ISSN 1682-8356
ansinet.org/ijps

INTERNATIONAL JOURNAL OF

POULTRY SCIENCE

ANSInet
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorijps@gmail.com

International Journal of Poultry Science, 4 (3): 167-176, 2005
ISSN 1682-8356

An Assessment of Vertically Integrated Contract Poultry Farming: A Case Study in Bangladesh

Ismat Ara Begum
Laboratory of Development Economics, Department of Agricultural Economics,
Graduate School of Agriculture, Hokkaido University, Kita-Ku, Sapporo 060-8589, Japan
E-mail: ishameen@yahoo.com

Abstract: The present study was undertaken to identify incentives for poultry farmers to participate in contract farming system in Bangladesh. This paper explores the causes why the farmer entering into contract farming system and evaluates the performance of vertically integrated contract poultry farming system on farmer's income by analyzing the cost and returns and labor utilization. Poultry meat is the most widely accepted meat in Bangladesh. Although Government provide various favourable policies for poultry sector development but still now meat deficiency is 89.5%.This is largely because the necessary backward and forward market linkages are rarely in place, i.e. rural farmers and small scale entrepreneurs lack both reliable and cost efficient inputs, credit for running business and guaranteed and profitable markets for their output. Vertically integrated contract farming could be one possible solution in this situation. With effective management, vertically integrated contract farming system can be a means to develop markets and to bring about the transfer of technical skill in a way that is profitable for both farmers and integrators. This study was based on the primary data collected from 50 sample farm of ABFL, the pioneer vertically integrated poultry contract firm, kishorganj in Bangladesh. It was revealed in the study that contract farmers get several incentives from vertically integrated firm such as credit, production and price risk reduction, marketing assistance, technical know-how etc. The study also found that the contract farmers were better off in their net income by getting the high net return from the poultry farm.

Key words: Poultry farming, Contract farming, price risk

Introduction

Bangladesh is a country where about 25 percent population is identified as hardcore poor and 48 per cent lives below the poverty line (Household Expenditure Survey, 1998), needs a special and comprehensive approach to reduce serious problem of high unemployment, poverty and malnutrition. Protein deficiency from animal origin has been taken as the major contributory factor in malnutrition. Consumption of animal protein is only 11.8 grams (BBS, 2001) per capita per day where as the standard requirement of 36 grams as recommended by UNO (Ahmed and Islam, 1985). Commercial poultry farming system is considered an important avenue to reduce unemployment, poverty and malnutrition problem.

Although commercial poultry started 1980 but still now meat deficiency is 89.5% (Table 1) and only 14% meat comes from commercial farming system (Alam, 1995). Presently, major portion of total poultry meat supply comes from scavenging or traditional farming system.

In Bangladesh most of the farmers' are very poor and small holder (land holdings less than 2.5 acre belongs to small farm category). Commercial poultry production requires very specialized management skills, large volume of finance and fine tuning amongst supply of timely and quality inputs and timely sells the outputs. Most of the farmers have the limitations of working capital but they can provide abundant labor by using their family in the farming system. Farmers often have trouble accessing credit, obtaining information on market opportunities or new technologies, purchasing certain inputs and accessing product markets. Most of the farmers are unable to take advantage of market opportunities. In rural areas, markets are often poorly serviced. When markets are accessible, farmers may be subject to price fluctuations or inequitable prices. Such difficulties are barriers to poultry sector development and represent a 'bottleneck' in the development process. Through contractual arrangements, vertically integrated firm can assist farmers to shift from scavenging or traditional poultry farming to commercial or modern poultry farming. In this system, different units/stages of production (such as breeder, hatchery, feed mill, farmer, processing agency and marketing agency) are bound together as a single unit and performance guarantees as well as incentives. Vertically integrated contract farming is potentially a way of overcoming credit constraint, minimizing transaction costs and gaining market access.

Contract farming offers several potential advantages over independent farm. Contract farming has potential to unified low-income small farmers into the commercial

poultry farming. The potential benefits of contract farming are being given renewed attention in the wake of economic reforms that have reduced public expenditures for credit programs, input subsidies, and government research and extension programs (Dirven, 1996; Schejtman, 1996). While contract farming promises significant benefits for growers in many cases, recent studies have highlighted circumstances in which members of the rural population have realized only limited gains, or have been directly or indirectly harmed by contract farming (e.g.,Glover and Kusterer, 1990; Little and Watts, 1994). Moreover, there is evidence, however, that contract farming may have a negative effect on the welfare of smallholders. There are concerns that contractors favor larger growers; hence poorer growers may be left out of the development process. From the above discussion it is clear that contract farming system have both positive and negative effect on farmer.

Contract farming has recently been introduced in Bangladesh in 1994 by a big company, named ABFL (Aftab Bahumukhi (multipurpose) Farm Limited). Broiler production is organized by this large company that contract with individual growers. This approach, which has been implemented in other developing countries, may also provide benefits for farmers in Bangladesh and deserves priority in development research. The agriculture of Bangladesh is overwhelming with small farmers. Although in Bangladesh like other development policy poultry development policy also emphasized on small farmer interest. According to the poultry development policy of Bangladesh (GOB, 1991), establishment of large scale poultry farm has been restricted for protecting the interest of small farmers but it is necessary to know how contract farming system working in Bangladesh. Still now no study has emphasized whether farmer's are benefited by getting incentives through contract farming or not.

In Bangladesh, although there are a limited number of studies (Karim and Mainuddin, 1983; Ahmed, 1985; Haque, 1985; Islam and Shahidullah, 1989; Ukil and Poul, 1992; Bhuiyan, 1999; Uddin, 1999; Yasmin *et al*., 1989) on production and economic aspects of commercial independent poultry farm but research work on contract farming is very scanty. So far only a few studies (Chowdhury, 2001, Karim, 2000) have been done on benefit-cost analysis of poultry contract farming system. So, it is necessary to identify and measure the farmer's incentives, if any that can be attributed to contracting. The purpose of this study was to identify incentives for farmers in Bangladesh to participate in contract farming system. This paper also evaluates the performance of vertically integrated contract poultry farming system on farmer's income by analyzing the cost and returns and labor utilization.

Methodology of the Study: The primary data for vertically integrated contract farming were collected from two sub-districts- Bajitpur and Kuliarchar, that located in Kishorganj district. A sample size of 50 farms was chosen for the study. In order to fairly spread the sample over the entire study population at first a list of all 560 contract growing farmers were prepared with the help of officials of ABFL to obtain a representative sample and then the farmers were categorized according to their poultry farm sizes as bellow:1) Small farmers raising 1200 birds , 2) Medium farmers raising 1201 upto 2000 birds , 3) Large farmers raising more than 2000 birds. Following this category in the study area among 560 farms 202, 280, and 78 farms were small, medium and large farm respectively. So, in total 50 broiler farms under contract farming system were selected by the ratio of the observation, that's why 18, 25 and 7 were small, medium and large farm respectively. However, this category is operational category. Generally in Bangladesh, large scale farm means those having a total bird population of more than 50,000 to 100,000 birds in a farm with 5,000 to 10,000 birds in each flock or batch. So, according to this definition all of our sample farmers were under small poultry farm category. In the period of investigation of this study covered a one year beginning from December 2001 to November 2002. Data were collected from December 2002 to January 2003. Tabular analysis was adopted to analyze the costs, returns, profitability and revenue risk variability of farming system.

Vertically Integrated Contract Poultry Farming System in Bangladesh: The term 'Contract' in broiler production may vary from country to country and the nature of the integrator company. Contract in broiler production means agreements between farmers and integrators that specify conditions of producing and marketing broiler. There are generally two types of contracts- Production contracts and Marketing contracts. Production contracts the quality and quantity of broiler inputs to be determined and supplied by the contracting firm. The type of compensation that the grower will receive for services is also decided by the contractor. In case of marketing contract refers to agreements between a contractor and a grower that sets a price and the market outlet for the broiler before the broiler is ready to be marketed. Most management decisions remain with the grower. In marketing contract, only price risk is shared whereas in production contract, both production and price risk are shared by the grower and contractor. The contractor may have more control over production decisions depending on the type of production contract. Contract farming system in broiler production was started before 1960 in most of the developed countries but in Bangladesh it was started in 1994 through Aftab Bahumukhi Farms Limited (ABFL). ABFL is one of the

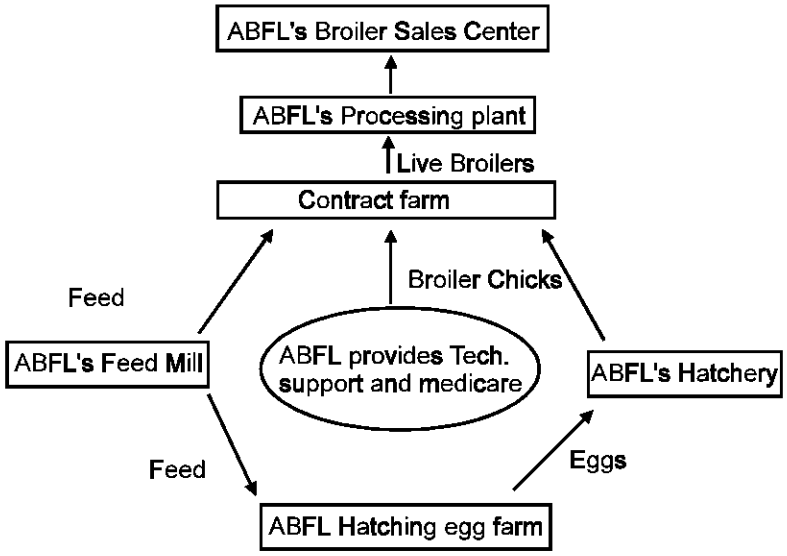

Fig. 1: The vertical stages of ABFL on broiler contract farming

leading poultry farm in Bangladesh under the Islam Group Ltd., Dhaka, Bangladesh. It was established in 1991 at Bhagalpur, Bajitpur in the district of Kishoregonj, about 110 km northeast of Dhaka City. ABFL introduced contract growing system of commercial broiler as an experimental extension program whereby at first selected only 20 farmers, who had to enter into contract growing agreement with the ABFL on production and marketing of Broiler products.

In contract broiler farming system the grower usually provides land and housing facilities, labor, and other operating expenses such as repairs and maintenance, manure disposal, and chicken house cleaning. The integrator/contractor provides chicks, feed, veterinary supplies, management services, and transportation. Expenses for fuel and litter disposal can be shared or paid by either party, depending on the specifications of the contract. Broiler contracts usually provide three types of compensation for growers: (1) the base payment (fixed fees per kg of broiler), (2) an incentive or performance payment (a percentage of the difference between average settlement costs of all flocks contracted during a specific period and costs associated with an individual grower), and (3) terms for any disaster payments (Martin, 1997; Little and Watts, 1994).

The vertical stages of ABFL on broiler contract farming system in Bangladesh have been shown in Fig. 1. The agreements between ABFL and the farmer are very simple indeed. According to the agreement ABFL provides the day-old-chicks, feeds, veterinary supplies by kind on credit, and implements the final marketing of the output. ABFL also provide day to day technical assistance about chick rearing, feed rationing and disease control through their expert supervisor as service. The contract farmer typically provides the space and facilities (land and housing), equipment, labor (family and/or hired) and daily farm management. Any farmer in the company located area is eligible to enter in ABFL contract system if and only if they could provide housing, equipment and labor facility. However, the number of birds per batch to be reared and managerial decisions are taken by the farmers. The average duration of the grow-out cycle is roughly 5 to 7 weeks for an average sized (1.5kg). ABFL buy the matured broiler from the contract farmer by paying a predetermined price for per Kg of live broiler and then market these broilers through ABFL sales centers in Dhaka. All the credit liability of the contract farmer is adjusted against price of their products. Since contract farmers are bound to buy the ABFL's day-old-chick and feed, so ABFL has assured its product market by the contract farming system. Moreover, according to ABFL's contract the number of batch and birds and quantity of inputs as well as managerial decision is taken by the farmer.

Socio- Economic Profile of the Sample Poultry Farmer:

This section presents the characteristics of the independent and contract poultry farm surveyed. Table 2 represents the mean values for contract farmer's socio-economic characteristics. About 26% of sample contract farmers had experience of commercial poultry rearing before they enter into contracting system, else are started the business as a contract farmer.

In Bangladesh generally farm households are distributed into three categories: small, medium and large. Table 3 represents the different categories of farm size in Bangladesh. A small household has an operated area between 0.05 and 2.49 acres of land. A medium farm household has it between 2.50 and 4.99 acres. A large farm household is one with 5 acres of operational

Table 1: Total meat availability and deficiency in Bangladesh

Total yearly requirement per capita	43.80 kg/year
Total per capita availability	4.57 kg/year
Total per capita deficit	39.23 kg/year
Percentage of deficit	89.50%

Source: Poultry Khamar Bichitra, Poultry business directory, year Book, 2003.

Note: 1) The deficit of meat means all meat coming from livestock sources

2) Poultry meat alone contributes 37% of total meat (Haque, 1992)

Table 2: Characteristics of Household head/Decision maker of contract farm

Entry	Contract Farm
Age (years)	41.46
Education (No. Of years)	6.70
Main occupation (%)	70.00
Secondary occupation (%)	30.00
Total land holdings (decimal)	172.74
Experience in broiler farming (years)	4.45
Engaged in contract farming (years)	3.54

Source: Field Survey, 2003

Note: 1) Sample size of contract farms was 50.

2) 1 Acre = 100 decimal

holding or more. Table 3 also presents a statement of farm size distribution in Bangladesh on the basis of the findings in Agricultural Census, 1996. It appears that Bangladesh agriculture is overwhelmingly characterized by the operation of small farms.

In the present study farm size has been defined as the cultivated area which is composed of the total acres owned plus homestead area plus acres rented in minus acres rented out in during the year of investigation. Table 4 represents the farm size of the sample farmer. Sample farm were classified into three size groups, i.e. small (0.5 to 249 acres), medium (2.5 to 4.99 acres) and large farms (5 and above 5 acres). A considerably large number of farms (76 per cent) were under small farm category, while another 14 per cent were medium farms. The remainder 10 per cent were belongs under large farm category. So, it appears that sample contract farm size is also overwhelmingly characterized by the operation of small farm.

Incentives for Contract farmer: As a developing country in Bangladesh, where majority of the people are under poverty level, the farmer's decision to enter in contract may have been motivated by some benefits or incentives from contracting. Risk and uncertainty are quite common facts of poultry business. Different constraints as faced by independent farmers have pointed out from previous research and those problems are lack of capital, inadequate knowledge of poultry rearing, outbreak of diseases, inadequate availability of inputs, inadequate institutional credit, guaranteed and profitable markets for output etc. These problems and constraints motivate the independent farmer to enter in contract broiler farming system.

Table 5 reflected the reasons why farmers entered in contractual agreement. This table mentioned only the first motivating factor to enter contract farming system. Farmers' enter contractual arrangements for a number of reasons. The primary reason is lack of capital. About 50% of respondent mentioned this reason as a first motivating factor. Risk reduction is the next reason, indicating by 26% of the respondents. The need for more income and lack of marketing facilities were the third most important reason for entering contractual agreements. About 4% of respondents also mentioned the lack of technical know-how as a first motivating factor. In below the main motivating factors are discussed.

Credit facility: A strong argument can be made that those willing to pay the most for credit will be small farmer. Poorer producers generally are less able to self finance, are more likely to be restricted in their access to formal loans by their inability to satisfy lender collateral requirements, and consequently will be more likely to resort to the expensive informal sector. To the extent that smaller, poorer farmers are willing to pay more for credit, firms will have an incentive to contract with them.

Lack of capital is the first most frequently cited reason for entering contractual agreement. Most of farmers mentioned lack of capital problem. Capital constraint was an acute problem because the farmers required substantial amount of initial capital to establish a poultry farm and also need cash to run the poultry farms. The amount of loans obtained from both institutional and non-institutional sources is a significant determination of adaptation of the new technology. It is difficult for a farmer to manage such a large investment from their accumulated savings.

The Government of Bangladesh recognizes the credit needs of the farmers. After 1990, the supply of institutional credit increased significantly due to poultry development policy. Although bank loans are available for broiler farming from different sources and farmers also willing to get bank loan for farming, but due to the weakness of the credit institutions, credit has remained concentrated in the hands of few wealthy farmers. The complicated loan-sanctioning procedures have led to untimely disbursement, which together with the spread of corruption among bank officials has promoted laxity in credit disciplines and poor recovery.

Under the terms of contracts, the contractor provides feed, day old chicks, veterinary care, technical assistance and marketing services. The feed and other inputs supplied by the contractor represent over 90% of

Table 3: Size distribution of farm households in Bangladesh

Item	Small farm (0.5 to 2.49 acre)	Medium farm (2.5 to 4.99 acre)	Large farm (5.01 acre to above)	Total
Percentage of total farm holdings	86.68	8.84	4.48	100.00
Percentage of area of farm holdings	42.70	26.09	31.21	100.00
Average size of farm holdings (acres)	0.57	3.40	8.00	1.16

Source: The Bangladesh Census of Agriculture, 1996. http://www.fao.org/es/ess/census/wcares/bangla_2000 pdf

Table 4: Size distribution of farm households of contract farmer

Land holdings	Contract farm (No. of farm)	Percent
Small farm (0.5 to 2.49 acre)	38	76
Medium farm (2.5 to 4.99 acre)	7	14
Large farm (5 and above 5 acre)	5	10

Source: Field survey, 2003

Note: 1) Sample size of contract farms was 50.

Table 5: Motivating factors of farmers to enter contract farming system

Reasons	No. of respondents	Percent
Lack of capital	25	50
Risk reduction	13	26
Additional income	5	10
Lack of marketing facility	5	10
Lack of technical knowledge	2	4

Source: Field survey, 2003

Note: Results were obtained from 50 sample farmers

the total cost of the production. That means farmers only paid 10% of annual average cost. So, farmers could get financial support without any interest rate to run the business smoothly in this farming system from integrator. Furthermore, they also provide insurance for death bird.

Vertically integrated firms are well suited to act as lenders to farmers. In fact, vertically integrated firm often have a superior ability to monitor and enforce credit contracts and have lower default costs than do banks. The integrator can be assured that the credit will be spent on production because the loans are usually distributed in kind and the supervisor often monitors the use of inputs. Unlike banks, integrated firms can extract a grower's debt directly from the chicken revenue before the grower receives his payment. In addition, 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. The relationship between the firm and grower can also reduce other lender and borrower transaction costs, which may represent a significant portion of the total cost of the loan (Adams and Nehman, 1979). The credit contract can be transacted at the same time as the farming contract and does not require any trips to bank-administrative costs are minimized for the firm and time and transportation costs are minimized for the borrower. In addition, collateral requirements are eliminated or reduced, so the borrower can avoid notary and other collateral titling fees. Low monitoring, enforcement, and other transaction costs often place integrated firms in a position to compete with formal and informal lenders.

Risk reduction: Risk reduction is next cited reason for entering contractual agreement. Risk is an important feature of the poultry farming. There are two types of risk in poultry production. One is production risk and another is price risk. Risk sharing is one of the most widely cited reasons for contracting. Numerous studies of contract farming have emphasized risk reduction as a principal incentive for producers to enter into contracts (e.g., Roy, 1972; Covey and Stennis, 1985; Dornbush and Boehlje, 1988; Herbert and Jacobs, 1988; Lawrence and Kaylen, 1990; Johnson and Foster, 1994; Knoeber and Thurman, 1995).

Price risk is one important contributor to revenue variability. In case of price risk, broilers are perishable, if farmer failed to sell at proper time, they will face a great loss. So, the biological nature of broiler is the cause of price instability. Broiler is sensitive agricultural product. It can not be stored for long time without proper storage facilities. For this reason, the farmer wants to sell their products immediately. Moreover, market price is could be fluctuate. Fig. 2 shows the nominal retail prices and real retail poultry prices. Nominal retail price is increasing from year to year but real retail prices have remained relatively stable since 1991 to 1997, after that 1998 it decline because of the worst flood of 1998 in Bangladesh. Fig. 3 represents the price fluctuation of Dhaka market from July 1991 to June 2000. Farmers' can reduce price risk by entering contract system because contract price do not depend on market price fluctuation. Contract farming system gives a guarantee of minimum price to the farmers who do not have to bear the price risk.

Prices observed in time are the results of seasonal pattern of change. Measuring seasonal variation is required to know the short time fluctuation in the time series data. In Bangladesh still now people buy whole live chicken rather than packed chicken. That's why average monthly wholesale price of big size (1.5 to 2 kg)

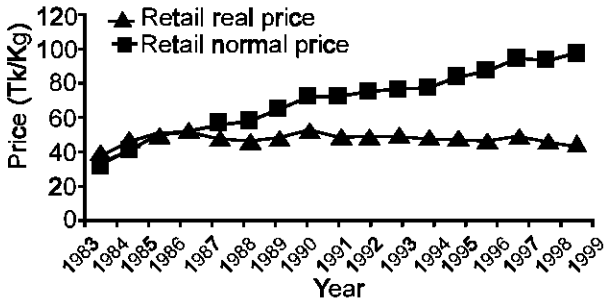

Fig. 2: Retail price of chicken from 1983-1999

poultry in dhaka markets used to measure seasonal price variation. Data were collected from the Directory of Agricultural marketing (DAM). Data covered the period from January 1992 to December 2000. The ratio-to-moving average method was used in this study to measure seasonal variations. Fig. 4 depicts the seasonal indices. Poultry price in March is 106 percent of those of the average month, typical October price is 93 percent of those of the average month, and so on. Most of the festival like Eid-ul-fitar, Eid-ul Azha, picnic and marriages etc. happened in winter season, which created high price in those months (November–March) and thus causing seasonality in price. From Fig. 4 it was also observed that the price declined from April to October. The reasons of decline price on those months for poultry were the high availability of fish in rainy season, flood and hot weather.

Contract farmers were not much affected by fluctuating prices since the price agreed upon at contract signing was fixed, regardless of market price changes. As a result, growers payment depend upon production outcomes but not price outcomes. So, growers do not bear price risk.

Production risk is another contributor for income variability. Production risk mainly happened in broiler farming due to death loss of bird. Outbreak of disease is causing a considerable economic loss and erosion of confidence in poultry farming. The major poultry diseases that the farmer faced in the study area were (a) Fowl cholera, (b) Gumboro disease, © Fowl pox, (d) New castle diseases etc. Gumboro and New Castle disease affect in epidemic form and large quantity of losses occurred. Contract growers were freed from the dreaded pests and diseases or epidemics since the integrator provided technical assistance and insurance. Developing countries have established agricultural insurance programs not only to provide farmers with one risk management tool but also to promote other goals, such as improving farmer's access to credit, promoting production with higher production risk and related industries. There have been quite varying degrees of success over the years, across countries and across several types of insurance programs (Hazell *et al.*,1986; Hueth and Furtan, 1994; Mishra, 1996).

For independent farmers there is no poultry insurance system in Bangladesh. ABFL is the only farm in Bangladesh which introduced an internal insurance scheme to cover the risk of loss and safeguard the interest of the contract growing farmers in case of immature death of chicks by diseases and other cogent reasons. According to this scheme, ABFL operates a contributory security fund. Farmers contribute taka 1.50 per chick to the fund. If the mortality is less than 3 percent, 4-6 percent, 7-10 percent and 11-15 percent then 80, 40, 20, 10 percent of the contribution made by farmer is refunded, respectively. If the mortality rate is above 15 per cent, then farmer can claim for insurance money, taka 20 per bird is paid after deducting 15 percent of the mortality quantity from the total mortality quantity within the period up to 20 days. After 20 days taka 30 per bird is given to farmer after calculating the benefits of 20 days age as stated earlier. Because of this measure, farmers feel secured and are encouraged to take up this venture. Return came from the insurance averaged 16,163 taka (Table 6) per farm.

The vast majority of farmers are risk averse, i.e., when choosing farming investments they will choose the less revenue risky business. The vertically integrated contract firm can insure growers against price risk via a forward contract, and against production risk via a insurance claim contract. Thus contract arrangements reduce risk, so, farmers' income is more stable over time.

Marketing facility: Lack of proper marketing facility is another reason for entering contract system. Marketing problem is an important problem for poultry farmers. In Bangladesh the poultry farms uses different channels to sell their broiler. Different marketing channels are presented in Fig. 5. Farmers sometimes they faced problem of selling broiler in time. Sometime they bound to sell at lower price because of inadequate transporting facility to transport and market their products in different towns and cities. Due to this problem farmers have to sell their products to local buyer and often do not get appropriate return. But by entering into contractual agreement, the grower can guarantee that ABFL will buy the grown up chicken. So, this reason also motivated farmer to enter contract farming system.

Technical Knowledge: Farmers should have technical knowledge to run a poultry farm but most of the poultry farmers started this business without being proper trained. Facilities to train up poultry farmers on various aspects of poultry farming are inadequate in the country. They are in many cases not in touch with modern technology to augment production. Inadequate knowledge about poultry diets are the major problem, most of the farmers do not have sufficient knowledge about poultry diets. Ratio of feed varies from starter, grower and finisher of broiler production. To get

Table 6: Average annual return per farm from bird insurance

Particulars	Contract farm
Cost for insurance	13769
Return from insurance (tk/farm)	16163
a) Return from refund (less than 3% mortality rate) tk/farm	4833
b) Return from refund (4-6% mortality rate) tk/farm	1018
c) Return from refund (7-10% mortality rate) tk/farm	387
d) Return from refund (11-15% mortality rate) tk/farm	106
e) Return from claim (above 15% mortality rate) tk/farm	9819

Source: Field survey, 2003. Note 1) Sample size of independent and contract farms were 50. 2) 1 US$ = 58.50 taka, 2003. 3) Average bird/year and average batch per year of contract farm was 9179 and 5.6, respectively. 4) Average mortality rate per year of contract farm was 7.3

Table 7: Annual average cost, return and profit of contract broiler farms

Particulars	Contract farm (taka/farm)	%
Total variable cost		
DOC	139034.60	28.7
Feed	272058.90	56.2
Vaccine and medicine	21847.66	4.5
Electricity	14392.00	3.0
Polythene	1146.60	0.2
Trans cost	11892.00	2.5
Litter cost	4352.20	0.9
Miscellaneous	725.04	0.1
Hired labor	5474.00	1.1
Family labor	11660.00	2.4
Int. of OP capital	1899.11	0.4
Sub total	484482.11	98.1
Total fixed cost		
Dep on equip	1772.63	19.1
Dep on housing	5042.71	54.3
Land rent	2477.27	26.7
sub total	9292.61	1.9
Total cost	493774.72	100.0
Total cash returns		
Broiler sold	624380.34	96.7
Faces sold	2306.00	0.4
Feed bag sold	2821.35	0.4
Insurance	16163.33	2.6
Total returns	645671.02	100.0
Gross margin	161188.00	
Net return	151896.00	
Rate of return	0.31	

Source: Field survey, 2003. Note: 1) Sample size of contract farms was 50. 2) 1 US $ = 58.50 taka, 2003. 3) Average bird/year and average batch per year of contract farm were 9179 and 5.6, respectively. 4) Gross margin and net return are calculated by deducting total variable cost and total cost, Total return, respectively. Rate of return is calculated by dividing net return to total cost.

technical know how some farmer decided to enter contract farming. By entering contract farm productivity increases to the extent that management decisions are transferred to the contractor, producers can benefit from technical advice and market knowledge, which not otherwise available.

Performance of Vertically Integrated Contract Poultry Farms

Cost and return: Here, an attempt is made to determine the net return gain from contract broiler farming system. In this study, cost items consisted of Feed, hired labor, vaccine and medicine, transportation, litter, equipment and machinery, housing, land use cost, interest on operating capital and miscellaneous. On the revenue side, gross return, net return, rate of return were determined and analyzed in this study.

Broiler production input costs are high and small farmers receive advances from the firm for feed, day old chicks and vaccine and medicine by kind to overcome potential credit constraints. Integrator provides major share of total cost. For total costs, expenses were also classified into variable and fixed items. Under variable costs, feed, day old chick and medicine/vaccines were the major expenditures, accounting for 56, 28 and 4 percent, respectively. Variable costs were the major costs (96-98%) of the total cost (Table 7). This was indicative of the high operating capital investment required in the broiler business. It is also evident from Table 7 that 100 percent of the average total returns were contributed by the total cash income. This was attributed to their contract with the integrators, under which the latter was to take all the broilers produced. ABFL fixed prices before contract and farmers got the price on basis of that, in the survey period average price and average bird per year were 54 tk per kg and 9179. Total cash returns per farm from contract growing averaged 645,671 taka (Table 7).

Total value of fixed costs per farm was tk 9,293 while variable costs were tk 484,482. The total costs per farm for contract growing amounted to tk 493,775 resulting in a net return tk 151,896 per farm.

However, in the final analysis, the contract farmers were better off in their net income since the major cash inputs were provided by the integrators and had a guaranteed market. It is evident from the Table 7 that net return of contract farm is highly positive. Rate of return 0.31 also

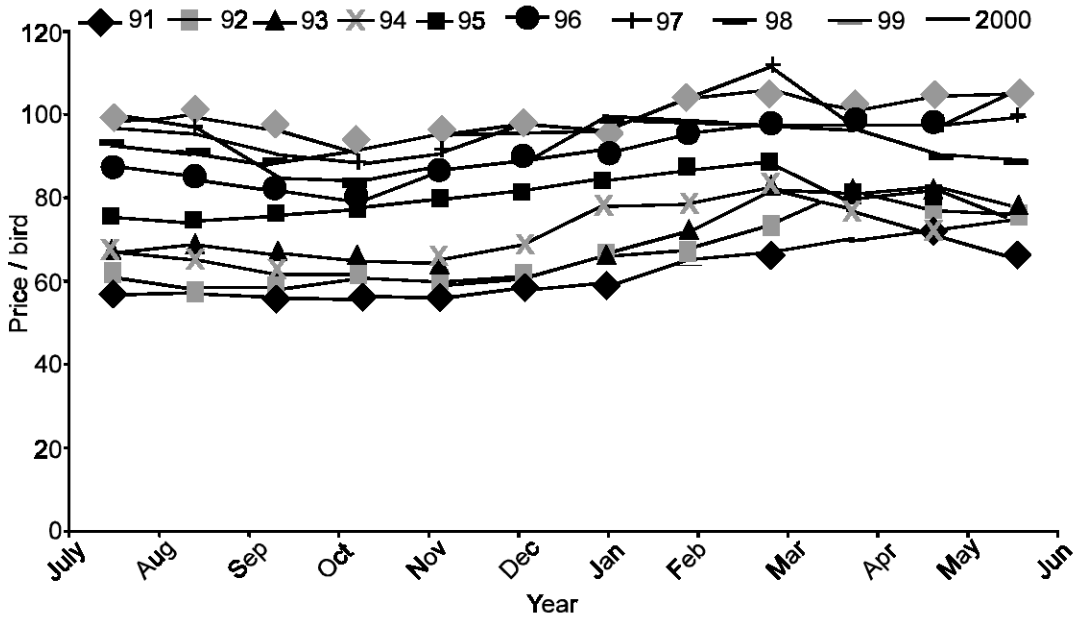

Fig. 3: Monthly poultry price in Dhaka market

Source: Directorate of Agricultural marketing: Wholesale price of Agricultural and animal products of Bangladesh during July 1991 to June 2001, Khamar Bari, Farm Gate, Dhaka

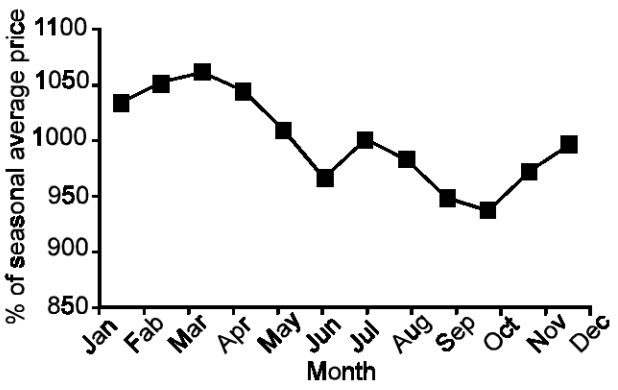

Fig. 4: Poultry seasonal price variation in Dhaka market, 1992-2000.

Source: Varous issues of Statistical year books ,1994. (Banglaesh Bureau of Statistics, 1998, 2000, 2001, 1996)

Farm -----Wholesaler ------Retailer ------→Consumer

Farm ----------Institutional buyer ----------→Consumer

Farm ---------- Whoesaler ----------→Consumer

Farm ----------→Consumer

Fig. 5: Different marketing channels of poultry farm to sell meat

indicates that contract farm is a profitable business. The number of contract broiler farms and number of birds raised per month from 1994 to 2002 is shown in

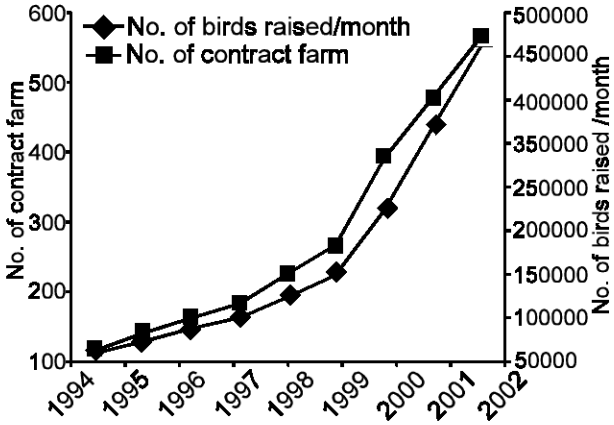

Fig. 6: Performance of ABFL from 1994 to 2000

Fig. 6. According to the figure it seemed that the people of that locality started taking interest in contract poultry farming by knowing its profitability. Producer clearly favors the vertical integrated contract system as it has the positive gross margins and net return. The summary results indicate that vertically integrated contract farm is profitable business.

Labor utilization: Poultry sector can generate employment by using family labor as well as hired labor. The survey also collected information of labor use for poultry production activity. Table 8 presents the information of labor utilization of contract poultry farm. It appears from the Table that total labor man-days per

Table 8: Use of labor in contract farming system

Types of labor	Man-day used Per farm per Year contract Farm	%
Family labor	194.49	38.52
Hired labor	310.36	61.48
Total labor	504.85	100.00

Source: Field survey, 2003. Note: 1) Sample size of contract farms was 50. 2) 1 Man-day = 8 hours

farm were 505 of which 39 per cent man-days was family labor and 61 per cent man-days was hired labor. Furthermore, the broiler industry generated jobs within the industry, in terms of production (i.e., hatcheries, breeder farms, broiler farms, corn, soybean farms) processing(i.e., feed mills, dressing, processing, cold storage) marketing (including veterinary and extension services) and consumption(e.g. fast-food outlets, restaurants). In 1994 ABFL started broiler contract system with 20 staffs but in 2002 the number was increased in 200, which represent positive impact on country's unemployment problem. Jobs were also created at the farm level by using family labor.

Conclusion: A farmer's decision to enter a contract and his or her successful participation in it will lead to increase revenue and reducing risk exposure.The results suggested that in the study area most of the contract farmers are under small farm category and this vertically integrated contract system is substantially profitable farming system. Contract farming offers many incentives for farmers, including access to new markets, technical assistance, specialized inputs, and financial support. Moreover, the study has found in vertically integrated contract farming system price risk and part of production risk due to mortality was shared by integrator. Mortalities or losses incurred during disease outbreaks were shared between contract farmers and integrators by insurance policy. Moreover, Contract farmers were also assured of more stabilized prices even during period of low demand. So, it could be concluded that well organized vertically integrated poultry farming could be a feasible approach to increase the poultry production in Bangladesh and by following this system various problem of running commercial farms will be solved as well as contract poultry farmers will be more benefited than independent farmer.

Contract farming undoubtedly the most authentic way to produce quality chickens and this method is proven all over the world. This system is well established in developed countries and has to be spread in all over Bangladesh if we have to take advantage to meet the domestic meat requirement and also for export market. So, this system has not only the potential to increase incomes of contracting farmers but also to have multiplicative effects in the broader economy. But in one hand establishment of such vertical integration requires huge credit support from the banking system for various players and for ensuring quality output. Besides that banks have to adopt proactive and liberal approach in financing poultry sector to take advantage of opportunities thrown open due to implementation of policy on poultry development. On the other hand as a developing country Government has to monitor integrated firm whether they exclude small farmer or not This combined with favorable Government policies like extension of subsidies to poultry farmers and exporters and protection from imports will help us to play a significant role in global poultry products trade besides meeting the ever increasing domestic demand. It could be suggested that for increasing the poultry production and developing poultry industry, government as well as other private integrators can take initiative to establish such effective and well organized contract farming system in Bangladesh.

References

Adams, D. and G. Nehman, 1979. Borrowing costs and the demand for rural credit. J. Dev. Studies, 15: 165-176.

Ahmed, R., 1985. Prospect and Problems of Broiler Production in Bangladesh. Proceeding of the First National Conference of Bangladesh Animal Husbandry Association, February 23-24, 1985, BRAC, Dhaka.

Ahmed, S. and N. Islam, 1985 Backyard Poultry Development Project in 100 Villages. Sponsored by Bangladesh Agricultural University and assisted by UNICEF, Bangladesh. Proceedings of the 1st Conference of Bangladesh Animal Husbandry Association, February 23-24, 1985, BARC, Dhaka, Bangladesh.

Alam, J., 1995. Livestock Resource in Bangladesh – Present Status and Future Potential, University Press Limited, 1995, Dhaka.

Bangladesh Bureau of Statistics, 1998. Report on the Household Expenditure Survey, 1995-96, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 1994. Statistical Yearbooks., Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 1998. Statistical Yearbooks., Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 2000. Statistical Yearbooks., Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 2001. Statistical Yearbooks., Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 1996. The Bangladesh Census of Agriculture, 1996, http://www.fao. org/ es/ ess/ census/wcares/bangla_2000.pdf.

Bhuiyan, A.U., 1999. An Economic Analysis of Small Scale Poultry Farming of Kotwali Thana in Mymensingh District. M.S. thesis, Submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Chowdhury, S.J., 2001. An Economic Analysis of Broiler Rearing Farms Under Aftab Bohumukhi Farm Limited in Bajitpur Upozila of Kishorganj District. M.S. thesis, Submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Covey, T. and E. Stennis, 1985. Analysis of the rough rice futures contract. Agricultural Economics Research Report No. 156, Mississippi State University, May, 1985.

Dirven, M., 1996. Agroindustry and small-scale agriculture: a comparative synthesis of different experiences. Report LC/R.1663. Economic Commission for Latin America and the Caribbean, Santiago, Chile.

Dornbush, C. and M. Boehlje, 1988. An economic analysis of contracting arrangements used by the Minnesota turkey industry. Department of Agricultural and Applied Economics Staff Paper, University of Minnesota, Minnenpolis June, 1988.

GOB, 1991. The Fourth Five Year Plan 1990-95. Ministry of Planning, Government of the Peoples Republic of Bangladesh, 1991, Dhaka.

Glover, D. and K. Kusterer, 1990. Small Farmers, Big Business:Contract Farming and Rural Development London, Macmillan, 1990.

Haque, Q.M.E., 1985. Commercial Poultry Farming in Bangladesh." Proceeding of the First National Conference of Bangladesh Animal Husbandry Association, February 23-24, 1985, BRAC, Dhaka.

Haque, QM.E., 1992. Rural Poultry in Bangladesh Economy. Paper presented in Bangladesh Animal Husbandry Association Conference, Dhaka, December, 1992.

Hazell, P., C. Pomerada and A. Valdes, 1986. Crop Insurance for agricultural Development: Issues and Experience. Johns Hopkins University Press, Baltimore, 1986.

Herbert, T. and J. Jacobs, 1988. Contracting, coordination and instability in the navy bean industry. Agricultural Economics Report No. 504, Michigan State University, East Lansing, MX, February, 1988.

Hueth, D. and W. Furtan, 1994. Economics of Agricultural Crop Insurance: Theory and Evidence. Kluwer Academic publishers, Boston, 1994.

Islam, M.M. and M. Shahidullah, 1989. Poultry Knowledge of the Farmers of a Union in Mymensingh, Bang. J. Train. Dev., 2: 12-18.

Johnson, C. and K. Foster, 1994. Risk preferences and contracting in the US hog industry. J. Agri. Appl. Econ., 26: 393-405.

Karim, R., 2000. An Economic Analysis of Broiler Enterprise under Contract Farming System in an Area of Bangladesh." M.S. thesis, Submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Karim, A.M.A. and G. Mainuddin, 1983. Evaluation on the Field Activities of Backyard Poultry Raiser in Bangladesh, UNICEF, Dhaka.

Knoeber, C. and W. Thurman, 1995. Don't count your chickens: Risk And risk shifting in the broiler industry. Am. J. Agri. Econ., 77: 486-496.

Lawrence, J. and M. Kaylen, 1990. Risk management for livestock producers: Hedging And contract production. Department of Agricultural and Applied Economics, Staff Paper, University of Minnesota, Minneapolis, July, 1990.

Little, P. and M. Watts eds.,1994. Living under Contract: Contract Farming and Agrarian, Transformation in Sub-Saharan Africa. University of Wisconsin Press, Madison, 1994.

Martin, L.L., 1997. Production contracts, risk shifting, and relative performance pay-ments in the pork industry, J. Agri. Appl. Econ., 29: 267-278.

Mishra, P., 1996. Agricultural Risk, Insurance and Income: A study of the Impact and Design of India's Comprehensive Crop Insurance scheme. Avebury Publishing, Aldershot, UK.

Poultry Khamar Bichitra, 2003. Year Book of Poultry Business Directory, Dhaka.

Roy, P., 1972. Contract Farming and Economic Integration.,Interstate Printers and Publishers, Danville, IL, 1972.

Schejtman, A., 1996. Agroindustry and small-scale agriculture: Conceptual guidelines for a policy to encourage linkage between them. Report LC/R.1660, Economic Commission for Latin America and the Caribbean, Santiago, Chile.

Uddin, H., 1999. A Comparative Economic Analysis of Broiler and Layer Production in Some Selected Areas of Sadar Thana in Mymensingh District. M.S. thesis, Submitted to the Department of Agricultural Economics, Bang. Agri. Univ., Mymensingh.

Ukil, M.A. and D.C. Paul, 1992. Problems and Prospects of Broiler Industry. Conference of Bangladesh Animal Husbandry Association, Dhaka.

Yasmin, L., M.A. Hossain, M.A.M. Miah and M.M. Rahman, 1989. Characteristics of Backyard Poultry Farmers Affecting Their Knowledge on Poultry Production in Bangladesh. Bang. J. Train. Dev., 2: 22-30.