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Formal and informal contract farming in poultry in Bangladesh¹

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Summary

Since the early 1990s, contract farming as a market institution in the poultry industry in Bangladesh has evolved along with the expansion of commercial poultry farming. Apart from classical contract farming within vertically integrated enterprises, there are also formal and informal contract arrangements in input marketing and output marketing. In this paper, characteristics of these forms of contract arrangements and their implications for the poultry industry in Bangladesh are discussed. A high drop-out rate among commercial poultry producers is observed. Results of a survey conducted among farmers who dropped out of the poultry business in recent years are presented, highlighting the causes of dropping out and the possible role of contract farming in addressing them.

Key words: poultry, market, institutions, contract

1 Introduction

In Bangladesh, commercial poultry production using improved genetics, feeds and management has grown rapidly since the early 1990s in response to increased market demand for livestock products including poultry. The total poultry population in the country increased from 91 million in 1990 to 101 million in 1992, 123 million in 1995 and 153 million in 1997. This increase occurred almost entirely in the commercial poultry sector. In 1998, there was a sharp decline in the population to 138 million due to a severe flood. The population then stabilized at around 140 million until 2006 (figures from FAOSTAT – <http://faostat.fao.org/default.aspx>). Contract farming in the poultry sector has also evolved to some extent, along with the expansion of commercial production.

This paper begins by briefly presenting the background to the emergence of contract farming as a market institution in the developing world. It then discusses the evolving forms of poultry contract farming, along with their pros and cons, and their implications for the future role of contract farming in the sector. In Section 3, the types of contract farming arrangements prevailing in the poultry sector in Bangladesh and the profiles of practitioners of various contract types are described. In Section 4, the implications of the current contract arrangements in the sector are summarized. In Section 5, major reasons for dropping out of the poultry business, as reported by a sample of farmers who dropped out, are discussed along with implications for contract farming.

2 Background to the emergence of contract farming as a market institution

In recent decades, the demand for livestock products in developing countries including Bangladesh has increased rapidly, propelled by rising levels of income, population and urbanization. Demand has principally been met by large-scale urban/peri-urban production. Although growth in demand for livestock products should, in principle, bring opportunities for the large numbers of livestock-dependent poor who have traditionally dominated developing-country markets, such producers have generally faced severe competition as markets have expanded. Small-scale or poor producers have captured only a tiny share of these expanding markets because of their inability to produce high quality products at competitive costs and to reach urban markets. This is a result of a lack of access to information, skills, technologies and other infrastructure, which increases transaction costs. Further,

¹This paper is partly derived from a longer study (see Jabbar *et al.*, 2007).

the absence, in most rural areas, of adequate preservation and marketing infrastructure means that the individual market-entry investments needed to fulfil production and sanitary standards are prohibitively high given the quantities of marketable products produced. Lack of access to market information further reduces the negotiating position of small production units. Government policies have often supported and subsidized industrial livestock production, promoting economies of scale, but usually overlooking equity, environment and health consequences (Delgado *et al.*, 1999).

To overcome the above-mentioned constraints, a variety of organizational arrangements that allow small production units to benefit from various forms of collective action, such as producer groups, input and output marketing cooperatives, and product collection schemes, have been supported by government and non-government organizations in a number of countries, with varying degrees of success. Contract farming is one such institutional arrangement that is considered to be useful in facilitating market access for smallholders in high-value supply chains that require specialized production inputs, and sales to markets for specialized outputs. Contracting has long been used in various fields of economic activity as a means to strengthen supply chains, with varying degrees of success (Glover, 1987; Farrelly, 1996; Runsten and Key, 1996; FAO, 2001).

Contract farming promotes the linkage of smallholders to the market in circumstances where the transaction costs of direct engagement with the market are high for producers and/or traders. Contract farming has also been successful in enabling the transfer of improved technology and the integration of smallholders into an economy that embraces modernization and globalization. In addition to enhancing the incomes of smallholder producers *per se*, contract farming may also be beneficial for overall employment and for infrastructure or market development for the wider community. Particularly when multinational agribusiness firms are involved, contract farming may also increase access to lucrative export markets (ERS, 1997; FAO, 2001; Delgado *et al.*, 2003). Given current concerns about diseases such as avian influenza, quality assurance is becoming an even more challenging task, and involvement of smallholders in any supply chain is likely to make the management of those chains even more difficult and costly. Under such conditions, contract farming may provide one avenue to keep smallholders engaged in the sector. Production and price risks are important features of poultry farming. Risk sharing is one of the widely cited reasons for contracting. Numerous studies of contract farming put emphasis on risk reduction as a principal incentive for producers to enter into contracts (Covey and Stennis, 1985).

Conversely, contract farming has been blamed for breaking up existing farming activities, involving farmers in inflexible production arrangements, and potentially jeopardizing food security and subsistence production. Moreover, where the contracted product requires substantial investment in equipment or infrastructure, the debt burden of contract farmers may increase along with dependency on the large integrators or agribusiness companies which may show characteristics of monopoly firms (Shivramkrishna and Jyotishi, 2007). Depending on whether participation in contract farming is restricted to males and/or larger-scale farmers, and the rights and treatment of locally-hired labour by such farmers, contract farming arrangements may result in a negative effect on overall equity and gender relationships (Glover, 1987). Women and child workers in particular may be disadvantaged because of unfavourable contract terms (Singh, 2003).

3 Types of contract farming in poultry in Bangladesh

Contract farming is usually defined as farming which is a part of a vertically integrated enterprise within which actors are linked through contracts defining roles, responsibilities, rights and obligations. However, contract arrangements may also prevail outside vertically integrated enterprises. Forms of contract farming may be defined on the basis of a set of criteria (e.g. types of partners involved, how risks, benefits and obligations are shared, how contract agreements are made, enforced and monitored, and how disputes are settled). The prevailing legal and regulatory frameworks in a country or society determine how these factors are incorporated in contracts and are actually practised. Some of the above-mentioned elements of contract farming are common in other forms of collective action such as cooperatives and production and marketing groups; a distinction therefore needs to be made between

contract farming and other organizational forms.

Considering these elements and by analysing the firms and enterprises involved in various contract arrangements in the poultry sector in Bangladesh, the following three types of contract arrangement can be identified:

- (a) Production–marketing contracts – relevant actors are involved in contracts within a vertically integrated enterprise for supply of inputs and services, disposal of outputs, and sharing of risks and benefits. The agreement is documented in writing and signed by the parties.
- (b) Input marketing contracts – relevant actors are involved in contracts for supply of one or more inputs and services, generally to market agents who directly deal with producers. The agreement is documented in writing and signed by the parties.
- (c) Output marketing contracts – primarily a forward purchase contract in which contractors purchase output from existing producers. The agreement is basically verbal or in a form that may not be considered acceptable in a formal court for dispute settlement.

The evolution, profiles and characteristics of the various enterprises operating under different contract types are discussed in more detail below.

3.1 Production–marketing contracts

The principal actors in this arrangement are Aftab Bahumukhi Farms Ltd operating in Kishoreganj District, Biman Poultry Complex operating in Savar near Dhaka District, and BRAC’s poultry operations in a number of districts. The main characteristics of these three enterprises are summarized in Table 1. A more detailed description of the individual enterprises is given below.

Table 1. Summary of characteristics of enterprises practising production–marketing contracts

	Aftab Ltd	Biman	BRAC
Year established	1992	1997	2002
Products covered	Broiler and breeder stock	Broiler	Broiler
Vertical integration	Yes	Partial	Partial
Input supply	On credit till 2003, then cash	On credit	On credit
Output purchase	Market price plus margin	Fixed price	Fixed price
Production risk	100% producer with insurance	100% producer	100% producer
Price risk	Shared	Producer	Producer
Number of producers	350 and 122	25	215
Batch size	1 500–2 500 Average 1 800	1 000–5 000 Average 2 500	500–2 000 Average 800

Source: Jabbar et al. (2007).

Broiler farming by Aftab Bahumukhi Farms Ltd

The Aftab Bahumukhi Farms Ltd (ABFL) is one of the subsidiary companies of the Islam Group of Companies, Dhaka, a multi-enterprise company that also has the largest private sector commercial operations in the agricultural sector. The ABFL established a broiler farm in 1991 in Bhagalpur Thana (subdistrict) in the District of Kishoreganj, about 110 km northeast of Dhaka city. The ABFL started contract farming as an experimental programme with a group of 20 farmers. Based on the initial

experience, the ABFL took up in 1994 an elaborate vertically integrated contract growing programme for poultry, involving rural people in poultry farming as an income generating activity by providing technical and professional support. As the ABFL started as an agro-based firm, it included farms of all sizes in its poultry and other farm programmes. There was perhaps no special consideration given to small farms, but they were included so long as other requirements for engaging in poultry were met. Unlike vertically integrated farms in developed countries, where big trading companies usually prefer contracts with large-scale farms and farmers to minimize transaction costs, the ABFL has tried to be inclusive. One of the objectives of the ABFL was to increase the income and welfare of farmers in the areas around the firm's headquarters. This motivation may partly lie in the fact that the owner of the Islam Group, of which the ABFL is a component, comes from the locality; so contributing to the welfare of local people through his business ventures may serve both business and a welfare objectives.

The ABFL has developed into a vertically integrated firm over time and has established its own feed mill and hatchery. The firm consists of a modern hatchery that produces 60 000 broiler and layer parent birds and supplies 100 000 day-old chicks per week for the fast growing poultry industry. The firm has also established retail sales centres in Dhaka city to supply eggs and poultry meat to consumers. The Poultry Complex of the ABFL is already one of the largest in the country. The ABFL's poultry feed mill was first established primarily to provide balanced feed for the ABFL contract poultry farms. It was later expanded to meet the wider demand for poultry feed in the country. At present, ABFL has three feed mills with a capacity of 10 000 tonnes of feed per month. It distributes balanced feed to farms throughout the country using its own distribution channel.

The agreement between the ABFL and a contract farmer is very simple. Any farmer located in the company's operating area is eligible to enter into a contractual agreement. From 1994 to 2003, the ABFL provided day-old-chicks, feeds and veterinary supplies on credit, and ensured purchase of the output. All the credit liability of the contract farmer was adjusted against the value of their delivered products. After the bird flu rumour which followed outbreaks in Southeast Asia in 2003, the ABFL changed the arrangement from input supply on credit to cash. Although there was no bird flu in the country in 2003, there was suspicion among producers and consumers, and this affected the industry. The price of broilers and day-old chicks decreased drastically within a few days. Many farmers went out of business as they incurred unsustainable losses. The ABFL reportedly incurred a loss of nearly Taka (Tk) 150 million as a result of the incident (in mid 2006, US\$1= Tk 65.31). As a consequence of the scare, the number of the ABFL's contract farms fell from 650 to 200 in 2004. However, numbers increased to 315 in 2005.

The distribution of responsibilities between the contract farmer and the ABFL within the vertically integrated farming system is summarized in Table 2. The contract farmer typically provides land, housing, equipment and labour. According to the agreement, a farmer builds a covered shed at his/her own cost under the direct supervision of the ABFL extension staff, to ensure a congenial and healthy environment for proper growth of the birds. The average duration of the grow-out cycle is roughly five to seven weeks for an average sized (1.5 kg) broiler. Until 2003, the ABFL used to buy the mature live broiler from the contract farmer by paying a fixed price per kg and then marketed these through the ABFL sales centres in Dhaka. After 2003, when the price of poultry fell drastically, the ABFL also changed its contract arrangement and stipulated that farmers would be paid a price that is a given amount lower than the prevailing market price. For example, in 2003, farmers were paid Tk. 53 per kg when market price was Tk 60 per kg live weight, in order to cover the procurement and distribution costs of ABFL.

Risk reduction is an important cited reason for entering into a contractual agreement. Risk is an important feature of poultry farming. There are two types of risk: production risk and price risk. Price risk is an important contributor to revenue variability. The biological nature of broiler production and the unsuitability of the product for long-term storage is an important cause of price instability. Production risk is mainly a result of the death or loss of birds. Outbreaks of diseases may also cause considerable economic losses and erode confidence in poultry farming. The major poultry diseases

that farmers faced in the study areas included fowl cholera, gumboro disease, fowl pox, Newcastle disease. Gumboro and Newcastle disease are epidemic diseases, which cause huge losses.

Table 2: Sharing of responsibilities between the contract farmer and the contractor (ABFL) in broiler production

Particulars	1994–2003		2003 onwards	
	Contractor	Farmer	Contractor	Farmer
Land, buildings and equipment		X		X
Manure handling, storage and disposal capacity		X		X
Day-old chicks	X *		X**	
Feed ingredients, processing and delivery	X*	X	X**	X
Fuel, electricity and telephone		X		X
Facility repairs		X		X
Veterinary services and medicine	X*		X**	
Transportation cost of all input and output		X		X
Labour: production and maintenance		X		X
Labour: supervisory and specialists	X		X	

Source: Jabbar et al. (2007).

The vast majority of farmers are generally risk averse, i.e. they normally choose the less revenue-risky business. As poultry is a risky enterprise and farmers are not able individually to deal with distant urban markets, the ABFL initially tried to reduce price risk through a forward contract and purchase arrangement. Later, the mechanism was changed in favour of a risk-sharing arrangement between the ABFL and the contract farmer, which operated by assuring a certain share of the prevailing market price. In order to reduce production risk, an insurance scheme linking compensation to mortality rate was introduced.

There is no poultry insurance system for independent farmers in Bangladesh. The ABFL is the only organization that has introduced an internal insurance scheme to cover the risk of loss and safeguard the interest of its contract farmers in case of death of immature chicks resulting from diseases or other causes. According to this scheme, the ABFL operates a contributory security fund. Farmers contribute Tk 1.50 per chick to the fund when they purchase day-old chicks. For chick mortality within a given range, a portion of the initial contribution or risk premium is refunded. For example, if chick mortality is less than 3 percent, 4–6 percent, 7–10 percent or 11–15 percent, then 80, 40, 20, and 10 percent of the contribution, respectively, is refunded to the farmer. If the mortality rate is above 15 percent, the farmer can claim full insurance compensation. In this case, for birds up to 20 days old Tk 20 per bird is paid after deducting 15 percent from the total number of birds lost. For birds older than 20 days, Tk 30 is paid per bird after calculating the benefits from birds up to 20 days of age. Because of this measure, farmers feel secure and encouraged to take up the venture.

Overcoming marketing problems is a major motivation for joining a contract system. In Bangladesh, poultry farms located far from major urban markets face a number of problems in marketing, including inability to sell birds at desired times due to lack of buyers, inadequate transport facilities to carry

birds to markets, uncertain prices and low bargaining power. By entering into a contractual agreement, farmers have an assured market outlet.

Access to technical knowledge and management skills is another advantage of contract farming. Most poultry farmers in Bangladesh start business without acquiring proper technical knowledge and management skills. Facilities to train poultry farmers on various aspects of poultry farming and management are inadequate in the country. A major deficiency is in knowledge about feeding regimes and management, both of which heavily affect production efficiency. Most of the independent broiler farm owners reported that they did not have sufficient knowledge about poultry diets and optimal rations. In broiler production, the ratio of feed varies for starter, grower and finisher stages, and managing these properly is a precondition for profit efficiency. The ABFL provides initial training in the management of the contract farming package and also provides continuous supervision throughout the growing period.

The main feature of the ABFL broiler farming system is that it is a partnership between the ABFL and the contract farmer whereby the contract farmer provides land, housing, equipment and labour and the ABFL provides inputs (initially on credit but later on a cash basis), technical knowledge and supervision which reduces yield uncertainty, and an assured market for products at pre-agreed prices or a pricing mechanism that reduces price uncertainty – all of which are likely to contribute to a remunerative business.

Breeder stock farming contracts by ABFL

The ABFL started contract breeder stock farming more recently. The ABFL's hatchery production systems depend totally on import of grandparent stock from abroad, usually from France, the United States of America and the Netherlands. The ABFL rears the imported birds under its own supervision. The eggs obtained from the grandparent stock are hatched and the day-old chicks are distributed to the selected contract grower farmers as breeder stock birds. After 25 weeks of rearing, the parent stock birds start producing hatchable eggs, which the ABFL buys back. After hatching, they distribute the day-old chicks to contract and independent broiler farmers for rearing as broilers.

A written agreement is made between the ABFL and the contract breeder stock farmer, usually for a ten-year period which can be renewed on mutual agreement. Unlike broiler contract farming, only solvent or relatively wealthy farmers in the operation areas of the ABFL are eligible to participate in the scheme, because of larger investment requirement. According to the agreement, the ABFL provides day-old-chicks, feeds, veterinary supplies in kind on credit, and intensive supervision. It also ensures purchase of the output. All the credit liability of the contract farmer is adjusted against the value of their products. Unlike broiler contract farming, input credit was not discontinued in breeder stock contracts (Table 3)

The contract farmer typically provides land, housing, equipment and labour, and builds a covered poultry shed under the direct supervision of the ABFL experts to ensure a healthy environment for proper growth of the birds. Building the shed is a relatively costly investment which few rural households can afford. In case of need, the ABFL helps farmers to access a bank loan of Tk 800 000 from Uttara Bank to build the shed. If any additional funds are required, ABFL provides 50 percent on credit; the remaining 50 percent has to be borne by the farmer.

The ABFL's internal insurance scheme mentioned above also covers the breeder stock farms, but the premium and compensation rates are different. Farmers contribute 4 percent of the day-old chick price to the fund as a premium and get refunds based on the rate of mortality. If the mortality is less than 10 percent, 11–25 percent or 26–50 percent, then 70, 60, 50 percent, respectively, of the contribution made by the farmer is refunded. If the mortality rate is above 50 percent, then the farmer can claim for the full insured sum. In this case, Tk 60 per bird is paid if the bird dies at the laying stage. In the event of a bird dying during the growing stage, Tk 100 per bird is paid to the farmer. Because of this measure, farmers feel secure and are encouraged to subscribe to the scheme.

Table 3: Sharing of responsibility between the contract farms and contractor (ABFL) in breeder stock farming

Particulars	Breeder stock contract farmer	
	Contractor	Farmer
Land, buildings and equipment		X
Manure handling, storage and disposal capacity		X
Day-old chicks	X *	
Feed ingredients, processing and delivery	X*	X
Fuel, electricity and telephone		X
Facility repairs		X
Veterinary services and medicine	X*	
Transportation cost of all inputs and outputs		X
Labour: production and maintenance		X
Labour: supervisory and specialists	X	

Source: Jabbar et al. (2007).

Broiler farming contracts by Biman Poultry Complex

The Biman Poultry Complex (BPC) is a sister concern of Biman Bangladesh Air Lines Corporation, which deals with dressed broilers under contractual arrangement. The complex started its operation in 1997. With 25 contract growers located in Dhaka, Tangail, Manikgonj and Gazipur Districts, within about 60 km of the Poultry Complex at Savar, the system ensures a supply of dressed chicken to the Biman Catering Centre and two sales centres in Dhaka. The Biman Catering Centre supplies chicken-based foods to different airlines operating out of Dhaka International Airport.

The BPC has entered into agreement with 25 farmers who have built good poultry sheds and have experience in broiler farming. Batch size varies from 1 000 to 5 000 birds with an average of 2 500 birds. The BPC provides day-old chicks on credit and supplies technical services including veterinary treatment to the enlisted farmers and buys back live chickens from the contractee at a pre-determined price. In 2006 the prices were Tk 100/kg from February to July and Tk 95/kg from August to January. The price is reviewed periodically based on market conditions, so that any price risk is shared between BPC and the contract farmers. However, production risk is fully borne by the farmers. There are rare cases of dispute between the contractor and the contractee. These disputes are settled through mutual negotiation and understanding.

Broiler farming contracts by the Bangladesh Rural Advancement Committee

The Bangladesh Rural Advancement Committee (BRAC) is the largest national NGO operating in the country as well as abroad. The BRAC's involvement in contract poultry farming has evolved over time. The BRAC is committed to poverty reduction and empowerment of the poor through providing credit, training and technical assistance. According to Saleque (2000), BRAC considered poultry to be a potential candidate activity for income generation among the landless and small farmers, particularly destitute women, many of whom owned a few chickens. In Bangladesh, poultry is kept by 70-90

percent of households, while fewer households keep goats and cattle. Households owning no land or less than 0.5 acre of land own more than 50 percent of the total poultry population. Poultry is sometimes used as the first investment in a “livestock ladder” (in the sense that one can move from poultry to goats/sheep to cattle, etc) to increase income and get out of poverty. During the 1970s and early 1980s, there were almost no job opportunities in the country for the landless, disadvantaged women who were BRAC’s targets for relief and development work following the independence of Bangladesh in 1972. Relief could not be a mechanism for creating sustainable livelihoods for poor people. There was a need to provide relief beneficiaries with opportunities to earn an income. It was realised that poultry rearing, in which women in relief-beneficiary families were already engaged on a very small scale, could be an income earning activity for a large number of poor women. The belief that, starting with a few chickens, relief-dependent ultra-poor people, especially women, could gradually move away from relief and towards self-sustained livelihood activities was the basic foundation of the poultry model developed by BRAC jointly with the Department of Livestock Services (thus called the BRAC-DLS model) which eventually became a major development innovation (Islam and Jabbar, 2005).

Through trial and error over the period 1978 to 1985 BRAC developed a smallholder poultry model in collaboration with the DLS, targeting landless and poor households, especially women. Initially there was no model or specific design, but over time several activities were linked together in a network involving nine inter-related actors, each performing a specific task such as hatching eggs, rearing day-old chicks to a certain age, rearing them to mature birds, supplying feeds and vaccination services, and selling eggs and broilers. The DLS used to supply day-old chicks from its hatcheries as foundation material for the network groups. After the model proved to be a success at a pilot scale it was replicated in wider areas during 1985–1992, when the concept was taken up by major donors such as the International Fund for Agricultural Development (IFAD), the World Bank and the Asian Development Bank (ADB) and the Government of Bangladesh for replication through development projects over the period 1992–2003. BRAC and the DLS remained involved in the implementation of this large project – providing of some services, along with several other NGOs. The DLS continued to provide day-old chicks for the project participants. However, the DLS’s limited capacity to supply day-old chicks became, at some stage, a constraint to expansion of the model. Partly as a response to this problem, BRAC started to produce day-old chicks in order to serve the requirements of the poultry model (Dolberg, 2001). However, in addition to addressing the shortage of day-old chicks for the project participants, BRAC also saw a business opportunity. It used the experience of the poultry model to develop a contract growing system, whereby it started supplying day-old chicks and other inputs on credit to smallholder producers and initially bought back eggs and broilers at pre-determined prices. The difference between this system and commercial contract growing is that, as in the poultry model, BRAC kept the focus on poverty alleviation by targeting smallholders and the poor, (Islam and Jabbar, 2005).

After the expiry of the smallholder poultry development project in 2004, many of its poultry network groups became non-functional, and in many places the supply chains collapsed. However, BRAC continued to support more efficient and functional groups by supplying day-old chicks through its own rural livelihood programme, while developing alternative mechanisms to promote contract poultry farming as an income-generating activity among smallholders.

Apart from the poverty-focused collaborative poultry development programmes, BRAC has gradually moved to unilateral programmes under varying arrangements. BRAC generally sells day-old chicks and feed to the poultry farmers through dealers. It also provides support for training, vaccines and medicine and helps with the marketing of products through agents at the existing market price. At the field level, dealers make an informal contract arrangement with farmers by making credit sale of inputs and often buying output on credit.

During 2002–2004 BRAC tried contract farming in Sherpur District by providing key inputs such as day-old chicks, feed and medicine on credit and buying back broilers at pre-determined prices. The arrangement did not work because of violation of contracts by farmers, particularly during periods of

higher market prices when they sold products in the local market instead of selling to BRAC.

Recently, BRAC has entered into an arrangement with “Mexicana Chicken”, a fast food retailing enterprise of the Nasir Group of Industries. Under the arrangement, BRAC supplies “Mexicana Chicken” with hygienic broilers raised through contract growing by 215 farmers in seven districts, namely Gazipur, Manikganj, Norshingdi, Kishoreganj, Tangail, Mymensingh and Brahmanbaria. Batch size varies from 500–2000 birds, with an average of 800 birds. BRAC supplies day-old chicks and other inputs to the farmers through agents. It also provides technical supervision to the farmers. Quality of the product is ensured through strict scrutiny by BRAC personnel according to specifications suggested by “Mexicana Chicken”. BRAC usually enters into a written contract with the producers to buy products at the prevailing market price. The contract includes the provision that if, under certain unavoidable circumstances, the specified quantity and quality of products cannot be supplied or bought, it must be informed at least three days before the delivery date. Price risk is shared by both contractor and contractee because the contract price depends on market price fluctuation. The production risk is fully borne by the farmer. The contracting arrangement ensures access to quality inputs for farmers and also ensures a stable market for the inputs supplied by the integrator.

3.2 Input marketing contracts

There are 130 hatcheries in the country, of which 68 are fully functional, others are partially functional or closed for one reason or another. There are also 52 feed mills. Among these, only three large companies – Kazi Farm Ltd, Paragon Poultry and Nourish Feed Ltd – practice formal input-marketing contracts. A brief description of their operations follows.

Kazi Farm Ltd is the largest producer of parent stock as well as day-old chicks for broiler and layer poultry in Bangladesh. The farm was established in 1996. In 2006 the company also established the largest poultry feed mill in Bangladesh. Kazi Farm Ltd has begun exporting poultry products to the Middle East and Nepal, and is managing the operations of a broiler-breeding farm in the Sultanate of Oman.

For achieving the full potential of the farm, Kazi provides countrywide sales and services. It employs over 100 sales staff, who are stationed in different poultry producing areas. The day-old chicks and feeds are distributed through 600 feed and chick distributors all over the country. A person who according to the judgment of the company is financially solvent and has personal integrity is selected as a distributor or agent for a particular geographical area comprising one or two thanas (subdistricts).

Kazi Farm Ltd enters into a written contract with the distributors, under which the latter have to abide by a set of conditions including fulfilment of a target volume for the purchase of day-old chicks and feed from the company. The distributors are also required to deposit some security money with the company, normally equivalent to the price of 1 000 chicks. The distributors have to purchase day-old chicks and feed through advance payment in cash or as a bank draft. There is no provision of credit sale to the distributors. Under the informal contractual arrangement with the farmers, the company has set up a service network of veterinarians and animal husbandry graduates to help farmers to deal with disease problems. These technical personnel regularly visit the client farmers and offer veterinary services free of cost. This is an investment by the company to ensure chick survival and that the poultry business operates on a sustained basis – thus ensuring that its own feed and day-old chick business can be sustained and expanded.

In this system of contract, both production and price risks are borne by the farmers. However, farmers benefit from the supply of healthy day-old chicks and feed through the dealers both in peak and lean periods.

Paragon Poultry Ltd is one of the largest producers of day-old chicks in Bangladesh. It has developed a special type of contractual arrangement through which it supplies day-old chicks and feeds to poultry raisers through its 205 dealers scattered all over the country. It supplies 400 000 day-old chicks per

week and 140 tonnes of feed per day. The company claims more than a 10 percent market share for day-old chicks produced in the country. The company does not directly participate in purchasing the farmers' products, but some of the dealers help farmers with selling the products. All production and price risks are, obviously, borne by the farmers.

Nourish Feed Ltd is one of the largest poultry feed producers in the country. It also produces day-old chicks as a supplementary venture. It supplies day-old chicks and feed to the farmers through its 160 dealers operating across the country. The company supplies 300 000 day-old chicks per week and 330 tonnes of feed per day. The company captures a substantial market share for poultry feed and more than 2 percent of the country's day-old chick production. The company considers Kazi, Aftab and Paragon to be the major competitors in the feed market. The company does not directly participate in the purchase of farmers' products, but occasionally helps farmers in the marketing of products through the dealers. As the company does not participate in the purchase of products at any predetermined price, both production and price risks are fully borne by the farmers.

3.3 Output marketing contracts

Other than the producers, aratdars, wholesalers and output retailers are the three main actors in the output marketing chain.² The aratdars and wholesalers of eggs in Dhaka city sometimes make forward purchase contracts with layer farmers in Gazipur District. They also sometimes make contracts with agents who then buy eggs from producers with or without prior contract to supply the aratdars. The difference between this arrangement and formal contract is that these forward contracts are made with existing farms rather than for establishing new farms. In this arrangement the aratdars make a lump-sum advance payment, which is adjusted according to the value of products at the time of delivery. The main benefit for the producers is that this cash advance can be considered as a form of credit with which to buy inputs in situations where going to a formal credit agency may be time consuming or problematic. The price of eggs is generally fixed unilaterally by the aratdars. Although these prices remain close to the prevailing market prices, they are sometimes lower than the prices that prevailed during the immediate past, and are therefore unexpected from the point of view of producers. The basis on which prices are set is not made clear by the aratdars. The producers supply eggs without knowing the price beforehand. The aratdars in Dhaka, through their syndicate, set prices on a day-to-day basis, and the producers just have to accept it. It is often alleged that the aratdars extract an unduly high margin/commission through these practices.

4 Implications of the various contract arrangements for the poultry industry

4.1 Production–marketing contracts

About 600 farm households are involved in production–marketing contracts or the classical type of contract farming under the three enterprises operating such schemes; this accounts for a tiny share of the country's total broiler output market. From the point of view of producers, there is no opportunity to choose among the three operators as they operate in different geographical areas. Thus, there is no

² Aratdars are large traders and one of the basic institutions in the traditional market system. They buy and store products for varying periods of time for temporal arbitrage. In the case of broilers and eggs, the storage period is relatively short as live birds can't be stored for more than a day without incurring extra feed costs and risking loss of weight, and eggs can't be stored for long without risk of spoilage.

Wholesalers are large traders (but smaller than aratdars) dealing with one or more inputs (feeds, drugs, equipment) and/or products (broilers, table eggs). They are licensed full-time traders having fixed business premises in the wholesale market, and they handle a large volume of transactions mainly in bulk. They purchase products from producers and small traders and sell to the retailers.

Output retailers are the smallest traders having permanent stalls in the section of the markets for broiler and table eggs. Input retailers are similar enterprises dealing with one or more inputs; they operate in local markets or convenient places close to producers. They mostly buy products from the wholesalers and sell to the ultimate consumers or users.

competition, as such, with regard to the terms that they offer to prospective participants. There are some differences between the operators in terms of the potential for smallholder farming families or small-scale poultry producers to participate in poultry contract farming as a mechanism to diversify income generation and to achieve some escape from poverty. BRAC is relatively more involved in serving smallholders – the average size of land and poultry flock of its contractees is the smallest among the three operators – while Aftab’s breeder stock farmers are relatively rich.

The main advantage to the producers is an assured outlet for products; other conditions such as production- and price-risk sharing and mode of payment for inputs are variable among the three current operators of this type of contract. However, Aftab’s internally generated insurance scheme has something to recommend it for adaptation by other enterprises – not only in the poultry sector, but also in other commercial agricultural operations. There is no other similar example of an insurance scheme in the agricultural sector providing service to smallholders, though there is much talk about insurance to cover risks in crop and livestock production. Potential risk of avian influenza may limit expansion of this type of contract arrangement in poultry and may also lead to the emergence of terms more favourable to integrators. An insurance scheme of the type being operated by Aftab may be modified to accommodate such high-risk events and allow small producers to remain engaged in the poultry sector alongside large operators.

4.2 Input marketing contracts

A dual structure is emerging in both the hatchery and feed industries: a few large operators are deriving economies of scale and controlling large market shares; they may push smaller operators out of business if policy distortions (cheaper credit, import subsidy on raw materials, tax relief) continue to favour large operators. Continued competition in the industry will be beneficial for suppliers of inputs, input traders and producers, as it will keep prices low and improve the quality of products and services. There is underinvestment in the hatchery industry, so production of day-old chicks is lower than demand. Consequently, to maintain the production cycle producers are required to make advance orders and advance payments at higher prices. Advance payment requirements may also result from the perishable nature of the product, which means that hatchery owners may want to schedule production based on orders and concomitant delivery schedules. Contract farming is supposed to address this imbalance and uncertainty, but it appears that input marketing contracts alone, with input sellers and agents having secondary contracts with producers, are not a satisfactory solution to the problem of uncertainty. The feed industry and the commercial feed market is operating slightly better than the hatchery industry in this respect, perhaps because of less perishable nature of the product; yet there is room for expansion of investment in this industry. Dependence on imported raw materials and uncertain electric supply are, however, major bottlenecks constraining expansion.

4.3 Output marketing contracts

Forward purchase contractors are basically informal money lenders who provide a service in a situation where access to formal credit for small-scale poultry producers is either limited or costly. Asymmetric information on supply, demand and prices, and the market power of buyers derived from this asymmetry are the main problems for producers under this type of contract. Easier access to formal credit at interest rates and terms comparable to larger operators will increase the bargaining power of small-scale producers becoming involved in forward sale contracts. Entry of more formal contract farming operators into the industry, easier access to formal credit, feeds and day-old chicks, and better provision of market information on supply, demand and prices to producers and traders will increase opportunities for producers to choose between input purchase and output marketing options, and also increase the bargaining power of producers even when they have to be involved in informal forward purchase contracts.

5 Problems leading to business failure and the role of contract farming in solving them

A survey among commercial poultry producers conducted by Jabbar *et al.* (2005) indicated two fairly common features of the poultry industry: some farms changed from broiler to layer farming or vice versa, while others dropped out of the poultry business altogether. A similar pattern was observed during a more recent survey (Jabbar *et al.*, 2007). Change from one type of poultry farming to another indicates that producers respond to anticipated market opportunities and are able to adapt their fixed infrastructure easily or quickly. Many reasons may contribute to the business failures that cause producers to drop out of the business altogether.

In order to understand the causes of business failure and dropping out of poultry farming, a survey was conducted during July–September 2007 among 140 poultry farms in five districts namely – Gazipur, Kishorganj, Jamalpur, Bogra and Rangpur – which have concentrations of commercial poultry farming. As there was no list of the farms that had dropped out of business, purposive sampling was used to select farms for interview. The thanas or subdistricts within each of the selected districts were visited and “drop-out” farms were identified by talking to feed and output traders, DLS staff and other key informants. The interviewees were asked a direct question about the reason(s) for dropping out of the business. The survey also included some additional information to elucidate the nature of the business and its management – including flock size, duration of the business, sources of input supply and veterinary services, training in poultry farming, quality of the poultry houses, feeding and management practices, and the types and skills of labour employed. This information was used to assess possible links between the stated reason(s) for dropping out and the technical and financial management of the business.

Eighty-four percent of the sample farms raised broilers, while the remainder raised layers. These farms were in business for an average of 3.6 ± 2.6 years: 3.1 ± 1.9 years for broilers and 6.3 ± 4.0 years for layers. Forty-six percent of the layer farms operated for more than seven years before dropping out, while 61 percent of broiler farms dropped out within three years of establishment (Table 4).

Table 4. Duration of operation of sample broiler and layer farms before dropping out

Duration of business (years)	Enterprise type		Both
	Percentage of broiler farms	Percentage of layer farms	Percentage of all farms
1	23.7	9.1	21.4
2	19.5	13.6	18.6
3	18.6	9.1	17.1
4	16.1	4.5	14.3
5	11.9	13.6	12.1
6	6.8	4.5	6.4
7+	3.4	45.6	10.1
All	100.0	100.0	100.0

Source: Field survey 2007.

A summary of the interviewees’ reported reasons for dropping out of business is presented in Table 5. Most respondents gave multiple answers, so the percentages do not add up to 100. It appears that inconsistency between input and output prices, several problems related to the supply and price of day-old chicks (the basic material for the broiler industry), shortage of capital, high mortality and low productivity, low local demand for products, and difficulty in accessing distant markets are the major reasons that led to business failure and eventual dropping out of the business. All the stated reasons for dropping out of business were found to be enterprise neutral (i.e. there was a similar pattern among broiler and layer farms). They were also scale-neutral: for each stated reason or combination of

reasons for dropping out, there was no significant difference between the scale of operation (measured by installed capacity and actual number of birds raised or flock size) of those giving the reason and those not giving the reason (but who might have given another reason). No systematic technical and management problems could be associated with the stated reason(s) for dropping out, except that some associations between high mortality and low productivity could be discerned, which had implications for contract farming type market institutions.

Table 5. Causes of dropping out of poultry farming as reported by a sample of farms

Perceived main reason(s) for dropping out	Percentage of the sample
Input price higher than output price/lower price of output/output price not remunerative	81
Problems related to day-old chicks:	
High prices	63
Desired quality not available	51
Timely supply not available	34
Adequate quantity not available	31
Shortage of capital	60
High mortality of birds	47
Low productivity of birds	43
Low demand for products in local market	33
Moved into other business	29
Disagreement among family members/partners	26
Difficult to sell in distant markets	17

Source: Field survey 2007.

Sixty-six (47 percent) of the sample of 140 drop-out farms gave high mortality leading to unsustainable losses as the main reason for dropping out of business. Among these 66 respondents, 61 percent had had no formal prior training in poultry farming, compared to 81 percent among those who did not give high mortality as a reason for dropping out. Among those who gave high mortality as a reason for dropping out, 42 percent derived their technical knowledge about poultry farming from observing and talking to neighbours, 21 percent from traders of day-old chicks and feeds, 17 percent from drug suppliers or agents of pharmaceutical companies, and 20 percent through trial and error or other means. The corresponding percentages for those who did not give high mortality as a reason (but might have given another reason) were 31, 42, 16 and 11 percent. Thus it appears that lack of proper knowledge of commercial poultry farming, and derivation of such knowledge from amateur or unprofessional sources, was a major reason for high mortality and consequent business failure.

Sixty (43 percent) out of 140 drop-out farms gave losses arising from low productivity of birds as the main reason for dropping out. Of these 60, 75 percent said they did not obtain supplies of day-old chicks on time, 70 percent said they did not get the desired number of day-old chicks, 97 percent said the quality of day old chicks was low to average, and 89 percent said they had low/average satisfaction with the quality of purchased veterinary drugs. The corresponding percentages for those who did not give low productivity as reason for dropping out (but might have given another reason) were 60, 50, 75 and 63 percent. Thus, problems with the supply of day-old chicks and of quality drugs appeared to be a major reason for low productivity leading to losses and failure of the business, although other reasons could also have played some role.

These are the types of problems (especially those related to reduction of input and output price uncertainty and assurance of a remunerative return for all parties through timely and adequate supply of good quality inputs to produce quality output and reduce mortality) that are ideally addressed by contract farming-type market institutions. In the Bangladesh context, contract farming currently covers a tiny share of the industry, so there is wide scope to expand this type of market organization for the mutual benefit of producers, hatchery owners, feed manufacturers and integrators, and to promote the stable growth of the industry.

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