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MARKET ACCESS, ORGANIC FARMING AND PRODUCTIVITY: THE DETERMINANTS OF CREATION OF ECONOMIC VALUE ON A SAMPLE OF FAIR TRADE AFFILIATED THAI FARMERS

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Abstract
We analyse the impact of Fair Trade and organic farming on a sample of Fair Trade rice producers in Thailand. We find that per capita income from agriculture is positively and significantly affected by organic certification and FT affiliation years. This effect does not translate into higher productivity due to a concurring increase in worked hours. The estimated FT and organic certification contributions are however downward biased if we do not take into account the relatively higher share of self-consumption of affiliated farmers. Our main findings are robust when we control for selection bias and endogeneity with instrumental variables, when using propensity score matching and restricting the sample to affiliated producers only. We also test which of the two (organic and FT) effects is stronger and find that the latter prevails.

Keywords: organic production, Fair Trade, productivity.
JEL Numbers: O18, O19, O22.

1. Introduction

Fair Trade is an increasingly fashionable economic phenomenon aimed to promote inclusion of marginalised farmers with a package of economic initiatives which include improved market access, capacity building, environmental sustainability, export services, price stabilisation and provision of a premium which is used for investment or development of local public goods.[1]

Fair Trade is gradually mainstreaming after having been a niche phenomenon for several years. Between 2006 and 2007, total FT sales registered a 127% increase by volume and 72% by estimated retail value. Growth in Europe has averaged 50 % per year in the last 6 years. Even though Fair Trade has been originated by not for profit importers (called Alternative Trade Organisations or ATOs), the growing consensus of consumers willing to pay for the social and environmental value incorporated in the products has induced traditional corporations to step in. Cooperative supermarkets in the UK and Italy created their own Fair Trade product lines since the '90es, Nestlè launched its first fair-trade product in 2005. Tesco and Sainsbury announced their decision to sell 100% Fair Trade bananas boosting up the UK market share for this product to 25 percent in 2008.[2] On September the 3rd 2008 Ebay launched a dedicated platform (WorldOfGood.com) for Fair Trade e-commerce calculating that the U.S. market for such goods was $209 billion in 2005, and forecasting the rise to $420 billion in 2010.

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[1]   According to IFAT (the main international organisation gathering producers and Fair Trade organizations) such criteria are: i) Creating opportunities for economically disadvantaged producers; ii) Transparency and accountability; iii) Capacity building; iv) Promoting Fair Trade; v) Payment of a fair price; vi) Gender Equity; vii) Working conditions (healthy working environment for producers. The participation of children, if any, does not adversely affect their well-being, security, educational requirements and need for play and conforms to the UN Convention on the Rights of the Child as well as the law and norms in the local context); viii) The environment; ix) Trade Relations (Fair Trade Organizations trade with concern for the social, economic and environmental well-being of marginalized small producers and do not maximise profit at their expense. They maintain long-term relationships based on solidarity, trust and mutual respect that contribute to the promotion and growth of Fair Trade. Whenever possible, producers are assisted with access to pre-harvest or pre-production advance payment).

[2]   For a discussion on competition between fair trade dedicated retailers and supermarkets see also Kohler (2007).

The theoretical literature on FT is expanding in these last years but it finds generally difficult to capture with a single model the variety and multiplicity of FT characteristics.[3]

From a theoretical point of view one of the most controversial issues is the price premium paid to local producers, traditionally seen as a distortion of the market clearing price which risks to send wrong signals leading to excess supply. Some authors however emphasize that the premium is justifiable in presence of monopsonistic markets, or that it may be conceived as a successful innovation in a competitive environment with rational consumers, in presence of a moral hazard problem on producer's investment (Reinstein and Song, 2008).

Yet, it is more correct to evaluate Fair Trade in dynamic than in static terms. In this perspective the potential development of a given country or area crucially depends, among other factors, on the opportunities that individuals have to develop their talents. With this respect, promotion of equal opportunities and creation of economic value may go hand in hand if the former eases access to education, credit and markets. This is what FT declares to do when emphasizing capacity building and creation of opportunities for disadvantaged producers among its principles.

A Fair Trade product is therefore a bundle of a physical product plus an intangible social and/or environmental content. The latter is a fundamental component but it is not unfortunately an experience good (we do not learn more about the effectiveness of the social and environmental action of Fair Trade by buying more of the product). This is why impact studies in this field are urgently needed.

With this respect, the current literature of FT studies presents some valuable case studies (Bacon, 2005; Pariente, 2000; Castro, 2001a and b; Nelson and Galvez, 2000; Ronchi, 2002) and a few econometric analyses which evaluate the impact of affiliation against the benchmark of a control group of non FT producers living in the same areas.[4] Among the latter Ronchi (2006) finds on a panel of 157 mill data

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[3] Valuable contributions to it are those of Maseland and De Vaal (2002), Moore (2004), Hayes (2004) and Redfern and Sneker (2002).
[4] For a comparative view of such studies see Rueben (2008).

that FT helped affiliated Costa Rican coffee producers to increase their market power. Other empirical studies on producers' organisations in Kenya, Chile and Peru (Becchetti and Costantino, 2008; Becchetti et al. 2007) show that FT significantly affects child schooling by increasing household income and productivity, but only when household income overcomes a minimal threshold consistently with the "luxury axiom" hypothesis (Basu and Van 1998).

In all cases the stereotype of an exclusive relationship between affiliated producers and the Fair Trade channel is rejected in favour of a more articulated pattern of relationships. In this respect, Fair Trade is potentially an opportunity to improve access to market, reduce vulnerability to shocks and diversify trade channels for producers who often depend on monopolistic transportation intermediaries and who however keep on selling part of their production to them and on the local market.

The above summarized theoretical and empirical FT literature suggests that the crucial hypothesis to be tested is the following: does Fair Trade promote capacity building and inclusion of farmers in international markets, as it promises in its principles which play a strong role in motivating consumer purchases (Becchetti et al., 2007)?

We test this hypothesis by evaluating whether affiliation years enhances economic value and, in doing so, we introduce some important novelties in this literature. First, from a methodological point of view, we cannot perform a randomized experiment since Fair Trade affiliation comes before we decided to start our research. We therefore need to control carefully for endogeneity and potential selection bias. To do so we propose three main alternatives: an instrumental variable approach, a propensity score evaluation and the restriction of our analysis to the treatment sample only to eliminate any potential heterogeneity between treatment and control samples. Second, we test separately the organic certification and FT affiliation effects which are often combined and observationally equivalent in many FT projects. We do so by exploiting the relatively shorter FT affiliation spell with respect to the organic certification period. In this respect we provide also a contribution to the literature on the

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relationship between organic farming and productivity which presents contributions with mixed results, even though the majority of them document a negative relationship.[5] By limiting our focus to productivity our analysis neglects the wider issue of the impact of organic farming on environmental sustainability and therefore has not the ambition to perform an overall cost/benefit evaluation of organic farming.

The paper is divided into five sections (including introduction and conclusions). In the second section we describe the characteristics of the Green Net Cooperative of Thai organic rice producers which is the object of our scrutiny, in the third we describe our dataset, in the fourth and fifth sections we illustrate and comment our descriptive and econometric findings. The final section concludes.

2. The FT Project in Thailand

Green Net Cooperative[6] is a major organic fair trade producer in Thailand. It was established in 1993 by a group of producers and consumers with the aim of supporting environmentally and socially responsible business. In 2002 it received the Fair Trade label by the Fair Trade Labelling Organization (FLO).

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[5] Offerman and Nieberg (2000) compare the economic performance of organic and conventional farms in different countries and find that organic farms have lower yields, higher output prices and slightly lower unit costs. Ricci, Maccarini and Zanoli (2004) find that part of the reduced efficiency of organic farming is due to the difficulties and length of the conversion period. On the same line, Oude et al. (2002) observe that it takes time to reach the optimal nutrient stock of soil and optimal nutrient supply for arable crops under organic farming. This extends the effective conversion period during which productivity slows down to 6-7 years. Kassie et al. (2008) find, on the contrary, a clear superiority of organic farming practices over chemical fertilizers in enhancing crop productivity for resource-constrained farmers cultivating land in a semi-arid Ethiopian area.

[6] Green Net statutory goal is "*to serve as a marketing channel for small-scale organic farmers with fair trade principles in its marketing activities*", and, in particular, to: *i) promote organic way of life through marketing and producing high quality organic and natural products (organic fairtrade rice; organic vegetables and baby corn organic coconut silk and cotton); ii) conduct trade with fair price for producers and buyers; iii) have responsibility for consumers and environment; iv) Support producers to organize as community enterprise to produce high quality organic and natural products and safe for consumers and environment; v) transfer knowledge organization's research and development to general public; vi) campaign for environment and fair trade; vii) support employees' creativity and make them feel as an important part of organization; commit to generate organization growth with stability and continuity; viii) create added value for share-holders and appropriate returns; ix) be a model organization of "Social business" and encourage other business bodies to be more concerned with consumers safety, environment conservation and social responsibility.*

Green Net farmers produce organic[7] long grain red, white and brown Jasmine rice. The trading chain is organized as follows. Farmers sell the paddy rice[8] to a "producers' group", i.e. a local cooperative having 5-9 members representative of farmers; the price and the grading of the paddy rice is agreed upon by the Organic Fair Trade Rice Committee, which is composed of 2 members from 5 producers' groups 2 members of Green Net Coop and 2 members of Earth Net Foundation.

Green Net provides advance payments to the producer groups. The latter buy the paddy and stock it, while Green Net receives export orders for the whole year and gives instructions to the group on the quantity of rice to deliver; the milled rice is then delivered to Green Net for packaging. Green Net pays the producer group and exports and/or sells the rice locally.

In addition, organic farmers receive the following two benefits from Green Net: i) in accordance with FLO laws, a Fair Trade premium to be used for different social and capacity building activities for organic farmers (i.e., scholarships, emergency funds, credit facilities, training, etc.); ii) an additional yearly Fair Trade bonus (1,280 bath per ton, last year) for organic production (see Table 1 for the premium incorporating price breakdown in 2008).

Conventional farmers can be members of a producers' group and thus benefit from group trading (higher market power and information on market demand with respect to individual uninformed producers), while not enjoying the two above mentioned Fair Trade benefits.

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[7]   The organic production method followed by Green Net farmers is organised as follows. Cropping pattern begins in May after the first rainfall. Farmers plough the land to get rid of the weed. Weed residues are incorporated into the soil and the fields are left for the residues to be decomposed. After the decomposition, a second plowing is done in order to loosen the topsoil and to flatten the field in order to regulate the water level. Rice seedlings are transplanted into the field around June-August. Rice takes around 3-4 months to mature. The grain is left to dry in the field before harvesting (ranging from end of November to December). Few farming activities occur after this period since water is not abundant during dry season. In areas where irrigation exists, farmers may plant legume crops (e.g. peanut or sward been) or cash crops (e.g. melon) in the rice fields. Also, some may cultivate vegetable crops during the winter season (around December-January) as there are few pests on vegetables during this period. Rice is cultivated once a year and thus little pest infestation problems occur.

[8]   Paddy rice is the individual rice kernels that are in their natural, unprocessed state. It is harvested directly from rice fields or rice paddies and transported to a processing site. As part of the processing, the protective hull is removed, leaving only the actual rice kernel for consumption.

To evaluate the impact of Green Net affiliation[9] we look at affiliated farmers in two organisations from two different areas of the Yasothorn province: the Bak Rua Farmer Organization (BRFO) and the Nature Care Society (NCS).

The Bak Rua Farmer Organization (BRFO) is situated in Ban Don Phueng village (Moo 4) of Tambol Bak Rua, Mahachanachai District, Yasothorn province. It is located 10 km from Mahachanachai district and 35 Km from Yasothorn and roughly 530 kilometres from Bangkok. BRFO has members spreading in 45 villages of 25 tambol (all in Yasothorn province)[10].

BRFO[11] started in 1976 by the government agency to help the (chemical) fertilizer distribution scheme of the government. Soon after it, it was temporary suspended due to the failure in collecting payments from members. It was re-established again in 1981, trying to continue with the fertilizer distribution scheme. In 1987, it started collective buying and selling of rice paddy, and, later on, it became specialized in rice mill. A small rice mill was built in 1989 servicing farmers in the village to mill rice for self consumption. In 1994 BRFO received funding support from the government to construct a commercial mill. A local non-governmental organization started working there in 1996 to help supporting farmers to reduce the use of agro-chemicals in rice farming. In 1999, the groups started collaborating with Green Net.

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[9]   Green Net is therefore a second level cooperative providing services to first level local associations such as the Bak Rua Farmer Organisation and the Nature Care Society. The second level is required for coordinating production between local cooperatives, developing research and promotion of organic agriculture and providing export services on a larger scale. All members of first level associations are also members of Green Net.

[10]   Bak Rua is predominantly a rice cultivating area. Farmers grow sticky rice (Kor Ko 6) for family consumption and grow Hom Mali rice as cash crop. As the soil consists of sand and no irrigation system are available, farmers only cultivate one rice crop a year without any other supplement crops. Farmers rely on natural rain for rice farming. Unpredictable rainfalls in recent years affected rice yields quite significantly.

[11]   The BRFO is registered as "Farmer Organization" under the Ministry of Agriculture and Agricultural Cooperative since 8 April 1976 (Farmer Organization has a legal status equivalent to Farmer Cooperative) with the following goals: i) support members to grow rice without using chemical inputs and establish rice farmlands appropriate to local ecology; ii) strengthen farmer organization so that it can manage and control rice quality throughout the chain; iii) encourage learning among farmers so that they can manage rice mill as rural enterprises sustainably.

BRFO started with 118 members in 1976 and reached 853 members in 2007. To become a member it is necessary to pay 20 bath as entrance fee and purchase a minimum of 1 shares (price = 10 bath/share) of BRFO. Members are allowed to buy 100-bath shares of the rice mill.

The organisation started pesticide-free rice farming in 1996 with support from local NGOs complying with the following certification standards: i) ACT Organic Standards according to IFOAM Basic Standards (IFOAM programme); ii) EU Regulation 2092/91; iii) BioSwiss organic standards. BRFO is being receiving the FLO's certification since 2002 as part of Green Net Cooperative.

The second association under scrutiny is the Nature Care Society (NCS) and is situated in Ban Sok Kumpoon village (Moo 2) of Tambol Naso, Kudchum District, Yasothorn province. It is located 12 km from Kudchum district and 40 Km from Yasothorn and about 530 kilometres from Bangkok. Members are spread in 95 villages of 5 districts (all in Yasothorn province).

Since 1980, farmers in Naso village started working with the Herbal for Self-Reliance Project- HSRP (a local NGO which promotes the use of herbal medicines and traditional health care systems). In 1991, with the support of the HSRP, a rice mill was set up in the area to process natural rice. The Nature Care Society has no formal registration. Its mill is associated with "Naso Rice Farmer Organization", a registered organization under the Ministry of Agriculture and Agricultural Cooperative (Farmer Organization has a legal status equivalent to Farmer Cooperative)[12].

As far as membership is concerned, there are two types of members, i.e. farmers and non-farmers. New members must pay 20 TBT as entrance fee and can purchase a minimum of 50 shares (value at TBT/share).

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[12] Its objectives and goals are: i) to support members to grow rice without using chemical inputs; ii) to solve farmers' problems of unfair price and trading in paddy; iii) to expand the milling capacity to economy of scale; iv) to strengthen farmer organizations; v) to provide learning process in running a community business.

NCS started the organic rice farming in 1992 by itself. In 1996, a group of farmers first received organic certification. The certification standards followed are: i) ACT Organic Standards according to IFOAM Basic Standards (IFOAM programme); ii) EU Regulation 2092/91; iii) BioSwiss organic standards.

NCS is being receiving the FLO's certification since 2002 as part of Green Net Cooperative.

3. The dataset

During 2008 a questionnaire was delivered to 360 farmers living in the two districts, Kud Chun and Bak Reua (Table 2). In each district, respondents were randomly chosen - in equal number - among affiliated (members of the Green Net cooperative) and non affiliated farmers. The treatment group was randomly generated from the list of all organic Green Net farmers in the two selected areas, while the control group has been randomly created from a list including all farmers living close to (within 10 kilometers from at least one of the selected) organic farmers. As it will be shown in descriptive statistics treatment and control samples exhibit no significant differences in terms of socio-demographic characteristics.[13]

Cooperative membership is widespread in the area and not limited to Fair Trade affiliated. In Kud Chun and in Bak Reua 84 and 77 percent of farmers, respectively, are members of cooperatives. This implies that, while all affiliated farmers are obviously cooperative members, also 60 percent non affiliated members belong to cooperatives. Controlling for this will allow us to measure in the econometric evaluation of differences between treatment and control sample the specific effect of FT and/or organic certification on Green Net farmers rather than a generic cooperative effect.

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[13]   Beyond attention to the sample design we will control ex post for the selection bias problem with the propensity score approach and by checking whether our findings are robust when we restrict the sample to affiliated producers only (see section 5).

As to the kind of information collected, our questionnaire contains 75 questions concerning various measures of qualitative and quantitative well-being.[14] In particular, in addition to traditional socio-economic variables, the questionnaire reports information on income and various measures of wealth (land size, information on housing, sanitation and on durables owned), savings and productivity, child schooling and farmer education, working activity and working conditions, price and trading information, human and social capital indicators, self-esteem and happiness. Table 3 provides summary statistics of the main variables and Table 4 summarizes basic information on the two samples.

4. Descriptive Findings

To increase clarity of exposition we divide the analysis of descriptive findings in subsections dealing with specific issues.

4.1 Socio-demographic variables, cooperative membership and affiliation years

Treatment and control samples do not present significant differences in terms of socio-demographic characteristics (Table 4). Respondents' average age is 50 years with affiliated farmers being slightly younger (49) than non affiliated (51). The average number of school years in the overall sample is 6, with a slight but not significant difference (7 versus 6 years) between affiliated and non affiliated farmers. Family sizes are not significantly different when we consider either the number of people living in the respondent's family or the number of the respondent's children.

Median certification years in the treatment sample are seven. Average certification years are sligthly higher in Kud Chun (4 years) than in Bak Reua (3 years) and the difference is significant (at 95 percent). 14 farmers in our sample (7 in each area) are "in conversion", i.e. they are in the first year of

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[14]   The questionnaire is omitted for reasons of space and available from the authors upon request.

the procedure to obtain organic certification[15]. Notice that <u>Fair Trade affiliation</u> is more recent than organic certification, as Green Net cooperative received FLO certification in 2002.

4.2 Price and sale conditions

Respondents were asked to specify the <u>share of Jasmine rice production sold to cooperatives</u> and to <u>other buyers</u> as well as the price received per ton. It results that, on average, the <u>price paid by local cooperatives</u> per ton is significantly higher than the <u>price paid by other buyers</u> (10,902 vs 10,459 baht) and, in turn, the Fair Trade price (13,941 baht) is significantly higher than the price paid by local cooperatives. Interestingly, affiliated farmers obtain better conditions than control famers also when selling to local cooperatives (11,305 against 10,019 baht). Such difference may depend on differences in bargaining power or may be the organic premium recognised by the local market. The gap in the average price paid by local cooperatives also differs on geographical grounds, being higher in Kud Chun (11,533 vs 10,260 baht per ton), while there is no geographical difference for the price paid by other buyers. <u>Advance payments</u> do not make a strong difference since only 8 farmers, all affiliated to Fair Trade, received advance payments from local cooperatives, while none of the respondents received advance payments from other buyers.

On average, <u>profits and dividends</u> received by affiliated farmers are as much as 3 times higher than the amount received by non affiliated (303 vs 101 baht).

4.3 Productivity, income, wages and investment

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[15]   Conversion farmers are excluded from the sample used for econometric estimates since the conversion process implies a momentary break in production.

Treatment and control samples are not significantly different at 95 percent (even though they are at 90 percent) in terms of productivity calculated as income from agriculture per hour worked. Yet, the creation of economic value (per capita income from agriculture) is significantly different.

Farmers' average <u>income raised from agriculture</u> is around 51,321 baht per year, average income is 39,656 in Kud Chun while 59,598 in Bak Reua. Affiliated farmers' average income is significantly higher than non affiliated farmers', both overall (60,942 against 41,646 baht) and in the two different areas. The difference in income between affiliated and non affiliated farmers finds correspondence in a similar difference in income from agriculture per hour worked (126 against 98 baht), even though standard deviation is large and significance is much weaker. Note also that, across areas, there is a remarkable difference in average productivity (around 173 vs 26 baht per hour in Bak Reua with respect to Kud Chun).[16]

Almost half farmers have a second activity (craftmanwork, construction and other sectors). Considering the sum of income raised from the first and second activity, the two main previously mentioned results are confirmed, as <u>income from the two activities</u> in Bak Reua is higher (75,726.9 baht per year) than in Kud Chun (54,722.15 baht per year), and still higher for affiliated (78,778.61 baht per year) than for non affiliated farmers (55,173.74 baht per year). In both cases, the difference is significant at 5 percent. The same occurs if we take into account <u>total family income</u>, i.e. the sum of the respondents' and of the family members' income. Farmers in Bak Reua are still richer (106,655.3 baht per year) than in Kud Chun (81,026.17 baht per year) [17] and affiliated farmers are still richer (104,897.3 baht per year) than non affiliated farmers (87,089.39 baht per year). Consistently with a family structure which is not

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[16]   Such difference is due to a difference in the quality of lands in the two areas.

[17]   If we evaluate it at the average exchange rate in the month of the survey (1 U.S. dollar = 34.17 Thai bath) we obtain the value of 2.18 dollars per day per household member in Bak Reua against 1.65 in Kud Chun. If we consider the 2005 PPP of 16 bath per dollar we get respectively 6.17 against 4.69 dollar per day.

significantly different between treatment and control samples, per capita income (total, from first and from second activity) is always significantly higher in treatment than control sample.

Although total land size is higher for affiliated than for non affiliated farmers (26 vs 24 rai)[18], the difference is not significant, nor it is so in the two subsample areas.

Total productivity (income from first and second activity per hour worked) is around one third higher for affiliated with respect to the control sample (93.749 against 67.43 baht). This is the result of three different components: i) affiliated farmers have a one fifth higher productivity in agriculture than the control sample, even though the standard deviation is high and the difference is not significant at 90 percent; ii) affiliated farmers are twice more productive than control farmers in the second activity; iii) the second activity is by far less productive than the main one and control producers employ 15 percent more hours than affiliated producers in this activity. The combination of facts ii) and iii) is such that, even devoting less hours to the second activity, affiliated farmers have a slightly larger income from that than control ones.

Some farmers employ temporary workers for their activity. Affiliated farmers employ on average more temporary workers than non affiliated (3.8 vs. 2.5) and farmers from Bak Reua hire almost 3 times more temporary workers than respondents in Kud Chun. In both cases the difference is significant at 5 percent. However, there are no significant differences in the employee wage between the two groups. During last year, respondents' investment in working activity amounted to 9,958 baht. Affiliated farmers' average investment expenditure is markedly higher than non affiliated (14,651 vs. 5,265 baht), although variability is very high and this difference is not significant at 5 percent; capital investment is higher in Bak Reua as compared to investment in Kud Chun (10,400 vs 9,339 baht), but also in this case the difference is not significant.

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[18] Thai unit measure corresponding to a 40*40 meter area.

4.4 Consumption expenditure and self-consumption

Total <u>family food expenditure</u> amounts to 446 baht per week in the sample. Non affiliated farmers spend more than affiliated (461.5 vs. 430.7 baht), although the difference is not significant. Farmers' families in Bak Reua spend significantly more than in Kud Chun (552.9 versus 296.6 baht). An invisible, though important component of productivity and creation of economic value, is <u>self consumption</u>. As it can be easily imagined, 100 percent of the rice consumed in (both treatment and control) farmers' households is self produced and not bought on the market. Beyond rice, organic FT certified producers do not buy 81 percent of vegetables consumed against 71 percent in the case of control producers. The gap is 79 against 68 percent for papaya, 54 against 40 for fresh fruit in general, 53 against 49 for chicken and 70 against 57 for fish (almost all farmers have ponds with fishes in their land plots).

This implies that the observed positive differences in income from agriculture between affiliated and non affiliated farmers are downward biased with respect to the true ones which should include the value of self consumption. We therefore sum the visible and the invisible income by evaluating the income from the self consumed share at the local market value. The total value of self-consumption for affiliated farmers is higher than the control sample, the difference being 29,503 vs. 24,217 baht per year.[19] As a consequence, the difference in income from agriculture between affiliated and non affiliated farmers is higher when self consumption is considered, and around 6,239 versus 5,032 baht (when we do not include selfconsumption) per capita per year.

4.5 Savings, debt and wealth

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[19]If we sum the visible to the invisible (self produced) food consumption, we find that the consumption share over total family income goes from 22 to 50 percent for affiliated (29 to 56 percent for non affiliated) farmers when we add to the former the market value of self consumption. Self consumption adds 27 percent (31 percent) to total family income in Bak Reua (Kud Chun). By taking it into account standard of living rises from 6.17 to 7.87 (4.69 to 6.14) dollars per day in PPP in Bak Reua (Kud Chun).

Affiliated farmers appear to be relatively better off in terms of financial conditions: their savings share is around 15.5 of total income against 11.15 for control farmers, while total family debt to income ratio is slightly higher in the control than in the treatment sample (1.2 vs 1).

Summing up the number of durables owned,[20] it results that, on average, that there is a slight, although significant, difference between affiliated and non affiliated farmers (around 8 vs. 7).

Wealth can also be measured by other indirect indicators (directly observed by researchers and therefore not subject to measurement bias), such as those related to housing accommodation. In this respect, all respondents (except one) use electricity as light source and as fuel for cooking in their house. Furthermore, 54 percent of affiliated farmers have their house made of timbers, while 44 percent have a house made of brick or concrete. Less than 10 percent have bareground floor in their house, with a very similar proportion between treatment and control sample; 20 percent of respondents have wood floor, 33 percent tiles floor and 37 percent cement floor, with the proportion between affiliated and not affiliated being similar. 51 percent households have an exclusive bathroom outside their house, with a non significant difference between non affiliated and affiliated farmers, while around 48 percent families have exclusive bathroom inside their house.

5. Econometric findings on the organic certification effect

Descriptive findings highlight a significant difference in the creation of economic value between the treatment and control group (section 4.3). We check whether our finding is confirmed when controlling for factors affecting the creation of value.

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[20] Our dataset has also information concerning some durable goods owned by the respondents, which are: tv, entertainment devices (CD, DVD players, etc,), fridge, bicycle, motorcycle, car, water pump, plowing machine, gas stove, truck and mobile phone.

Our controls include education, geographical location, age, sex, marital status, number of children, years of working experience, number of temporary employees, affiliation to a local cooperative and land size. The significance of the agricultural income per capita gap between treatment and control farmers is supported in our first specification where the marginal effect of one year of organic certification amounts to around 818 baht, which approximately corresponds to 2 percent of the current average income from agriculture in the control group (Table 5, column 1). The only other two variables which matter are geographical area and land size.[21]

The organic certification result persists when we control for the size of the FT premium (the magnitude falls to 632 baht) (Table 5, column 2). The the FT premium size is definitely a component of the current difference in agricultural income between control and affiliated farmers (this is why we include it in our estimates), but it cannot explain the marginal effect of the treatment (i.e. why any additional year of organic certification contributes significantly to such a difference in income). The premium may have helped farmers to save more and to reduce their debt to income ratio across years (see descriptive findings in Table 4), but it can generate a positive effect of affiliation years on income only if it is invested (together with higher savings) in capacity building. The likely interpretation of the positive effect of certification when controlling for the FT premium is therefore that a combination of productivity and commercialization gains progressively widened the income gap across years. The hypothesis that the effect is the same in the two areas is rejected since certification years have a stronger impact in Bak Reua area (Table 5, columns 3 and 4). This is consistent with the significantly higher income and productivity of this area.

5.1 How to tackle endogeneity and selection bias

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[21]   The hypothesis of a quadratic relationship between land size and our dependent variable has been tested and rejected. Results are omitted for reasons of space and available upon request.

The relationship between affiliation years and creation of economic value is not free from endogeneity. To tackle the problem we try to select a good set of exogenous instruments. We identify them into the farmer's distance from the cooperative affiliated to Fair Trade and the number of exogenous memorable events[22] with positive or negative economic consequences as declared by farmers. The distance is correlated with affiliation since it is a component of the cost of bringing the product to the cooperative and of any other activity which requires face to face meetings at the cooperative. To check for the exogeneity of this instrument we verify that sample farmers are "locked" in their geographical location and did not change it after starting their agricultural activity. With regard to exogenous memorable events, we identify the following with positive economic consequences among those reported by farmers: i) an increase in the paddy rice market price, ii) a positive shock on production, iii) a present from farmers' sons and daughters (money or, in same cases, a car), v) a wage shock in the second activity, vi) lottery winning and vii) the granting of awards. We classify as exogenous memorable events with negative economic consequences: i) close relative's death, ii) disease, iii) car accidents, iv) fire, v) car breaking, vi) an increase in the input market price, vii) the death of animals used as capital investment (such as water buffalos), viii) a slow development of the soil. In both cases (positive and negative events) we only consider events which took place from 1995 on. In the estimate shown in column 5 (Table 5) certification years are instrumented only by farmers' distance from the cooperative, while exogenous events are introduced as additional instruments in column 6.

While we can exclude that our set of instruments suffers from the problem of reverse causation we need to test their exogeneity with proper diagnostics. To this purpose we use the standard approach of verifying whether the residual (from a "modified specification" in which instruments replace selected endogenous regressors) has significant effects when introduced in the standard non instrumented

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[22] Even cross-sectional surveys are based on memory efforts of respondents when asking basic information such as last year income. Survey data maintains the same reliability if we extend memories back in the past for important events in life. For a discussion on the validity of using retrospective information based on memorable events see McIntosh et al. (2007).

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equation. As it is well known, instruments are exogenous if the null of insignificance of the added variable (residual from the "modified specification") in the standard non instrumented equation is not rejected. To see whether this is true we compute Wooldridge's (1995) heteroskedasticity-robust score and regression tests which show that the null hypothesis of exogeneity is not rejected (if we consider the 99 percent confidence interval) when we use only the distance from the cooperative as instrument (Table 5, column 5). The Sargan test on overidentifying restrictions does not reject the null in the specification in which we use more than one instrument (Table 5, column 6) but the null of exogeneity is rejected.

Results on the base estimate obtained with the above mentioned instruments for the certification age variable show that the latter is positive but significant only at 10 percent (Table 5, columns 5 and 6). We will compare later these weak results with the much better ones in specifications in which we replace organic with FT affiliation years and include in income the invisible part of self consumption.

The wider problem of heterogeneity between treatment and control sample requires further testing before we can rely on our results. In the impossibility of running a randomized experiment it is always possible that the observed difference in performance variables between treatment and control sample does not depend on the treatment but on the ex ante different characteristics which affected the decision to affiliate (implicit selection) or on explicit admission rules discriminating entrance (explicit selection).

We use two additional checks to control for selection bias. First, we compare treatment and control producers with a propensity score approach. When estimating the propensity score we carefully avoid to include variables which have positive impact on income per capita (included variables are age, number of children, gender and geographical location). In a second specification we add school years and job experience (also not significant as determinants of income from agriculture per capita). In both

cases the difference between treatment and control sample is significant and strong (between 4,200 and 4,500 baht) (Tables 6.1 and 6.2).

Since also propensity score matching has limits when used on variables in levels and not in first differences, an ultimate remedy against heterogeneity between treatment and control producers is that of estimating the effect of affiliation years in the subsample of affiliated producers only.[23] This is an option not available in impact studies in which there is no graduation of the treatment, but available to us since years of affiliation differentiate producers in terms of exposition to the program.

When we restrict our estimate to affiliated producers only the affiliation effect is much weaker (t-stat around 1.55) and its magnitude falls to 545 baht (Table 7, column 1). When we calculate the effect separately in the two areas we find 5 percent significance in the Bak Reua, while no significance in the Kud Chun area (Table 7, column 2).

5.2 Econometric findings on the FT affiliation effect

As clearly shown when describing the Green Net project, organic certification anticipates affiliation to FT which starts only from 2002. We therefore re-estimate specifications presented in Tables 5-7 by replacing years of organic certification with those of FT affiliation. This corresponds to rescaling the previous variables by introducing an upper bound of 6 years for all farmers with organic certification longer than 6 years.

Empirical findings from this new specification show that FT affiliation years are significant and stronger in magnitude (Tables 8-9).

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[23]   We carefully verified the absence of survivorship bias among members in Green Net. Exits are around 1 percent in the last 10 years and not caused by worsening economic conditions.

In the base estimate the magnitude of the effect is larger than the organic certification effect (1,350 baht per year) and moves to 1,458 when we introduce the FT premium (Table 8, columns 1-2).[24] It is significant when calculated separately in the two areas (Table 8, columns 3-4) and remains so in the instrumental variable estimate (Table 8, columns 5-6). Exogeneity tests are slightly better than in the organic year estimate. The single instrument equation does not reject the null of exogeneity at more than 5 percent and the multiple instrumented equation at 1 percent.

When we restrict the sample to affiliated farmers the one-year effect magnitude gets stronger and remains significant after correcting for the 2008 FT premium (Table 9, columns 1-2), differently from what happens when measuring the organic certification effect. (Table 7, columns 1-2).

The FT and organic certification years are obviously highly correlated (.92). However, it is possible to test directly whether one of the two effects prevails on the other in two ways i) by estimating the base and the restricted model with both variables and ii) by using a Davidson-McKinnon (1993) test. The test clearly shows that the FT affiliation effect is stronger. The predicted dependent variable from the FT affiliation estimate is significant at 5 percent in the organic certification estimate (Table 10, column 2), while it is not so for the opposite case.

5.3 Robustness check: adding the "invisible" income from self consumption

We repeat all estimates presented in Tables 4-6 by adding the market value of agricultural products produced and consumed in the household. The value is calculated on the basis of the market prices measured at the time of our inquiry.[25] Results are substantially similar and the significant effect of affiliation is confirmed under the different specifications and methodological approaches (Table 11).

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24   The latter corresponds to around 3.5 percent of the current average income from agriculture in the control sample.
25   The maintained assumption is that farmers would not alternatively have problems to sell the self consumed part on the market.

From a quantitative point of view the impact of one year of organic certification and Fair Trade affiliation are, respectively, about 200/300 baht larger than when measuring income from agriculture without the self production component (see model 1 findings in Table 11). The result is confirmed when testing separately the effects in the two areas and when instrumenting them with farmer's distance from the cooperative. The important point here is that exogeneity tests perform quite better than in previous estimates. In the model with FT years the null of no endogeneity is not rejected at 10 percent level in the single instrumented specification (see column 4).[26]

The Davidson-McKinnon (1993) test confirms the superiority of the specification with FT affiliation versus that with organic certification years even when the invisible (self consumed) part of agricultural production is consumed.

6. Interpretation of our findings

To sum up, our findings document that FT affiliation affects creation of economic value more than organic certification years. Part of it may be due to the double bonus of FT (a price premium directly granted to farmers and a premium granted to the organisation to be invested for innovation and the provision of local public goods). Part of it may also depend on marketing gains generated by FT. To this point consider that affiliated producers sell a significantly higher share of their Jasmine rice production (83 against 72 percent of control sample producers) with no significant differences in family size and in the share of self consumed rice (100 percent for both).

We also observe that affiliated farmers earn significantly more as shareholders (have significantly higher dividends from the cooperative) and have relatively higher shares of self consumption which

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[26] The magnitude of the effect of one FT affiliation year in the single instrumented model is the largest in all estimates and corresponds to around 13 percent of the current average income from agriculture in the control sample.

represent the invisible side of the economic value created by farmers. All these benefits are associated to better financial conditions (higher savings share and lower debt to income ratios).

Note that, if we repeat estimates discussed in section 5 using total productivity or income from agriculture per worked hours, we do not find a significant effect of organic farming or FT affiliation years.[27]

The interesting question raised by our findings is therefore why affiliation years increase creation of economic value and production yield without increasing productivity per worked hours.

As it is well known economic growth may come from higher productivity or from an increase in worked hours. We fall here into the second case since affiliated workers have not significantly different hours worked per day vis-à-vis control workers but work 20 days more per year on average in agriculture (151 against 131). In addition to it, hours worked increase with affiliation years. Farmers below the median affiliation year work on average 1,461 hours per year against 1,723 hours for those above the median.

In the light of the two different branches of the empirical literature on FT and organic farming effects we are led to conclude what follows. Organic farming confirms itself as a practice of increasing labour intensity. The overall balance in terms of productivity and creation of economic value is not unfavourable for organic farmers. This is a substantial finding if we take into account past results in the literature (see introduction and footnote 5) and the productivity slowdown of the post-conversion learning period. Consider as well that the potential environmental and health effects of organic farming are not under scrutiny in this paper. As a consequence, our conclusions cannot be considered a comprehensive evaluation of the impact of such initiative including all dimensions of individual and environmental wellbeing..

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[27]   Estimates are omitted for reasons of space and available upon request.

When investigating in depth the contribution of each affiliation year we discover that the contribution of FT affiliation years is decisive.

This leads us to conclude that the additional FT characteristics which are not included in organic production (improved market access through the provision of an alternative trade channel, introduction of a premium to be invested in capacity building and in farmer's welfare) should play a decisive role in generating a progressive growth of the creation of economic value in our sample.

7. Conclusions

One of the main Fair Trade's declared goals is capacity building and promotion of inclusion of marginalised farmers via social benefits and easier access to international markets. When this declaration is believed by concerned consumers willing to pay for the social value incorporated in the product, it increases the intangible value of FT goods.

For this reason it is of foremost importance to investigate whether FT affiliation actually affects producer's capacity of creating economic value.

We investigate the issue on a sample of Thai organic rice producers working for the Green Net cooperative. The trade agreement between FT importers and the cooperative clearly states that importers must pay a premium which has to be employed for various social and productivity purposes.[28]

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[28]   More specifically, Table 1 shows that, in the Bak Reua case, it can be used for - i) green manure seed, ii) farmer training and iii) member welfare, e.g. education of their children, natural disaster relief to improve its management, while, in the Kude Chun case, 50 percent is allocated to the mill to improve its management, 25 percent is allocated to the extension work and 25 percent is allocated for Organic Fair-Trade Fund. This Fund has also contribution from other sources and provides loans to members who wish to convert to sustainable production as well as other community benefits.

In this paper we test whether what is stated on the above mentioned agreement translates into an effective process of capacity building. Our findings lead us to identify a clear link between the "duration of the treatment" (years of membership) and creation of economic value.

Econometric findings show that any additional affiliation year has a positive and significant effect on income from agriculture of affiliated producers. This effect does not translate into significantly higher productivity since affiliated workers tend to work progressively more hours. Only when considering FT (and not organic) affiliation years, our findings are robust under three alternative approaches controlling for endogeneity and selection bias: i) instrumental variable estimation; ii) propensity score evaluation and iii) restriction of the estimate to affiliated producers only. These results continue to hold when the invisible part of self consumed income is accounted for.

Finally, our research sheds light on two relatively less explored sides of the relative performance of FT. We find that affiliated farmers sell a significantly higher share of their Jasmine rice production and have a significantly higher share of self consumption than non affiliated farmers on almost all products which are part of their diet. This implies that part of the affiliation effect is due to improved market access and that the observed income from agriculture and productivity effect is downward biased. Given the relative dominance of the FT affiliation over the organic farming effect, the concurring FT affiliation is probably crucial in determining a nonnegative productivity and per capita income difference between organic and non organic farmers.

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Table 1: Breakdown of price and FT benefits determination in 2008 for Green Net affiliated farmers in Bak Reua and Kud Chun

	Bak Reua	Kud Chun
October 2007 - *organic farmers discuss about the price of the paddy and set it around...*	THB 10,000	
January 2008 – *Conventional farmers receive from the market the same price as organic farmers (THB 10,000). Organic farmers receive a bonus for organic production of ...*	+ THB 2,500	
Additionally, the FT premium that goes only to producer's group is for 2008 (according to FLO law ...)	+ THB 750	
The FT bonus (also called paddy fund) that goes directly to organic farmers is...	+ THB 1,280	
Further FT benefits	Local training, extension activities, advising and support to organic farmers	
Local cooperative's dividend (to organic and conventional members).	Variable (positive) computed as follows: 8% of the capital share farmers invested in the cooperative + THB 50 per ton of paddy sold.	Variable *(0 in the last years)*
Fair-trade premium utilization	The premium is divided into several funds to which farmer members can apply for support (a) green manure seed (b) farmer training (c) member welfare, e.g. education of their children, natural disaster relief	(a) 50% is allocated to the mill to improve its management (b) 25% is allocated to the extension works (c) 25% is allocated for Organic Fair-Trade Fund. This Fund has also contribution from other sources and provides loans to members who wish to convert to sustainable production as well as other community benefits.
Local cooperative's funds (*to organic and conventional members*) taken from cooperatives' profits.	Loans Saving Groups	

Table 2. Summary information on the samples

THE "TREATMENT" GROUP AND THE "CONTROL GROUP IN THE WHOLE AREA	
Number of Observations	360
N. of Organic Farmers	180
N. of Non-Organic Farmers	180
N. of Farmers in Cooperative/producer's group	288
N. of Non-Organic Farmers out of Cooperative/producer's group	72
N. of Non-Organic Farmers in Cooperative/producer's group	108
N. of Farmers in conversion	14
BAK REUA	
Number of Observations	210
N. of Organic Farmers	105
N. of Non-Organic Farmers	105
N. of Farmers in Cooperative/producer's group	162
N. of Non-Organic Farmers out of Cooperative/producer's group	48
N. of Non-Organic Farmers in Cooperative/producer's group	57
N. of Farmers in conversion	7
KUD CHUM	
Number of Observations	150
N. of Organic Farmers	75
N. of Non-Organic Farmers	75
N. of Farmers in Cooperative/producer's group	126
N. of Non-Organic Farmers out of Cooperative/producer's group	24
N. of Non-Organic Farmers in Cooperative/producer's group	51
N. of Farmers in conversion	7

Table 3. Summary statistics of Socio-Demographic and Economic Variables

Variables	Mean	Std. Dev.	Min	Max
Income from agriculture	51321.31	38556.56	500	260000
Total income	67009.05	53837.59	500	390000
Family income	96018.16	91109.73	5000	790000
Self consumption (market value)	26859.58	16961.19	0	74977.32
Age	50.21111	11.90444	23	79
School years	6.258333	3.055191	3	19
People in the household	3.797222	1.581753	0	9
Number of children	2.519444	1.382203	0	9
Temporary employees	3.186111	5.46667	0	37
Employee daily wage	155.1613	34.83458	120	500
Number of durables owned	7.916667	1.529196	2	11
Household food consumption expenditure	446.1333	312.7669	20	3000
Investment in input	9958.611	61240.91	0	800000
Local (non Green Net) cooperative price	10901.86	1198.29	8000	12500
FT price	13940.98	732.7797	10000	15780
Other buyers price	10459.53	2798.526	6000	21000
Cooperatives advance payments	.0311284	.1740036	0	1
Green Net dividends	243.9961	509.4296	0	4000
Other coop dividends	39.28926	172.4658	0	1500
Total productivity	80.70326	100.8628	.4761905	666.6667
Productivity of the 1st working activity	112.2625	162.5647	.4761905	2000
Productivity of the 2nd working activity	37.90209	60.98353	.375	476.1905
Debt/income	1.143719	1.986836	0	20
Saving/income (share)	13.51667	16.15629	0	90
Land size (rai*)	24.96806	14.1498	3	100

Variable legend: see Appendix.

*Thai unit measure corresponding to a 40*40 meter area.

Table 4. Confidence intervals of selected variables for FT producers and the control sample

Variables	Obs.	Ft producers Mean	[95% Conf. Interv.]		Obs.	Non Ft producers Mean	[95% Conf. Interv.]	
Socio-demographic features								
Ft years	180	5.283333*	5.078092	5.488574	180	0		
Certification years	180	6.888889*	6.431667	7.34611	180	0		
Age	180	49.1	47.41761	50.78239	180	51.32222	49.51545	53.129
School years	180	6.611111*	6.132579	7.089643	180	5.905556*	5.49255	6.318561
People in the household	180	3.827778	3.613573	4.041983	180	3.766667	3.516413	4.01692
Number of children	180	2.488889	2.302008	2.675769	180	2.55	2.331082	2.768918
Income, productivity and investment								
Income from agriculture	180	60942.49*	55225.46	66659.53	179	41646.37*	36363.51	46929.22
Total income	180	78778.61*	70469.44	87087.77	179	55173.74*	48040.08	62307.41
Family income	180	104897.3	92479.45	117315.2	179	87089.39	72814.02	101364.8
Temporary employees	180	3.822222*	2.914331	4.730113	180	2.55*	1.87567	3.22433
Employee daily wage	86	156.2791	147.1056	165.4525	69	153.7681	148.6373	158.899
Land size	180	26.08056	24.17416	27.98695	180	23.85556	21.61981	26.0913
Total productivity	180	93.74913*	77.02672	110.4715	177	67.43628*	54.95465	79.91791
Productivity of the 1st working activity	180	125.8913	104.4428	147.3399	177	98.40271	72.09847	124.7069
Productivity of the 2nd working activity	92	49.01387*	32.77152	65.25622	85	25.87522*	19.59875	32.15169
Investment in input	180	14651.67	2960.193	26343.14	180	5265.556	258.4469	10272.66
Price, sales and trading conditions								
Local (non Green Net) cooperative price	177	11305.73*	11141.69	11469.76	81	10019.32*	9824.894	10213.75
FT price	177	13940.98	13832.28	14049.68				
Other buyers price	4	11583.25	4267.535	18898.96	116	10420.78	9916.863	10924.69
Cooperatives advance payments	176	.0454545	.0143782	.0765309	176	0		
Green Net dividends	177	306.0904 *	219.1588	393.022	77	101.2597*	56.44248	146.077
Other cooperative dividends	6	14	-7.197561	35.19756	115	40.6087	7.949534	73.26786
Food expenditure and self-consumption								
Household weekly food expenditure	180	430.7111	381.1277	480.2945	180	461.5556	419.4204	503.6907
Rice self-consumption share	180	100	100	100	180	100	100	100
Noodles self-consumption share	170	.2941176	-.2865001	.8747354	167	1.197605	-.4693058	2.864515
Vegetables self-consumption share	180	81.33333*	77.6292	85.03747	180	71.30556*	66.74405	75.86706
Papaya self-consumption share	180	79.35*	74.34501	84.35499	179	67.7933*	61.65727	73.92932
Fresh fruit self-consumption share	180	53.96111*	48.87574	59.04649	180	39.55556*	34.51099	44.60012
Eggs self-consumption share	180	25.98889*	19.91602	32.06176	179	16.98324*	11.77462	22.19186
Milk self-consumption share	170	3.582353	.7799004	6.384805	170	2.411765	.1084575	4.715072
Chicken self-consumption share	178	52.86517	45.86483	59.86551	179	49.27374	42.44436	56.10313
Other meat self-consumption share	177	0			177	.0564972	-.0550019	.1679963
Fish self-consumption share	180	70.38889*	65.07485	75.70292	179	57.15084*	51.09267	63.209
Fresh noodles self-consumption share	172	.5813953	-.5662407	1.729031	175	.5714286	-.5563951	1.699252
Market value of self consumption	180	29502.66*	27029.26	31976.06	180	24216.51*	21754.81	26678.21
Savings, debt and wealth								
Debt/income	180	1.040396	.7944135	1.286379	179	1.24762	.9143597	1.58088
Saving/income (percent)	180	15.56389*	12.96199	18.16578	180	11.46944*	9.378305	13.56058
Number of durables owned	180	8.333333 *	8.144836	8.521831	180	7.5*	7.258395	7.741605

* 5 percent significance of the difference in means between affiliated and non affiliated farmers.

Table 5: The effect of organic certification years on per capita household income from agriculture *(thousand bath)*

	OLS				Instrumental variables (2SLS)	
Dependent variable: per capita household income from agriculture)					*(Instrumented variable: organic certification years)*	
	Equation 1	**Equation 2**	**Equation 3**	**Equation 4**	**Equation 5**	**Equation 6**
Control group	2.096261	2.515116	2.164635	2.049935	37.95238	33.50922
	(1.437)	(1.749)	(1.482)	(1.398)	(1.529)	(1.716)
Area1	-7.468254**		-5.624645**			
	(-5.525)		(-3.745)			
Area2		6.452535**		5.643593**	15.4101*	14.44963**
		(4.352)		(3.750)	(2.532)	(2.925)
Age	.0994526	.098599	.0793663	.0765185	-.2454686	-.2032293
	(1.418)	(1.418)	(1.138)	(1.083)	(-.923)	(-.895)
Number of children	-.514838	-.5370602	-.5437539	-.5415752	-.3806767	-.409844
	(-1.109)	(-1.150)	(-1.173)	(-1.165)	(-.509)	(-.583)
School years	-.2519862	-.252277	-.263609	-.2653176	-.5391375	-.5047439
	(-1.209)	(-1.213)	(-1.301)	(-1.317)	(-1.106)	(-1.147)
Male	.1340217	.0667066	.1416808	.1629953	.5365545	.3859259
	(.1074)	(.0537)	(.115)	(.130)	(.229)	(.177)
Married	.7986077	.8862895	1.370711	1.432871	5.222724	4.823583
	(.300)	(.331)	(.496)	(.5127)	(.798)	(.792)
Divorced	.0812717	-.2199668	.4995221	.6542248	8.785472	7.856937
	(.0228)	(-.0621)	(.139)	(.180)	(.857)	(.851)
Years in agriculture	.0627544	.0627157	.0669684	.067631	.1410976	.1332476
	(1.126)	(1.131)	(1.175)	(1.173)	(.925)	(.952)
Certification years	.8185072**	.6316182**			6.110847	5.462464
	(4.640)	2.859			(1.718)	(1.942)
Certification years 1			.5778565**	.5965702**		
			(2.990)	(2.789)		
Certification years 2			1.136404**	1.241406*		
			(3.971)	(1.975)		
Temporary employees	.0085186	-.0010207	-.0205889	-.0222329	-.1400134	-.1207512
	(.0687)	(-.008)	(-.166)	(-.1784)	(-.669)	(-.661)
Land size	.3483096**	.3482052**	.3536237**	.3544759**	.2959587**	.3024255**
	(6.942)	(6.974)	(7.045)	(6.986)	(3.517)	(3.725)
FT premium		.0007708		-.0002305		
		(1.428)		(-.235)		
Constant	1.267371	-5.998363	.7549146	-4.724651	-32.55138	-29.40346
	(.281)	(-1.298)	(.165)	(-1.083)	(-1.589)	(-1.765)
N of obs.	358	358	358	358	294	294
P- value (overall goodness of fit)	3.94e-16	7.19e-16	1.14e-17	1.56e-19	4.09e-07	4.56e-08
Tests of instrument esogeneity						
Robust score χ^2 (1)					4.5472	6.94002
					(p=0.0330)	(p=0.0084)
Robust regression F(1,280)					4.20346	6.80064
					(p=0.0413)	(p=0.0096)
Test of overidentifying restrictions						
Score χ^2 (2)						.421199
						(p=0.8101)

Legend: coefficients and t-stats; ** 1 percent significance, * 5 percent significance. All estimates are with heteroskedasticity robust standard errors.

Instrumented variable: certification years. Instruments: distance from cooperative (equation 5); distance from cooperative, positive exogenous events, negative exogenous events (see section 5.1 for a list) (equation 6).

Tests of endogeneity: Wooldridge's (1995) robust score test and a robust regression-based test

Test of overidentifying restrictions: Sargan's (1958) and Basmann's (1960) χ^2 tests. Variable legend: see Appendix.

Table 6.1 The effect of FT affiliation on per capita household income from agriculture (propensity score estimate)

	Propensity Score Estimate – Probit Regressions (Dependent Variable: Affiliation dummy)			
	Model 1		**Model 2**	
	Coefficient	*z-stat*	*Coefficient*	*z-stat*
Area 1	-.0186111	(-0.14)	-.0396236	(-0.29)
Age	-.0159115	(-2.34)	-.0055874	(-0.57)
Number of children	.046204	(0.82)	.0369817	(0.65)
Male	.2868614	(2.04)	.2355149	(1.61)
School years			.030153	(1.14)
Married			.4176686	(1.27)
Years in agriculture			-.0055407	(-0.75)
Constant	.5564597	(1.84)	-.2894752	(-0.50)
	Number of obs.	360	*Number of obs.*	360
	LR χ² (4)	7.61	*LR χ² (7)*	11.03
	Prob > χ²	0.1069	*Prob > χ²*	0.1375
	Pseudo R²	0.0152	*Pseudo R²*	0.0221
	Log likelihood	-245.72776	*Log likelihood*	-244.02013

Table 6.2 The effect of FT affiliation on per capita household income from agriculture (propensity score matching)

Propensity Score Matching (Dependent variable: Per capita income from agriculture)				
	n. treat.	**n. contr.**	**ATT**	**t-stat**
Model 1	180	180	4506.621	(3.573)
Model 2	180	180	4293.024	(2.836)

Note: ATT is the average treatment of the treated. Regressors in the ATT estimate are dummy for FT affiliated producers, Land size, [Land size]² for model 1 with the addition of temporary employees in model 2. The balancing property is satisfied. Standard errors with bootstrapping and 50 replications.
Variable legend: see Appendix.

Table 7: The effect of organic certification years on per capita household income from agriculture (sample restricted to affiliated producers) *(thousand bath)*

OLS

Dependent variable: per capita household income from agriculture

	Equation 1	Equation 2
Age	.2160537	.1289239
	(1.911)	(1.011)
Number of children	-.3890588	-.2904015
	(-.467)	(-.350)
School years	-.2361534	-.2338186
	(-.739)	(-.778)
Male	-3.323648	-2.700016
	(-1.662)	(-1.317)
Married	9.296444**	10.3843**
	(2.804)	(2.876)
Divorced	7.478083	10.26233
	(1.267)	(1.651)
Years in agriculture	.0210991	.0502066
	(.2197)	(.474)
Certification years	.5450243	
	(1.548)	
Temporary employees	-.021389	-.0619727
	(-.115)	(-.342)
Land size	.3758203**	.3849802**
	(3.990)	(4.189)
Certification years 1		-.0447008
		(-.1208)
Certification years 2		1.558604*
		(2.247)
Ft premium	.0032576**	-.0011436
	(3.268)	(-.531)
Constant	-20.35118*	-8.500757
	(-2.381)	(-1.0732)
N of obs.	172	172
P-value (overall goodness of fit)	.0000771	.0000876

Legend: coefficients and t-stats; **: 1 percent significance, *: 5 percent significance. All estimates are with heteroskedasticity robust standard errors.

Regressors are from the affiliated sample.

Variable legend: see Appendix.

Table 8: The effect of FT affiliation years on per capita household income from agriculture *(thousand Bath)*

	OLS				Instrumental variable (2SLS)	
Dependent variable: per capita household income from agriculture					*Instrumented variable: FT affiliation years*	
	Equation 1	**Equation 2**	**Equation 3**	**Equation 4**	**Equation 5**	**Equation 6**
Control group	3.14652* (2.199)	3.152634* (2.198)	3.04989* (2.0939)	2.695405 (1.835)	26.38337 (1.743)	23.33963 (1.947)
Area 1	-7.18528** (-5.527)	-7.483749** (-5.044)				
Area 2			6.524948** (4.264)	6.683946** (4.357)	9.308472** (4.061)	9.012142** (4.338)
Age	.1047793 (1.537)	.1051203 (1.542)	.1001419 (1.489)	.0836077 (1.231)	-.0434554 (-.329)	-.0237628 (-.210)
Number of children	-.4809568 (-1.027)	-.4715545 (-.997)	-.4934683 (-1.048)	-.4527717 (-.958)	-.294628 (-.505)	-.330878 (-.594)
School years	-.2233816 (-1.077)	-.2219019 (-1.070)	-.2288768 (-1.108)	-.2376519 (-1.164)	-.1870135 (-.747)	-.1898228 (-.780)
Male	.2973841 (.240)	.3272789 (.265)	.2990336 (.242)	.6067799 (.477)	1.385653 (.791)	1.157801 (.682)
Married	.3406913 (.128)	.2611039 (.098)	.5721248 (.211)	.7680207 (.279)	2.684802 (.624)	2.561886 (.610)
Divorced	-.2505796 (-.074)	-.1933862 (-.057)	-.1094202 (-.032)	1.073429 (.311)	4.373648 (.711)	3.937838 (.674)
Years in agriculture	.0596335 (1.115)	.0593849 (1.112)	.0604057 (1.126)	.0612299 (1.132)	.0943945 (1.197)	.0916546 (1.210)
Ft years	1.350382** (5.586)	1.45805** (3.619)			5.80117* (2.050)	5.218551* (2.312)
Temporary employees	.0135053 (.1079)	.0162447 (.130)	.0058999 (.047)	.00071 (.006)	.0056845 (.041)	.0092844 (.068)
Land size	.3441327** (6.990)	.3436279** (6.951)	.346097** (6.942)	.3494768** (7.018)	.3133825** (5.255)	.3177537** (5.289)
Ft premium		-.0002308 (-.327)		-.0023215* (-1.99)		
Ft years 1			1.20334** (3.594)	1.653129** (4.159)		
Ft years 2			1.450869** (4.544)	2.966236** (3.269)		
Constant	.1245096 (.028)	.2846922 (.062)	-6.588748 (-1.466)	-5.947474 (-1.334)	-27.64499 (-1.899)	-25.15812* (-2.036)
N of obs.	358	358	358	358	294	294
P-value (overall goodness of fit)	6.03e-18	3.53e-18	1.35e-19	1.90e-20	2.57e-13	1.45e-13
Tests of endogeneity						
Robust score χ^2 (1)					3.3048 (p=0.0691)	4.61158 (p=0.0318)
Robust regression F(1,280)					3.04876 (p=0.0819)	3.07467 (p=0.0806)
Test of overidentifying restrictions						
Score χ^2 (2)						1.63952 (p=0.4405)

Legend: coefficients and t-stats; ** 1 percent significance, * 5 percent significance. All estimates are with heteroskedasticity robust standard errors.

Instrumented variable: FT years. Instruments: distance from cooperative (equation 5); distance from cooperative, positive exogenous events, negative exogenous events (see section 5.1 for a list) (equation 6).

Tests of endogeneity: Wooldridge's (1995) robust score test and a robust regression-based test.

Test of overidentifying restrictions: Sargan's (1958) and Basmann's (1960) χ^2 tests. Variable legend: see Appendix.

Table 9: The effect of FT affiliation years on per capita household income from agriculture (sample restricted to affiliated farmers) *(thousand bath)*

OLS

Dependent variable: per capita household income from agriculture

	Equation 1	Equation 2
Age	.1893868	.1532398
	(1.729)	(1.351)
Number of children	-.2694462	-.2489142
	(-.3140)	(-.289)
School years	-.226613	-.2306541
	(-.725)	(-.742)
Male	-2.336937	-2.189811
	(-1.113)	(-1.037)
Married	9.608373**	9.573048**
	(3.129)	(3.145)
Divorced	9.856791	10.61492
	(1.790)	(1.941)
Years in agriculture	.0155602	.0411891
	(.169)	(.437)
Ft years	2.254683*	
	(2.501)	
Temporary employees	-.0185474	-.0225136
	(-.102)	(-.124)
Land size	.3825852**	.3813571**
	(4.157)	(4.192)
Ft premium	.003305**	-.0059342
	(3.518)	(-1.034)
Ft years 1		-1.110434
		(-.484)
Ft years 2		2.934869**
		(2.942)
Constant	-28.82804**	3.345025
	(-2.838)	(.159)
N of obs.	172	172
P-value (overall goodness of fit)	.0000238	.0000197

Legend: coefficients and t-stats; ** 1 percent significance, * 5 percent significance. All estimates are with heteroskedasticity robust standard errors.
Variable legend: see Appendix.

Table 10: organic certification versus FT affiliation years (Davidson McKinnon Test)

Davidson McKinnon Test
OLS Estimates with RSE
Dependent variable: per capita household income from agriculture (thousands of bath)

	Equation 1	Equation 2 (Predicted Var.: FT affiliation years)	Equation 3 (Predicted Var.: organic certification years)
Area 1	-7.260584**		
	(-5.342)		
Area 2		6.169198	.9224076
		(1.815)	(.264)
Control group	3.141594*	2.835254	.366031
	(2.194)	(1.675)	(.203)
Age	.1033073	.0887737	.010881
	(1.508)	(1.046)	(.136)
Number of children	-.4848361	-.4095994	-.0605814
	(-1.036)	(-.766)	(-.120)
School years	-.2289626	-.1921382	-.0319164
	(-1.110)	(-.799)	(-.145)
Male	.2699465	.2503611	.0076223
	(.218)	(.202)	(.006)
Married	.3528454	.2361395	.0523198
	(.132)	(.088)	(.0196)
Divorced	-.2277618	-.2396386	-.006724
	(-.066)	(-.0699)	(-.002)
Years in agriculture	.0599731	.0508024	.0073701
	(1.114)	(.839)	(.123)
Ft years	1.19118*	1.19118*	
	(2.136)	(2.136)	
Certification years	.1196139		.1196141
	(.306)		(.306)
Temporary employees	.0116371	.0103923	-.0002759
	(.093)	(.0832)	(-.002)
Land size	.3441203**	.2932195	.0405589
	(6.966)	(1.714)	(.267)
$\bar{y}$ **(organic certification years)[1]**		.1461367	
		(.306)	
$\bar{y}$ **(FT affiliation years)[2]**			.8821057*
			(2.136)
Constant	.2786064	-6.075801	-.7536317
	(.062)	(-1.147)	(-.137)
N. of obs.	358	358	358
p-value (overall goodness of fit)	7.54e-18	7.54e-18	7.54e-18

1. Predicted dependent variable from model in column 3 when excluding $\bar{y}$ (FT affiliation years) from the estimate

2. Predicted dependent variable from model in column 2 when excluding $\bar{y}$ (FT certification years) from the estimate
Legend: coefficients and t-stats; ** 1 percent significance, * 5 percent significance. All estimates are with heteroskedasticity robust standard errors.
Variable legend: see Appendix.

Table 11: The effect of Certification years and FT years on per capita income when selfconsumption is accounted for.

	Organic Certification years	Organic Certification years (area 1)	Organic Certification years (area 2)	Ft affiliation years	FT affiliation years (area 1)	FT affiliation years (area 2)
Dependent variable: Per capita income from agriculture and selfconsumption						
OLS model # 1	1.049704** (5.491)			1.695782** (6.493)		
OLS model # 2	.8585559** (3.512)			1.927427** (4.395)		
OLS model # 3		.7812269** (3.551)	1.40436** (4.703)		1.598068** (4.333)	1.762559** (5.167)
OLS model # 4		.8159783** (3.409)	1.599349* (2.483)		2.144011** (4.938)	3.601877** (3.718)
OLS model # 5	.7757561* (2.092)			3.00966** (3.187)		
OLS model # 6		.0407064 (.0987)	2.03911** (2.895)		.4576734 (.179)	3.525489** (3.318)
Davidson-Mc Kinnon test	.2498924 (.584)			1.363184* (2.248)		
2 SLS model # 1	5.737092 (1.633)			5.446356 (1.858)		
Test of endogeneity Robust score χ^2 (1)	3.18177 (p=0.0745)			2.10205 (p=0.1471)		
Robust regression F(1,280)	2.92686 (p=0.0882)			1.9495 (p=0.1637)		
2 SLS model # 2	4.848505 (1.810)			4.506378* (1.969)		
Test of endogeneity Robust score χ^2 (1)	3.96816 (p=0.0464)			2.09992 (p=0.1473)		
Robust regression F(1,256)	3.77175 (p=0.0531)			1.95649 (p=0.1630)		
Test of overidentifying restrictions Score χ^2 (2)	.910245 (p=0.6344)			2.24067 (p=0.3262)		

OLS Model # 1: Table 5 column 1 and Table 8 column 1
OLS Model # 2: Table 5 column 2 and Table 8 column 2
OLS Model # 3: Table 5 column 3 and Table 8 column 3
OLS Model # 4: Table 5 column 4 and Table 8 column 4
OLS Model # 5: Table 7 column 1 and Table 9 column 1
OLS Model # 6: Table 7 column 2 and Table 9 column 2
2 SLS model # 1: Table 5 column 5 and Table 8 column 5
2 SLS model # 2: Table 5 column 6 and Table 8 column 6
** 1 percent significance, * 5 percent significance.

Appendix. Variable legend

Variables	Description	Variables	Description
Area 1	Variable taking value of 1 if respondents live in Kud Chun	Employee daily wage	Temporary employees' daily wage
Area 2	Variable taking value of 1 if respondents live in Bak Reua	Investment in input	Investment in input during last year
Affiliation dummy	Dummy taking the value of 1 if respondents are affiliated to FT and 0 otherwise	Male	Dummy taking the value of 1 if respondents are male
Age	Respondents' Age	Married	Dummy taking the value of 1 if respondents are married
Control group	Dummy taking the value of 1 if respondents are members of cooperatives buy are not FT affiliated	Divorced	Dummy taking the value of 1 if respondents are divorced
School years	Years of school attendance	Unmarried	Dummy taking the value of 1 if respondents are unmarried
Number of children	Number of children	Certification years	Number of organic certification years
People in the household	Number of people living in the household	Certification years 1	Certification years in area 1 (Kud Chun)
Family food consumption	Household's food expenditure in a week	Certification years 2	Certification years in area 1 (Bak Reua)
Rice	% of rice self-produced	FT years	Number of FT affiliation years
Noodles	% of noodles self-produced	FT years 1	FT years in area 1 (Kud Chun)
Vegetables	% of vegetables self-produced	FT years 2	FT years in area 1 (Bak Reua)
Papaya	% of papaya self-produced	Durables owned	Sum of durables owned by respondents
Fresh fruit	% of fresh fruit self-produced	Cooperatives price	Price of Jasmine rice paid by local cooperatives
Egg	% of eggs self-produced	FT price	Fair trade price for Jasmine price
Milk	% of milk self-produced	Ft premium	Difference betweem FT price and the price payed by local cooperatives
Chicken	% of chicken self-produced	Other buyers price	Price of Jasmine rice paid by other buyers
Other meat	% of other meat self-produced	Cooperatives advance payments	Advance payment from local cooperatives (Jasmine rice)
Fish	% of fish self-produced	Cooperatives profit/dividends	Profit/dividend received from local cooperatives (Jasmine rice)
Fresh noodles	% of fresh noodles self-produced	Other buyers profit/dividends	Profit/dividend received from other buyers (Jasmine rice)
Value of self consumption (per year)	Value of self-production (per year)	Total productivity	Total income per hour worked
Years in agriculture	Working years in agriculture	Productivity 1st activity	Respondents' income from agriculture per hour worked
Income from agriculture	Respondents' yearly income in agriculture	Productivity 2nd activity	Respondents' income from second activity per hour worked
Total income	Respondents' yearly income from the main and the second activity	Debt/income	Family debt to income ratio
Family income	The sum of the yearly income earned by all members of the household	Saving/income	Last year saving as a percentage of income
Temporary employees	Number of the respondents' temporary employees	Land size	Total land size (rai)
Positive exogenous events	Exogenous events having a positive impact on respondents' income i) increase in the paddy rice market price, ii) a positive shock on production, iii) present from farmers' sons and daughters (money or, in same cases, a car), v) wage shock in the second activity, vi) lottery winning and vii) granting of awards.)	Negative exogenous events	Exogenous events having a negative impact on respondents' income (i) close relatives's death, ii) desease, iii) car accidents, iv) fire, v) car breaking, an vi) increase in the input market price, vii) the death of animals used as capital investment (such as water buffalos), viii) a slow development of the soil.)
Distance from cooperatives	Distance from cooperatives4		

	Questionnaire	
N°	**Question**	**Alternatives**
1	Case number	CG or TG
2	Sex	female [1] male [3]
3	Age	number
4	Civil status	Unmarried [1] divorced [3] married [5]
5	Are you member of a cooperative/producers' group?	yes [1] no [0]
6	If 5 = yes: How far do you live from the cooperative center (in Yasothon)?	km
7	How many people in your household migrated in the last five years?	number
8	If 7 = yes: What for?	Relatives moved as well [1] Schooling [3] Marriage [5] Look for work/start new job [7] Famine, draught, disease [9] Other (specify)_____[11]
9	if 7 = yes: Where?	Other village [1] Bangkok [3] Other-Non-Bangkok [5] Other-non-Thailand [7]
10	How much do you consider yourself happy (from 0 to 10)?	0-10
11	How many years have you attended the school?	years
12	How many children do you have? [fill the tab below]	number

13 Children tab

	Sex	Age	How old when started the school?	How many years did he/she attend the school?	How many years did he/she repeat? [if not = 0]	help the family [1]	Activity work outside the family [3]	not working [5]	how many hours/day does he/she work on that activity?
First	Male [1] Female [3]								
Second									
Third									
Fourth									
Fifth									
Sixth									
Seventh									
Eighth									

14	How far do you live from the school?	km
15	During the last year your children went to school how much have you spent on education for?	baht

Fees
Uniforms
Textbooks
Exercise books, pens,
pencils
Meals, transportation
Other expenses

16	Where was your last child born?	at home [1]
		in a rural clinic [3] in the hospital [5] other (specify) [7]
17	Has your last child been vacccinated?	yes [1]
		no [0]
18	How much did you spend this year for dental care for the whole family?	baht
19	Has one of your children died?	number of children died
20	Have you seriously injured yourself during the last year?	how many times
21	How many days have you got sick and could not go to work?	days
22	If you were to sell your plot of land today, how much could you sell it for?	baht/RAI
23	Do you use any chemical fertilizer/pesticide?	yes [1]
		no [0]
24	If 23 = no: Did you use chemical ferilizer/pesticide in the past?	yes [1]
		no [0]
25	if 24= yes: When did you stop using them?	year
26	How many people do usually live in your house?	number
27	During the past year, how many times have you attended extension training activities?	times [0 if not attended]
28	If 27>0: What kind of training courses?	Use of fertilizers [1]
		Irrigation [3] New seeds [5] Pest infestation [7] Blight problems [9] soil problems [11] weather problems [13] general crop advice [15] marketing advice [17] insemination services [19] other (specify) _____ [21]
29	If 27=0: Why?	I am not interested [1] I don't have time [3] I can't afford them [5] there aren't training courses [7]

#	Question						
30	Which is the main building material used for your house?	timbers [1] bricks and concrete [3] other [5]					
31	Which kind of floor is there in the house?	bare ground [1] cement [3] wood boards [5] tiles [7] other [9]					
32	Which is the main light source you have at home?	electricity [1] gas [3] oil lamp [5] candle [7] other (specify) [9]					
33	What type of fuel does your family mainly use for cooking?	wood [1] coal [3] gas [5] electricity [7] dung [9] other (specify)_____ [11]					
34	Has your family access to drinkable water?	yes [1] no [0]					
35	Bathroom location and sharing:	inside and exclusive [9] inside and shared [7] outside and exclusive [5] outside and shared [3] no bathroom [1]					
36	How much do usually you spend in food for all your family in a week?	bath					
37	Consumption TAB	How many times does your family eat the following food?					Which share of each food consumed do you produce by yourself?
		every day [1]	twice a week [3]	once a week [5]	once a month [7]	never [9]	0 - 100 %
	Rice Noodles Vegetables Green Papaya Fresh fruit Eggs Milk Chicken Other meat Fish Fresh noodles						
38	How do you consider your standard of living compared to the one of other people who live in this village?	much better [1] better [3]					

#	Question	Col1	Col2	Col3	Col4	Col5	Col6
		equal [5]					
		lower [7]					
		much lower [9]					
39	Besides agriculture do you have another activity?	craftwork [1]					
		construction [3]					
		other (speficy)_____ [5]					
40	Activities' Tab	Years	Earnings/year	Days worked/Year	Hours worked/day		
41	Agricolture Second How many employees do you have? stable employees temporary employees	Number of employees	Daily wage				
42	Are you usually involved in a labour exchange system?	yes [1] no [0]					
43	Buyers Tab - Who do you usually sell Jasmine Rice to?	Which share of production do you usually sell to each type of buyer?	Which price do you usually receive per ton sold?	Do you receive money in advance?	How much did you receive as profit/divid end from the producer's group?	How much are you satisfied with the price?	
		%	baht/ton	Yes [1] No [0]	baht	[1= very much 2= enough; 3= not very satisfied; 4= not at all]	
44	Local cooperative Other buyers During last five years have you changed your production system?	yes [1] no [0]					
45	Please tell me the yearly income in your family. husband/wife sons/daughters other members	baht					
46	Do you have other sources of non work income (subsidies, donations, etc.)? from the community from the state from private persons from development agencies/ngos remittances from relatives rents other (specify)_____	yes [1] no [0]					
47	Which of the following things does your family own? tv entertainment devices (CD, DVD players, etc.) fridge bicycle motorcycle car water pump plowing machine gas stove truck mobile phone	yes [1] no [0]					

48	How much are you satisfied with your household's living conditions?	[0 - 10]		
49	How much do you consider yourself a good farmer?	[0 - 10]		
50	In your opinion, how much should your monthly wage be to live in a satisfactory way?	baht		
51	What do you do with your production's wastes?	You burn it [1]		
		You throw it [3] You re-use it as manure [5] You sell [7] other (specify) _____ [9]		
52	Have you ever asked/received loans in the past three years? From whom?	Asked	Received	What is the average interest rate charged?
		Yes [1] No [0]	Yes [1] No [0]	%
	friends relatives privates/neighbours producers' group/other buyers ngos bank financial institutions other (specify)_____			
53	What is the total debt of your household?	baht		
54	How much did you save approximately last year in percent of your earnings?	%		
55	How many of the following animals do you own?	number		
	water buffalos cows pigs fishes and frogs chickens			
56	How much did you spend for investment in your working activity (replacement of working tools, etc.) last year ?	baht		
57	Do you know FAIR TRADE?	yes [1]		
		no [0]		
58	if yes, to with of the following statements do you agree the most?	fair trade is charity [1]		
		fair trade means getting a better earning [3] fair trade is an equal commercial relationship [5]		

		fair trade is an alternative approach which is based on dialogue, transparency and respect trying for equity in international trade [7]
59	Do you speak english?	yes [1] no [0]
60	Which groups or associations do you participate in or are you more interested in? sporting groups religious groups or associations farmers' cooperative local community groups cultural groups (music, dance) political parties other (specify)_____	yes [1] no [0]
61	Do you voted in the last election (at national or local level)?	yes [1] no [0]
62	Have you ever asked the other farmers to take care of your son?	yes [1] no [0]
63	Have you ever asked for help from the other farmers?	yes [1] no [0]
64	Do you collaborate with your neighbours?	yes [1] no [0]
	ONLY FOR AFFLIATED FARMERS	
65 A	How did you know about GreenNet?	from other farmers/peoducer's group [1] from relatives [3] other (specify)_____ [5]
66 A	Was it easy to enter in GreenNet?	yes [1] no [0]
67 A	Which year did you receive the organic certification?	year
68 A	Have you ever exit from GreenNet?	yes [1] no [0]
69 A	How do you consider the sale conditions of GreenNet compared to the other buyers' ones?	better [5] worse [1] same [3]
70 A	Comparing with conventional producer, do you think: your field enjoy more birds? your soil keep the moisture longer? your field enjoy the	yes [1] no [0]

	presence of more small animals?		
	ONLY FOR NOT AFFLIATED FARMERS		
65 NA	Do you know any other farmer who works with any local cooperative?	yes [1]	
		no [0]	
66 NA	If yes:Do you think they have better sale conditions?	yes [1]	
		no [0]	
67 NA	Would you like to get the organic certification?	yes [1]	
		no [0]	
68 NA	If 67 = yes: What are the main contraints you find in doing that?	costs [1]	
		not enough sales [3] lower price [5] other (specify)_____ [7]	
69 NA	Since your organic neighbours have been working here, has your situation improved?	improved [1]	
		worsened [3] same [5]	
	FOR ALL		
71	List a series of memorable economic events in the last years (i.e., purchase of machinaries; house renovation; marriage; famine; drought seasons; education decisions; etc.)	Events	Year
72	What is the total size of your land?	Rai	
73	What is the size of the plot where you grow jasmine rice?	Rai	
74	What was your total production of jasmine rice last year?	tons	