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Impact of Contract Farming with Farmer Organizations on Farmers' Income:

A Case Study of Reasmey Stung Sen Agricultural Development Cooperative in Cambodia

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Abstract

This study examines the impact of contract farming with Farmer Organizations on farmers' income. Contract farming with farmer organizations is a smallholder farmer-inclusive contract farming system. Field surveys were conducted in August 2010 with 75 farmers (including 39 contract farmers) in Kampong Thom province, Cambodia. The analysis—i.e., using a treatment effects model—indicates that contract farming with farmer organizations significantly raises farmers' income. The econometric model and qualitative data show that the contract farming can attribute to an increase of farming productivity, quality of produce and farming cost efficiency.

Key words: Contract farming, Farmers Organization, income, credit, inclusion, Cambodia

1. Introduction

The agricultural sector plays a significant role in developing and least developed countries. The growth of this sector is a significant source for economic growth in many underdeveloped countries (Gollin, 2010). It also has the largest contribution to poverty reduction (Loayza and Raddatz, 2010).

Technology transfer and innovative institutional arrangements, such as contract farming, have been introduced in the agricultural sector. Contract farming in particular is an effective way to transfer technologies to farmers (Glover, 1984). In theory, the institutional arrangement and technology transfer through contract farming improve agricultural production and marketing, that may result in an increase of farmers'income. Some studies indicate that contract farming raises farmers'income (e.g., the study of Birthal et al. [2008], Glover and Kusterer [1990] for the case from contract farming of Alimentos Congelados, S.A. [ALCOSA] in Santiago, Guatemala, Minot [1986], Miyata et al., [2009], and Warning and Key [2002]). These studies showed that contract farming helps smallholder farmers to improve their cultivation and marketing of agricultural produce. Farmers can access agricultural inputs, agricultural equipment and machinery, credit, and technical knowhow (Cai et al., 2008; Glover, 1984; Sethboonsarng, 2008). They can also reduce the uncertainty of their earnings from farming business (Bolwig et al., 2009; Cai et al., 2008; Glover, 1984; Sethboonsarng, 2008).

However, there is much criticism of contract farming in regard to the balance of bargaining power between contracting parties, and, when all factors are taken into account, there are conflicting views as to whether contract farming raises farmers' income. Some studies indicated that contract farming has negative impacts on farmers' income (e.g., Cai *et al.* [2008], Glover and Kusterer [1990] from the case of contract farming of ALCOSA in Chimachoy and Partzicia, and Zola *et al.,* [2007]). Cai *et al.* found that contract

farmers earn lower income than former-contract farmers, the noncontract farmers who used to join the contract. Contractors might execute their power to manipulate the contract by raising the quality standards to control the volume of produce purchased; changing price, or even cheating (Baunann, 2000; Glover, 1984, 1987; Sivramkrishna and Jyotishi, 2008). These manipulations can occur at various levels through the contracting process – as a policy of the contracting firm itself; by individuals in decision making positions, or by lower level employees – or indeed by simultaneously various actors in the process (Glover and Kusterer, 1990). The unequal relationship between parties to the contract, an imbalanced bargaining power (Cai *et al.*, 2008; Eaton and Shepherd, 2001; MacDonald *et al.,* 2004; Sivramkrishna and Jyotishi, 2008; Warning and Key, 2002) and the exclusion of smallholder farmers (Baumann, 2000; Cai *et al.*, 2008; CREM, 2008; Glover and Kusterer, 1990; Key and Runsten, 1999; Sartorius and Kirsten, 2007) are among the negative characteristics of contract farming. Agricultural inputs and credit provision from contractors also contribute to the imbalance of power relations between contractor and farmer, leading to accumulation of debts (Eaton and Shepherd, 2001; Glover, 1984; Glover and Kusterer, 1990).

However, there are suggestions that the presence of farmer organizations in contract farming raises farmers' income and benefits to the farmer. Coulter *et al.*, (1999) suggested that contract farming and farmer organizations could be integrated together well. The study of Key and Runsten (1999) suggested that farmer organizations could increase farmers' bargaining power and reduce the cost of farming business.

This study aims to provide some empirical evidence on the impact of contract farming with farmer organizations on farmers' income with a case study of the Reasmey Stung Sen Agricultural Development Cooperative (RSSADC) in central Cambodia. We firstly overview RSSADC and explain its contract farming system. Secondly, we will examine whether or not the contract farming with farmer organizations raises farmers' income.

Field surveys were carried out by the authors in Kampong Thom province, the central part of Cambodia in August 2010. The authors conducted semi-structured interviews with 39 contract farmers that have contractual relationship with RSSADC and 36 non-contract farmers from the same villages (75 farmers in total). The sample is representative. Informants were selected based on the discussion between authors and local people—one third of interviewees from both contract and non-contract farmers were poor households, one third were average households and another one third were rich households. The authors also conducted interviews with the management committee of RSSADC, middlemen who purchase paddies from farmers, and the village chief.

2. Materials and Methods
2.1 Overview

Cambodia is an agricultural producer country. The agricultural sector makes up 36% of the national economy, which is smaller than the service sector (at 40.7%) and bigger than industrial sector (at 23.3%) (Asian Development Bank [ADB], 2013). Crop production is the dominant sub-sector in agriculture with 54.80% of sector output. Rice production is the dominant crop. From 2003 there was a noticeable increase in production, from under three million matrix tons of rice to 9.30 million matrix tons in 2012 (Ministry of Agriculture, Forestry and Fisheries [MAFF], 2011, 2013). Cassava production is the second major crop with total production of less than one million matrix tons in 2011 and 2012 (MAFF, 2013). Rice is not only a main crop in Cambodia, it is also a primary source of farmers income, is a staple food (more than three quarters of diet intake for average Cambodian is rice), and a strategic agricultural export commodity for the Cambodian government (MAFF, 2013; MAFF & Ministry of Water Resources and Meteorology [MOWRAM], 2008).

Rice farming still largely remains a subsistence farming activity, with low application of fertiliser (Yu & Diao, 2011). Cambodian farmers are smallholder farmers. The average farming households own less than two hectares of cultivating area[1]. Most cultivating areas are rain-fed areas—only 19% of cultivated areas are irrigated areas (MAFF & MOWRAM, 2008). Most soils in rain-fed areas have poor fertility (White, Oberthur & Sovuthy, 1997). Average rice productivity in 2012 was 2.87 matrix tons per hectare (MAFF, 2013). The productivity of study area is lower than national average—yield of contract farmer is 1.65 matrix tons per hectare, yield of noncontract farmers is 1.20 matrix tons per hectare. Apart from low fertile soil, there is

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[1] Based on FAOSTAT, arable land in Cambodia is four million hectares and agricultural population is 9.363 millions in 2011. The ratio of arable land in hectare to agricultural population is 0.43. Based on General Population Census of Cambodia in 2008, average household in rural area has 4.6 persons. Average arable land owned by farmer household is 4.6 persons/household times 0.43 hectare/person = 1.98 hectare of arable land per household.

seasonal flooding in the area. The rice productivity of study area as well as Cambodia's national average productivity is far below world average--4.55 matrix tons per hectare (FAOSTAT). Egypt produced highest rice productivity of the year (9.53 matrix tons per hectare).

Contract farming exists in Cambodia in the form of formal and informal contractual arrangements facilitated by firms, intermediary agents, rice millers, middlemen and farmer organizations. The contract can be coordinated through large scale contracts such as in concession projects, joint venture projects, and outsourcing contract projects (also see in Cai et al., 2008; Zola et al., 2007) as well as through small-scale projects via middlemen and rice millers' contract. The number of farmers who participate in contract farming is significantly increasing (CREM, 2008). The Cambodia's Sub-Decree on Contract Farming promotes and encourages farmer organizations as the preferred modality of contract-based agriculture (Royal Government of Cambodia [RGC], 2011).

2.2 Contract Farming of RSSADC

The RSSADC was established as an autonomous farmer organization in 2003 with initial support from the government funded "Integrated Pest Management Program" (and later supported by the Community-based Rural Development Project funded by the German Society for International Cooperation (GIZ), and the Provincial Department of Agriculture and Provincial Department of Rural Development). RSSADC has 352 contract farmers as its members, in Stung Sen district, Kampong Thom province. The RSSADC is run by an elected steering committee. The General Assembly (the top managerial body) oversees the work of the Board of Directors, the inspection committee and village committees. The Board of Directors is responsible for the overall management of RSSADC business. The Inspection Committee is an internal control unit to ensure accountability and transparency of the Board of Directors. It inspects the compliance of rice cultivation of contract farmers and ensures that procured rice meets contracted quality standards. The RSSADC uses village committees to arrange and coordinate the contract and runs a credit program within each village.

The main business of the RSSADC is purchasing and marketing organic rice. It coordinates the contract with its members, purchases rice from them and sells it to the market. Promotion of shareholdings and a credit program (i.e., mobilizing members to apply collective cash savings and provision of credit services) are parts of its business. The RSSADC also uses these resources to support its rice procurements. Investing members can get benefit from shareholdings (annual dividends) and the credit program (earnings from loan interests).

The RSSADC uses village committees to arrange and coordinate contract farming and to run the credit program at village level. All farmers who own cultivated land regardless of size can join the contract. The contract is made in a written form and on annual basis. At the beginning of cultivating season, the steering committee consults with contract farmers and assesses possible rice production to be contracted. The contract is made after consultation and assessment. The price of contracted rice is set at premium price. The price is 15% higher than the current provincial market price of non organic rice. RSSADC provides contract farmers with packaging bags with individual farmers names identified, so that they can trace and hold farmers accountable over the quality of their produce. If there is any violation of product standard, individual farmers can be traced easily. The RSSADC also covers the transportation cost of produce for contract farmers.

Table 1. Descriptive statistics: comparison of noncontract farmers and contract farmers

Items	Mean		t-Stat.	Std. Error Difference	Sig. (2-tailed)	
	Noncontract farmer (N=36)	Contract Farmer (N=39)				
Age of HH head (year)	55.61	46.90	3.01	2.89	.004	***
Cultivated land (hectare)	2.75	2.40	0.60	.41	.552	
HH labor in agriculture (person)	3.19	3.23	-0.10	.59	.923	
Value of Agricultural equipment (10,000 Riels)	8.90	9.49	-0.43	.38	.671	
Draft animal (head)	3.19	2.92	0.49	1.39	.628	
Credit from RSSADC (10,000 Riels)	0.28	4.23	-2.37	1.67	0.02	
HH agricultural income per annum (10,000 Riels)	228.91	378.77	-2.07	.56	.042	**
HH off-farm income per annum (10,000 Riels)	24.06	44.86	-1.94	72.49	.057	*
Total household income per annum (10,000 Riels)	262.19	458.85	-2.55	10.74	.013	**
Yield (MT/ha)	1.2	1.65	-2.68	0.17	.009	***

Source: Authors' survey in 2010
Note 1) The exchange rate at the time of survey was approximately 1 US dollar = 4,000 Riels
   2) *: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

2.3 Analysis: Treatment Effects Model

Agricultural income, in general, can be attributed by 'productive assets' in every household. Warning and Key (2002), who studied the impact of contract farming on income, defined productive assets as "labor endowment, draft animals, agricultural equipments and cultivated land". To make the data specifically target agricultural income, the labor endowment used in this study specified household labor as labor used for agriculture. Therefore, the agricultural income equation is:

[1] $Y_i = \beta_0 + \beta_1 Land_i + \beta_2 Labor_i + \beta_3 AgriEquip_i + \beta_4 DraftAnimal_i + \delta I_i + \mu_i$, $i = 1, 2…k$

   Y_i: agricultural income;

   $Land_i$: size of cultivated land,

   $Labor_i$: household labor in agriculture,

   $AgriEquip_i$: value of agricultural equipments,

   $DraftAnimal_i$: number of draft animals,

   I_i: Dummy ($I_i = 1$ if farmer participates in contract farming, and $I_i = 0$ if farmer does not participate in contract farming),

   μ_i: error term.

According to Greene (2008), the estimation of δ in equation [1] simply using OLS could lead to an overestimate. In this study, we use a 2-step estimation to correct this i.e., treatment effects model (Greene, 2008). In the first step, the probit model, (equation [2] below), is used to calculate the inverse Mills ratio, λ_i for bias correction caused by the problem of self-selection (Greene, 2008, p. 889).

[2] $I_i^* = \alpha Z_i + \varepsilon_i$

> $I_i = 1$ (participation in contract farming) *if* $I_i^* > 0$, $I_i = 0$ (no participation in contract participation) otherwise

> Z_i: determinants of farmers' decision on participating in contract farming
>
> > (age of household head, household off-farm income, credit from RSSADC, productive assets and farming cost)
>
> ε_i: error term

The second step is to run OLS regression by including λ_i variable (see in equation [3]). There is a correlation of error term in equation [1], μ_i and equation [2], ε_i. The application of treatment effects model in this study uses one assumption for bias correction, i.e., the correlation of μ_i and ε_i is joint normal error distribution. Including inverse Mills ratio, λ_i in equation [1], the OLS regression model is:

[3] $Y_i = \beta_0 + \beta_1 Land_i + \beta_2 Labor_i + \beta_3 AgriEquip_i + \beta_4 DraftAnimal_i + \delta I_i + \beta_\lambda \lambda_i + v_i,$

$i = 1, 2, 3\ldots k$

> Y_i: agricultural income;
>
> $Land_i$: size of cultivated land,
>
> $Labor_i$: household labor in agriculture,
>
> $AgriEquip_i$: value of agricultural equipment,
>
> $DraftAnimal_i$: number of draft animals,
>
> I_i: Dummy ($I_i = 1$: participation in contract farming, $I_i = 0$: no participation in contract farming), and
>
> λ_i: inverse Mills ratio,
>
> β_λ: coefficient of inverse Mills ratio, and
>
> v_i: error term.

3. Results

3.1 Probit model: participation in contract farming

The Probit model is highly significant (Prob. > χ^2 = .0000) and it correctly predicts in 82.67% of observed outcomes (Table 2). In Table 2 we see that the age of household head has a significantly negative association with contract farming participation, while off-farm income is a significantly positive association. The credit from RSSADC is not a statistically significant determinant of contract farming participation. All productive assets like cultivated land, household labor used in agriculture, agricultural equipment and draft animals are not significant determinants of contract participation. This infers that the RSSADC does not exclude either large or small farmers from its contracting scheme. In other words, the RSSADC (and by implication farmers organizations) is an inclusive system.

Table 2. Result of analysis on contract farming participation by Probit model

Variables	Coef.	Std. Err.	Z	P>|z|	
Dependent variable: Contract farming participation (dummy)					
Age of household head (year)	-0.04	0.02	-2.41	.016	**
Household off-farm income (10,000 Riels)	0.01	0.01	2.00	.045	**
Credit from RSSADC (10,000 Riels)	0.05	0.05	1.11	.267	
Cultivated land (ha)	-0.03	0.08	-0.35	.727	
Household labor in agriculture (person)	0.05	0.12	0.41	.680	
Value of agricultural equipment (10,000 Riels)	0.03	0.03	0.91	.363	
Draft animals (head)	-0.16	0.11	-1.44	.150	
Input cost (10,000 Riels)	0.09	0.03	3.11	.002	***
Cost of market search, transportation and packaging (10,000 Riels)	-0.11	0.04	-2.64	.008	***
Constant	0.97	0.86	1.13	.259	
Pearson chi square	119.11				
Prob > chi^2	.0000				
		Predicted			
		1	**0**	**Total**	
	1	32	6	38	
Actual	**0**	7	30	37	
	Total	39	36	75	

Source: Author's survey in 2010
Note 1): The exchange rate at the time of survey was approximately 1 US dollar = 4,000 Riels
    2) *: Significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

However, the data does also shows that the cost of farming business is significant determinant of contract participation. Input cost is positively associated with contract participation. The input cost is the cost of purchasing improved seed, fertilizer (both contract and noncontract farmers normally use compost, animal manure and green manure) and the cost of other production operations such irrigation cost. It means that the more farmers invest in inputs of agricultural production, the more likely those farmers participate in the contract. Contract farmers have a higher quality standard to meet and have more access to credit to help meet the higher quality conditions of the contract (and membership of agricultural cooperatives) so can invest more in farming, but this cost is offset in contract farming by the provision of market research, transportation, and packaging. Contract farmers pay significantly lower cost for market research, produce transportation and packing than noncontract farmers pay. In the contract, RSSADC provides the bags for packaging of contracted produce, the information about market price and covers the cost of transportation for contracted produces.

3.2 OLS model: agricultural income regression

The data in the OLS model is significant (Significant level = .0000), though the adjusted R^2 is .32 due to small sample respondents. Three variables in the model are significant, namely contract farming participation dummy (5% level significant), cultivated land size (1% level significant), and value of agricultural equipments (5% level significant). The Inverse Mills ratio variable is not statistically significant, meaning that the correction of selectivity bias is not significant in this model.

As an impact of contract farming, when farmers accept contract farming with RSSADC, their gross agricultural income increased by 1,924,400 Riels (US$481.10 per annum, as of 2010). The average cost of inputs, market search, transportation and packaging is 220,900 Riels (US$55.23). The net agricultural income of farmers increased by 1,703,500 Riels (US$425.88). Therefore, it can be said that contract farming has a significant impact on farmers' income.

Table 3. Effect of contract farming on agricultural income: OLS results

Variables	Coefficient	Std. Err.	t	P>|t|	
Dependent variable: Agricultural income (10,000 Riels)					
Cultivated land (ha)	52.27	12.98	4.03	.000	***
Household labor in agriculture (person)	5.82	21.15	0.28	.784	
Agricultural equipment (10,000 Riels)	17.02	5.73	2.97	.004	***
Draft animals (head)	-9.29	15.65	-0.59	.555	
Contract farming participation (dummy)	194.43	95.09	2.04	.045	**
Constant	-75.48	92.77	-0.81	.419	
Inverse Mills ratio	-38.66	71.05	-0.54	.588	
F (6, 68)	6.80				
R squared	.38				
Adjusted R squared	.32				
Prob. > F	.0000				

Source: Author's survey in 2010
Note   1) The exchange rate at the time of survey was approximately 1 US dollar = 4,000 Riels
        2)*: significant at 10% level, **: significant at 5% level, and ***: significant at 1% level.

3.3 Discussion

This study finds that contract farming with Farmers Organizations has a significant impact on farmers' income. Contract farmers earn 84.07%[2] greater income than noncontract farmers. This is because the operation of farmer organization is mainly for the profit of farmers who are its members and the owners. It is different from other forms of contract farming in which both firm and contract growers try to bargain for the greater share of the profits. The party that has the stronger bargaining power could gains more while the weaker gains less. Through the examining the system of farmer organizations via the qualitative data, it could be seen that contract farming via farmer Organizations helps contract farmers to strive for a better price for produce and helps create the environment for cost efficiency of farming business.

Farmer organizations can function well in the market or at least function better than individual farmers because they normally have expertise to support their business operations. For example, RSSADC has an inspection committee that acts as its quality controller to assure the procured produce meets the quality standards of its targeted market. Cooperatives also have strong collective bargaining power and strong

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[2] Calculation of the percentage: the increase of income of contract farmers (1,924,400 riels) divided by average noncontract farmer income (2,289,100 Riels) times 100.

business networks. Cooperatives can bargain for good returns of profit through contract farmers' collective business, attracting high returns.

The cost of farming also contributes to the increase in contract farmers' income. (The costs discussed in the probit regression are input cost [the cost of seeds, compost, animal manure, green manure, and irrigation cost] and cost of market search, transportation, and product packaging.) Contract farmers expend higher input cost than noncontract farmers but pay lower marketing cost than noncontract farmers. In production, contract farmers need to prepare their cultivated land based on RSSADC standards (leveling cultivated land), construct the rice field bund to keep appropriate level of water in their field and protect it from inflowing of chemical substance, supply irrigated water as needed, and weed the field. Farmers need to cultivate the designated rice variety supplied by RSSADC. Furthermore, they are required to apply only organic methods (e.g., using compost, animal's manure and green manure for soil fertilization). Only the cost of seed, organic fertilizer (compost, animal manure, and green manure) and irrigation are monetary costs. Farmers use household labor to fulfill other inputs and preparation. Based on Marginal Factor Cost Optimization (see in Cramer, Jensen, & Southgate, 2000), farmers are willing to add their additional cost to obtain their marginal value of the product until it reaches the optimum (i.e., marginal factor cost = marginal value of the product). In this case study, contract farmers were willingly to pay additional cost to obtain the premium price provided by the cooperative. This kind of cost therefore, is for pursuing additional earning by improving the quality of the produce. These input costs also increase rice productivity and yield.

In marketing cost, noncontract farmers expend higher cost specifically in packaging, market search and transportation of produce to market. By contrast, contract farmers pay lower marketing, transport and packaging costs because the cooperative covers these costs or subsidizes the bulk of these costs. The Cooperative provides the packaging for produce that farmers sell to the cooperative. The cooperative also assesses the market price, sets the premium price of rice for contract farmers and make it known to farmers. For transportation, all produce are collected from contract farmers' houses – so there are zero transportation costs to get produce to market.

Noncontract farmers normally face two constraints namely facing high marketing cost and low purchase price from purchasers. Noncontract farmers need to pay the cost of packaging, market research and transportation by themselves. Noncontract farmers are doubly disadvantaged as they normally sell their produce to middlemen. According to the interview with middlemen, the price that they offer to farmers is flexible. The final purchase price depends on how well farmers are able to negotiate. This clearly is advantageous to those who are apt at bargaining and disadvantageous to those who are not, or are the weaker party in the power relationship between seller and buyer. One middleman, said that only about one percent of farmers bargain on the price offered by middlemen. Most farmers simply accept the offered price. This is mainly because they do not know market information as the basis of price negotiation.

Looking at international studies, it is difficult to claim that all contract farming will result in increasing of contract participants' income. There are many cases where contract farmers achieve a higher income than noncontract farmers—e.g., the contract participants in Arachide de Bouche in Senegal (Warning and Key, 2002); the contract participants in dairy contract farming in India (Birthal et al., 2008); the contract participants in apple and green onion contract farming in China (Miyata et al., 2009); and the contract participants in organic coffee contract farming in Uganda (Bolwig et al., 2009); multinational case studies of contract farming (Minot, 1986)—but there are just as many international studies showing that contract farmers have lower incomes than noncontract farmers (e.g., in rice contract farming in Cambodia [Cai et al., 2008]; contract farming of rubber, sugar cane, oil palm, cassava, rice, vegetable, tobacco, cotton in Cambodia in general [Zola et al., 2007]; contract farming of frozen vegetable with Alimentos Congelados, S.A. [ALCOSA] in Chimachoy and Patzicia, Guatemala [Glover & Kusterer, 1990]). Most empirical studies can only show that contract farming provides stronger market linkages for contracted produce and increases farming technical knowhow and inputs.

Farmer organizations alone do not ensure market access for produce like it does through contract farming. However, it does increase farmers' bargaining power—producers can bargain for better returns and business conditions through their association or cooperative. Alene at al. (2008), Glover and Kusterer (1990), Key and Runsten (1999), Key et al. (2000), Ouma et al. (2010) show that cooperatives help farmers to pay low transaction costs and extract high benefits. Farmer organizations strengthen farmers' bargaining power, raise the price of produce, control monopsony exploitation and increase social welfare (Shivramkrishna & Jyotishi, 2008).

There is a good complementarities between contract farming and farmer organizations —contract farming has strength in market assurance, transfer of farming technology and increase of farming inputs, and

farmer organizations increase farmers' bargaining power for better returns. The case study of Reasmey Stung Sen Agricultural Development Cooperative, and the findings of some previous studies such as Coulter et al. (1999) and Baumann (2000) show that contract farming and farmer organizations could be married and complement one another, i.e., through farmer organization's contract farming, farmers could have an assured market for their produce and could possess high bargaining power in the market.

Contract farming with farm organizations is an inclusive contract farming system. Based on the statistical analysis in the probit model, productive assets (namely household labor in agriculture, agricultural equipment, number of draft animals and especially the size of cultivated land) do not significantly determine farmers' contract participation. This infers that small or big farmers can participate in the contract with farmer organization regardless of the size and/or capacity of their productive assets. However, the literatures on contract farming consistently raise the problem of exclusion of small farmers who have small productive assets in conventional contract farming. Cai et al. (2008), Glover and Kusterer (1990), and Key and Runsten (1999) found that firms prefer medium and large scale farmers because contracts are easier to arrange, coordinate, and administer at this scale, and the cost of these transactions is also low, compared with arrangement of contract with smallholder farmers.

Like firms and other types of contractor, farmer organizations' business objective is to make a profit. Firms generally consider working with small farmers as a cost because the management costs are high. Conversely, farmer organizations do not exclude small farmers because it is a farmer-owned entity. The rules of the business are set by the farmers themselves, for their benefit. For example, RSSADC's criteria for farmer selection for its contracts include large and smallholder farmers who have cultivated land, require all farmers to register as a member of cooperative, and require framer agreement comply with the cooperative's farming standards. These criteria do not create a barrier to participation for any farmers. Farmer organizations create the business interface that reduces the management costs of contracts. Farmer organizations considerably reduce the cost of contract arrangement and coordination (Glover & Kusterer, 1990) and transaction cost (Alene et al., 2008; Key et al., 2000; Key & Runsten, 1999; Ouma et al., 2010).

4. Conclusion

Contract farming with farmer organizations increases farmers' income. Contract farming in general assures the marketing of produce while farmer organizations reduce the cost of farming business and provide more bargaining power to farmers that result in higher profits to farmers. Contract farming with farmer organizations helps farmers to get high returns by increasing product quality and targeting market niches. It also includes smallholder participation and access to contract farming opportunities – where smallholder farming is not attractive to contracting firms. The pooling of productive assets of all farmers – small, medium and larger in a farmer organisation is advantageous for contract farming.

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