The role of contract farming in agricultural development in globalise world: an institutional economics analysis.

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The Role of Contract Farming for Agricultural Development in Globalize World: an Institutional Economics Analysis[1]

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Abstract

In the wake up ubiquitous agrarian crisis reflected in decelerating growth and increasing farmer suicides this paper examines the institutional constraints faced by agricultural sector. This paper interprets institutions in the very general sense of rules of structure in agricultural production and market interaction. Considering contract farming as a new institutional arrangement evolved in Indian agriculture to minimize risk and maximize profit, the paper assesses its strength in addressing the above problems. The basic question examined is how can contract farming help farmers especially smaller ones in the presence of imperfection of agrarian market (input, output, credit, etc)? Insights from theoretical literature and evidence from empirical studies show that contract farming would be able to address (at least partially) the market imperfections and have significant positive impact on farm households' income and employment. Nonetheless the impact of contract farming is specific to regions, crops and farmer. Due to prevalence of weak legal system and weak bargaining power of farmers the contracts are generally biased against farmers.

Key words: Agrarian Crisis, Institutional Constraints, and Contract Farming

JEL Classification: $Q_{1,}$ Q_{13}

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I. Introduction

Since last one decade Indian agriculture has been facing numerous problems, including those of decelerating productivity, poor growth, increasing numbers of farmer suicides, and widening disparities in farm incomes. This is not to say that globalisation and market liberalization have not presented a positive impact on agriculture in general and high-value crops, livestock production in particular. However, to reap the benefits or to act on these advantages there is a need for superior institutional as well as technological control over processing and marketing of agricultural commodities. But because of problematic agricultural environment and limited abilities of the small and medium-sized farmers (who are dominating), the agricultural sector is unable to realize its full potential. On the other hand, in many Indian states, agricultural land are being converted and used for non-agricultural purpose which is further reducing the overall agricultural yield. Not only that such a phenomenon has serious implication for intergenerational livelihood and food security but it also raises questions regarding the competitiveness of agricultural sector in the years to come.

Responding to these challenges in agricultural management (production and marketing), the Central and the various State Governments of the Indian Union have pursued an array of policy measures. Among those measures, promotion of private sector participation in agriculture has emerged as interesting alternative. Private sector engagement in agriculture is observed in different areas: important ones being, promotion of agricultural inputs market and output market, agricultural Research and Development (R&D) and in different formats- vertical integration, contract farming and also open market participation. This paper gives attention towards effectiveness of contract farming in India. The recent literature on agricultural management views contract farming as a new institutional arrangement encompassing agriculture and industry which could help to reduce the risks and uncertainties involved in agriculture. In this context, it is important to revisit the Indian agricultural experience to comment upon the potential benefits and beneficiaries of the contract farming system. Specifically, our concern is to comprehend why do above problems persist in Indian agriculture, how severe are they, and what are their causes? Further, it is important to know the extent to which weak institutions and imperfect agrarian market are a matter of cause? In this regard, the present paper critically reviews the existing literature presents some insights on the institutional rigidities inherent in Indian agriculture and tests the suitability of contract farming under alternative conditions. The rest of the discussion is planned as follows. Section II examines the nature of constraints prevailing in Indian agriculture. Section III explores the hypothetical argument regarding effectiveness of contract farming. Section IV deals with conclusion and some policy implication.

By measuring simply growth rate would not give us the proper answer for this poor performance of agricultural sector. To understand and deal with these types of

concerns we need to go beyond the simplistic quantitative mindset that pervaded economic theory in general and policy making in agriculture in particular. A systematic strategy is required, without which agriculture is likely to face continuing problems of rising costs and falling productivity.

II. Institutional Constraints in Indian Agriculture

Institution refers to the rules of a society or of an organization that facilitate coordination among people by expanding the individual actions. The question arises regarding institutions and economic performance. The evidence tells us there is a strong link between institutions and economic performance. Financial crisis in South Asia, low economic growth in South Africa are examples. North (1990) argues that institutions affect performance of the economy by their effect on the costs of exchange (transaction costs) and cost of production (transformation costs). So an efficient institution plays an important role in development process by mobilizing higher investment but an inefficient institution keeps economy at a low level equilibrium[2]. North (1990) and Bardhan (1999) have indicated the evidence relating poverty and weak institutions. The institutional structures of such economies do not create incentives for economic actors to perform productive activities, leading to slow economic development. As in much of institutional economics, we interpret institutions in the very general sense of rules and structure of agricultural production and market interactions. This paper argues that in the absence of efficient institutions the agrarian economy continues to struggle at a very low-level income, production and consumption equilibriums. In order to review the performance of the underlying agricultural institutions in India and inherent difficulties of the agricultural sector, the paper highlights the institutional performance from six broad perspectives; namely, agrarian credit institutions, agricultural inputs market, agricultural output market, agricultural research and extensions, agricultural insurance, and infrastructure provisions.

Credit is crucial in determining the cultivation practices of farm households as it forms an important means to purchase inputs such as seeds, fertilizers and chemicals as well as durable productivity inputs such as machinery. Because of the presence of constraints in self-financed agriculture, small and marginal farmers often adopt bias investment strategy towards marginal variations within the traditional technology. Parthasarthy and Prasad (1978) found that small and marginal farmers were unable to adopt capital goods and HYV technology during the mid sixties and seventies because of difficulties and inadequacy of institutional credit. Much of the criticism in this regard could be attributed to the fact that India as such had limited resources for investment purpose and whatever minimum, that was invested appropriated by the big farmers due to cumbersome institutional procedures and network. Though there had a significant increased the formal credit in the 1970s in

[2] Low equilibrium means low investment leading to low growth leading to low level of better paying employment.

rural areas across states with the establishment of a large network of Rural Financial Institutions (RFIs) and a subsequent decline in that in the 1990s and henceforth with the gradual shortage of formal credit in situation operations in rural areas. As a result there has been increasing the dominance of informal sector for providing credit to farmers. For instance, around 58 per cent of the total agricultural loans are coming from institutional sources and non-institutional sources like moneylenders, traders etc. who charges very high interest rate account for 42 per cent (Bhalla, 2006). As a matter of fact it could be argued that most of the small and marginal farmers would be coming under the purview of the latter informal credit authorities (moneylenders) rather than falling in the domain of institutional loans. This has manifested an illusionary impact of rising agricultural credit because what is observed for the decade of nineties is a decline in agricultural credit for small and marginal farmers but not for large farmers during the same period[3]. Because of inability to satisfy lenders' (Commercial Bank) collateral requirements small and marginal farmers have restricted access to formal credit. Sometimes even when collateral does not restrict access to formal credit, transaction costs associated with acquiring bank loans is high, does not permit farmers to borrow credit from banks. Further, wherever co-operative credit structure exists, its monopolistic nature limits the choices to people. This induces farmers especially small and marginal ones to borrow from informal credit sources such as pushing them into distress condition.

Successful agricultural development in most developing countries today requires increased output per hectare and per worker. This agricultural intensification depends on the availability and financing of new, often manufactured inputs such as fertilizer and pesticides, new seeds, irrigation systems, mechanical power, and supplemental minerals. Access to such inputs is often unavailable and sometimes costly. This is worse in case of small farmers particularly those who are living in remote regions and upland areas. Or the remoteness and lack of infrastructure hinders the distribution of chemicals fertilizer to farmers. It is manifested that 80 per cent farmers depend on farm-saved seeds and seed replacement is very low despite the fact that there has been an increase in annual growth of certified/ quality seed distribution. What ever is available more than 80 per cent of planting/seeding materials do not meet the minimum standards of Indian Seed Act, 1968 (Swaminanthan, 2006). Although organized sector has been dominating the market for seed production but it is unable to meet existing market demand and to further create marketing opportunities for their product. Apart from the private sector limitations, the marketing, production, certification, and availability of quality seeds at reasonable prices are not gaining proper attention even among the public

[3] The distribution of credit by land size shows that the share of marginal farmers increased from 28 percent in 1981-82 to 29 percent by 1991-92 but declined to 25 percent in 2003-04. The share of small farmers increased from 21 percent in 1981-82 to 25 percent in 1991-9, and remained at that level thereafter. The share of cultivator above five acres fell from 52 percent in 1981-82 to 46 percent in 1990-91 but rose again to 52 percent in 2003-04. Where as the share of marginal and small farmer in total area increase and large farmers' share of area remained same port of the Export Group on Agricultural Indebtness, 2007).

institutions. The input market is also plagued with problems, such as poor enforcement of the Seed Act, because of a number of seed traders in the market cheat the cultivators and reliability of the seed quality sold is questionable (Singh, 2005). Because of supply constraints the application of fertilizer declined from 55-65 per cent in eighties to 50-55 per cent in late nineties though it increased recently. Availability of fertilizer and pesticide at a reasonable price with minimum transaction costs could lead to their wider application and, perhaps, contribute towards productivity growth in agriculture.

In this context, the effectiveness of agricultural research and extension services has to be scrutinised. It is observed that despite consistent evidence of higher rates of return to agricultural research there are undue pressures to reduce public funding for it. Although India has successfully established a chain of agricultural laboratories and advanced agricultural research systems its potential, however, has not been fully realised. The Indian Council of Agricultural Research (ICAR), earlier Imperial Council of Agricultural Research, along with the state agricultural colleges and research units are the key agencies to conduct agricultural research, education and transfer of technology for advancement of agriculture and allied activities. A problem in this regard, is to observe that, India has only 156 agricultural scientists per million of its population, while China has 450, and the US with 4,300 (Kumar, 2006). To provide a wide range of technology to farmers and proper information dissemination, 533 Krishi Vigyan Kendras (KVK) have been established all over the country. Because of squeeze in the financial assistance to states and to these Kendras by the central government led to the virtual breakdown of extension of machinery and services. Hence majority of farming communities are practicing traditional methods of cultivation since research and scientific advice (i.e. when to be cultivated, on what type of soil, when to be use fertilizer, feticides and pest control) is not reaching to needy farmers in a timely manner. And sometimes farmers depend on the informal information providers like input dealers and progressive farmers. In addition to this, in the absence of public regulation of such services, the resource-poor and gullible farmers are becoming victims of exploitation by unscrupulous traders and moneylenders interested in selling spurious materials (Rao, 2003). Increasing dependence on inputs dealers led to higher crop failure because wrong messages are passed to farmers. Under this circumstance, farmers do not get confidence in extension works and they prefer to choose old varieties and traditional methods of cultivation. Farmers with low education fail to respond to the opportunities provided by new technology and are thus unable to touch the upper bound productivity level[4]. Further the mater of concern is that about 60 per cent of farmers are unable to access any information on modern technology (Bhalla, 2006). So farmers become less competitive and more vulnerable in open market economy compared to those in other countries.

[4] The term upper bound yield refers to the yield that could be obtained using proper cultivation methods reflecting the advances in agricultural technology at that time. The upper bound yield may change with progress in agricultural research (Reddy and Akaiah, 2005).

Economists assume that all markets are characterized by full knowledge but in real world information is not cost free or no perfect market exists (Davis and North, 1971). The imperfect markets are more observed in agriculture because of uncertainty in production process, especially in the context of developing countries. These market deficiencies are more pronounced in rural areas. Further due to presence of significant intermediaries in the supply chain results in the weak transmission of market signals about quality and price to the farmers. In this process the middlemen essentially pool the available surplus from farmers paying little attention to quality. So farmer does not fetch the breakeven price. It is observed that there are at least six to seven intermediaries in Indian vegetable markets (Chakraborty, 2003), which remains as one of the major lacunae of the agricultural marketing system in India. Apart from the problem of intermediaries in supply chain in agricultural sector another problem is that there are various institutional controls over mobility of agricultural commodities between different states. Therefore the agricultural marketing Act needs to be modified so that the intermediaries between producer and consumer could be reduced. In this circumstance agro-industries could play a major role by procuring agricultural commodities directly from the farmers. Though presently agro-industries are procuring directly from farmers but it is not helping farmers much due to fuzziness of agricultural marketing Act. There is also high tax on processed food in India compared to other developing and developed countries. On the contrary, Kahn (2007) observed that incentives are always given higher to unhygienic unbranded foods compare to hygienically packed processed food. It indicates that there is no significant incentive for agro-industries to work with farmers. On the other hand, farmers are not adequately rewarded in terms of higher price for their efforts in producing quality products either by market or by government. Hence there is little incentive for farmers and as well as agro-industries to continue to do so and push them into an unknown world.

It was expected that the market for agricultural commodities would expand after the WTO agreement. Nonetheless, the outcome becomes reversed because of opportunistic behaviour of developed countries. Although agricultural commodities in developing countries are much competitive compare to the developed countries but developed countries provide high subsidies to the farm sector. As a result there is falling of international for agricultural commodities. It is observed after 1996 there was a deceleration in export growth and import tended to increase[5]. The institutional regulations governing the trade in agriculture commodities need to be thought, to some extent, independently of other goods and services.

In agriculture, generally farmer faces risks and uncertainty in his daily life. Crop insurance is a risk management tool to protect farmers from uncertainty of

[5] Report of the Export Group on Agricultural Indebtness, 2007

agricultural activities. The Comprehensive Crop Insurance Scheme (CCIS) was implemented for 15 years, from Kharif 1985 to Kharif 1999. As per CCIS it was mandatory for loanee farmers to grow covered crops and insured 100 per cent of the crop loan. The CCIS only charged premiums of 1-2 per cent, while claims made were approximately 9 per cent of the sum insured. Factoring in administrative costs, participating farmers as a whole had to pay approximately 15 per cent of the sum insured without the subsidy. After completion of CCIS period, National Agricultural Insurance Scheme (NAIS) implemented from Rabi 1999-2000. It was mandatory for loanee farmers to grow covered crops in implementing states. NAIS followed 'area approach[6]' where farmer insured are not guaranteed indemnity for their yield losses. This leads to prevalence of adverse selection that when a group of farmers is offered crop insurance at the premium, as is often the case in government subsidized crop insurance. Another problem of this scheme is that farmers who are outside the domain of institutional credit are unable to avail this facility and it is not designed to cover all crops and all regions. To cope with the uncertainty prevailed in farm activities due to fluctuation in market price of the product Farm Income Insurance Scheme (FII) has implemented in Rabi season 2003-04 on pilot basis for two crops (rice and wheat). The biasness of insurance schemes towards the specific crops and specific regions led to decline the farm participation under this scheme. Further, the Agriculture Insurance Company of India Limited (AIC) was formed by the Government of India launched Varsha Bima in 2005 which covers anticipated shortfall in crop yield on account of deficit rainfall. This insurance operates during June to September for short duration crops, June to October for medium duration crops, and June to November for longer duration crops. These periods are state specific. In case of 'sowing failure' the insurance is for the period from 15th June to 15th August. Although there is public sector domination to insured crop, however it covered only 10 percent gross cropped area (Sinha, 2004) and due to complex definition of these insurance schemes most of farmers are not able to avail these crop insurance schemes.

Institutional rigidities and bottlenecks are hallmark of developing country agriculture but its impact is also fostered by poor investments in a variety of social

[6] The area approach treats all farmers in a defined area as identical in terms of risk and loss, paying identical premium and receiving identical claim amount. These are based on the average risk and average loss characteristics for entire area. This approach gives rise to a basis risk-deviation of individual losses from the average. The "area approach" is operated under the results of crop-cutting experiments. Each year a set number of plots with the insured crops for a certain "area" are used as the indicators of an individual farmer's losses within that area. The unit area can be as large as a Block/Taluka or as small as 4-5 villages (Gram Panchayat level). The states implementing the NAIS are expected to reach the Gram Panchayat level of implementation within three years. Insured farmers receive indemnity based upon the difference between the threshold yield and the yield of the crop-cutting experiments in their area. Crop yields naturally vary even over small areas and much-localized natural calamities could occur. Situations easily exist in which farmers would not be compensated for their loss under the NAIS or farmers without insurable losses would receive payments anyway. Loanee farmers forced to purchase crop insurance may not receive payments for crop losses.

overhead capital such as roads or irrigation facilities. It is observed that the profit margin significantly gets reduced with presence of inefficient infrastructure facilities and improper post harvest management. For example, although there has been increased number of cold storages and their capacity is not sufficient for today's requirement. The cold chain in India is woefully inadequate to meet the growing production of *perishables* such as fruits and vegetables, milk, fisheries and poultry for domestic and export market (Khan, 2007). Another major problem is the absence of transportation facilities and good roadways from procurement field to market or to cold storage Rs. 23,000 core worth of fruits and vegetables are lost at the procurement and retail levels and constitute 50 per cent value of the current fruits and vegetables production (Dev and Rao, 2005). Around 20 per cent of the value of food produced each year gets lost because inadequate storage and processing capabilities. Also about 20 million tones of food grains are lost at the stage of harvest and it is estimated to be equivalent to Australia's entire production (Khan, 2007). So to make agriculture more profitable there is a need of better infrastructure along with better management.

To achieve a sustainable agricultural growth with higher income and make it distress free the above problems should be addressed properly. There is need for an appropriate institutional arrangement among the different actors involved in this sector. This calls for greater value addition at the farm level through various post harvest operations. Such operations being scale sensitive need to be undertaken on a larger scale for being economically viable. Experiences gained in developed and also in many developing countries in Southeast Asia, Africa and Latin America have revealed that contract farming has the potential to address these above problems. It is argued that it can increase the farmer's income by reducing transaction costs through coordinating production vertically. At the same time it can meet the consumer's demand through processing (Warning and Key, 2000; Eaten et al, 2001; Narayan and Gulati, 2002). Given such experiences elsewhere, does it imply that India should go for contract farming in larger scale or not? But, importantly, does the choice rest with the farmers or with the firms, which is discussed in the following section.

III. Contract Farming and Indian Agriculture: Review of Evidence

Contracting is an intermediate form of industrial organization, standing between spot market markets and vertical integration in degree of authority relationships between the grower and user of the crops (Grosh, 1994). In spot markets, growers and processors meet at a time and agree on price and delivery immediately. On the other extreme is vertical integration, where the growers of the crop and the users of the crop are within the same firm. Hence growing of the crop is fully coordinated with processing and marketing. Contract farming where growers of the crop and users of the crop are different. It is a way of organizing agricultural production whereby farmers are obliged to supply their produce to agro-enterprises in accordance with conditions specified in written or oral agreement. In the jargon of

institutional economics, it refers to "an alternative market, which establishes an agreement (formal or informal) between grower(s) and firm(s) (Exporters, processors, retail outlets, or shippers, for example) to produce and to supply the agricultural commodity under forward contract[7]". This contract basically includes four things-pre-agreed price, quality, quantity or acreage (maximum and minimum) and time. From a developmental intervention point of view, it is a situation in which the relationship between the agribusiness firm and the farmers takes the form of an expert endowing the apprentice with resources, knowledge and skills.

Contract farming includes a number of options depending upon the nature and types of contracting agencies, technologies and nature of crop. Contract farming can be of different formats such as contract based on market-specification, based on resource provision, and based on production management, which are not to be mutually exclusive (Minot, 1986). *Market specification* contracts are pre-harvest agreements where firms and growers are attached to a particular set of conditions as to *what* to be produced (product and quality attributes) and *what* are the commitments for future sale (timing, location, and price). *Resource providing* contracts follow conditions of the market specification contracts and add provision of the farming inputs namely, seeds, fertilizer and credit. *Production management* contracts bind the growers to follow a particular production method or inputs regiment provided by processor, usually in exchange for a marketing agreement or resource provision. The first type is generally termed as marketing contracts; the other two are known as production contract. The relevance and importance of each type varies from product to product and over time (Key and Rusten, 1999).

The effect of contract farming on agricultural development invokes much controversy. There are two schools of thought in Less Developed Countries (LDCs) such as Harvard Business Schools of thought and Food First of thought[8]. The former who stresses that agriculture is an international system and believes that small farmers can gain from becoming involved in it, and sees agribusiness as a means of developing rural areas in LDCs. The latter one comes to opposite conclusion who argues the internationalization of agriculture hurts small farmers by exposing them out of nutritious traditional food crops and exploit farmers by agribusiness firms in the form of control over the land, labor and other local resources. Both schools of thought make valid point. We accept these two opposite opinion. We discuss contract farming from new-institutional economics perspective by drawing the literature from earlier studies. As noted by Grosh (1994) and Key and Rusten (1999), at a macro-economic level contracting could help to remove (at least partially)

[7] This is a contract where price is agreed for commodities and securities to be delivered at a future date. It may be used for hedging, to decrease risk, or as a speculation, taking on risk for the sake of an expected profit.

[8] For details see Glover (1984) "Contract Farming and Smallholders Out Grower Schemes in Less-Developed Countries"

market imperfections in capital (credit), input, labour, product, and share risks. But we need to explore how contracting overcomes several market failures common in Indian agriculture. Our purpose is not to seek explanations why contracting has been used. Rather, we seek to determine whether contract farming permits efficiency gains which can be used to increase income available to the rural population.

Imperfect Capital (Credit) Market

We discussed before farmers especially small farmers' face three types of problems to access credit because of high information costs and resource constraints[9]. First, farmers have lack of information regarding the availability of credit. Second, if farmers have information regarding the availability of credit because of resources constraints they are being outside the credit. Third, if they access credit, sometimes it becomes difficult to repay the borrowed amount because of uncertainty in agricultural activities. This creates uncertainty in farmer to access credit from particular source in next season as well as from other sources because of he loses credit-worthiness. The failure of capital markets clearly inhibit the adoption of new crops, which often requires investments in new seeds, fertilizes, land improvement and irrigation. Under this circumstance contracting can be viewed as a form market inter-linkages overcoming capital market failure (Bardhan, 1980; Bauman, 2000). Contract crop can serve as collateral, even in the absence of title deeds to land appropriately of land. Contract farming serves this function only if the processing firm can be sure that it will receive the crop from the farmer.

There is empirical evidence to suggest that for determining whether contract farming can be use to replace the non-existence of credit markets. In Tamil Nadu, for example, Appachi Cotton Company (ACC) provides crop loan at 12 per cent rate of interest to it's grower (Singh, 2005), which is difficult for such farmers. At the same time, there is no restriction for farmers to sell crops to only that particular firm. They are free to sell elsewhere if they find prices higher than contract price. Because of agro-industries is better positioned in access of credit from organized financial market at lower rate of interest. So it becomes easier for farmers to access credit at low transaction or no transaction costs. Sometimes, if the firm itself does not provide loans to its grower, banks provide credit by accepting 'contract' as collateral. For examples, basmati rice cultivation under Rallis India in Madhya Pradesh, Maharastra, Karnataka and Haryana. The company has tied up with banks like Industrial Credit and Investment Corporation of India (ICICI) and State Bank of India (SBI) for providing credit. In this arrangement, the growers in Panipat availed of a loan up to Rs. 6500 per acre for basmati rice cultivation for six-month period at a 13 per cent rate of interest (Singh, 2005). Suguna Poultry Farm Ltd (SPFL) also binds agreement with SBI to finance poultry growers and Maize Growers in Tamil Nadu[10].

[9] For more details see Ray (1999) "Development Economics" Page No 540

[10] "Suguna Polutry, SBI in Pact for Contract Farming" Business Line (2006) December 19

Under this situation the risk of default by farmers is very less because of firms very often monitor the production strategy so the chance of crop failures become less, the grower could repay their debit. On the other hand firms can assure his return from credit given to farmers by inducing the farmers to sell their crop to firm only. Generally firms promote farmers to grow high value crop, which has limited alternative market, for example, gherkin cultivation in Andhra Pradesh. This would be serious implication on farm household's nutrition level. Defaulting on a loan from a firm means that not only will the delinquent borrower sacrifice future credit, he will also likely sacrifice future business with the firm (key and Rusten, 1999). Therefore it makes obligatory to farmers not to violate the contract with company/firms. But because of unequal bargaining power in contract system in long run firms try to exploit farmer by increasing his monopsonic power. There is also apprehension is about the possibility of the farmers getting locked into a situation of deteriorating debt (Little and Watts, 1994). A grower can not move out from it after enter into contract even if the expected benefits do not materialize due to low price or crop rejection or crop failure. These problems have not addressed in India properly.

Imperfection of Labour Market

The human resources of a household can be utilized by employing in own land if household has or by selling in the labour market. But because of imperfection in rural factor markets, uncertain agricultural environment and social stigma human resources are being under utilized. As a result part of the economically active population remains un-employed. Households with large endowments of family labour attempt to compensate missing labour market by leasing in more land, or by growing more labour intensive crops (Bell, 1989) when family labour is non-tradable. For growing labour intensive crops there is need for financial help to buy modern inputs. Nevertheless, because of imperfection in land market and credit markets do not permit households to do it[11]. On the other hand firms face problems like labour shirking and supervision problem when they follow vertical integration strategy. For some crops, the performing the labour makes many decisions, and monitoring these decisions is very expensive for firm. It is more difficult and costly in case of labour intensive crops because it requires more labour supervision. For example harvesting gherkin requires the farmers to judge each day which crop is ready for harvest, with repeated passes through the same field as the crop matures.

Contract farming overcomes above these problems by generating more employment in economy and transferring the production risks from firms to farmers. In contract farming, farmer cultivates the firm's crop under its supervision and supplies to firm only under pre-agreed quality. As a result firm easily monitor the labour supervision

[11] Most of the small farmers are not able to lease in land due to ban on tenancy and imposing restrictions leasing out (Hansted et al 2004). In addition due to resources constraints small farmers could not access the financial market. This has discussed earlier.

at low or without any costs. This is common phenomenon, which has observed in all contracting schemes in India.

Generally, two types of employment created in contract farming system, employment associated with non-farming activities and employment associated with farm activities. Non-farming employment includes the job generated in off-farm activities and in on-farm activities (Little, 1994). A number of jobs are created by the ventures in their staff and management structures could be seen as off-farm employment generated under contract farming. On-farm employment comprises indirect employment generated among the various service providers and supporting services to the activities such as cleaning, grading etc which needs more unskilled labour. But, the employment created in off-farm activities has not studied in India properly or not at all. Employment created in farming activities includes unskilled labour generated in cultivation process during planting to harvesting period. Because of labour intensive and perishable in nature of crop under contract farming, it generates more employment than the non-contract crop (Key and Rusten, 1999). Singh (2002) observed that employment created under contract farming crop such as tomato is five times higher than non-contract crop such as paddy[12]. He also observed that contracting has led to more and better employment opportunities for women, which accounted for almost 60 per cent of the total labour hours in case of tomato cultivation. But because of weak bargaining power among them, they are being paid very less compare to their effort (Singh, 2003). Gherkin cultivation in Andhra Pradesh (Dev and Rao, 2005) also observed this crop increased employment opportunities to family labour as well as other labours and also wages. The question here is regarding realization of employment under this system if processor would mechanize these highly labour intensive crops. Another question arises regarding quality of employment generated in this system.

Coordination Failure in Inputs Market

Seeds, Fertilizer and Pesticide

We discussed before the inputs market in India is not functioning properly because of prevailing of weak market structure along with inadequate infrastructure. As a result, vicious circle develops whereby low demand for inputs provides no incentive for the development of commercial distribution networks and this, in turn, further adversely affects input availability and use. This affects the production and productivity of agriculture. So there is need for an alternative institutional arrangement to enhance availability such inputs to all regions as well as all sections of farmers. Contract farming overcomes these problems through bulk ordering and by management (Eaton and Shepred, 2001). In this arrangement farmers have direct link with inputs provider. It becomes easier to access such inputs without any transaction costs. The main objective of firm to enter into contract agreement is to

[12] It has observed that labour intensity was 640 h per hectare for potato, and 3,600-4,000 h per hectare for tomato, as against 740 h per hectare for paddy (Singh, 2002 pp 1632).

access steady supply of certain quality and quantity of commodities. This may not available in spot/open market. So firm supplies basic inputs such as advanced seeds, fertilizer and as well as machinery at free of costs to growers.

There is a lot of empirical evidence regarding inputs supplied firms. Singh (2002) and Kumar (2006) found that both local firms and MNCs are supplying inputs such as seedlings on credit (with part payment in advances) and various equipments, free of costs on returnable basis. In Andhra Pradesh (Dev and Rao, 2005) observed that it becomes easier for gherkin growers to access drip irrigation facilities and other inputs such as seeds, fertilizer and pesticide. In case of hybrid seed cultivation in Haryana the processors are also providing parent seeds (Kumar and Chand, 2004; Kumar et al, 2007) to their respective growers. The poultry farming in Andhra Pradesh, (Ramswami et al, 2005) also observed that the growers are supplied by the chicks along with medicine and other inputs. Recently, many firms made joint venture with different facilitators such as seeds, fertilizer companies or dealer and banks. If firms could not provide specified inputs to farmers, it asks inputs companies to provide such inputs and send detailed accounts to the bank, which debits farmer accounts and credits inputs companies. This model of contract farming system can be noted as "Quad-Partite Contract Farming Models" (for details see Singh, 2005). Rallis India and Hindustan Level Ltd. (HLL) adopted this approach. But the impact of this arrangement has not studied.

The question arises about the distribution of these inputs among all sections of farmers and all regions. This may be differing from farmers to farmer and from regions to region because of heterogeneity in nature. The argument here is that firm may provide only progressive farmers and large farmers who have more bargaining and political power compare to others. This has not address properly in India. Once the production has begun, firm could use his monopoly power over the provision of specialized inputs as these factor markets are missing. By rationing these inputs, firms restrict the supply of inputs lower than required quantity and quality. This is happening in Punjab where the quality of fertilizers and pesticides provided by firms are bad and sometimes the quantity supplied by firms also is not meeting required quantity for cultivation. Singh (2002) claims that 12.5 per cent of Hindustan Lever Ltd. (HLL) farmers, 6.7 per cent of the Nijjer growers and about 15.5 per cent of the Pepsi potato growers reported crop failure due to bad seed. The pesticides recommended by firms are very costly and non-viable. The farmers also find there is some corrupt arrangement between the firm and the pesticide dealers about the sale of particular pesticides and insecticide brands. But this study has not discussed who are the farmers facing these particular problems and whether specific class or cast or specific region.

Extension

Although there is a dominance of public sector for supplying extension service to farmers but most farmers are not able accesses the modern techniques of production.

Further information on market and the husbandry techniques that would most profitably satisfy market demand has not flowed freely. Because of possible risks and cost involved, sometimes farmers don't adopt these techniques if it is available. They are more likely to accept new practices when they can rely on external resources for material and technological inputs and also assurance of new practices (Eaton and Shepred, 2001). Contract farming, however, has proved to be an effective conduit for supplying these techniques. Since firms have direct interest for improving the quality of product to meet the consumer's demand, it usually offers improved technology and better technical assistance more conscientiously than a government agricultural extension services (Minto, 1986). They have an incentive to learn from farmers' experience and modify their advice accordingly. Farmers could get good advice without any costs as the farmers use the company staff[13].

It is observed that most contracting schemes in India supply extension services to farmers and involved much higher ratios of extension agents to farmers than are typically find outside contract schemes. The gherkin growers in Karnataka reported that the inputs supply by the processor helped to ease working capital requirement of the farmers and extension services by the processors was an additional benefit of contract farming (Singh and Asokan, 2005). Poultry farming in Andhra Pradesh (Ramswami et al, 2005) observed that contract growers are able to standardize the production practices where non-contract farmers are not able to do this. Unfortunately, these studies did not discuss the earlier knowledge of farmers but they assume that learning is a part of the contracting relationship. Contract farming has spillover effects in terms of enhanced the productivity of non-contract crops. There are few studies, which has discussed spill over effect of contract farming system. Most studies observed that the crop productivity of is higher in case of contract crop compare to non-contract crop (Kumar, 2006; Tripathi et al, 2005; Kumar, 2006) and also non-contract farmer. Dev and Rao (2005) found that gherkin and oil palm growers are able to increase the productivity of non-contract crop. Nonetheless, this study did not discuss regarding productivity of non-contract farmers.

The question arises here regarding technology spillover effect. It is observed that farmers who participate in contract farming are heterogeneous and multitude of small growers. Firm may not have the managerial capacity to provide them all individual attention. The farmers who have advanced knowledge could learn faster than others. The standardization process followed by firms may have impact on farm's soil, topography and climate. Further, if farmer follows the firm's advice

[13] The South Nyanza Sugar Company (SONY) in Kenya places strong emphasis on field extension services to its 1800 contracted farmers, at a ratio of one field officer to 65 sugar-cane growers. The extension staff's prime responsibilities are focused on the managerial skills required when new techniques are introduced to SONY's farmers. These include transplanting, spacing, fertilizer application, cultivation and harvesting practices. Also, SONY promotes farmer-training programs and organizes field days to demonstrate the latest sugarcane production methods to farmers (Eaton and Shepred, 2001).

fully then farmer may lose his traditional skills. Farmers may have abandoned traditional cultivation methods, which will be disrupted by the innovations introduced in a contractual relationship. The patterns that emerged from the optimal utilization of locally available resources might be irreversibly lost, as farmers become used to different technologies. It will be difficult to re-establish the traditional knowledge of cultivation if in case the farmer exits or the project stopped.

Imperfect of Product Market

When buyers or sellers cannot be sure about quality of the produce except at prohibitive cost, the market will not function efficiently, possibly not at all (Akerlof, 1970). Assume buyers (firms) and sellers (farmers) are both perfectly informed about the quality and quantity of goods being sold in the market then it becomes easier for both parties to perform their activities efficiently. If the information about quality and quantity is costly to obtain, then it is no longer plausible that buyers and sellers have the same information about goods involved in transactions. Under this circumstance the process of transaction would undermine the processes of exchange and localized markets with little rural-urban linkages emerge. Because of high information costs, a negative correlation could be generating between household's supply and effective prices at a particular time. A decrease in the market price of a commodity can be expected if all households successfully produce that commodity, whereas the opposite would occur if households cease to produce it. This creates higher variability in production and price. In this environment, farmers produce only a limited range of goods and services for their own consumption, which is not supplied by market. It could reduce the total production.

Contracting may solve these problems (at least partially) by overcoming the moral hazard problems. It integrates primary supplier (farmers) with primary buyers (firms). It provides market guarantees to the farmers and assured supply to the purchasers. The empirical evidences suggest the same outcome. Evidences include; Singh (2002), Kumar (2006), Dev and Rao (2005), Tripathi et al (2005), Ramswami et al, (2005), Dileep et al, (2002) and Kumar et al, (2007). These studies found that the firms are able to increase probability of achieving proper quality and quantity of product and on the other hand it also increased the probability of getting certain quantity of produce. Because of assure market outlet for producer's commodity create incentives to increase production. It allows farmers to reduce the transaction costs of selling perishable product in uncertain or thin market by organizing transport for their crops, normally from the farm gate (Eaton and Shepred, 2001). In Andhra Pradesh, Dev and Rao (2005) found firm collects commodity from farm each village. In each village firm set up one collection centre and farmer brings commodity to collection centre at his risks. In Punjab Singh (2002), Dillip et al, (2002) and Kumar (2006) found farmers bring their commodities to factory at their own cost, which takes into account by the firms while fixing the contract price for particular region. But sometimes transportation cost is very high for contract rather

than non-contract farmer which is observed by Dillip et al, (2002). The differences in transportation costs depend on nature of product.

Contracting is most commonly practiced by food processing firms. Since their processing plants have high fixed costs, these firms have an interest in keeping raw materials inflows at a steady level close to plant capacity. The firms try to keep contracting with farmer for long run. This could help stabilize the product market. To reap benefits firms invest in export oriented crop or high value crop and internalize market to avoid the competition. Gherkin and cocoa cultivation in Andhra Pradesh and basmati rice cultivation in Punjab are classic examples. The apprehension is that it could create enormous problem in traditional food market. Total food production will be decline because of shifting form traditional crops to export oriented crops. This could lead to increase the food prices. In this environment the non-farm households will suffer who previously subsist.

Generally contract is made between one weak party (farmer) and other strong party (firm). The weaker party accepts the 'unfair' contract because it has no other option. In this circumstance farmer lose his bargaining power. Further, contracting firm increases the farmer's reliance on firm by providing some social services such as provision of free transportation rides and distribution of promotional gifts (t-shirt, caps, pencils, etc). The reliance on the firm also weakens the farmer's bargaining power. Thus it strengthens the firm's ability to exercise monopsonistic power on farmers. This monopsonistic power could be observed by looking the performance of contract agreement. For example, sometimes firms break the promise on contractual terms if market circumstances changes because of changing in government policy or if other problems arise. Since the price of contract product setup based on expectations about future market behaviour, substantial variations in the realization of the expectations lead firms to force renegotiation or to engage in contractual hold-up. A disguised form of hold-up is the rejection of products delivered, under pretext of non-conformity to quality regulations-firms might refuse to receive products as a strategy for transferring the financial losses arising from unexpected market turns to farmers (Silva, 2005). In this process producers are disadvantaged in situation, in terms of both the legal and tacit arrangements. These problems have observed in Indian, for example, tomato cultivation in Punjab (Singh, 2002; Dileep et al, 2002; Kumar, 2006), and Sugarcane cultivation in Orissa (Braja, 2005). Singh (2002) found that farmers have to wait at the factory gate for a day or more. This led to weight loss due to evaporation and the company would then receive a more concentrated product for the same price. Longer delays resulted in spoilages and a higher rejection rate. Braja (2005) also observed similar results for sugarcane where in actual procurement takes place after 5 to 10 days after the harvest. This resulted in weight loss for the farmers but higher sugar realization for the factory. However, this type of problem has not observed in case of cottons seed (Kumar et al, 2007), wheat seed (Kumar et al, 2004) and Tomato (Tripathi et al, 2005) cultivation in Haryana. Bringing suitable legislative measure by government can weaken this monopsonistic power of buyer.

Imperfection in Insurance Market:

An economic agent can adopt different methods to smooth uncertain socks in future consumption. These different methods could be self-insured method and insured by other economy agent by entering into a contract. Using one's wealth to smooth uncertain shocks in income and future consumption is called self-insured mechanism. Self-insured can work through several channels. Stocks of cash or accumulated saving in banks can be run down (or added to) for the purpose. It becomes difficult for small farmers because they earn very little income form agriculture, however. The same can be done with grain stocks, although holding such stocks is costly because grain is not perfectly durable. Farm households to smooth the future consumption can adopt institutional methods of coping with risk; however, these are not available and are often costly. Further, sometimes households also find difficult to get non-institutional methods for sooth future consumption because of social stigma. Hence farmers are induced to sale their productive assets such as bullock, land and other agricultural instruments at lower market price. This affects negatively on productivity efficiency and the average output. Because of market imperfection and weak extension service farmers choose lower variability income strategies and traditional techniques of cultivation. This could also affect on productivity efficiency of farm households.

Empirical evidence suggests that like most economic agents, farmers are averse to risk and are willing to pay a premium for a reduction in the risk of their income (Binswanger, 1980). Under these circumstances farmers are ready to accept lower market price to access the stable future income. On the other hand, firms are also ready to provide a stable price to avoid market fluctuation. This is possible in contract farming, where firms are often in a position to insure growers against income fluctuations as well as growers are often insure firms' against market uncertainty. Firms also insure producers against yield risk by providing fixed amount of cash to farmers that forgive debt in case of crop failure. Hybrid rice seed cultivation in Andhra Pradesh and maize seed cultivation in Tamil Nadu, for example. In case of maize cultivation in Tamil Nadu the Mahindra Subhlabh Services Limited (MSSL) offers the extension service to farmers for a fee and ensures a certain level of yield. If farmers get lower than the assured level of yield, then they need not pay the fee of extension service. The farmers are paying Rs. 500 per acre, achieved assured 75 per cent of the cases in the first year, which increased to 80 per cent in the second year, despite drought condition. In Andhra Pradesh the firms pay Rs. 18000 per acre if the farmer won't get minimum yield (six quintal) because of natural calamities. Thus, opportunities for reducing smallholder's risk through contracting include diversification into new crops. In addition, most studies have emphasized risk reduction as a principal incentive for producers to enter into contracts (Kumar, 2006; Singh, 2002). Ramswami et al, (2005) in their study on poultry farming in Andhra Pradesh observed that contracting shifts a large proportion of market risk from the growers to the processor. This would stabilize the farmers' income.

Contract farming gives higher prices to farmers through a buyer who is certain that the farmer will deliver the commodity to him. The uncertainty about sales prices is often reduced, since contract typically specify at the beginning of the growing cycle the prices to be paid at product delivery. Most empirical studies observed that contracting scheme able to reduce the price uncertainty of contract crop along with yield variability (Singh, 2002; Dileep et al, 2002; Dev and Rao, 2005; Kumar, 2006; Ramswami et al, 2005). Dileep et al, (2002) found that, it considerably reduced the yield uncertainty and completely removed the price uncertainty among its farmers, whereas it becomes very difficult in case of non-contract farmers. Nonetheless sometimes contract price becomes lower than market price, which has observed in tomato cultivation in Punjab (Dileep et al, 2002). In such situation farmer fails to obtain expected benefit. Use of fixed pricing sometimes increases processors risks and impedes schemes viability in another way- by reducing farmers' incentives to comply with their contracts. If spot prices rise above the contract price, farmer will attempt to renege on their contracts, it may lead to collapse the schemes. Singh (2002) observed that when the gap between contract price and market price is very large (3-5 times) the farmers are selling the product in outside. The contract farming system reduces moral hazard problem and enables be the firm to enforce insurance contract by monitoring the farm activities. This has been discussed earlier in credit enforcement mechanism.

Although contract farming is an alternative instrument for reducing price and yield risk, however, sometimes firms cheat farmer by avoiding transparency in the price determination mechanism of the contract and utilizing the complex formula for quantity and quality measurements of commodities. In addition, long-term contracts might lead to gradually decreasing real prices received by farmers, because of monopsonistic behavior of company, which force to farmer accept lower price.

IV. Summary and Conclusion

The above discussion reveals that because of poor performances of institutions agriculture is facing major crisis such as, decelerating growth, increasing numbers of farmer suicides, and widening disparities in farm incomes. Suicide is confined to certain regions and certain group of farmers who produce for market. To overcome of these problems successive central and various state governments have been undertaking an array of policy measures. Among those measures, promotion of private sector participation in agriculture through contract farming is an important one. In response to this contract farming has emerged as new institutional arrangement encompassing agriculture and industry to bring down the market uncertainties.

Credit market failures may induce farmer to enter into a credit contract. However, this credit contract does not supply detailed specification of farming practices and supply the assured market outlet to farmers. Problems of complex information,

which cannot be adequately conveyed by a spot market, will lead to detailed and instructive specifications of farming activities. On the other hand spot market cannot fulfill the firm's demand. By entering into contract, farmers can access the better quality of inputs such as seed, fertilizers, pesticides, and extension services along with credit from sponsor. And contracting company can reduce the risks of non-availability of quality and quantity raw materials. Contract farming stimulates technology and skill transfer, and supports to farmers in meeting of international sanitary, phytosanitary, and hygiene requirements.

Contract farming boosts farm income by opening up opportunities and employing resources in efficient manner, nonetheless, it creates numerous problems for contract farmers and for local economy. It is possible that the farmers can lock into a situation of increasing debt because they cannot move out from contract easily after entering into it even if the expected benefits do not materialize because of low price or crop rejection or crop failure. Usually, firm supplies inputs (sometimes machinery) to growers in advance and takes it back payment through the deduction from crop income. This induces farmers to keep contracting with the firm year after year just to pay off these loans. The development of these phenomenons are often generate problem for farmers who have limited business experience. This is an important issue in the Indian context wherein most small farmers do not have knowledge about market and they are not market oriented. This has to analyses in proper way.

To access undisrupted supply of raw materials firm provides basic inputs, better technology. However, sometimes firm provides bad and often costly seeds, fertilizer and pesticides and poor extension services, and also. This inputs are also observed is non-viable. This indirect effect is very difficult to observe. These problems should study properly. Contracting has certain harmful social consequences, as well. It creates tension among the contract and non-contract farmer as well among contract family members. Generally firms don't prefer to work with small farmers. The question is here regarding factors influences for participating in contract farming or factor induces firms to do contracting with particular section of farmers. Further, an issue given little or no attention in India is what happens to those farmers who do not get contracts. To regulate the company's activities the state can pursue some measures, which will make contracting work more smoothly to advantages of farmers.

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