Empirical Research on Farmer's Breaching Behavior in Order Contract

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Abstract In "leading enterprise + farmer" cooperation model, farmer's behavior of breaching contract exists generally. In this paper, from the angle of incomplete contract, the influencial factors of farmer breaking contract are analyzed. It is found that farmer sex, age, culture degree and farming period have obvious effects on the behavior of breaching contract. Under regulating effect of relationship quality, farmer assest specificity, exogenous uncertainty and endogenous uncertainty affect farmer's breaking behavior. That is, the higher the farmer assest specificity, the lower the farmer breaching tendency; higher exogenous uncertainty causes that farmer is easy to generate breaching behavior; higher endogenous uncertainty causes that farmer is also easy to take breaching behavior.

Key words Farmer breaching, Relationship quality, Assest specificity, Uncertainty

1 Introduction

The development strategy of agricultural industrialization is always concerned by government, enterprise, farmer, academic worker and social masses. The organization application of "leading enterprise + farmer" could decline business cost, stabilize product source, and increase the income of trade subject. However, in agricultural industrialization practice of China, this kind of trade relationship is not stable, and the event of farmer breaching contract occurs frequently[1]. Farmer's breaching behavior not only brings economic loss for leading enterprise but also seriously hinders the realization of China agriculture industrialization and marketization. At present, scholars mainly explore prevention and countermeasure of farmer breaching from incomplete contract perspective[2], game view[3] and legal perspective, but neglect the impact of bilateral relationship on contract implementation. However, trade occurs in static rural society, and the role of relationship quality in channel relation between farmer and leading enterprise is prominent. Therefore, the relationship quality is introduced into the model on influence factor of farmer breaching, and farmer breaching behavior is explored in detail.

2 Literature review and research hypothesis

2.1 Literature review The researches about order contract fulfillment aspect at home and abroad mainly concentrate in influencial factors of implementing contract[4], motive aspect of breaching contract, prevention and countermeasure of breaching contract. Taking trade cost theory as the basis, Zylbersztajn found that farmer's production scale, convenience degree of goods sale and contract price form affect farmer complying with the signed order[4]. Besides, design of contract item, selection of contract object and setting of risk fund[2], whether or not enterprise monopoly in the developing country, personal relationship between farmer and manager, farmer's right using land, moral risk, government support and culture atmosphere are also influencial factors. Liu Fengqin *et al.* thought that essential reason of breaching was incompletion of contract, information asymmetry and weak breaching punishment power. Li Pingying pointed out that institutional arrangement could ease breaching problem. Benefit distribution between farmer and leading enterprise[3, 5], perfecting of restraint mechanism and reducing trade cost are the key of contract stability. Shi Jianmin approved the importance of law, and proposed that detailed and complete contract item could improve contract implementing rate from the angle of contract law. However, the role of law could not be played sometimes. Zhang Chuang *et al.* introduced social relation factor into the research about trading relationship of agricultural product, and highlighted important degree of social dimension, but there is no data support. Although domestic scholars analyze a lot of breaching phenomena, but there are fewer literatures about emotional connection established between farmer and leading enterprise. In static rural society, cooperation and communication are mainly maintained by the relationship, and "constitutionality" is used rarely[6]. In this paper, relationship quality is introduced to study farmer's breaching behavior, and how farmer own factor, farmer asset specificity, exogenous uncertainty, endogenous uncertainty and relationship quality to affect farmer breaching is studied.

2.2 Research hypothesis

2.2.1 Uncertainty. When actual operation environment is exposed under unpredictable and uncertain condition, trade cost could increase greatly. Due to benefit pursuit, under the driving of external environmental condition, one side or both sides of the transaction could generate non-moral opportunism behavior, and

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contract exists in name only, and contract breaching becomes the fact. Due to own reason, farmer and enterprise could not accurately measure and judge large environment, macro and medium background of whole transaction. Just because of this, final result of their trade is uncertain. Scholars at home and abroad study the uncertainty, and basic classification is as below: market and event uncertainty; primary and secondary uncertainty; subjective and objective uncertainty; exogenous and endogenous uncertainty. Exogenous uncertainty is mainly caused by external environmental factors, namely uncertainty of trade and behavior, while endogenous uncertainty is uncertainty of behavior and result caused by internal structure. (i) Exogenous uncertainty and farmer breaching. In commodity business between leading enterprise and farmer, uncertainty mainly indicates market uncertainty in planting and production links and subsequent processing process of agricultural product, and natural disaster and immoral behavior are easy to appear in production link. Tian Min *et al.* verified the regulation role of market uncertainty on speculation behaviors of farmer and buyer. Compared with other product markets, agricultural product market had more serious uncertainty. Zhao Xiliang *et al.* also thought that more market price change of agricultural product was easier to make farmer have speculation and breaching behaviors. H_1: the higher the exogenous uncertainty, the higher the breaching tendency. (ii) Endogenous uncertainty and farmer breaching. Knight firstly elaborated the idea of uncertainty, and distinguished uncertain risk whether event result could be predicted. Risk is involved in bank credit decision, enterprise strategy decision, technology innovation and use, order contract implementation and risk sharing mechanism arrangement[2]. In commercial credit decision, endogenous uncertainty risk induced by information asymmetry affects the transaction. Keh *et al.* thought that risk perception was intuitive judgment and attitude of risk, and subjective awareness and psychological feeling of decision maker facing various objective risks in decision-making process. Farmer's risk perception level affects behavior decision making. Wu Lanya *et al.* found that farmer's environmental risk perception degree affects his ecological behavior. Uneven benefit distribution and risk sharing mechanism lacking are essential sources of breaching. Guo Jinyong *et al.* brought education degree and risk orientation of household into the model affecting farmer breaching behavior. When farmer breaches the contract, he is possible to suffer from mandatory penalties from company, thereby losing reputation and money. H_2: the higher the endogenous uncertainty, the higher the breaching tendency.

2.2.2 Asset specificity. Williams thought that the most essential difference of special asset and non-specific asset was whether the lasting and durable investment could be used for the designated transaction[7]. The most obvious and prominent feature of asset specificity is unchanged characteristics at certain degree. The organization mechanism and trading relationship of the seller and the buyer are all affected by asset specificity. Farmer has the asset specificity of geography, production data or tool, and labor, and asset specificity affects contract stability. Williams proposed intermediate mode in market and section, and thought that business between leading enterprise and farmer was a kind of relationship contract, and asset specificity acted contract complying[7]. Huang Zuhui *et al.* thought that too high asset specificity investment could cause "ripping off", thereby destroying the implementation of contract item[8]. Asset specificity could improve transaction cost and increase market risk, thereby affecting market transaction[9]. Chen Can also thought that higher asset specificity needed better guarantee to prevent the occurrence of opportunism. Based on case analysis, Hou Shouli *et al.* analyzed different types of contracts[10]. Research found that farmer was easier to make breaching decision when milk source was hard to get. When farmer asset specificity was higher, his conversion cost also increased correspondingly. H_3: the higher the asset specificity, the lower the breaching tendency.

2.2.3 Relationship quality and farmer breaching. Contract implementation could be divided into two kinds of types: formal mechanism and informal mechanism, and they have replacing or complement. Some scholars thought that asset specificity was essential reason of relationship contract generation, and relationship contract could not guarantee contract stability. Effective relationship control could decrease opportunistic behavior, promote better cooperation between farmer and corporation, and guarantee contract stability. Claro *et al.* found that relational rule could affect trade stability. MacNeil thought that trade contract research must consider embedding property of social dimension. Zhang Chuang *et al.* introduced social relation factor into the research about trade relationship of agricultural product, and found that relation control mechanism based on social relationship control behavior norm played key role, and the law was used rarely. It was very necessary to study the introduction of social dimension in agricultural product transaction, and good social interaction between farmer and leading enterprise could promote the stability of trading relationship. Luo Luan thought that unofficial treatment mechanism played a key role in relation control of agricultural product supply chain organization, and relation type of psychological contract also could promote enterprise and farmer solving conflict and decreasing speculation. Tian Min *et al.* found that interpersonal relationship could inhibit breaching behavior of buyer. Therefore, it is proposed the hypothesis H_4: relationship quality affects farmer breaching behavior. H_{4a}: relationship quality regulates farmer asset specificity and farmer breaching behavior; H_{4b}: relationship quality regulates exogenous uncertainty and farmer breaching behavior; H_{4c}: relationship quality regulates endogenous uncertainty and farmer breaching behavior. Based on the above theoretic analysis, impact mechanism of farmer breaching behavior and regulation role of relationship quality on the process are studied. The analytic research model is shown as Fig. 1.

3 Data source and variable illustration

3.1 Data source The research data were from field investigation in 6 counties and districts of Haikou City, Hainan Province

during November – December, 2015, and investigation method used face to face interview and questionnaire. Questionnaire content mainly contains farmer's basic features, farmer asset specificity, exogenous uncertainty, endogenous uncertainty, relationship quality and farmer breaching tendency. The investigation offers 600 copies of questionnaires, and 510 copies of effective questionnaires are obtained, with 85% of effective recovery rate. In the recovered 510 copies of effective questionnaires, male accounts for 71.8%, while female accounts for 28.2%. The investigated farmers concentrate in 41 – 50 years old, dominated by older persons, which corresponds with actual background that young people tend to go out to work. The investigators with culture degree below primary school, primary school, junior high school, senior middle school and above senior middle school respectively account for 5.9%, 5.9%, 41.2%, 17.6% and 29.4%. It illustrates that culture degree of farmer is still low. Traditional agriculture accounts for 52.9% of total sample and is dominant. Agricultural sideline becomes main channel of farmer income increase in recent years, which accounts for 47.1%.

3.2 Variable illustration Combining with research thought in this paper, and referring to other scholars' researches about influence factors of farmer breaching behavior[3], farmer's sex, age, culture degree and farming period are selected as endowment characteristics and controllable variables in this paper. Farmer asset specificity scale table is from the past research[7]. But due to the change of research background, the author revises the question item. Exogenous uncertainty is measured by three question items, and relationship quality mainly contains three question items. Farmer breaching tendency scale table contains 5 question items. The research about influence factor of farmer breaching behavior could further clear farmer breaching motive and decrease farmer's breaching behavior. Endogenous uncertainty contains three question items.

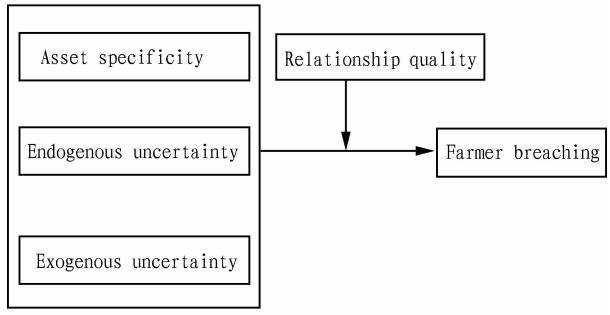

Fig. 1 Analytic research model

4 Analytic results

4.1 Reliability and validity analysis of scale table The research contains reliability and validity tests of farmer asset specificity, exogenous uncertainty, endogenous uncertainty, relationship quality and farmer breaching tendency, and results are shown as Table 1. Results show that Cronbach's Alpha values of farmer asset specificity, endogenous uncertainty, exogenous uncertainty, relationship quality and farmer breaching are 0.746, 0.736, 0.836, 0.801 and 0.840 respectively. If Cronbach's Alpha reliability coefficient is more than 0.7, it illustrates that research data have better reliability. In the model, the index is all more than 0.70, illustrating that internal consistency degree of the model is better, and scale table has better reliability. Cumulative interpretation rate of factor analysis reaches 76.181%. Seen from factor load after rotation and grouping, except factor load values of farmer asset specificity Q3, farmer risk perception Q4, relationship quality Q10, Q11 and Q12 are less than 0.6, factor load values of other question items are all more than 0.6, and KMO value is 0.590, and Sig value of Bartlett ball inspection is 0.000, with very significant result. It illustrates that fitting effect is ideal, and scale table has good validity.

Table 1 Reliability and validity of important variables

Variable name	Question item	1	2	3	4	5	Cronbach's Alpha coefficient
Farmer asset specificity	Q1	0.865					0.746
	Q2	0.797					
	Q3	0.575					
Endogenous uncertainty	Q4		0.494				0.736
	Q5		0.869				
	Q6		0.889				
Exogenous uncertainty	Q7			0.803			0.836
	Q8			0.878			
	Q9			0.858			
Relationship quality	Q10				0.440		0.801
	Q11				0.510		
	Q12				0.534		
Farmer breaching tendency	Q13					0.654	0.840
	Q14					0.755	
	Q15					0.779	
Other	Q16					0.797	
	Q17					0.807	

4.2 Empirical analysis on impact factors of farmer breaching behavior Combining with analysis and research results of the related literatures, sex, age, education level, farming period and use of new technology from farmer individual endowment characteristics are set in linear model for analysis. Meanwhile, using hierarchical regression model, regulation role of relationship quality is explored. The first-layer regression shows the influences of farmer endowment characteristics, farmer asset specificity, exogenous and endogenous uncertainty on farmer breaching willing. But seen from whole regression result, F value of regression equation is 119.155, and it is significant at 1% of confidence level, illustrating that the equation has good fitting effect. Sex has significant impact on farmer breaching willing, with the coefficient of −0.088, and male breaching tendency is higher. The influence coefficient of age on farmer breaching willing is 0.334, and it is found that older farmer has higher breaching tendency. The influence coefficients of culture degree and farming period are −0.120 and 0.769 respectively, and farmer with high culture degree has lower breaching tendency, illustrating that farmer with high education degree more concerns reputation. When farming period is longer, farmer tends to breach contract to obtain super profit. The influence coefficient of farmer asset specificity on breaching behavior is −0.341, that is, the higher the farmer asset specificity, farmer is not easy to breach. The influence coefficient of exogenous uncertainty on farmer breaching behavior is 0.167, illustrating that when external environment change is frequent, farmer is easy to breach. The influence coefficient of endogenous uncertainty on breaching behavior is 0.119, that is, the higher the endogenous uncertainty, farmer tends to breach. Seen from regression results of three layers, F values of regression equation introducing regulated item and interaction item are 106.186 and 100.440, which is very significant, illustrating that the equation has better explanatory power on the whole. R^2 change amount of the second-layer regression model adding relationship quality to the first-layer regression model is 0.001, illustrating that explanatory power of the equation is improved by 0.1%, and it is significant at 1% of level, that is to say, action is very obvious. Change amount of the third-layer regression adding interaction to the second-layer regression is 0.051, that is, explanatory power of the equation is improved by 5.1%, which is extremely significant(P value less than 1%), illustrating that the regulated variable has very large contribution. Seen from significance and coefficient changes of farmer asset specificity to farmer breaching, after adding regulating factor, its coefficient changes from −0.341 to −1.274, and absolute value of the coefficient increases, and regulation effect of relationship quality is obvious. The coefficient of exogenous uncertainty changes from 0.167 to 1.138, and absolute value of the coefficient increases obviously, illustrating that under the regulation of relationship quality, the influence of exogenous uncertainty on farmer breaching enhances. The absolute value of coefficient of endogenous uncertainty changes from 0.119 to −0.439, and symbol changes when absolute value increases. Based on the above analysis, relationship quality regulates influence mechanism of farmer breaching behavior.

Table 2 The influence factors of farmer's breaching behavior and regulating effect of relationship quality

Research variable	Beta		
	Model 1	Model 2	Model 3
Constant	−0.216	−0.090	1.658
Sex	−0.088***	−0.089***	−0.068**
Age	0.334***	0.334***	0.249***
Culture degree	−0.120***	−0.105***	−0.300***
Farming period	0.769***	0.773***	0.675***
Utilization of new technology	−0.531***	−0.543***	−0.457***
Farmer asset specificity	−0.341***	−0.342***	−1.274***
Exogenous uncertainty	0.167***	0.189***	1.138***
Endogenous uncertainty	0.119***	0.099***	−0.439***
Relationship quality		−0.048	0.103
Farmer asset specificity * relationship quality			1.375***
Exogenous uncertainty * relationship quality			−2.254***
Endogenous uncertainty * relationship quality			0.610***
Adjusted R^2	0.650	0.651	0.701
$\triangle R^2$		0.001***	0.051***
F value	119.155***	106.186***	100.440***

5 Conclusions and suggestions

5.1 Conclusions By investigating the influences of farmer endowment characteristics, farmer asset specificity, exogenous uncertainty and endogenous uncertainty on farmer breaching behavior, the regression model on influence factor of breaching behavior is established to study the regulation role of relationship quality on farmer asset specificity, exogenous uncertainty, endogenous uncertainty affecting farmer breaching behavior. Results find:(i)farmer age, culture degree, farming period and new technology utilization all significantly affect farmer breaching behavior;(ii)after adding the regulation role of relationship quality, farmer asset specificity, exogenous uncertainty and endogenous uncertainty affect farmer breaching behavior, that is, the more the farmer specificity investment, the lower the farmer breaching tendency; the higher the ex-

ogenous uncertainty, farmer is easier to generate breaching behavior; the higher the endogenous uncertainty, farmer is easier to generate breaching behavior; direct effect of relationship quality on farmer breaching is not obvious.

5.2 Suggestions Enterprise should establish good cooperation relationship with farmer, and initiatively offer market price information, technology guide, timely and safe payment method, credible commitment, preferential policies and incentive measures, making that farmer trust enterprise from psychology and could not generate breaching thought. Additionally, on the basis of attracting farmer by special asset investment, enterprise could encourage farmer conducting specific asset investment, thereby improving farmer's conversion cost. Exogenous uncertainty is from external environment, such as the fluctuation of market price, and farmer and company could not control it, and market risk could be declined by option, intermediate organization and market prediction. To avoid endogenous uncertainty risk, when enterprise and farmer consult price item, they could use the minimum purchase price by combining product type and market situaton. Enterprise should put attention focus on farmer's benefit, and share risk with farmer. Government should increase concerns on rural human capital, input fund and related technology, and increase farmer's participation sense. Farmer should initiatively learn related technology and understand market situation, to better adapt to market quickly changing and realize income increase.

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cooperation and take advantage of large companies, to realize strategic development of rural e-commerce and logistics. They may cooperate with local public transport system, and deliver goods to towns and villages with the aid of local public transport system. Also, they may cooperate with postal logistics companies and use logistics system of each other, and select the optimum path to improve the actual effect of the time and goods receiving, and also ensure the quality of goods.

3.3 From the perspective of rural areas

3.3.1 Introducing logistics. The development of rural e-commerce and logistics in rural areas will not be realized simply relying on local government. Individuals and enterprises should actively participate in the development of rural e-commerce and logistics. Rural areas should also actively introduce logistics enterprises and support development of logistics in villages in policies.

3.3.2 Talent introduction and cultivation. Talent cultivation and introduction are the support of government policy, and also an issue of rural areas to be actively solved. Rural areas should make well preparation for cultivation and introduction of professional personnel for modern rural logistics, so as to provide technical guidance and talent reserve for the development of rural e-commerce and logistics. Cultivation and introduction should be combined together. In the first place, it is recommended to provide professional knowledge training for rural young residents, and provide guidance of professional teachers, to make them understand and apply professional knowledge to develop and serve rural areas. In the second place, with the rapid development of logistics, modern logistics talents emerge in an endless stream to adapt to the demands of logistics development. Rural areas can introduce a batch of young logistics talents who are devoted to rural development to develop rural e-commerce and logistics.

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