

DOES CONTRACT FARMING IMPROVE PRODUCTIVITY AND INCOME OF FARMERS? A REVIEW OF THEORY AND EVIDENCE

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ABSTRACT

The share of agriculture in the gross domestic product of (GDP) in many countries has been declining. Yet agriculture still plays an important role in many developing country economies as the sector is a source of employment for an estimated 60 to 70 percent of the population in most developing countries. Most agricultural production in developing countries is associated with low productivity and poor income due to high dependence on subsistence farming with minimal technology as well as poor access to markets. Contract farming is believed to improve productivity and income because it facilitates coordination between farmers and other actors in terms of production, processing and marketing of agricultural products. The effect of contract farming on income and productivity has been a subject of increasing research but most of the available information is aggregated and there is lack of detail analysis on the mechanisms of the effects. We conduct an in depth analyses of relevant published literature and present evidence on the effect of contract farming on farmer productivity and income. We argue the existing approach to the analysis of the impact of contract farming is too narrow. We develop a framework for a more detail analysis.

JEL Classifications: Q12, Q18

Keywords: Contract farming, productivity, income, farmer

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1. BACKGROUND

We examine the literature and evidences of the impact of contract farming on productivity and income of farmers. Theoretically contract farming is expected to improve the income and productivity of farmers because of risk minimization, access to market and economies of scale (Simmons, 2002). We present evidence that studies that did not present hard facts with data on outcome often tend to report the influence of contract farming on productivity and income of farm households as positive while the evidence from studies with data is inconclusive. The inconclusiveness is possibly due to different factors including models of contracts, production scales, and types of products among others.

There are several definitions and concepts on contract farming in the literature. Contract farming can be identified as an agricultural production implemented based on an agreement between farmers and a buyer with given conditions in production and marketing of the product (Minot, 1986). Contract farming is a linkage between local farmers and agribusiness firms and association with the local authority (Neocosmos & Testerink, 1985). Contract farming is a production system, in which small and large scale farmers participate in and involve formal or informal agreements with agro-industrial enterprises (Ayako, 1989). Contract farming may be described contract farming as an agreement between farmers and processing and/or marketing enterprises in terms of production and provision of farm products according to forward agreements at given prices (Eaton & Shepherd, 2001). Contract farming is a term that mentions the status, in which farmers grow and supply agricultural products for an integrated enterprise according to a forward agreement (Dhillon & Singh, 2006). Contract farming is a forward agreement, which indicates the responsibilities of farmers and purchasers as counterparts in business (Will, 2013).

Theoretically these benefits accrue to farmers in various ways as follows. Transaction costs reduction because purchasing products on an open market was higher screening and selection costs for contractors compared to involving contract farming because they can influence the production process. Other forms of cost/risk reduction can be achieved in terms of (i) market access, (ii) access to capital, technical assistance. Under contract farming, the problem in market access was transferred to agribusiness firms because they can open markets for products of producers. Contract farming can also solve uncertainty issues of prices because contractors often pay to farmers with the same or higher prices comparing to market prices (Singh, 2002). Farmers take some advantages such as market knowledge and experience, information integration and legal

expertise. In addition, information regarding markets, plantation and harvesting procedures and product quality management was mentioned clearly in the contract between parties. With contract farming, producers can access capital at lower or reasonable interest rates to invest for their production. Contract agreement involves as a tool that allows farmers access credit from local sources (Simmons, 2002). Farmers participate in contract farming due to technical support and information transfer from the firm. To satisfy quality and quantity requirements in production, processing firms introduce and transfer technical supports to producers (Eaton & Shepherd, 2001). Through contract agreement, producers may learn more skills and knowledge relating to the efficient use of resources, methods of input using, record keeping, the significance of product quality and characteristics of different markets. These contribute to improve productivity of agricultural production (Eaton & Shepherd, 2001). Income stability has a valuable contribution not only to improve livelihood of farm households but also reduce poverty in the rural areas. Majority contract farming creates more welfare and higher income to farmers, at least in the short run (Little & Watts, 1994; Sriboonchitta & Wiboonpoongse, 2008; Guo & Jolly, 2009; Man & Navi, 2010; Miyata et al., 2009; Saigenji & Zeller, 2009; and Tuan, 2012).

While farmers enjoy benefits there are some dark sides to contract framing and these apply mostly to the contractors. Some of the negatives of contract farming as listed as follows. Risks in contract farming can occur due to farmers' decisions. For example, the third party can pay higher prices compared to contracted prices and farmers neglect contracts and are willing to sell products without permission of contractors. Rising transaction costs occurs when the number of individual famers rises and this leads to increasing transaction costs because firms need to invest more on personnel, controls and monitoring systems. Another issue of contract farming is wrong use or reselling inputs supplied by the contractor. Farmers can get mistakes in terms of using resources in production activities or resell them to gain cash. Rising costs of support services occurs because sometimes contractors must cover the cost of support services, namely extension, transportation, quality monitoring and financial services. One more challenge of contract farming is loss of flexibility to seek substitution products. If the economic situation changes, it is difficult for contractors to look for alternative raw materials under contracts. Contractors can neglect contractual terms if the market situation changes. For example, if market prices of products at delivery time are lower than contracted prices, then contractors request renegotiation or reject product procurement. Farmers often out of reach or are very costly to check quality regulations of contractors. Contractors may avoid transparency in the price determination of the contract. As a result of this, it is difficult for farmers to indicate whether they receive payments and farmers become passive partners in conducting farming activities. Contractors can affect contracted prices via adjusting schedules of product delivery. If market prices of products volatile, contractors can change delivery schedules to gain benefits. Increasing risks associated with monoculture practices also in a challenge of contract farming. Production with single agricultural crops or focusing on animal herds can develop the chances of diseases. Occurrence of indebt risks rises. Increasing the possibility to credit access can lead to indebt problems of farmers (Dorward et al., 1998; Key & Runsten, 1999; Eaton & Shepherd, 2001; Dorward, 2001; Kirsten & Sartorius, 2002; Simmons, 2002; Masakure & Henson, 2005; Silva, 2005).

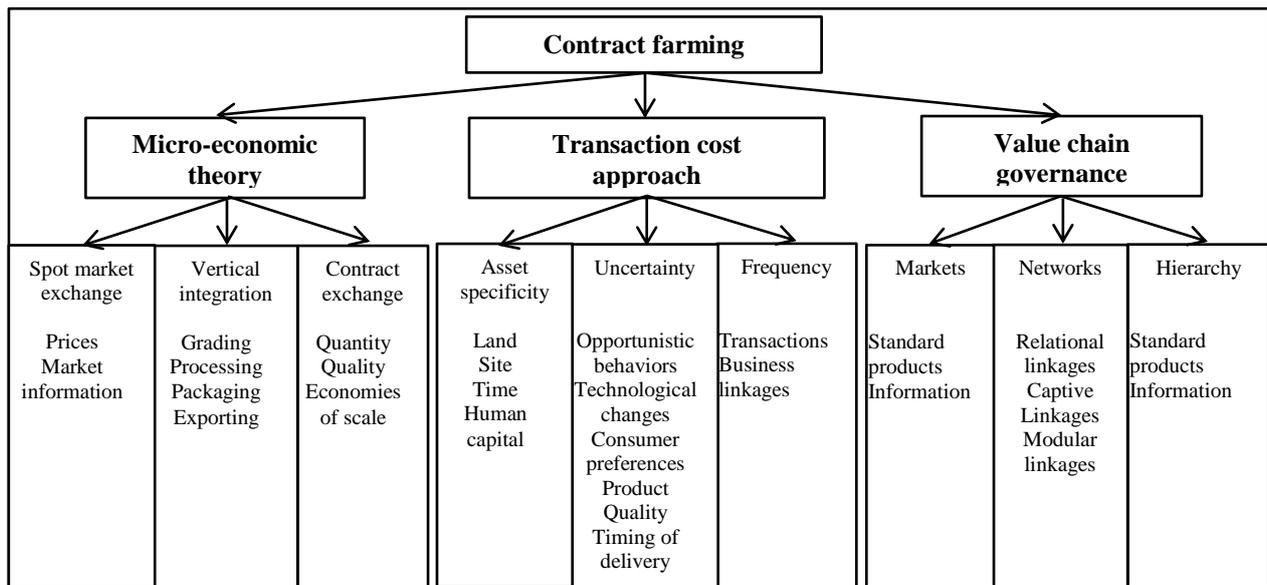
2. THEORETICAL PERSPECTIVES OF CONTRACT FARMING

Minot (1986) developed a micro-economic theory on contract farming by indicating three distinct types of coordination mechanisms between farmers and purchases of farm products, including spot market exchange, vertical integration and contract exchange.

In terms of spot (open) market, he commented that this market coordination is succeeded because of the price factor and in this case, prices reveal a central role in supporting sellers and buyers to adjust their transactions towards the equilibrium point of the supply and demand. In addition, he argued that majority markets for agricultural commodities are imperfect due to lack of perfect information. As a result of this, farmers can be assumed to gain maximum profit with given information, skills and resources. Therefore, Minot indicated that the most serious problems of small farmers in production are resources and markets assess.

Vertical integration is the second type of market coordination, which can be achieved by emerging two or more successful functions in the same firm. Based on the above definitions and classification we summarized the approaches in contract farming in Figure 1 as follows:

FIGURE 1. APPROACHES IN CONTRACT FARMING



Source: Authors, 2015

Micro-economic Theory

There are some benefits obtained from this model through integrating farming with other operations such as grading, processing, packaging and exporting. Hence, vertical integration is the most suitable for crops that grown in long seasons, require accurate supply time, complicated markets and specialized inputs. A limitation of vertical integration in agriculture is scale complementarity shortage. Actually, some crops are appropriate when they were produced in a small scale and require labor intensive and it is so difficult to emerge them with large scale processing or exporting enterprises. However, vertical integration is a solution for the market failure issue since it encourages information flows regarding production and providing financial and technical resources. The following vertical coordination category is contracting. This requires a high coordination but a low scale complementarity. This coordination can be applied perishable, processed and/or exported agricultural products, which have huge input requirements, labor intensive as well as economies of scale in processing/marketing (Minot, 1986).

Vertical integration through contract farming can be a way to reduce costs firms must face. Contract farming provides the firm with better certainty in terms of the quality and quantity of products. This also limits uncertainty by establishing a guaranteed marketing chain for farmers and reduces difficulties in their livelihood. Furthermore, it encourages farmers to invest more in their production due to credit provision and marketing channel assurance. Finally, it promotes repeated exchange between farmers and contractors (Prowse, 2012).

Transaction Cost Approach

Apart uncertainty of the firm, another factor should be considered is exchange transactions on a market and transactions within a firm are treated differently by regulations of the Government. There is an assumption that firms exist in the exchange economy which directed by the price mechanism. A firm becomes larger if they have more additional transactions organized by the entrepreneur and in contrast, it becomes smaller when abandoning the organization of such transactions (Coase, 1937).

Transaction costs contribute to market failure because of lack of exchange reduces production and innovation and increases poverty. In addition, transaction costs are clearly in imperfect markets such as agricultural markets in developing countries. Transaction costs are indicated through three transaction features, namely uncertainty, asset specificity and frequency of exchange (Williamson, 1979).

Contract farming can be explained by applying Transaction Cost Economics and which is a component of New Institutional Economics (NIE). According to NIE, transactions between stake-holders create costs and transaction costs are one of the most appropriate elements to involve transactions (Meshesha, 2011).

Transaction costs of agribusiness firms involve in contract farming include four items such as costs of drafting, negotiating and enforcing contracts; mal-adaption costs; set-up and running costs associated with governance; and bonding costs of effecting secure commitments (Deitrich, 1994, as cited in Simmons, 2002). Transaction costs related to negotiating, reaching and enforcing agreements (Silva, 2005). Bounded rationality is

the initial factor of transaction costs, which refers to differences in information between contracting parties. Opportunism may appear when a party takes advantages in the context compared to another. Asset specificity is the most critical characteristic which mentions sunk costs relating to processing plant, delivery systems, market development or investment protection (Simmons, 2002). The higher degree of asset specificity can lead to the higher the incentive to entering a contract (Meshesha, 2011).

In developing countries, transaction costs in processing and marketing rise because market prices do not reflect real costs and returns (Delgado, 1999). Contract farming may be interpreted as an institutional matter that associated with several factors such as credit, insurance, information and raw materials (Glover, 1987). There are six categories of transaction costs, including search costs, screening costs, bargaining costs, monitoring costs, enforcement costs and transfer costs (Jaffee & Morton, 1994).

Value Chain Governance

Value chain governance can be defined as the term and enforcement of instructions relating to product design, process controls and timing. Governance plays an important role because of greater demand for non-standard products, risk reduction, economies of scale and the availability of sanctions. There are three different forms of economic governance, including markets, networks and hierarchy (Humphrey & Memedovic, 2006).

Due to the complexity of information transmission, three distinct forms of global value chain literature suggested comprise markets, networks and hierarchies (Williamson, 1979). Standard products are frequently transacted through markets because they do not require information transferring. However, niche or highly-differentiated products are transacted via networks or hierarchies depend on the competence of suppliers and the availability of information about the quality and characteristics of products (Prowse, 2012).

Network coordination can be implemented in three forms, consisting of relational linkages (strategic partnerships with a degree of inter-reliance), captive linkages (small upstream are reliant on larger downstream buyers), and modular linkage (the customization of products occurs without substantial interactions or investment in specific assets) (Humphrey & Memedovic, 2006).

3. METHOD AND DATA

This paper was conducted based on the secondary data from several studies. The majority of chosen studies to review were conducted in developing countries in the world where contract farming was developed in different agricultural products, namely rice, soybean, tea, dairy, poultry, hog, vegetables and so on. On the other hand, contract farming in developed nations has also been mentioned to figure appropriate lessons. In each study we effort to analyze the major information relating to products, places, findings and impacts of contract farming on productivity and income of farmers. All of studies are searched in the Internet from different sources such as World Development Journal, Elsevier and Science Direct. First of all, studies are searched by writing a key word "contract farming". Secondly, from the list of these studies, we choose studies which refer to the influence of contract farming on productivity and income of farmers. Finally, there are totally 36 studies from several countries in the world which are selected to review, in which 11 studies on the impact of contract farming on productivity and 25 ones mention effects of contract farming on income of producers.

4. RESULTS: CONTRACT FARMING, PRODUCTIVITY AND INCOME

Effects of Contract Farming on Productivity

The comparison in productivity and production costs of different products should be implemented to identify the impact of contract farming on production activities of independent and contract farmers.

Productivity of contract farmers is higher than that of independent farmers. In Shandong province, China, productivity of green onions of both independent and contract farmers is nearly the same and it is non statistical. However, productivity of apples of contract farmers is higher than that of independent ones by 28 percent at the 1 percent of significance. This difference can be explained by greater labor productivity and land productivity of contract famers. The gap of dairy yield between contract and non-contract producers in Rajasthan, India is 0.3 liter/in-milk animal/day since size of landholding, size of land per capita and the number of in-milk cows and buffaloes are greater than those of independent farmers. The difference in rice yield between contract and independent farmers in Lao PDR is nearly 700kg because contract producers have more planted area, production capital and assets compared to non-contract farmers. In terms of production costs, contract farmers spend higher costs compared to their counterparts except apple production in Shandong, China because they need to invest greater levels based on the requirement of contract farming (Table 1).

TABLE 1. COMPARATION IN PRODUCTIVITY AND PRODUCTION COSTS BY PRODUCTS

Products and Countries	Productivity		Production Costs	
	Independent Farmers	Contract Farmers	Independent Farmers	Contract Farmers
1. Shandong province, China (Miyata et al., 2009)				
- Apples	37,533 kg/ha	47,966 kg/ha	7,265 Yuan	6,314 Yuan
- Green onions	56,951 kg/ha	56,124 kg/ha	827 Yuan	1,331 Yuan
2. Milk in Rajasthan, India (Birthal et al., 2008)	9.30 l/in-milk animal/day	9.00 l/in-milk animal/day	8.58 Rs/l	8.86 Rs/l
3. Rice in Lao PDR (Setboonsarng et al., 2008)	2,603 kg/ha	3,272 kg/ha	920 Kip/ha	1,474 Kip/ha

Source: Authors calculated based on studies, 2015

Note: Information on brackets mentions authors and published years.

All of studies argue that productivity of farmers can be increased by using contract farming, in which two studies claim that the impact of contract farming on productivity is a significant increase, four papers assess the impact level is a moderate increase and the rest (five studies) conclude that the effect of contract farming on productivity is a slight increase (Table 2).

TABLE 2. STUDIES ON EFFECTS OF CONTRACT FARMING ON PRODUCTIVITY

Authors, Products, and Places	Findings	Impacts on Productivity
Ahearn et al. (2002) Agricultural products in the US	An increase in contract farming led to rising total factor productivity (TFP).	+++
Paul et al. (2004) Agriculture in the US	The value of marketing and production contracts were associated with greater productivity.	++
Minot (2007) Agricultural products in developing countries	Contract farming can also assist small farmers in raising their productivity.	+
Key & McBride (2007) Hog in the US	An increase in the contract use can play an important role in raising total factor productivity.	+++
Olomola (2010) Cotton, ginger, rice, soybean and tobacco in Nigeria	Main benefits of farmers in contract farming included improvement in productivity and profitability.	+
Begum et al. (2012) Poultry in Bangladesh	Contract farms were more efficient than independent farms.	++
Ajao & Oyedele (2013) Tobacco in Oyo state, Nigeria	Specific policies should be promoted for improving farm efficiency and achieving maximum productivity.	++
Nakano et al. (2014) Rice in Tanzania	Households who adopting the System of Rice Intensification (SRI) gained a higher productivity and profitability than their counterparts.	+
Kalimangasi et al. (2014) Cocoa in Kilombero and Kyela districts, Tanzania	Benefits of smallholders from contract farming included credit access, timely purchase, timely payment, production quantity increasing and labor training.	++
Swain (no date) Hybrid paddy in South India	Contract farmers gained a higher productivity in growing contract crops compared to non-contract ones. With non-contract crops, independent farmers achieved a higher productivity than contract farmers.	+
Saigenji & Zeller (2009) Tea in Moc Chau district, Son La province, Vietnam	Contract farming of tea production in Moc Chau district provided a higher technical efficiency and slightly higher income to households.	+

Source: Authors, 2015

Note: +++: significant increase

++: moderate increase

+: slight increase

In general, studies on effects of contract farming on productivity of different agricultural products were conducted in both developed and developing countries. Both qualitative and quantitative methods were applied to assess the impact of contract farming on productivity. Some quantitative methods were used included the

Cobb-Douglas production function, the stochastic frontier production function and the Heckman sample selection model. Draw backs of some research comprised the lack of quantitative methods and information on production scale of producers. Another weakness of some studies is appeared due to the Cobb-Douglas production function application. This production function, especially in the linear form, is applicable for small sets of data. To address this problem, the Heckman sample selection model should be applied in estimating the technical efficiency of producers. There are two stages of estimation with the Heckman sample selection model, including one associated with the presence of technical efficiency and the other relating to a conventional random error.

Effects of Contract Farming on Income

We compared the income of farmers by different products in some countries in Table 3.

TABLE 3. COMPARATION IN INCOME OF FARMERS BY PRODUCTS

Products and Countries	Income	
	Independent Farmers	Contract Farmers
1. Honey in South West Ethiopia (Meshesha, 2011)	ETB4,678.7/year	ETB13,165.2/year
2. Peanuts in Senegal (Warning & Key, 2002)	FCFA6,692,100/ha/year	FCFA8,918,325/ha/year
3. Shandong province, China (Miyata et al., 2009)		
- Apples	YUA17,361/year	YUA20,119/year
- Green onions	YUA1,119/year	YUA2,751/year
4. Tea in Moc Chau district, Son La province, Vietnam (Saigenji & Zeller, 2009)	VND23.54/capita/day	VND28.08/capita/day
5. Rice in Lao PDR (Setboonsarng et al., 2008)	Kip1,751,000/ha/year	Kip2,924,000/ha/year

Source: Authors calculated based on studies, 2015

Note: Information on brackets mentions authors and published years.

Income in honey production of contract farms in South West Ethiopia is higher than that of non-contract farms nearly 3 times at the 1 percent significance because of the influence of different factors, namely the number of hives or bee colonies owned, the number of family members participating in contractual production, the moisture content of the honey and land size owned of the household. In terms of peanut production in Senegal, the income of contract and independent farms reaches FCFA6,692,100 and 8,918,325 per hectare, respectively. The difference may be explained by greater labor endowment per cultivated area, greater value of agricultural equipment per cultivated area and larger cultivated area of contract farms. The income of contract farms in apple and green onion production in Shandong province, China is higher than those of independent producers. Although their per-unit input costs are higher, the higher prices obtained leads to higher gross margin. Higher prices received by contract farmers reflect the higher quality of products in the contract. Moreover, good soils and adequate rainfall in Shandong province are significant factors that satisfy the requirements of Japanese and South Korea markets. Regarding tea production in Moc Chau district, Son La province, Vietnam, contract farms earn higher income compared to non-contract farms since they have more experience in tea plantation and the impact of contract farming. The income of contract farms in rice production in Lao PDR is higher than that of independent ones by 1,173 Kip/ha because they have better access to inputs and credit, they tend to diversification in their production. Therefore, the contract arrangement becomes an important tool to facilitate the transition of small farmers from subsistence to commercial production (Table 3).

Almost studies argue that farmers' income may be rose because of implementing contract farming, in which four studies claim that the impact of contract farming on farm households' income is a significant increase, ten studies assess that the impact of contract farming is a moderate increase and eleven conclude that the impact is a slight increase. There is only one research evaluates the influence of contract farming on farmers' income either increase or decrease based on specific situations (Table 4).

TABLE 4. STUDIES ON EFFECTS OF CONTRACT FARMING ON INCOME

Authors, Products, and Place	Findings	Impacts on Income
Glover (1984) Agricultural products in developing countries	Contract farming improved access to technology and, markets.	+
Burch et al. (1990) Agricultural products in Australia	Economic risk reduced but farmers lost power by depending processing companies.	+
Porter & Phillips-Howard (1997) Barley in Nigeria and South Africa	Contract farming posed problems for many disadvantaged groups in rural of Africa.	+
Warning & Key (2002) Groundnuts in Senegal	The Arachide De Bouche (ARB) program provided a significant increase in incomes of contract farmers.	++
Birthal (2005) Vegetables, broiler and milk in India	Improve farm profitability.	++
Simmons et al. (2005) Poultry, maize and rice in East Java, Bali and Lombok in Indonesia	Increased returns to capital for the seed corn and broiler contracts.	+
Dhillon & Singh (2006) Agriculture in Punjab, India	Mixed outcome for both contract and non-contract farmers.	+/-
Ramaswami et al. (2006) Poultry in India	Benefits of contract growers included lower risk and higher expected returns.	++
Nagaraj et al. (2008) Baby corn and chilly in Karnataka, India	Net returns of domestic contracts were higher than that of foreign contracts for both crops.	+
Birthal et al. (2008) Dairy in India	Contract farming was more profitable.	++
Setboonsarng et al. (2008) Rice in Lao PDR	Contract farming was more profitable.	++
Guo & Jolly (2009) Fruit and vegetables in China	Prices were stabled.	+
Bolwig et al. (2009) Coffee in Uganda	Improved revenues for producers.	+++
Miyata et al. (2009) Apples and green onions in Shandong province, China	Contract farmers earned more income (higher margins) than their counterparts.	++
Barrett et al. (2011) Agricultural products in Ghana, India, Madagascar, Mozambique and Nicaragua	Higher estimating impacts on welfare.	++
Jones & Gibbon (2011) Organic honey in South West Ethiopia	A positive significant effect on household income.	+++
Cahyadi & Waibel (2012) Organic cocoa in Uganda	Higher net income of cocoa households Income reached 100 percent (0.70 log points).	+++
Oil palm in Indonesia Bellemare (2012)	Had a positive effect on farmers' income.	++
Oil palm in Indonesia Wainaina et al. (2012)	Net increase in household income.	++
Poultry in Kenya Abebe et al. (2013)	Net increase in household income.	+++
Potato in Ethiopia Girma & Gardebroek (2014)	Net increase in welfare.	+
Organic honey in Southwestern Ethiopia Narayanan (2014)	Sale prices higher than those in local markets.	+
Gherkins, papaya, marigold and poultry in Southern India Saigenji & Zeller (2009)	Contract farmers better off.	+
Tea in Moc Chau district, Son La province, Vietnam Tuan (2012)	Net increase in household income.	++
Peanuts in Nghe An province, Vietnam Wang et al. (2014)	Had practical field support or through policy advocacy.	+
Safe vegetables in Northern Vietnam	There was a positive effect of direct sales between farmers and consumers on farmer income.	+

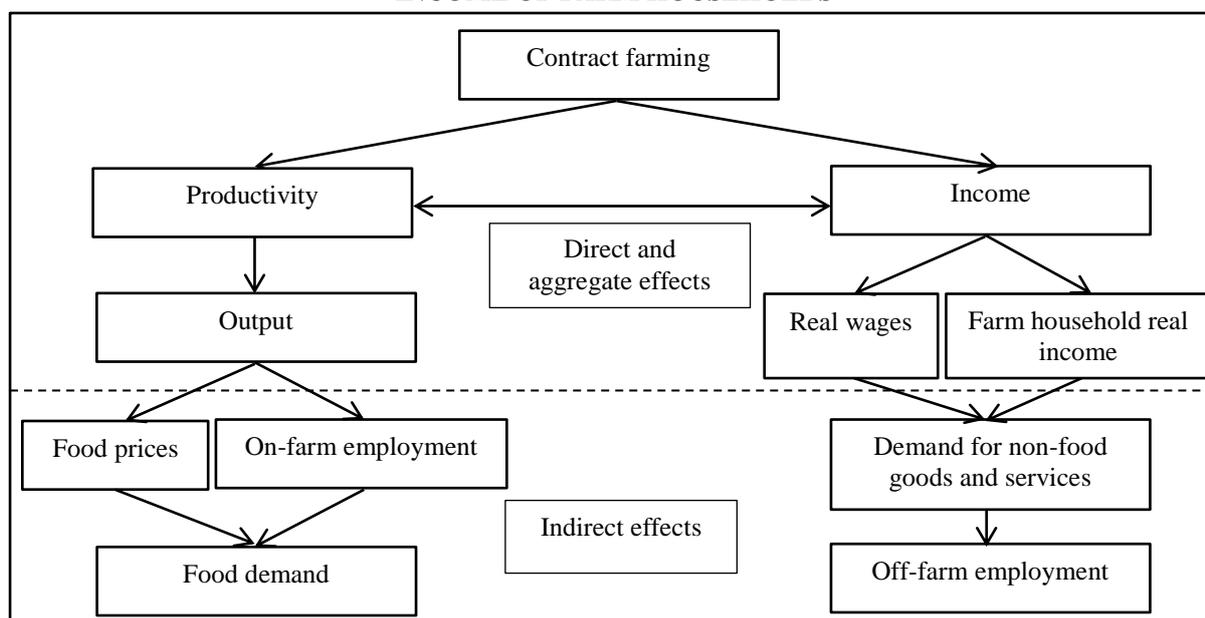
Source: Authors, 2015

Note: +++: significant increase ---: significant decrease
++: moderate increase --: moderate decrease
+: slight increase -: slight decrease

In general, these studies mentioned above focus on assessing the influence of contract farming on farmers' income in both developed and developing nations. Several agricultural products are selected to study. Both qualitative and quantitative methods are applied in these papers. Qualitative methods often concentrate on descriptive statistics. In terms of quantitative methodologies, two stages model is the most popular manner is applied by authors in estimating the effect of contract farming on producers' income or welfare. In the initial stage, the logit or the probit model is used to estimate the participation decision of farmer in the contract. However, the presence of unobservable variables (e.g. managerial skill, etc.) becomes the most issue which leads to bias estimation. To deal with this problem, the second stage in the standard treatment effects model is necessary to estimate the influence of contract farming on households' income based on using different tools such as the instrumental variable, the propensity score matching and so on. Almost studies argued that contract farming benefits farmers, especially small households in developing countries. Major weaknesses of these studies include the lack of quantitative methods and information on production scales of producers.

We proposed the framework in Figure 2 for the analysis of the impact of contract farming on farmer's productivity and income.

FIGURE 2. THE RELATIONSHIP BETWEEN CONTRACT FARMING, PRODUCTIVITY AND INCOME OF FARM HOUSEHOLDS



Source: Adapted based on Schneider & Gugerty, 2011

The influence of contract farming on productivity and income of farm households is summarized in the Figure 2. Actually, there are different effects of contract farming, namely direct effects, aggregate effects and indirect effects. These effects, sometimes, are very complex and it is really difficult to explain. The contract affects productivity by rising output of producers and as a result of this, food prices might be reduced. This can lead to a decrease in income of producers. However, with lower prices, farmers can increase the volume of products sold to markets. On the other hand, the decline of food prices can reduce expenditures of farm households on food which they must purchase in the market. By contrast, an increase of output may facilitate the expansion of on-farm employment, especially in developing countries. As a consequence of these, both food demand and income of farmers go up. Income of farmers rise and this leads to the increase of real wages and farm household real income and these encourage the development of demand for non-food goods and services. Finally, more and more off-farm employments can be created in the society. Therefore, it is very difficult to implement an independent assessment on the impact of contract farming on productivity and income of farm households. It is necessary to examine the impact of contract farming in association with the influence of different socio-economic factors (Figure 2).

5. DISCUSSION AND CONCLUSION

Contract farming provides both opportunities and challenges to the farmer, especially in developing countries. Impacts of contract farming on productivity of producers can be conducted by direct or indirect ways, which depends upon different factors such as types of products, production scales, weather conditions, technical skills,

managerial ability and so on. On the other hand, almost studies indicate that contract farmers earn a higher income compared to independent ones.

The majority of studies on effects of contract farming on productivity and income of farmers are conducted in the short term and obviously, conclusions are proposed for a short run. However, the long term impact of contract farming on productivity and income of producers are still ambiguous.

Contract farming benefits either large or small holders in their production. In general, agribusiness firms prefer to work with larger farmers, but most will deal with whoever is available, even though they are small households. Some companies choose working with small farmers because of the following reasons: (1) the area is suitable for production conducted by small farmers; (2) the local government encourages the firm to cooperate with small producers; and (3) small holders may have lower costs of production than large ones because they accept lower prices or greater shares of risk (Glover, 1984).

There are several reasons that explain small holders participate in the contract. The initial reason is they can access to markets where high transaction costs as a big issue that prevents the access of small producers. Subsequently, small farmers enter the contract since they may access a cheap credit. The third reason of participating in the contract is small farmers can gain services for managing on-farm risk. In developed countries, farmers can implement three methods to manage risks, including productive diversification, saving and borrowing adjustment and crop insurance policies. However, risk bearing is still a problem of small farmers in developing countries. The last reason of joining the contract of small farmers is they may obtain information on extension, logistics and marketing at lower costs (Simmons, 2002).

The failure of contract farming occurs in some countries in the world, especially in developing countries due to several causes. One of these reasons is an unequal relationship between contractors and farmers in making the contract. In this case, firms use their advantages in production and marketing to exploit the farmers by manipulating the clauses of the contract according to their directions. Farmers are crowd in the quantity, but they have no legal status. Moreover, farmers often operate separately or without organization. As a result of these, farmers must accept contents in the contract offered by contractors.

There are numerous advantages for farmers when they participate in the contract. The uncertainties associated with input availability, quality and costs can be reduced since they are provided by agribusiness firms. Farmers may obtain technological assistance offered by the enterprises, especially in high value crops and livestock. Farm production and managerial skills are facilitated by the technical assistance which can encourage farmers to produce non-contracted agricultural products. The uncertainty and the transaction costs in searching markets are decreased. The variation of sale prices can be reduced because the contract may guarantee a stable price for partners and this leads to income stability for farmers. As a consequence of this, product and market risks can be reduced. Another benefit for farmers in the contract is credit access because producers can borrow the capital with lower interest rates or gain input provision offered by a resource provision contract.

Farmers also must face different issues in contract farming. The first issue is firms may abundant contractual terms if market situations change or other conditions for opportunistic behaviors arise. The dependency of producers on a prescribed technology recommended by contractors and this can lead to productivity manipulation. Delivery schedules can be established by firms so it influences prices paid to farmers. Complex formulas or quantity and quality measurements given by firms are difficulties for farmers to understand. In some cases, enterprises try to avoid transparency in the price determination. Farmers can lose flexibility after participating in the contract and they can also lose linkages with former transaction partners. Socio-cultural structures in the family or rural communities might be disrupted. The last challenge for farmers in contract farming is the growth of indebtedness.

The influence of contract farming on productivity and income of farmers should be assessed in association with other socio-economic factors in the reality.

The following suggestions should be considered to implementing contract farming. Firstly, improving the investment climate because this helps to reduce unnecessary high capital requirements to start new firms, stream registration procedures, limit licensing requirements to sectors such as public health, food production and so on, and minimize corruption. Secondly, firm-farm contracts should be developed based upon the legal framework. Thirdly, developing effective grades and standards to facilitate communications and negotiations among farmers, traders and buyers and as a result of this, the long term relationship between farmers and purchasers may be improved and maintained. Fourthly, facilitating farmer organizations and other intermediaries such as cooperatives, non-government organizations (NGOs) participate in contract farming to reduce transaction costs. Fifthly, public-private partnerships in extension should be encouraged to provide extension services to producers through the contract. Sixthly, competition should be promoted to expand market power and negotiable ability of farmers. Seventhly, mediation services to deal with violation of the contract might be provided by different organizations such as governmental officials, extension officers and so on. The final solution is the government enforces contracts by indicating rights and duties of parties in the contract and it is necessary to establish different clauses relating to benefits sharing, risk sharing and decision-rights sharing in contract farming.

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