific to the contract relationship. This implies that the impact of contract enforcement problems is larger for more contract-specific investments.

Recent literature emphasises the role that private institutions in enforcing relational contracts. Private institutions may strengthen and enforce informal contracts embedded in a social system via matching partners and joining in sanctioning opportunistic behaviour (Ellickson 1991, Greif 1993 and Greif et al. 1994). The absence of formal law or inefficient public enforcement is the main motivation for the players to find or develop other private enforcement mechanisms (Milgrom et al. 1991 and Greif 2005).

The empirical studies focus on two important issues as cases of contractual relationships: delayed payment and interlinked contractual relationship within food chain. The delayed payment is a well known phenomenon in transition countries harming firm growth and investment activity. Cungu et al (2008) confirm this statement, they find that delayed payment was usual issue in Hungary in mid nineties and it has negative impact on the farm investment. Van Herck et al. (2012) using survey data for Bulgaria reveal that late payments have a negative effect on farm growth, while

interlinked contracts positively influence farm growth. Guo and Jolly (2008) analyse the relationship between contractual arrangements and contract enforcement. They find that floor price; specific investment and bonuses significantly improve the contracts' fulfilment rate in China. Beckmann and Boger (2004) focus on the role of court in public enforcement in Poland. They find that contract enforcement depends on the efficiency of legal systems, contract arrangements, transactions attributes, and business environment and buyer and seller characteristics. In sum, empirical studies suggest that beyond traditional transaction cost variables, like asset specificity, transaction characteristics, efficiency of legal system and contract design may have impact on perception on contract enforcement and acceptance of financial losses.

Following Beckmann and Boger (2004) we test following hypotheses.

H1: Probability of contract enforceability via court will increase with formalisation and completeness of contract.

H2: The value of business relationship decreases the likelihood that a contract is enforceable.

H3: The efficiency of legal system positively influences the perception that contracts are enforceable.

H4: The acceptance of financial losses is negatively related to formalisation and completeness of contract.

H5: The value of business relationship increases the likelihood of acceptance of financial losses

H6: The efficiency of legal system has negative impact on the acceptance of financial losses.

3. The sample and key variables

To investigate SMEs' contracting characteristics and to test the determinants of contracts, a questionnaire was designed and data were collected from central region of Hungary. The sample covers three stages of food chain; producers, processors and retailers. We conducted face-to-face interviews with each respondent. The surveyed 231 firms include 64 producers, 59 processors and 109 retailers. Table 1 shows descriptive statistics of key variables.

The first dependent variable, the contract enforcement is binary and derived from firms' response to a survey question. The firms were asked to evaluate to the statement whether contract enforceable via the court using five items Likert scale. Following Wald tests that showed no significant difference between 'agree' or 'strongly agree', we used a single dummy variable, *enforcement* that combines these two responses. Second dependent variable, *financial loss* describes the financial loss in Hungarian forints the firm is willing to accept before enforcing a contract via court. Table 1 shows that 59 per cent of the firms believe that contracts are enforceable via court. The mean amount of accepted financial loss is more than one million Hungarian forints before going to court to enforce the contracts.

Independent variables can be classified into five groups. First group describes the contractual characteristics of firms (CC), including two elements. Do you have written

contract for a particular period *(written contract*)? Do you receive payment after delivery (*payment after delivery)*. Calculations show that 51 per cent of the firms have written contract and 49 per cent of respondents receive payment on delivery. Mean duration of payment after delivery is eleven days which fits to the recent legislation. In other words, this implies the recent regulation is effective for our sample.

Second group measures the business relationships of respondents. *Dependence from partner* variable describes that what is the impact of your most important partner on your performance (strongly worsen 1 to strongly improve 5)? The firms evaluate in average very positively their relationships with main partner (4.3). *Frequency of partner change* variable reports that how many times have you changed your partners in last five years? Respondents switched their partner in average twice during last five years. *Duration of business relationships* variable shows how long do you have connection with your most important partner? The mean duration of business relationship with main partner is 8 years.

Third group reports firms' evaluation on the legal system (LS). Unlike Beckmann and Boger (2004) we measure two aspects of efficiency of courts, whether public contract enforcement is *costly* or time *consuming* (1: strongly disagree, 5: strongly agree). The mean values of answers for both questions are above four implying that the opinion respondents on the efficiency of legal system are very critical.

Fourth group identifies the buyers' characteristics (BC); *ownership* of firms in per cent of Hungarian ownership and two dummy variables to identify whether buyer is processor or retailer. The ownership of respondents is mainly Hungarian, 87 per cent of firms are exclusively Hungarian owned. Regarding to buyer characteristics, 19 per cent of firms sell to processors and 47 per cent to retailers, respectively.

Final set of variables displays the sellers' attributes (SC) including *managerial experience* in years, and the formal *education* ranging from elementary schools to university degree, and international orientation is a dummy describing firms international linkages (having export connections or being foreign ownership). Managers have at least secondary school and 15 years business experiences in average. The mean gross revenue of firms is between 10-50 million forint and 19 per cent of them have international orientation.

Table 1 Descriptive statistics of variables

	N	Mean	Std. Dev.	Minimum	Maximum
Dependent variables					
enforcement	231	0.59	0.49	0	1
financial loss	86	1014767	2358949	0	10000000
Independent variables					
1. Contractual characteristics (CC)					
Written contract	175	0.51	0.50	0	1
Payment on delivery	195	0.49	0.50	0	1
2. Business relationship (BR)					
dependence from partner	182	4.29	2.11	1	5
frequency of partner change	203	2.18	1.35	1	5
duration of business relationship	176	7.82	5.71	0	26
3. Legal system (LS)					
contract enforcement is costly	191	4.03	1.10	1	5
contract enforcement is time consuming	191	4.66	0.71	1	5
4. Buyers' characteristics (BC)					
processor	231	0.19	0.40	0	1
retailer	231	0.47	0.50	0	1
ownership structure	172	0.83	0.38	0	1
5. Sellers' characteristics (SC)					
business experiences (year)	230	14.83	10.86	1	50
education of manager	230	7.01	2.34	2	12
international orientation	231	0.19	0.39	0	1

Source: own estimations based on survey data

We are interesting for the difference of variables' mean across various stages of food chain. Table 2 shows our results based on the ANOVA. Bartlett tests imply that an equal-variance assumption is implausible for 6 cases of 16 variables. Thus we apply Kruskal-Wallis test which reinforced the results of F tests. Estimations suggest that there is no significant difference in contract enforcement having written contract, dependence from main buyer, evaluation of legal system, ownership structure and international orientation.

Interestingly, processors are willing to accept the highest value of financial losses (around 1.6 million forints) following by farmers. Surprisingly, threshold of acceptance of financial losses is the lowest for retailers, only of 53 per cent of value for processors. The share of immediate payment on delivery is the highest for retailers (40 per cent) following by processors (22 per cent) and farmers (9 per cent). This suggests that bargaining power of farmers is the lowest comparing to other stages of food chain. The partner change is most frequent for processors and rare for farmers. The duration of business relationship is longest for farmers (8.7 years) and shortest for retailers (7.5).

Table 2. Mean of variables by stages of food chain

	processor	retailer	farmer	Kruskall-Wallis test (p value)
Dependent variables				
enforcement	0.55	0.63	0.57	0.54
financial loss	1579444	848500	1304783	0.08
Independent variables				
1. Contractual characteristics				
Written contract	0.78	0.85	1.00	0.79
Payment after delivery	0.22	0.40	0.09	0.03
2. Business relationship				
dependence from partner	5.89	4.20	4.43	0.48
frequency of partner change	2.72	2.20	1.78	0.01
duration of business relationship	8.28	7.50	8.70	0.00
3. Legal system				
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
4. Buyers' characteristics				
processor	0.22	0.15	0.57	0.00
retailer	0.28	0.35	0.22	0.04
ownership structure	0.78	0.75	0.78	0.66
5. Sellers' characteristics				
business experiences (year)	18.56	11.65	18.13	0.00
education of manager	6.22	7.65	8.48	0.03
international orientation	0.22	0.17	0.17	0.69

Source: own estimations based on survey data

Apparently, buyer partners are significantly differing at the various stages of food chain. Farmers sell their product mainly to processors, while processors sell to retailers. The most experienced managers are working in the food processing (18.6 years) following by farmers (18.1 years) and surprisingly retailers have only 11 years managerial experiences. Contrary to our a priori expectation, farmers are more educated, they have at least college degree in average, following by retailers with grammar school and processors with specialised technical college.

4. Contract enforcement

In order to examine the relationships between contract enforcement and explanatory variables, we estimated various binary models. The binary models are typically estimated by maximum likelihood after imposing distributional assumptions of error term. However, semi parametric literature emphasise that parametric estimators of discrete choice models are known to be sensitive to departure from distributional assumptions. Various estimators have been developed for correcting this restrictive nature of parametric models. In this paper we apply the semi-nonparametric approach of Gallant and Nychka (1987) and the semi parametric maximum likelihood approach of Klein and Spady (1993). We report only those models which perform better.

We estimate our models step by step adding new groups of factors to the basic model from contractual characteristics to branch specific attributes. We present six specifications of our estimations (Table 3). Wald tests imply that we can reject the hypothesis that all coefficients are jointly equal to zero. Likelihood ratio tests suggest that semi-nonparametric models outperform parametric probit models.

The written contract has positive and significant impact on contract enforcement for all specification with one exception. This suggests that firms with written contract believe that they are able enforce contract via court in the presence of their partners' opportunistic behaviour. Our results confirm Lyons (1996) argument, namely contract is not necessarily written when its enforceability is difficult, or absence of control and witness by third party. Boger and Beckman (2004) find also that written contracts increase contract enforceability through courts for Polish farmers. Estimations for immediate payment on delivery are rather ambiguous. The baseline model reports positive and significant coefficient, but models 4-6 show the opposite case.

All business relationships variables are significant for all specifications. Dependence from the main partner positively influences the trust in court enforcement which is contrary to results by Boger and Beckmann (2004). They argue that public enforcement may harm the value of business relationship, thus farmer prefer to use of private mechanisms. Our results can be interpreted as following. Sellers depend on the main partner strongly, because they know that they are able to enforce their contract in the case of opportunistic behaviour of buyers. In other words, sellers need to have a special level of threshold of trust to contact their partner. Frequency of partner change and the duration of business relationship have negative impact on the trust in court enforcement. Former one implies that firms with bargaining power are less relies on public institutions. Latter one suggests that longer duration of business relationship may exist in absence of efficient legal system.

Interestingly, two aspects of legal procedures have different effects on the probability that a contract is regarded as enforceable. Firms believing that the use of legal systems is too costly do not trust in public enforcement mechanisms. However, respondents consider that despite of time consuming nature of legal procedure, contracts are enforceable via courts.

Buyers' characteristics have also important role to explain the opinion of respondents. The probability of trust in court enforcement increases if firms sell their products to processors. But, selling to retailers has negative impact on the belief in public enforcement. Interestingly, the ownership structure of seller has no significant impact on the opinion of legal enforcement.

Among seller characteristics variables, business experiences an international orientation are insignificant. However the managerial education has positive and significant effect. If manager is more educated the probability that a firm will consider its contract as enforceable through courts is decreased. Finally, the branch specificity of sellers has no significant impact.

5. The willingness to accept financial losses

Now we turn the question that the willingness to accept financial losses before going to the court. We have less valid answer for this question, thus the sample size is reduced to 60 observations. Table 4 shows our estimations based on OLS regression. The explanatory powers of models are modest, R squares are below 0.3, and however specification tests do not reveal problems. Most striking findings that contractual characteristics, business relationship and efficiency of legal system may play important role on the willingness to accept financial losses. Similarly to trust in public enforcement, immediate payment after delivery has negative effect on the magnitude of losses of firms is willing to accept for all specifications. This suggests that firm try to receive payments, because they can accept only low level of financial losses. Unlike Boger and Beckmann (2004) written contract has significant impact.

The variables for business environment show that frequency of partner change and duration of business relationship has significant impacts on the willingness to accept financial losses. Surprisingly, coefficient of dependence from most important buyer is insignificant. The frequency of partner changes negatively influences the acceptance of financial losses. If firm has bargaining power they tolerate less partners' opportunistic behaviour. These results are robust in all model specifications. Duration of business relationship increases the level of acceptance of financial losses. This implies that firms can tolerate some level of opportunisms from their traditional partners.

Among legal system variables, the 'contract enforcement is time consuming', reveals a robust effect on the willingness to accept financial losses. Unlike to contract enforceability, we find negative impact. We may argue that firms are less tolerate to opportunistic behaviour if it causes financial losses them comparing to opinion on general efficiency of public enforcement. Cost efficiency aspect of legal procedure has no significant impact. Finally, buyer and seller characteristics have no influence.

Table 3 Semi-nonparametric maximum likelihood estimations for contract enforcement

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CC_1 written contract	1.799***	0.464	0.522*	1.761***	1.674***	1.598***
CC_2: payment after delivery	0.946**	0.492	0.286	-0.636***	-1.092***	-0.985***
BR_1 dependence from partner		0.373***	0.212***	0.316***	0.232*	0.320**
BR_2 frequency of partner change		-0.383***	-0.262**	-0.386***	-0.208*	-0.205**
BR_3duration of business relationship		-0.093***	-0.049**	-0.124***	-0.089***	-0.085***
LS_1 contract enforcement is costly			-0.758***	-0.562***	-0.389***	-0.351***
LS_2 contract enforcement is time consuming			0.706***	0.794***	0.781***	0.801***
BC_1 processor_buyer				0.508**	0.755**	0.866**
BC_2 retailer_buyer				-1.197***	-1.151***	-1.082***
BC_3 ownership structure				-0.209	0.171	-0.030
SC_1 business experience					-0.009	-0.005
SC_2 managerial education					-0.217***	-0.178***
SC_3 international orientation					-0.328	-0.525
SC_4 processor						-0.152
SC_5 farmer						-0.394
N	171	163	142	139	138	138
Wald χ^2 test	0.000	0.000	0.000	0.000	0.000	0.000
Likelihood ratio test	0.065	0.005	0.017	0.000	0.000	0.000

*p < 0,1; **p < 0,5*; ***p < 0,01.

Source: own estimations based on survey data

Table 4: OLS for financial losses

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
CC_1 written contract			-0.523	-0.634			-0.295
CC_2: payment after delivery	-1.387*	-1.357*	-1.419*	-1.389*	-1.233*	-1.454**	-1.464**
BR_1 dependence from partner	-0.053	-0.091	0.022	0.001	-0.116	0.042	0.082
BR_2 frequency of partner change	-0.278*	-0.283*	-0.289**	-0.293**	-0.249*	-0.355**	-0.355**
BR_3duration of business relationship	0.056	0.068*	0.057*	0.070**	0.061*	0.069**	0.070**
LS_1 contract enforcement is costly	0.223	0.192	0.194	0.156	0.159	0.143	0.128
LS_2 contract enforcement is time consuming	-1.012*	-0.943*	-1.021*	-0.951*	-0.870*	-0.955**	-0.957**
BC_1 processor_buyer		0.357		-0.603		0.614	0.623
BC_2 retailer_buyer		-0.608		0.399		-0.611	-0.608
BC_3 ownership structure	0.105	0.080	0.123	0.100		0.026	0.036
SC_1 business experience					0.377	0.662	0.643
SC_2 managerial education						0.355	0.329
SC_3 international orientation						-0.481	-0.459
constant	16.400***	16.444***	16.623***	16.678***	16.713***	16.417***	16.515***
N	60	60	60	60	65	60	60
R^2	0.2441	0.2814	0.2495	0.2893	0.2288	0.3281	0.3298
Ramsey RESET test	0.6888	0.2688	0.7158	0.2212	0.2330	0.9997	0.9985
VIF	1.18	1.25	1.23	1.29	1.17	1.42	1.45
Breusch-Pagan test	0.8393	0.5266	0.8938	0.5797	0.5216	0.7831	0.8167

*p < 0,1; **p < 0,5*; ***p < 0,01.

Source: own estimations based on survey data

6. Conclusions

The aim of the paper is to identify factors explaining perceptions of SME-s in Hungarian food chain on the role of court in enforceability of contracts. Contrary to our a priori expectations, 59 per cent of respondents believe that contracts are enforceable through the court. Our calculations provide some support to the theoretical model that firms' responses can be explained by cost-benefit calculations regarding the use of courts. In line with earlier studies our estimations suggest that contractual specificity and firm attributes, external linkages, efficiency of legal systems factors, buyer and seller specific factors significantly influence the opinion on contract enforcement. Surprisingly, the impact of branch specific characteristics has no impacts. Acceptance of financial loss can be explained by contractual specificity, external linkages, and efficiency of legal systems. Buyer, seller and industry characteristics has not played role in the explanation of financial losses.

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