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Contractual Arrangements and Enforcement in India: The Case of Organic Basmati Paddy Farming

Shiv Kumar*, Subhash Chandra, D.R. Singh† and Khyali Ram Chaudhary***

ABSTRACT

The study analyses the empirical relationship between contractual arrangements and their enforcement in organic basmati paddy farming. For the purpose a list of agribusiness firms operating in Sonepat, Karnal, Kaithal and Kurukshetra districts of Haryana state were collected from the official records of their respective markets. The data on contents of contractual arrangements and their enforcement were collected from 40 agribusiness firms operating contract farming schemes in traditional basmati rice belt of the state pertaining to the year 2011-12. Binary logit model was used to capture the determinants of contract fulfilment rates. The study concludes that the provisions in designs of contract, viz., social capital, assured price in advance, bonus clause and specific investment for infrastructure creation for carrying out production and post-harvest operations in contract organic basmati scheme are likely to promote contract fulfilment rate by the farmers. Contractual arrangements are enforced through a mix of *quid pro quo*, altruism, and adherence to social norms.

Key words: Contract breach, organic, basmati paddy.

JEL Classification: Q13, Q17, Q20, Q56

I

INTRODUCTION

The implementation of Agriculture Produce Market Committee (APMC) Act-2003 by the government has created space for entry of new actors and factors in fast changing agribusiness environment. This has brought about changes in the relationship between input and output markets in the country (Kumar and Chand, 2004). This Act allows processors and contractors to procure raw materials directly from the farmers' field; and the government to make agricultural production more profitable and competitive (Singh, 2000, 2002a, b, 2005). Innovative business models offer agricultural producers in India better prices and stable market links. Different contract farming models prevailed in India according to the needs of the consumers and the nature of commodities (Kumar *et al.,* 2007; 2010). The contractual agreement encompasses three areas, viz., market, resource and management specifications (FAO, 2004). Eaton and Shepherd (2001) provided a much richer categorisation of contract farming schemes, viz., centralised, nucleus estate, multipartite, informal, and

*Senior Scientist, and Technical Officer, respectively, National Centre for Agricultural Economics and Policy Research (NCAP), **Research Scholar, Division of Agricultural Economics, Indian Agricultural Research Institute, New Delhi-110 012 and †Senior Scientist, Indian Agricultural Statistical Research Institute, Pusa, New Delhi-110 012.

intermediary models, based on the product, the resources of the sponsor, and the intensity of the relationship between the farmer and sponsor. It is now possible to match the product produced at farmers' field with required quality to meet the demand of consumers through vertical coordination in supply chain (Aarthi *et al*., 2012).

The organic food production in general and organic basmati in particular has gained importance in the domestic as well as overseas markets from the point of consumers' health safety. All certified organic products produced in the study area are produced through contract farming only. The enforcement of contracts is an important pre-condition for efficient exchange and investment in the market guided agro-food sector in India. Contract can be enforced through a variety of public and private mechanisms, either separately or in combination. In India, public institution such as legal system for enforcing contract farming projects is either absent or ineffective in ensuring contract enforcement. Enhancement of food safety and quality requirements in the markets raises formidable challenges for small–scale producers to participate in value chains/market for agricultural products. Donors frequently provide financial backing in order to offset the upfront costs of compliance (Birthal *et al.,* 2005). This has led to rise of new forms of governance, sometimes called 'private governance', which is seen to be taking the place of public (Hatanaka and Busch 2008; Fulponi, 2007). Private regulation in food production is emerging in response to the diminished ability of the state to regulate and exercise any real control over the setting, implementation and verification of standards (Spencer *et al*., 2005). Under such conditions, private enforcement mechanisms may provide a suitable replacement for the missing public enforcement institutions. The more serious shortcoming with Indian legal system, however, is not the lack of good laws but the lack of law enforcement. Despite the weakness of its legal system contract farming in India has been able to sustain an impressive rate of growth over the last decade. In this backdrop, it becomes essential to identify the contract arrangements that influence farmers' decision to breach or fulfil contracts in organic food production. The knowledge emanating from this research paper would help the policy makers, planners and researchers in understanding the nature of business ties between actors of contract scheme; and would also offer the intervention choices of public sector in private governance to facilitate contract compliance (contract fulfilment rate) by growers.

II

METHODOLOGY

Data

This study makes use of primary data pertaining to the year 2011-12. Haryana state was purposively selected on account of larger traditional area suited for basmati paddy cultivation and maximum area operated by the contracting agribusiness

companies in the country. A list of agribusiness firms operating in Sonepat, Karnal, Kaithal and Kurukshetra districts of state were collected from official records of their respective markets. A total of 40 agribusiness firms operating contract farming scheme in the study area were contacted for eliciting information. First, exploratory interviews were undertaken with agribusiness firms, i.e., the managers of agribusiness firms, government officials and growers working with firms fully understand the context in which contract farming schemes are operated. Second, the primary data on various attributes of organisational models/contract arrangements, viz., contract duration, specific investment provision, bonus or incentive price, etc. and the growers' contract fulfilment were collected from agribusiness firms using pre-tested schedule by personal interview method.

Econometric Model

Two organisational models are used by the agribusiness companies involved in organic farming. One is a centralised model in which a single contractor contracts directly with a large number of growers. This model is referred to as firm + growers. The second model involves an Agribusiness Company contracting with farmers through an intermediary. This contracting model is referred to as firm + intermediary + growers. Binary Logit model was used to ascertain the contract arrangement and enforcement between agribusiness firms and farmers using SPSS 14.0 (Table 1).

TABLE 1. DEFINITION OF DESCRIPTIVE VARIABLES

Variable (1)	Unit (2)	Description (3)
CF_i: Contract fulfilment rate	Binary	If organic firm states that the grower contract fulfilment rate exceeded 75 per cent = 1, else = 0
FG_i: Firm + grower	Binary	If '' Firm + grower" model is used = 1, else = 0
OC_i: Oral contract	Binary	If oral contract is used = 1, else = 0
FP_i: Floor pricing	Binary	If contract offers a floor price = 1, else = 0
LC_i: Length of contract	Ordinal	If length of the contract less than 1 year = 1, 1–2 years = 2, 2–3 years = 3, over 3 years = 4
SI_i: Specific investment*	Binary	If organic firm required grower to make specific investments = 1, else = 0
CB_i: Bonus	Binary	If organic offers a bonus to grower who complies with the contract = 1, else = 0

*It includes special storage structures for organic basmati rice, special equipments for spraying, farmers in group action with the help of agribusiness firms invested money to make available some capital intensive equipments and machinery like laser leveller, rotavator etc. for carrying out common purpose activities.

In order to examine the relationships between contract provisions and growers' contract fulfilment rate, the study estimated a binominal logit model using a maximum likelihood estimator (MLE). The dependent variable is the growers' contract fulfilment rate (CF_i). The independent variables are contract provisions are FG_i, OC_i, FP_i, LC_i, SI_i, CB_i and are self-explanatory presented in Table 2.

The reduced form of binary logit model is given below:

$FG_i = f(OC_i, FP_i, LC_i, SI_i, CB_i) + \varepsilon_i$

ε_i = error term

The estimating equation is

$$p_{\gamma}(Y_i = 1) = f(p) = \frac{\exp(\beta^1 x_i)}{1 + \exp(\beta^1 x_i)}$$

Log likelihood function will be

$$\ln L = \sum_{i-1}^{n} \{y_i \ln f(P_i) + (1 - y_i) \ln[1 - f(P_i)]\}$$

The individual likelihood for observation will be

$$p(CE_i) + f(p_i) \qquad CE_i[1 - f(p_i)]^{(1 - CE_i)}$$

The likelihood function for all observations

$$L = \prod_{i-1}^{n} P(CE_i) = \prod_{i-1}^{n} f(P_i) \qquad CE_i[1 - f(p_i)]^{(1 - CE_i)}$$

Where $f(P_i)$ is the probability of satisfactory performance and X_i represents the hypothesised explanatory models.

III

RESULTS AND DISCUSSION

Contractual Arrangements and Enforcement

Farmers, especially smallholders are not well integrated into markets or with each other (Sharma, 2007). One of the most important policies undertaken by the government was to foster vertical co-ordination among stages in the supply chain to help the small and medium holders to gain access to the markets. Contract default or breach may be initiated by either party due to asymmetry in information between grower and company. Since most contract defaults in India appear to be associated with price or quality issues, the default process can be modelled in such a way that the agribusiness firms and the growers have the option to fulfil or breach the contract. The determining factor influencing default will be whether or not the long run benefits outweigh the costs (Gow *et al.,* 2000). If the contract is breached by either party, the other party can choose to accept the default, self-enforce or take legal

action. Market price at the time of delivery is the only factor that would result in breach. When the business firm buys the product from the growers according to the contract, the open market price, P, may deviate from the pre-agreed price P_{fixed}. If $P > P_{fixed}$, then the contract provides unanticipated rents to the firm and the benefits of contract breach increase for the grower since they could get a higher price by selling the product on the wet market. The grower's benefits of contract breach depend on the wedge between the wet market price and the pre-agreed price times the contracted quantity. The cost to the grower of breaching the contract is determined by different enforcement mechanisms. When the grower breaches the contract, the business firm has the option of two enforcement mechanisms: (i) self-enforcement (termination) and (ii) enforcement by formal mechanism. The costs of contract enforcement are time, effort and money that must be spent to take legal action (Beckmann and Boger, 2004). Both enforcement mechanisms will entail different default costs for the grower. Under self-enforcement if the grower breaches the contract, then the agribusiness firm will accept the default and the financial loss. The longer the duration of contract, the greater will be the loss from default (Guo and Jolly, 2008).

The summary of survey data of organic firms operating in the study area is shown in Table 2. Regarding the ownership of the firms (total number of firms =40), 90 per cent of total firms were private and 10 per cent were of joint venture (i.e., Public-Private Partnership). Out of these 40 firms, the role of 80 per cent of firms were of national character, i.e., area of operation is more than one state and 20 per cent of the total firms were of state characters (i.e., operating in Haryana only). In the terms of operations, all firms were engaged from production to sale (i.e., they were carrying out production, procurement, processing and transportation etc.) or from plough to plate. We could infer that growers were in complete vertical integration with agribusiness firms in value chains. Targeting market of organic paddy by firms, 80 per cent of total firms were engaged in supplying basmati organic paddy to overseas markets and the rest 20 per cent firms targeted domestic markets. The experiences of 90 per cent of organic firms engaged in organic paddy farming project were having

TABLE 2. SUMMARY OF SURVEY DATA OF ORGANIC FIRMS OPERATING IN HARYANA: 2011-12

(*per cent*)

Sr. No.	Category		
(1)	(2)	(3)	(4)
1.	Ownership of firms	Privately owned firm	90
		Joint venture ownership	10
2.	Role of firm	National	80
		State	20
3.	Main activities of firm	Paddy production	-
		Paddy processing	-
		Paddy production + processing	100
4.	Product target market	Domestic	20
		Foreign	80
5.	Experience with contract farming (years)	Less than one year	0
		1-2 years	10
		3 & above	90

Source: Official records and Field survey (2011-12).

more than 3 years and the remaining 10 per cent firms were having experience of 1-2 years. We can infer that most of the organic firms have grown matured enough in basmati contract farming in the state.

Table 2 presents the results of the binomial logit model. The regression results shows that contract organisation model, FC_i has more significant impact on the growers' contract fulfilment rate. In addition, the variable OC_i shows a significant positive impact on the growers' contract fulfilment rate. Both findings apparently are contrary to the established hypothesis of contract enforcement. This might be due to the fact that social capital played an important role in contract enforcement in India. Trust and confidence of members of growers in group action in the operation and management of contract schemes could help to reduce transaction cost by prompting search, transparency and facilitating the flow of information (Aggarwal, 2007; Birthal and Kumar, 2008). The growers' network, based on family ties provides information about growers' reliability and integrity. It also serves as a means of social control by sanctioning growers who default on contracts. Most of the middlemen in Haryana are from farmers themselves, and obviously belong to the same rural social network as growers, and are able to assess the growers' reliability and integrity (Kumar *et al.,* 2010). The variable FP_i is positive and statistically significant at one per cent level. This reflects that the gap between the pre-agreed price and the wet market price will affect the growers' contract fulfilment rate. A floor price provision offers growers a minimum price at the beginning of each season. The agribusiness firm uses the open market fortnightly average price as the base price for fixing contract price (Kumar and Chand, 2004). Such an arrangement provides guarantee of income for growers because the agribusiness firm has higher risk tolerance than does the grower, it is more able to accept the risk of market price fluctuations. The variable LC_i shows no significant negative impact (i.e., positive) on the growers' contract fulfilment rate. This result does not support the hypothesis about the length of contract as we assumed. The variable SI_i shows a significant positive relationship on the growers' contract fulfilment rate because the contract scheme requires specific investment at production and post-harvest operations. Specific investment as contract provision improves the contract fulfilment rate. The farmers in the form of group action are incentivised by agribusiness firms for executing contract. The incentive in the form of social premium emanating from the consumers is channelled for building common assets farmers' community. The variable CB_i shows a significant positive impact on the likelihood of a contract fulfilment rate. This clearly supports the hypothesis that incentive price over and above wet market fortnightly average price of the organic basmati paddy, known as clause of bonus price, will improve the growers' contract fulfilment rate. Obviously, the farmer is price responsive and must be incentivised in the form of bonus as per the quality of product.

This concludes that the contract performance is significantly affected by the design of contract. Innovative contract provisions such as floor pricing, specific investment requirements, bonus clause, etc., in contract design will reduce the

likelihood of contract default by the growers. Henceforth, private informal mechanism of conflict resolution and contract enforcement will likely play an important role even as formal legal dispute resolution and enforcement public institutions become more effective.

TABLE 3. ESTIMATED LOGIT COEFFICIENTS: CONTRACT ARRANGEMENT AND ENFORCEMENT

Dependent variable P(CF = 1)	Coefficients
(1)	(2)
Constant	2.98***
FC_i: Firm + grower	-1.49
OC_i: Oral contract	7.84***
FP_i: Floor pricing	2.43***
LC_i: Length of contract	1.18
SI_i: Specific investment	3.22***
CB_i: Bonus	4.98***
-2 Log likelihood	104.6
Nagelkerke R square	0.73
Sample size	40

*** Significant at 1 per cent level ($p < 0.01$).

IV

CONCLUSIONS AND SUGGESTIONS

Contract farming becomes a legally vetted system in Indian agriculture after implementation of model APMC-Act 2003. The intent of the Act is to make agricultural production more profitable and competitive. Moreover, food safety and quality requirements to protect the health of consumers in domestic and international markets raise formidable challenges to the growers to participate in value chain. Asymmetry of information between growers and company breeds distrust and contract breach. The results conclude that social capital, assured floor price, bonus clause and specific investment provisions of contract design would reduce the likelihood of contract default by the growers. Pre-agreed floor price, bonus clause as contract provisions helped in contract fulfilment rate because agribusiness firms used the open market fortnightly average price as a base for fixation of incentive price. This guaranteed income for growers induced them to stay in the contract scheme. The grower was able to receive a margin around 20 to 25 per cent of the price of organic basmati paddy over conventional basmati paddy. Most pressing is that informal mechanism (social capital) of conflict resolution and contract enforcement has played a crucial role in the present circumstances. Trust and control are important resources of social capital. Social connectedness of the farmers served as a means of accessing benefits of improved information flow and as a source of favouritism besides exploiting joint social insurance. Trust and confidence of members of growers and/or growers' association in the operational management of contract scheme could help to reduce transaction costs and served as means of social control by sanctioning growers who defaulted on contracts. Contractual arrangements are enforced through a mix of

quid pro quo, altruism, and adherence to social norms. In future also, social capital in the farming community would play a vital role in contract enforcement even as formal legal system for dispute resolution and enforcement becomes more effective.

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