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## **Inputs and Services Delivery System under Contract Farming: A Case of Broiler Farming<sup>§</sup>**

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### **Abstract**

The paper has analyzed production-related aspects of broiler farming under contract and independent management, and has examined inputs and services provision arrangements. About two-thirds of the contracts are of long duration of three years, and the remaining are of two years or eleven months duration. Surprisingly, none of the contract farmer possesses a copy of the agreement with him. The average net return per kg of live weight as well as per bird has been found higher in non-contract than contract farmers. The average net returns per bird increases with increase in the size of the farm for both the groups. Despite contract for supply of inputs and sale of output, contract farmers face problems like delay in supply of inputs, high feed prices, delay in lifting the produce, delay in payment, low price, and sometime even rejection of output. Beside these problems, low growing charges, delay in providing chicks, delay in providing veterinary services, high visiting charges and deduction of tax at source are some other problems being faced by the contract farmers.

**Key words:** Broiler farming, contract farming, inputs delivery, services delivery

**JEL classification:** Q12, Q13, L14, L24

### **Introduction**

The poultry sector in India has undergone a paradigm shift in structure and operation. There has also been a marked increase in the size of poultry farms. Today, India is the third largest producer of eggs (after China and the USA), nineteenth largest producer of broiler and fifth largest producer of poultry meat in the world (Kornel, 2008). The major development in Indian poultry production is the spread of integration, especially in broiler production, particularly in

south-ern and western parts. Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra are the major broiler producing states. Broiler production, which was merely 4 millions in 1971, increased to 1250 millions in 2000 and reported production of 1563 million broilers in the year 2006. The contract farming systems and the vertical integration of broiler enterprises have played a major role in this spectacular growth.

### **Input and Service Delivery Agreement in Broiler Production**

A contract farming arrangement in broiler production, referred to as 'chick growing agreement' is generally a wage contract between an 'integrator', who supplies the intermediate inputs and procures the output. The integrator provides the growing stock (day-old chicks), feed, veterinary supplies and services, and implements the final marketing of the output. The contract farmer typically provides the space and

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facilities (land and housing), equipment, utilities, labour (family and/or hired) and day-to-day farm management (see, Box 1). Thus, the major component of working capital is borne by the integrator and who is the absolute owner of movable stocks in the farm (SAPPLPP, 2009). The farmer receives a guaranteed wage or growing charges for each live bird based on its live weight in a condition that is predetermined and agreed upon through contractual obligation. Generally, the payments are linked to the performance criteria in terms of efficiency in managing the birds; for example, the weight, quantum of feed used to produce that weight (FCR), percentage of birds died and others. Additional incentives are given to the farmer for surpassing the performance standards. For a farmer who falls below the set standards, corresponding penalty, amount per bird, is subtracted from the wage bill. Hence, the production contracts can be seen as a self-regulating system of reward and punishment to ensure cost-effective production of broilers for the integrator in accordance with the quality and quantity needed by the markets.

Contract farming in poultry has been successful in India due to the presence of strong backward linkages. The nature of contracting has been instrumental in sharing growers' risk through buyback guarantee and also provision of coping with production failure. Provision of quality inputs such as chicks, feed and medicine helps the poultry farmers raise quality chickens. Apparently, balanced contracts that benefit

both parties in terms of assured markets, competitive price and guarantee against risk have resulted in the success of poultry contract farming. Poultry integrators have been expanding rapidly in the states of Karnataka, Tamil Nadu, Andhra Pradesh and Maharashtra. The key players in integration include Venkateshwara, Suguna, Godrej, Shanti, Jaffa, Arumbagh, Skylark, etc. Contract farming has made inroads, however the system has both positive and negative effect on farmers. Keeping this in view, this paper analyses and compares the production-related aspects of broiler farming under contract and non-contract arrangements, examines the inputs purchase and output sale arrangements and identifies the constraints in it.

### Data and Methodology

The study is based on the primary data collected from the broiler units in Maharashtra. A two-stage random sampling technique was used for drawing representative sample of broiler farms with district as a primary unit and the broiler farm as the ultimate unit. At the primary stage, Nashik and Pune districts were selected as two clusters of high concentration of broiler as well as poultry population around the city. At the second stage, the farms in each of the selected clusters were stratified into three strata, viz. farms with less than or equal to 5000 birds (small unit), farms with 5001-10000 birds (medium unit) and farms with more than 10000 birds (large unit) and from these three strata, a total of 45 farms (30 contract and 15 non-contract)

<b>Box 1</b> <b>Vertical integration/Contract farming in the broiler industry of India</b>	
Broiler farmer	Integrator/Contracting firm
<ul style="list-style-type: none"> <li>• Owns the broiler shed &amp; equipment.</li> <li>• Buys deep litter material.</li> <li>• Attends to rearing activities, such as brooding, feeding, watering (own labour or hired labour), disinfecting shed and outside area</li> <li>• Bears cost of electricity/fuel for brooding</li> <li>• Takes the manure (litter) and empty gunny (food) bags</li> </ul>	<ul style="list-style-type: none"> <li>• Supplies the following inputs :               <ul style="list-style-type: none"> <li>- Day-old broiler chicks;</li> <li>- Broiler food required by the birds (owns a feed-mixing unit);</li> <li>- Medicines and vaccines (buys quality medicines and supplies them to the farmers as required); and</li> <li>- Emergency and routine veterinary services (engages qualified veterinarians for the purpose).</li> </ul> </li> <li>• Pays the rearing cost to the farmer to meet the cost of litter, labour, electricity, rent for building and equipments, and also a part of the profit.</li> <li>• Takes back the grown broiler and arranges for their sale mostly through traders.</li> </ul>

**Table 1. Characteristics of sample broiler farmers in Maharashtra**

Sl. No.	Particulars	Contract farmers				Non-contract farmers			
		Small	Medium	Large	All	Small	Medium	Large	All
1	No. of sample farmers	20	20	20	60	10	10	10	30
2	Average age of family-head (years)	46.7	39.1	45.0	43.6	40.8	39.4	43.6	41.3
3	Average education of family-head (years)	10.0	9.4	10.9	10.1	9.4	10.1	12.0	10.5
4	Occupation main — poultry (%)	25.0	5.0	5.0	11.7	0.0	10.0	0.0	3.3
5	Occupation subsidiary — poultry (%)	70.0	95.0	95.0	86.7	100.0	90.0	100.0	96.7
6	Average experience (years)	5.0	4.5	5.9	5.1	8.3	7.3	8.3	8.0
7	Average distance from main road (km)	1.75	3.1	3.93	2.92	5.7	4.15	2.75	4.2
8	Average area of the unit (acres)	0.33	0.38	0.75	0.49	0.34	0.49	0.69	0.51
9	Market for output -above 10 km	85.0	80.0	85.0	83.3	100.0	100.0	90.0	96.7
10	Location of other broiler farms <1 km	48.1	42.2	43.8	45.0	33.6	38.7	28.6	33.5

Source: Field survey data (Kalamkar, 2011)

were selected from each district. Thus, a total of 90 (60 contract and 30 non-contract) farms were selected from the two clusters and from each of the selected farm, the required data have been collected by canvassing a pre-designed and pre-tested schedule covering one year (June 2009-May 2010). The farmers having broiler farms under non-contract nearest to the contract broiler farm were selected purposively to reduce the differences in location, weather, availability of inputs and other related parameters.

### Characteristics of Broiler Farmers

The characteristics of sample broiler farmers given in Table 1 revealed that that middle age farmers were more engaged in poultry farming; and more than 76 per cent of farmers from both contract and non-contract categories had education at least up to secondary level. Most of farmers had agriculture as main occupation and poultry as subsidiary occupation. Hardly 12 per cent of contract farmers had poultry as the main occupation.

### Linkages of Broiler Farmers with Companies

The information on contract linkages of selected farmers with companies is presented in Table 2. It can be seen that the Saguna Private Limited had the maximum share in total contracts (61.7 %), followed by Venkys (25.0%). The share of other companies was very low, only 2-5 per cent in total contract broiler farming.

**Table 2. Linkages of contract broiler farmers with different companies**

(% to Total)

Name of company	Contract broiler farmers			
	Small	Medium	Large	All
Suguna Pvt. Ltd	65.0	70.0	50.0	61.7
Venkys (Venkateshwara)	15.0	25.0	35.0	25.0
C.P. India	5.0	0.0	0.0	1.7
Godrej Hatcheries	5.0	0.0	10.0	5.0
Harshad	5.0	0.0	0.0	1.7
Khadkeshwar Hatcheries	5.0	0.0	5.0	3.3
United Broilers	0.0	5.0	0.0	1.7

Source: Field survey data (Kalamkar, 2011)

The details about the terms of contract with the companies are presented in Table 3. It was observed that most of the farmers preferred to have long-term contract (36 months), while 30 per cent had 11 months contract and only a few had 24 months contract. The reasons behind the choice of contract with a particular company were: (i) provision of all inputs; (ii) timely supply of chicks; (iii) purchase of whole produce at one time, (iv) timely and good service; and (v) lack of own fund. However, contract farmers did experience some problems in the execution of contract as all the rights were in the hands of the company and sometime there was delay in providing chicks leading to less number of batches in a year. Surprisingly, none of the contract farmer had a copy of agreement with him.

**Table 3. Duration of contracts and supply of inputs and sale of output**

(% to total farms)

Nature of contract	Small farms	Medium farms	Large farms	All farms
11 month batch-wise contract	25.0	25.0	40.0	30.0
24 month batch-wise contract	0.0	5.0	5.0	3.3
36 month batch-wise contract	75.0	70.0	55.0	66.7
Supply of all inputs	100.0	100.0	100.0	100.0
Purchase of output	100.0	100.0	100.0	100.0

*Source:* Field survey data (Kalamkar, 2011)**Table 4. Details about cost of production and net returns — contract and non-contract broiler farming**

Particulars	Contract farmers				Non-contract farmers			
	Small	Medium	Large	All	Small	Medium	Large	All
Variable cost (₹/bird)	5.85	5.02	3.91	4.93	103.33	103.14	95.11	100.53
Live weight of bird (kg)	2.1	2.21	2.15	2.15	2.09	2.09	2.11	2.10
Fixed cost (₹/bird)	0.24	0.17	0.2	0.2	0.28	0.2	0.16	0.19
Variable cost (₹/bird)	5.85	5.02	3.91	4.93	102.7	108.4	103.7	104.9
Total cost (₹/bird)	6.09	5.19	4.11	5.13	102.95	108.56	103.83	105.09
Cost/ kg of live weight (₹/bird)	2.90	2.35	1.92	2.38	49.15	51.84	49.12	50.02
Sale price of live bird (₹/kg)	3.70	3.90	3.50	3.70	53.60	55.90	52.30	53.90
Average sale receipt of bird (₹/bird)	7.85	8.65	7.53	8.01	112.31	117.14	110.46	113.31
Sale of manure and bags (₹/bird)	1.19	1.19	1.59	1.41	1.64	1.34	1.14	1.28
Gross receipt (₹/bird)	9.04	9.84	9.12	9.41	113.95	118.48	111.6	114.59
Gross receipt/kg of live weight (₹)	4.30	4.46	4.25	4.37	54.4	56.58	52.8	54.54
Average net returns/kg of live weight (₹)	1.40	2.11	2.33	1.99	4.39	7.23	7.73	6.42
Average net returns per bird (₹)	2.94	4.65	5.0	4.29	9.19	15.15	16.34	13.49
Feed conversion ratio (FCR)	1.8	2.0	1.7	1.8	1.7	1.9	1.8	1.8

*Source:* Field survey data (Kalamkar, 2011)

### Cost of Production and Net Returns under Contract and Non Contract Broiler Farming

The details about the cost of production, and net returns are presented in Table 4. The main variable costs were on day-old chick (DOC) and feed. Other expenses included labour charges, vaccination and medicines, litter, etc. The average variable cost per bird was ₹ 4.93 in contract farming and ₹ 100.53 on non-contract group. It was lower in contract farming because DOC, feed and vaccination were provided by the company on credit, which was adjusted at the time of lifting the output. The cost per DOC was in the range of ₹ 26-30

in non-contract farming and ₹ 16-17 in contract farming<sup>1</sup>. The major item of variable costs was feed which accounted for 55.1 per cent of the variable costs. Thus, DOC plus feed together accounted for almost 82 per cent of variable costs in non-contract group. Labour costs accounted for approximately 3 per cent of total variable costs in non-contract group. In contract group, labour cost included the family labour, hired casual labour wages, while in non-contract group, cost on veterinary services was also included in labour cost. In the contract group, labour and other services accounted for 44.4 per cent of total variable cost,

<sup>1</sup> Most of the companies engaged in contract broiler farming own their hatchery as well as feed units. Therefore, cost of DOC as well as feed may be lower in contract than open market.



followed by litter cost (30 %). Although, it is a risky business, the insurance did not cover birds and poultry shed.

A look at Table 4 indicated an inverse relationship between costs and farm size in both the categories of farming. The large farmers could perhaps take the advantage of bulk purchases and thus could economize on costs. The average fixed cost per bird was ₹ 1.57 in contract and ₹ 1.33 in non-contract groups. The highest fixed cost per bird was observed in the case of small units in both the categories. In the total costs, variable costs accounted for 98.7 per cent, while fixed costs formed only 1.3 per cent in non-contract group. The corresponding shares were 75.8 per cent and 24.2 per cent, respectively in contract group. The average cost per kg of live bird was estimated to be ₹ 3.02 in contract farming and ₹ 48.47 in non-contract category. The average cost per kg of live weight decreased as the size of unit increased in both the cases. The average live weight of the bird was 2.15 kg in contract and 2.10 kg non-contract group. Across different farming categories, body weight was highest in medium-size units of contract farms and large-size units of non-contract farms.

The average net return per kg of live weight as well as per bird was higher in non-contract group than contract group. It was also observed that the average net returns per bird increased with increase in the farm-size in both contract and non-contract groups. As a contract farmer gets growing charges as per live weight of bird and mortality rate, which was pre-determined in contract agreement and thus there was a cap/limitation on the income under contract broiler farming. A non-contract farmer receives the prevailing market price for the output, therefore, the net return observed was lower in contract than non-contract farms. As company provides inputs and purchases the produce, farmer has to only rear the birds and faces less risk. However, a non-contract farmer has to face all kinds of risks in operation starting from purchasing of inputs, vaccination to selling in the market.

#### Constraints in Receiving of Inputs and Sale of Output — Contract Broiler Farmers

The problems faced by the sample contract broiler farmers are listed in Table 5. About 6.7 per cent of contract farmers complained about delay in the supply of inputs and 10 per cent expressed that feed prices

**Table 5. Constraints in receiving of inputs and sale of output — Contract broiler farmers**

(in per cent)

Constraint	Farmers expressing constraints			
	Small	Medium	Large	All
<b>Problems in receiving of inputs</b>				
Timeliness	5.0	5.0	10.0	6.7
Higher prices	10.0	10.0	10.0	10.0
Spurious feed	0.0	0.0	0.0	0.0
Transport	0.0	0.0	0.0	0.0
<b>Problems in sale of output</b>				
Delay in Lifting the Produce	5.0	25.0	30.0	20.0
Delay in Payment	5.0	10.0	30.0	15.0
Low price	5.0	0.0	15.0	6.7
Rejection on Quality Grounds	0.0	0.0	5.0	1.7
<b>Problems in services and payment</b>				
Low growing charges	30.0	25.0	55.0	36.7
Lack of training	20.0	40.0	35.0	31.7
Delay in providing chicks	40.0	45.0	50.0	45.0
Delay in providing veterinary services and high visit charges	35.0	45.0	50.0	43.3
Deduction of tax at source	25.0	15.0	20.0	20.0

Source: Field survey data (Kalamkar, 2011)

**Table 6. Problems in purchase of inputs and marketing of output — Non-contract farmers**

(in per cent)

Constraint	Farmers expressing constraints			
	Small	Medium	Large	Small
<b>Purchasing of input</b>				
Timeliness	30	0	10	13
Higher prices	60	10	60	43
<b>Problems in marketing of output</b>				
Unsatisfactory price received	90	80	90	87
Price fluctuations	50	80	80	70
Payment - not in time	40	40	30	37
Lack of co-marketing societies	50	80	80	70
No supporting price policy	60	90	70	73
Absence of processing units	50	40	30	40

Source: Field survey data (Kalamkar, 2011)

were very high. No one reported about spurious feed and transportation problem from both the categories. It was noted that lack of inadequate number of analytical feed testing laboratories could hardly provide any support to ensure that quality feed was made available to farmers. The farmers also faced problems in sale of output though they had agreement with the company on it. The delay in lifting the produce was the major problem, as reported by 20 per cent of the total farmers. The delay in lifting the produce after arriving the marketing age, increases cost on feed consumption, resulting in high FCR ratio and lowering of profit level.

Some contract farmers also experienced problems in getting services and payments. About 36.7 per cent farmers expressed concern about low growing charges (Table 5). About 45 per cent broiler farmers experienced delay in providing chicks, which resulted in a lower number of batches in a year and less income per year. About 43 per cent farmers felt that there was a delay in providing veterinary services by the company; also the charges deducted towards the same were very high. Deduction of tax at source was another problem faced by the contract farmers.

#### **Problems in Purchasing of Inputs and Marketing of Output by Non-contract Broiler Farmers**

The problems faced by the non-contract farmers are listed in Table 6. More than 43 per cent of non-

contract farmers felt that feed prices were very high and 13.3 per cent faced problems in getting inputs in time. About 87 per cent of non-contract farmers opined that price for output was unsatisfactory. More than 73 per cent of non-contract farmers felt that there was no supporting price policy for broiler. For about 70 per cent of non-contract farmers, price fluctuations and lack of cooperative marketing were the major constraints. The absence of processing units and delay in payment also affected the marketing of broiler.

#### **Conclusions and Policy Implications**

The study has analyzed the production-related aspects of broiler farming under contract and independent management, has examined the inputs purchase and output sale arrangements and has identified the constraints in it. About two-thirds of contract farmers have long-term contract for a period of three years with contract firms, while the remaining have either two-year or eleven-month contract. Surprisingly, none of the contract farmer possesses a copy of the agreement with him. The average net return per kg of live weight as well as per bird has been higher in non-contract group than in contract group. The average net returns per bird increases with increase in farm-size in both the groups. Despite contract for supply of inputs and sale of output, contract farmers have to face problems like delay in supply of inputs,

high feed prices, delay in lifting the produce, delay in payment, low price, and rejection of produce. Beside these problems, low growing charges, delay in providing chicks, delay in providing veterinary services, high visiting charges and deduction of tax at source were other problems faced by the contract farmers. Contract farmers also experienced problems in the execution of contract as all rights were in the hand of the company and sometimes there was delay in providing chicks leading to less number of batches in a year. Therefore, sponsor company should pay remunerative prices to the producer in view of a huge investment made and should remove bottlenecks for positive growth of the broiler sector. Neither the contracting firms nor any other agency provide insurance to the birds. Therefore, the contracting firms should provide insurance to their clients. The government can extend its support by paying part of insurance premium to the broiler farmers.

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