FINAL REPORT

COMPARATIVE IMPACT ASSESSMENT OF COFFEE STANDARDS IN NORTHERN NICARAGUA:

The Role of HIVOS Support to PRODECOOP

This report has been written by order of IOB. However, the authors bear final responsibility for the contents of this report.

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Spanish Summary

1. Este studio se llevó a cabo dentro del marco de la evaluación global de la cooperación al desarrollo del Gobierno Holandes hacia Nicaragua durante el período 2005-08. El principal objetivo de este estudio de base se refiere a la medición del impacto del apoyo brindado por parte de la organización HIVOS hacia la Federación de Cooperativas PRODECOOP en la zona Norte de Nicaragua (*Las Segovias*), en función del reforzamiento de la inserción de las cooperativas cafetaleras en el mercado del Comercio Justo.

2. El enfoque principal del estudio se concentra en el análisis de la función de los procesos de certificación de café y de los estandards privados para reforzar la inserción campesina en cadenas de valor. Para tal efecto, se han considerado los efectos sobre la organización interna y los cambios en la posición socio-económica de los hogares campesinos. Se ha dedicado atención específica a la posición de la mujer, la sostenibilidad ambiental y el manejo de calidad de productos como dimensiones vitales para reforzar la sostenibilidad de la inserción mercantil.

3. El diseño metodológico del estudio está basado en una muestra estratificada al alzar en la zona de *San Juan de Rio Coco*, compuesta por 150 productores miembros de PRODECOOP (Comercio Justo: 75 orgánico, 75 convencional), 75 productores independientes, 45 productores produciendo bajo estandards Café Prácticas (Starbucks) y 45 productores certificados por Rainforest Alliance. El disenño del cuestionario y la selección de la muestra han sido discutidos con oficiales de PRODECOOP en el taller inicial.

4. Fueron recolectados datos de campo acerca de indicadores del comportamiento familiar (edad, educación, género, ubicación espacial), sobre la producción de café y de otros rubros agropecuarios (área, rendimiento, precios), sobre la composición de ingresos y egresos familiares, actitudes de organización, género y empoderamiento, condiciones de mercadeo (contratos) y actitudes de riesgo, lealtad y justicia.

5. Se aplicaron métodos estadísticos para balancear la muestra y garantizar una comparación entre productores quienes comparten características intrínsicas homogéneas, de tal manera que los diferentes grupos de productores tienen igual probabilidad para cualificar para cada uno de los estandards. Esto implica un proceso de 'matching' para eliminar casos extremos, seguido por un análisis de las diferencias entre el grupo de tratamiento (Fair Trade/PRODECOOP) y los grupos de Control (productores independientes, RFA y CP).

6. Los resultados productivos de las fincas afiliadas a PRODECOOP indican que los precios recibidos para el café son 2-3% superiores comparados con productores individuales, pero los rendimientos realizados en fincas individuales son casi 25 % mas elevados. De la misma manera, los rendimientos en fincas certificadas por Café Prácticas y Rainforest Alliance son generalmente superiores a los del Comercio Justo debido a la application de mejores prácticas de cultivo y mejor manejo (post)cosecha. Fincas con café orgánica realizan por lo general mejores precios, pero deben aceptar un rendimiento ligeramente inferior.

7. PRODECOOP ha dado notable atención a la renovación de café dentro del marco del proyecto HIVOS/EU. La renovación resulta ser una actividad rentable (recuperación factible en 3-4 años) y de suma importancia para poder aumentar la productividad. Adicionalmente, habrá que dedicar más atención al mejoramiento del manejo de calidad tanto en finca como en beneficio. La capacidad competitiva de PRODECOOP en el próximo futuro depende en gran medida de las posibilidades de superación en materia de calidad y productividad.

8. Las ventajas de pertenecer a una organización cooperativa beligerante que defiende los intereses de los miembros y ofrece servicios de asistenca técnica y comercial son muy apreciadas. En este sentido, PRODECOOP supera notablemente a los productores individuales. Es notorio, que dichas ventajas también se manifiestan en el seno de cooperativas certificadas por Rainforest Alliance (café sostenible), mientras que los miembros de cooperativas certificadas por Café Prácticas (Starbucks) no lo disfrutan de la misma manera, lo que indica diferencias en materia de fomento organizativo.

9. El aporte del Comercio Justo para el reforzamiento de la posición de la mujer en el hogar y dentro de la organización campesina sigue siendo limitado. Aun con una amplia gama de actividades de promoción de género, hay limitada evidencia que las relaciones de conciencia y poder están en proceso de reajuste.

10 Para todos los productores, la dimensión del precio sigue siendo lo mas importante en la transacción de venta. El pré-financiamiento del Comercio Justo refuerza la seguridad de los productores. Los productores independientes valorizan más el pago directo y por contado al momento de entrega al beneficio. El precio mínimo que ofrece el Comercio Justo tiende a reducir la importancia dedicada a las dimensiones de calidad. Estandards privados a menudo realizan mejores ingresos debido a sus ventajas en materia de productividad.

11. El impacto del Comercio Justo sobre actitudes y comportamiento personal son de mucha importancia. Productores afiliados a PRODECOOP demuestran mayor sentido de justicia y son ligeramente menos aversivos al riesgo. Por otro lado, no se nota mayor lealtad, dado que ventas de café a compradores externos ocurren con cierta frecuencia.

12. El Comercio Justo ofreció contribuciones válidas para promover la recuperación y renovación de la producción cafetalera en la zona de Las Segovias, pero los estandards privados ofrecen mejores incentivos hacia el mejoramiento del manejo y de la calidad del café. Asimismo, para la etapa inicial de conquistar el acceso al mercado el Comercio Justo es de vital importancia, mientras que en etapas posteriores los estandards privados puedan contribuir al reforzamiento de las competitividad.

13. El programa HIVOS-PRODECOOP (€ 2.2 miljoen) ofrece a los miembros una ventaja de precio Comercio Justo de 20 US$/quintal (= € 0.33/kg). Con una producción total de 63.000 qq oro esto se traduce en un efecto sobre ingresos netos de € 945.000, equivalente con € 410 por familia o € 80 per capita, o sea 4 % por éncima del grupo de control de productores independientes. La recuperación se puede dar en menos de 2.5 años. Cabe notar, sin embargo, que un aumento similar se podría realizar - con precios fijos - a partir de un aumento del rendimiento con 2 qq/mzs. Las actuales diferencias de rendimiento con Café Prácticas y Rainforest Alliance son 4-6 qq/mzs, indicando que los estandards privados ofrecen mayores perspectivas para el aumento de la productividad.

1. Introduction: Key Research Questions

Within the framework of an overall assessment of Dutch bilateral development cooperation with Nicaragua, the Inspection and Evaluation Department (IOB) of the Dutch Ministry of Foreign Affairs scheduled a more detailed study regarding the impact of civilateral support by HIVOS to the Federation of Coffee Cooperatives PRODECOOP in the *Las Segovias* region of Northern Nicaragua.

Dutch bilateral aid to Nicaragua during the 2005-08 period amounted € 76 million (mainly for budget support and public health); in addition € 42 million has been channelled through non-governmental organizations. NGO support for economic-productive activities represents more than half of all civilateral programs (€ 17.4 million[1]), with HIVOS as a major intermediary agency (€ 8.9 million). HIVOS support to PRODECOOP started in 1995 and includes funding of programs for reinforcing productive and organizational development (e.g. farmers' training, technical assistance, production systems improvement, quality control and upgrading, and credit for women's groups). In addition, an EU-funded program for coffee renovation and diversification, organic conversion and coffee processing has been executed (€ 1.9 million). Total HIVOS support to PRODECOOP represents € 2.2 million.

PRODECOOP has been established in 1993 as a Federation of 40 base-level coffee cooperatives located in three Northern departments of Nicaragua (Estelí, Madriz and Nueva Segovia). The Federation provides support to 2.300 members for improving production, processing and international trade. The total coffee area is 4.600 ha. and 30% of current members are females. Each base-level cooperative is relatively small (30-45 members), most primary (wet) processsing takes place at farm or cooperative level, but dry processing is increasingly centralized. PRODECOOP Cooperatives are fully certified by Fair Trade (FLO) and partly for Organic production (by Ocia/Biolatina). About 80% of current production is marketed under the Fair Trade label.

Whereas the overall IOB evaluation focuses on aid effectiveness, the study assignment for PRODECOOP explicitly aims to assess socio-economic impact of Fair Trade labelling at farm-household and cooperative level. The terms of reference focus attention on three main issues:

a) Changes in income and related socio-economic conditions of farmers associated to PRODECOOP base-level cooperatives;
b) Improvements in the position of women and gender relationships (within households and cooperatives);
c) Development of productive, organizational and managerial capacities and skills (e.g. quality management, adoption of best practices and loyalty in delivery contracts).

This report provides a concise overview of the results of an extensive field survey conducted amongst 150 PRODECOOP members in the *San Juan de Rio Coco* region (75 organic; 75 conventional) and two different control groups: independent farmers without any certification (75), farmers delivering under the private labels of Rainforest Alliance label (45) and the CAFÉ Practices (Starbucks) label (45). We performed propensity score matching and difference analysis with nearest neighbour and kernel techniques to identify unbiased impact effects. Results are discussed against the background of the value chain approach for poverty reduction to assess the importance of certification and standards in the process of improving market competitiveness of smallholder production.

[1] This includes roughly € 10 million for support to smallholder production, and another € 7 million for microfinance services.

2. Conceptual Framework: Poverty Reduction through Value Chain Approach

The HIVOS-PRODECOOP program is based on the paradigm of structural poverty reduction for peasants living in (remote) rural areas through structural reinforcement of their linkages with (inter)national market chains and the improvement of their delivery conditions. This so-called value chain approach intends to reinforce the competitiveness and bargaining position of smallholder producers within the framework of contractual exchange networks of traders, processors and retailers (Muradian & Pelupessy, 2005). Better coordination of supply chain partners will enable to reduce transaction costs and risks and reinforces innovative capacities, in such a way that producers are better able to adjust their production systems to changing consumer preferences or market configurations.

Key aspects of the value chain approach include mutual coordination amongst stakeholders regarding market access, improvements of quality and consistency, and reliable deliveries. Therefore, scale economies and intensification of production systems are usually required, either by creating farmers cooperatives or through associative organization of individual farmers (Ruben et al., 2006, 2007). Delivery contracts tend to stipulate key conditions with respect to good agricultural practices (GAP), product quality characteristics (humidity, size), production volumes, price and payment frequency, and exclusivity clauses.

An important aspect of the value chain approach refers to the development of private standards and certification regimes. (Henson, 2006; Giovannucci & Ponte, 2005). Parallel to the rise of minimum delivery conditions from the retail sector (EUREPGAP), societal organizations have started with the development of standards for Fair Trade (FLO/Max Havelaar), ecological/sustainable trade (ECO, Rainforest Alliance) and more recently Responsible Trade (Starbucks Café Practices; UTZ Certified).[2] Fair Trade standards include provisions for a minimum price, premium payments, democratic internal organization and labour conditions. Sustainability standards devote additional attention to ecological production systems, water and nature conservation, and maintenance of local biodiversity and wildlife. Standards for Responsible Trade are also focussed on chain traceability and good agricultural and processing procedures. Both latter segments do not include price premiums, but intend to raise the market value of production through improved yields and higher quality of deliveries. None of the standards guarantees, however, full purchase of certified production volumes (Giovannucci & Koekoek, 2003).

HIVOS gives ample priority in its Sustainable Production and Entrepreneurial Development programs to bottom-up reinforcement of the bargaining position of smallholders and the role of progress indicators for monitoring the processes of upgrading and organization development (van Beuningen & Knorringa, 2009). Systematic support for training and technical extension is considered of critical importance to accompany in-depth investment for improving production or processing facilities. Involvement of women into income-generating activities and their participation in decision-making bodies are conditions for reinforcing empowerment. A suitable mix between 'hardware' and 'software' is therefore considered of vital importance for strengthening trust relationships and sharing the risks involved in effective supply chain partnerships.

[2] While Fair Trade focuses on minimum prices and premium payments at the output side, responsible trade pays more attention to input applications and improved agricultural practices for yield and quality management. Sustainable trade is more concerned about environmental ecosystem management, whereas organic production focuses on reduced (zero) agrochemical applications. The latter systems rely on market prices but include either quality or (negotiable) delivery premiums.

While the current proliferation of standards may easily lead to new dimensions of market segmentation, it can also be considered as a normal expression of the existing diversity and heterogeneity in production conditions. Different standards might be required to address specific binding constraints in the supply chain, and dynamic improvements of performance might be better supported through progressive regimes that enable farmers towards gradual upgrading of their production management practices (van Beuningen & Knorringa, 2009). Moreover, given the increasing importance of speciality coffee markets, price conditions are intrinsically related to quality performance. Private standards, like Utz Certified, CAFÉ Practices and Rainforest Alliance, offer opportunities to both smallholder groups and plantations for mainstreaming coffee supplies that are delivered under market-conform conditions, but receive higher prices due to improved input efficiency and better quality performance. This marks a fundamental change from global output price support towards targeted input management. Similarly, market access is less perceives as the main problem, and attention is gradually shifting towards value chain upgrading.

Empirical comparisons regarding the impact of trade standards on farmer's welfare should shed light on the feasibility of coexistence of different labelling regimes and the perceived benefits for smallholder producers. Muradian and Pelupessy (2005) argue that some voluntary certification schemes embrace weaker selection criteria and thus provide opportunities for large company's to 'green wash' their image (Renard, 2005). Other studies are rather doubtful about the possibilities of smallholders to comply with more stringent quality-based certification regimes (Lazaro et al., 2008). Few empirical field studies are available to assess the micro-economic effects of private labels on production and farm-household welfare.

While earlier experiences with standards always appeared to act as significant barriers to trade in agricultural and food products, these private standards might have similar effects. However, quite to the contrary, Swinnen and Maertens (2007) provide consistent evidence that tight public and more demanding private standards can also be considered as effective incentives for improving smallholder efficiency and equity in value chain. Moreover, the trend towards collective private standards and the harmonisation and mutual recognition of standards across global markets suggests that these in fact facilitate trade. Indeed, there is evidence that the tendency and speed towards harmonisation of private food safety and quality standards far exceeds similar efforts in public spheres (Henson, 2006).

The effects of Fair Trade (FT) certification on coffee producers and organizations have being analyzed in several earlier studies. Detailed studies from coffee cooperatives in Costa Rica (Ronchi, 2002), Nicaragua (Bacon, 2005) and Mexico (Jaffee, 2007; Calo & Wise, 2005; Milford, 2004) found that FT strengthened producer organizations and conclude that - in light of the coffee crisis of the early 1990s - FT can be said to have accomplished its goal of improving the returns to small producers and positively affecting their quality of life and the strength of the organizations that represent them locally, nationally and beyond. Other research stressed that Fair Trade initiatives substantially improved the well-being of small-scale coffee farmers and their families, particularly due to better access to credit facilities and external funds as well as through training and improved capabilities to enhance the quality of the product (Taylor, 2005; Murray et al., 2003). FT farmers were also more successful in diversifying their production, experienced greater satisfaction in terms of prices obtained for their crop, improvements in terms of monthly household food consumption and living conditions that resulted in a significant drop in child mortality (Becchetti and Costantino, 2006).

The European Fair Trade Association (EFTA) provides an overview of FT impact studies that were realized since 2000, but none of these studies count with an ample field work or a rigorous comparison with otherwise similar Non-FT producers. Most of them emphasize the positive effects on producer's organizations – focusing on the process of capitalization from the FT premium payments for example – while little attention is given to the individual and household-level implications (Taylor, 2005; Raynolds et al., 2004). Other studies refer to the effects on prices and productivity and the role of FT for improving competitiveness (Becchetti & Constantino, 2006). Some major constraints that are identified refer to difficulties of involving farmers in marketing decisions and the importance of public consciousness-raising for enhancing the size of the FT market.

Bacon (2005) compared Fair Trade, Organic and Specialty Coffees with respect to their potential to reduce small-scale farmers' vulnerability in Northern Nicaragua. In this region, 61 % of the surveyed farmers grow half of more of the food they eat. Many coffee farmers also produce corn, beans, bananas, fruits, chayote and yucca, while purchasing off-farm commodities like salt, sugar, oil, and meat. Both men and women allocate 80–90% of their corn and beans to household consumption before selling an eventual surplus. In contrast, farmers sold 80 –90% of the coffee harvest, generally keeping only the lowest quality beans for their own consumption. Coffee revenues are used to build houses, send children to school, and provide savings and investments for the future. The study supports the conclusion that access to FT certified coffee markets leads to significantly higher (and more stable) prices paid to the farmers and enables them to improve their livelihoods. Certification has an even greater influence on prices than the altitude (related to quality production). Other studies by Valkila (2009) and Valkila & Nygren (2009 that focus on organic FT farmers in Northern Nicaragua are more critical. FT organic coffee production reaches lower yields and asks higher labour efforts, and therefore the increase in farmer incomes of low-intensity coffee production is very modest, because little coffee is produced by marginalized farmers. Farmers thus remain in poverty despite being connected to Fair Trade organic markets (se also: Bacon et al., 2008).

The evidence from this study suggests that participation in alternative trade networks reduces exposure and vulnerability to low commodity prices. In a similar vein, Raynolds (2002) also points to the price premium as a critical element to offset the many other conditions that affect the quality of life. Farmers linked to coffee cooperatives that sell to alternative markets received higher average prices and also felt more secure in their land tenure. However, even then three quarters of all surveyed farmers reported a decline in their quality of life during the last few years. Their responses to the questions about perceived changes in the quality of life showed no significant difference between farmers participating in conventional and alternative trade networks. This finding and the results of the focus groups suggest that income from coffee sales to alternative markets is not enough to offset the many other conditions (e.g. higher input costs, steadily increasing consumer prices, gasoline and communication costs) that have provoked a perceived decline in the quality of one's life.

A general limitation with most impact studies is that no correction is made for differences in farm household characteristics when comparing FT farmers with other groups. For instance, if smaller and poorer farmers are the ones that usually become engaged in FT, farmers with similar characteristics should be used as comparison in order to get an unbiased measure of FT impact . The principal objective of this study is to evaluate this impact by using information on a sample of FT coffee producers in the Northern Nicaragua and comparing them with producers delivering under private labels and with Non-FT producers with similar characteristics.

3. Analytical Framework: Research Methods and Approach

The study provides a comparison between PRODECOOP farmers delivering to (Organic and Conventional) Fair Trade with control groups of farmers delivering to other (non)certified coffee outlets. The main focus is on determining the net differences between these categories of farmers, controlling for intrinsic and extrinsic factors (like farm size, location, agro-ecological conditions, etc.).

We rely on a propensity score matching approach to control for selection bias. This implies that the field sample should include three categories of producers:

(a) PRODECOOP farmers delivering Organic and Conventional coffee under FLO label
(b) Cooperative farmers delivering coffee under other private labels (Rainforest Alliance and CAFÉ Practices), representing Control Group 1
(c) Independent farmers (without certification) delivering to conventional outlets, representing Control Group 2.

The study is based on a cross-sectional assessment of FT impact with a selected sample of 315 farmers of *Arabica* coffee. The comparison will be focused on implications for farm household welfare, production and livelihood strategies. The list of key variables for the field survey is included in Annex A. Main attention is given to (a) the structural factors influencing the likelihood of market outlet choice, (b) the derived impact on production, prices, household income, wealth (assets, investments, savings), risk and loyalty attitudes, cooperative affiliation, and willingness to invest, and (c) the indirect impact of premium use, capacity building, gender relations, bargaining power and identity construction.

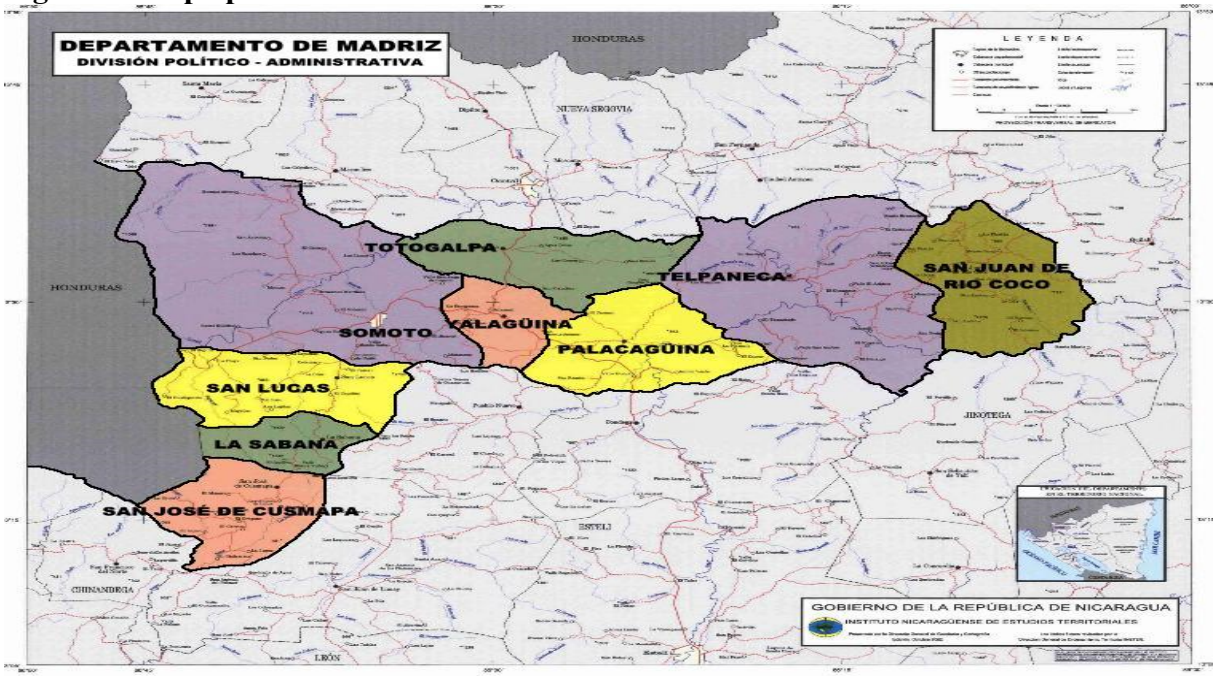
Due the absence of a base-line study, the only possibility to ascertain the impact of PRODECOOP Membership and Fair Trade affiliation is to compare their performance with otherwise identical farmers delivering to other market outlets. We selected therefore within the agro-ecologically uniform Village *San Juan de Rio Coco* (department of *Madriz*) a total number of 315 farm-households and collected data regarding income composition and expenditures, investments and capital assets, cooperative service provision, gender relationships and behavioural attitudes.

To enable sound matching of PRODECOOP farmers with the control households, a stratified sample was taken considering the location of the farm (800-1000 m, 1000-1200 m and > 1200 m. above sea level). Different locations are usually responsible for substantial quality (and price) variation and thus require a balanced sample composition. From each segment, 25 organic and conventional PRODECOOP member farms are randomly selected, as well as a corresponding number of their nearest neighbours independent farmers (see Table 1). In addition, we included we included 45 farmers with CAFE Practices (Starbucks) label and another 45 farmers with Rainforest Alliance certification.

Table 1: Sample Composition

	Certification of Production Systems					
Altitude	PRODECOOP Organic	PRODECOOP Conventional	Independent	CAFE Practices	Rainforest	Totaal
800 - 1000 m	25	25	25	10	15	105
1000 - 1200 m	25	25	25	15	20	105
> 1200 m	25	25	25	20	10	105
Total	75	75	75	45	45	315

Figure 1: Map op Field Locations



The Field work for data collection took place in three stages:

a) Initial workshop with PRODECOOP staff to define key indicators (August 2009)
b) Field sample composition and sample selection (September 2009)
c) Data collection, cleaning and processing (October-November 2009)

Data analysis is based on a process of statistical processing that includes the following steps:

a) Analysis of descriptive statistics of each of the four main sample segments (i.e. PRODECOOP, Independent Producers, RFA and CP);
b) Propensity Score Matching: estimation of likelihood functions for the probability of receiving a certain type of certification, based on intrinsic observable farm-household characteristics that influence selection but not the outcomes;
c) Selection of cases that belong to the Common Support Domain and can thus be used for subsequent analysis of significant differences
d) Difference analysis between treatment (=FT PRODECOOP) and control group (= Independent Producers and RFA/CP standards) using nearest neighbour, three nearest neighbours and Kernel techniques to guarantee robust outcomes (see: Ruben, 2008).
e) Comparative analysis of prices, yields and quality using distribution functions that indicate the spread of standard deviations (see: Zuniga et al., 2008, 2009).

Usually we would prefer to have a somewhat larger control group compared to the treatment in order to enable a more balanced sample composition after matching. However, the total number of RFA and CP producers in the region appeared to be limited.

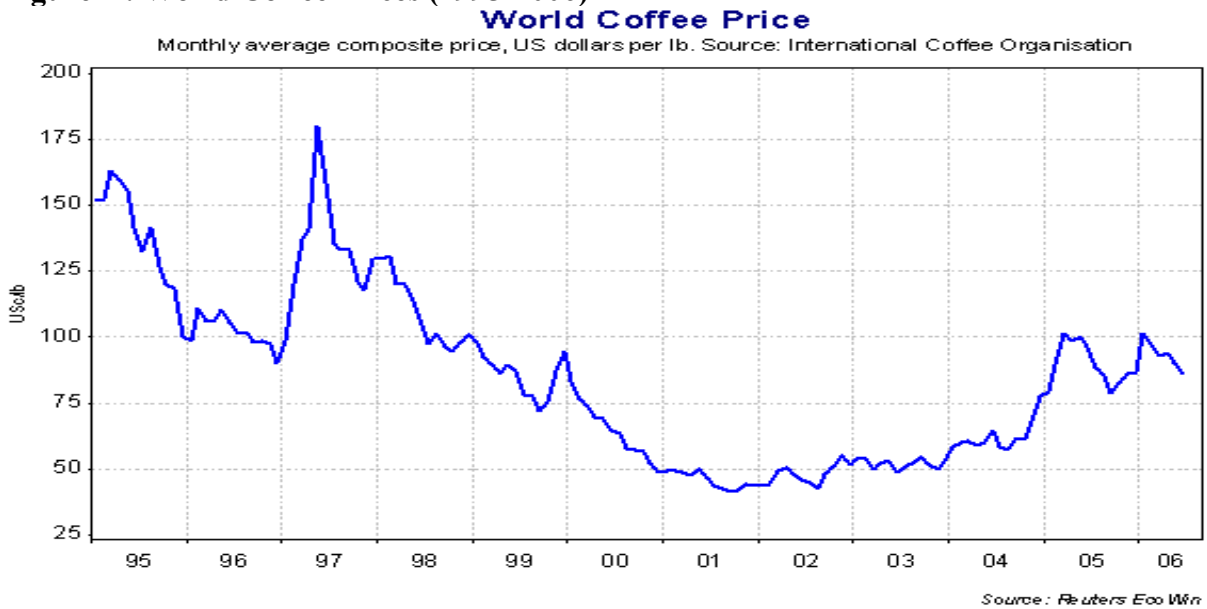
4. Economic Setting: Coffee Production & Standards in Nicaragua

The Nicaraguan economy has always been strongly dependent on coffee production and exports. Almost a quarter of the national export value is generated by coffee sales, even while Nicaraguan coffee only represents a 1% share in world coffee trade. More than 30,000 farmers cultivate coffee - usually on small parcels - and roughly 150.000 rural families are involved in coffee harvesting. The overwhelming majority of farmers manage family enterprises (< 3.5 ha of coffee area), but more than 80% of exports are generated by medium- and large-size farms. Coffee creates almost 1/3 of total rural employment in Nicaragua. Coffee yields are, however, relatively low compared to neighbouring countries. The World Bank classifies Nicaragua as a high-cost producer, mainly due to expensive credit facilities and inefficient input provision networks (Varangis et al., 2003; Kruger, 2000).

Rural development policies in Nicaragua since the 1960s have been oriented towards the improvement of production through area expansion (i.e. horizontal growth), devoting far less attention to quality and productivity. After the Sandinist liberation war and the following years of contra warfare, coffee yields further deteriorated. With the expropriation of large coffee estates as part of the land reform process and the subsequent instalment of coffee cooperatives with strong collective features, the government tries to maintain and consolidate its control over the strategic coffee sector. Moreover, coffee trade became centrally controlled, resulting in a more than 50 percent reduction in market supplies. After the gradual privatization of land ownership (started 1990) and the liberalization of trade, recovery of coffee production remained slow due to limited financing options and structurally low world prices.

From the 1980s onwards world coffee prices showed a continuous decline (see Figure 2). In the second half of the 1990s prices shortly recovered, generating as undesired side effect an increased used of child labour (Kruger, 2004). Since 1997 the world price has been declining again till its lowest level in 2002, when production costs are even beyond price levels. In an effort to stabilize family income, conditional cash transfers from the program '*Red de Protección Social'* provided important support to risk management (Maluccio, 2005). In addition, several public and private programs for improving coffee production and quality management were started to support coffee producers.

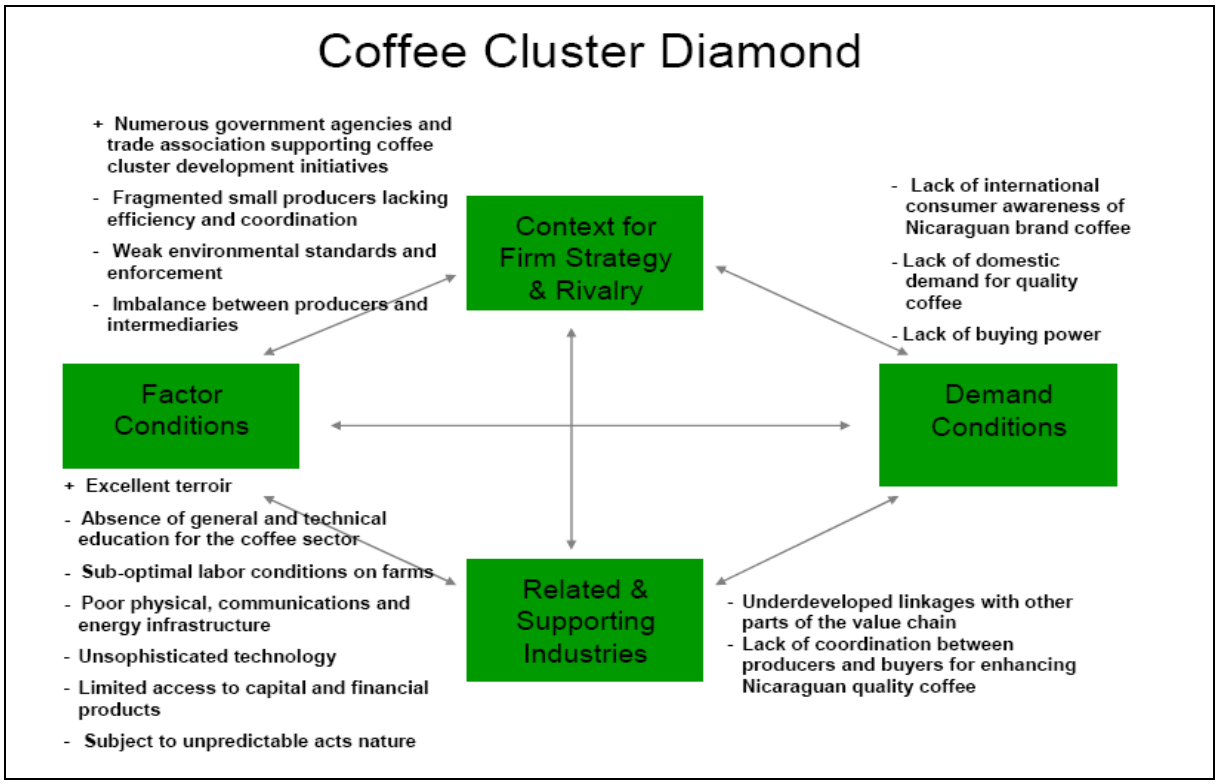
Figure 2 : World Coffee Prices (1995-2006)



In 1990, the Nicaraguan government started with large-scale credit provision for reactivation of the coffee sector. Whereas potentially, Nicaraguan coffee production can be of high quality (> 80 % of coffee productise classifies as *'strictly high grown'),* only 15-20 % is actually sold under premium conditions, while neighbouring countries like Costa Rica and Guatemala are able to reach almost the double amount. Central problems refer to the low processing quality, infrequent deliveries, and long distances resulting in high quality losses between the farm and the factory.

The structure and competitiveness of the Nicaraguan coffee cluster - based on the well-known Porter diamond - indicates major opportunities and constraints for upgrading of coffee production (see Figure 3). Natural conditions are most favourable, but infrastructure and (public and financial) institutional support are key limiting factors. Low education, precarious labour conditions, insecure land rights and natural hazards impose major constraints on investments for technological improvements.

Figure 3: Nicaraguan Coffee Cluster



Source: Villanueva et al. (2006)

A major drawback to coffee production occurred when hurricane Mitch hits the Northern territories of Nicaragua in 1998. Almost 500.000 people lose their homes and damages to agriculture have been estimated at US$ 200 million. Coffee exports from Nicaragua diminished in volume and value with almost 50%. Large-scale international support programs rapidly responded to the crisis, offering new possibilities for a coordinated effort towards recovery and renewal of the coffee sector.

Certification of coffee production and exports under the Fair Trade label started in Nicaragua in 1990 with some cooperatives from the federative CAFENICA network. Between 1996 and 2000, the Fair Trade export volume doubles to 1.400 MT. The number of participating coope-ratives strongly increased after hurricane Mitch, and in 2005 already 20 farmers cooperatives

obtained FLO certification. In the *Segovias* areas, almost all base-level cooperatives are FLO-certified, and certification is applied as the major strategy for renewing the articulation of smallholder producers into the economic process. The value share of producers in the market prices has increased from 7 to 11.5 % (Pirotte et al., 2006; Bacon, 2005). From national coffee exports, 4% is organically certified and 3% obtained Fair Trade certification. Average certification costs range between 2-4 US$ cents/lb.

HIVOS has been involved into Fair Trade initiatives in Nicaragua from the very beginning, mainly supporting cooperatives during their initial certification trajectory. Given the limited public support to the agricultural sector in general, the restrictive credit policies and the restrained entrepreneurial and business climate, the cooperative sector is almost fully dependent on civilateral support (both grants from NGOs and through MFI loans). The number of coffee labels in, however, rapidly increasing and proliferation of standards may lead to new market segmentation (see Table 2).

Table 2: Overview Major Coffee Standards

	Start	Volume (MT)	Characteristics
Production standards			
Fair Trade	1989	78.500	Minimum price + FLO premium + Pre-finance. Equitable trading arrangements for smallholders organized in democratic organizations (cooperatives).
Utz Certified	1997	77.500	Market price + negotiable premium. Global decency standard for responsible coffee growing and sourcing; Protocol for Good Agricultural Practices (EUREPGAP) and Worker welfare (ILO);Tracking & Tracing.
Rainforest Alliance	1993	62.000	Market price. Integrate productive agriculture: biodiversity conservation & maintenance of shade cover, protection and restoration of native forest reserves and human development.
Company standards			
C.A.F.E. Practices	2004	120.500	Market price + contract terms. Scorecard for sustainably grown and processed coffee to assess economic, social and environmental aspects.
Nespresso AAA	2006	13.000	Market price + quality premium. Assessment of sustainable quality (for grand cru and gourmet coffee).
Verification standards			
4C	2007	27.000	Market price; Code of Conduct with baseline requirements for sustainable production, processing and trading of coffee. Elimination of unacceptable practices and guidance for dynamic improvement process.

Source: based on TCC, Coffee Barometer 2009

Note: Utz Certified, Nespresso and 4C producers are not (yet) present in the region.

5. Institutional Setting: HIVOS support to PRODECOOP

PRODECOOP has been established in 1993 as a Federation of 40 base-level coffee cooperatives in three Northern departments of Nicaragua (Estelí, Madriz and Nueva Segovia), to support its 2.300 members in the fields of coffee production, processing and marketing. The total cultivated area of coffee is 4.600 ha. Roughly 30 % of members are female (partly wives of members) and there is a gradual increase of younger members.

The *'Las Segovias'* area is commonly known as an established coffee region, where several large-scale regional development programs have been executed (CIERA-Midinra,1984). In the 1990s, IFAD financed the Pronorte program for reinforcing rural infrastructure and strengthening production systems of smallholder cooperatives. In continuation, the TropiSeco program has devoted major attention to management of forest areas. The region was strongly affected by the tropical hurricane Mitch (1998) that almost halved coffee production. In response, the Inter-American Development Bank (IADB) funded a large-scale programme for improved management of watershed areas (Prosaf). The Public-Private FUNICA foundation is currently preparing a new program for reinforcing the coffee sector in *Las Segovias*. In many of these (semi-)public programs, participation of smallholders has been fairly limited. Most support for this sector has been provided by (European) NGOs, in partnership with national or regional peasant organizations.

The partnership program between HIVOS and PRODECOOP started in 1995 and includes components of training to farmers, technical field-level assistance (extension), improvement of organic farming systems, quality control (laboratories) and rotating credit for women's groups. In addition, a EU-funded program has been executed (in cooperation with Deutsche Welthungerhilfe) for the renovation[3] and diversification of coffee fields, the conversion towards organic production and improvement of (wet) coffee factories (including waste processing) for a total amount of € 1.9 million. Total HIVOS support to PRODECOOP during former years amounted € 2.2 million.

PRODECOOP also contracted international loans for a total value of 4.9 million US$ to enable pre-financing of coffee trade with Root Capital (USA), Shared Interest (UK), Triodos Bank (NL) and several National banks. These loans enable pre-financing of 50.000 qq. of the coffee harvest, about 50% of total production. The interest rate for international loans (12%) compares favourably to national interest conditions (up to 20%). The reimbursements of loans provided for coffee renovation under the EU project are deposited in a capital fund under management of the base-level cooperatives.

The internal organization of PRODECOOP has been gradually reinforced during past years. Central staff includes 53 professionals and in addition 41 promoters are working in the field for technical support to the base-level cooperatives. There have been made substantial investments for improving administrative and financial management systems. A third of staff (including the general manager) and a quarter of positions in governing bodies are now occupied by females. Moreover, 36 *Comisiones de Genero* are active in the fields of promotion of women's rights and the support of female independent production activities (through a microfinance fund). More than 300 members participate yearly in internal courses on financial and administrative organization. Notwithstanding a recent self diagnosis

[3] Renovation refers to replacement of old coffee trees (sometimes > 20-25 years) for new plants that are cultivated in local nurseries. After 8-10 years, yields usually decline and pruning becomes less effective for maintaining yields.

regarding internal organization still reports scores below 3 (on a 1-5 scale), indicating that much work still remains to be done.

Coffee production by PRODECOOP reached in 2007/08 a total volume of 86.000 qq *pergamino* that is processed into 63.000 qq *Oro.* Almost 80% is sold at the Fair Trade market at an average price of US$ 164/qq, almost 20 % beyond the average national price. The cooperative aims at diversification of market outlets, with 60% sales in the USA and 25% in Europe. The average yield of PRODECOOP famers is around 9 qq/mzs, which is slightly beyond the *Las Segovias* average (8 qq/mzs) but still fairly below the national average (11 qq/mzs).[4]

PRODECOOP coffee exports are for 80 % FLO-certified (50% organic, 50% conventional) and 19% non-certified, while the remaining 1% is sld at the national market. Some base-level cooperatives are also certified by Café Practices (Starbucks) and Rainforest Alliance (RFA), while UTZ-certified has recently started with the identification of potential suppliers in the region. Private traders that are operating in the region (Atlantic, Sisa) can also process certified coffee and handle around 10% of PRODECOOP production. These side sales occur because farmers prefer direct payment at the moment of delivery. On the other hand, the PRODECOOP factory also processes coffee delivered by other cooperatives.

There is a wide heterogeneity between the base-level cooperatives that belong to PRODECOOP in terms of yields, varying between 6 to 14 qq/mzs (2007/08). Main causes of lower yields are related to limited input use (neglect of plantations in earlier years) and low planting density. In addition, there are large differences in quality: each year some cooperatives from the *Dipilto* region receive high scores in the national 'Cup of Excellence', but on the other hand there are substantial substandard deliveries that lead to reclassification due to single harvesting, deficient selection and early fermentation. The quality variability is partly due to exogenous factors (altitude, soil quality, rainfall), but other important reasons for quality deterioration refer to old coffee trees and manual coffee processing at farm level. Coffee renovation and central coffee processing are therefore key priorities for PRODECOOP, but they require substantial access to medium- and long-term financial services.

The Fair Trade premium - paid from a bonus on coffe processing ($ 0.05-0.10 per 45 kg) represents annually US$ 200.000. This premium is invested in a fellowship fund for members' children (in 2008: 80), for commercial initiatives of women's' groups, and as an investment fund for both base-level cooperatives and at federative level. The (female) PRODECOOP manager is actively involved into the Latin-American Fair Trade network, but concrete knowledge about the functioning of the Fair Trade principles is rather scarce amongst the farmers.

The average net income effect of coffee renovation has been estimated at US$ 350 per family (Araujo et al., 2008), which permits a recovery by the 500 participating farmers within a 3-4 years period. Within the framework of the EU project, it has been agreed that the reimbursements will be used for capitalization of the base-level cooperatives. The recent resistance against debt repayments on loans from banks and microfinance agencies (*Movimiento no pago*) may, however, seriously undermine this discipline.

During the past few years, important progress has been made with the improvement of productive infrastructures, most notably the reconstruction of 7 local wet mills with

[4] 1 manzana (mzs) = 0.7 ha, 1 quintal (qq) = 46 kg; 20,5 cordobas = 1 US$

ecological management of residues, the building of 4 regional collection centres and the establishment of 12 new central processing units aiming at the improvement of quality management (especially to control early fermentation). The PRODECOOP-owned dry factory *Industrial Las Segovias* possesses an adequate quality-control laboratory and cupping facilities, also providing services to other nearby-located cooperatives. The processing efficiency has therefore be gradually raised from 82% in 2004/05 to almost 88% during the cycle 2007/08.

The financial situation of PRODECOOP is transparent and indicated balanced accounts (See Figure 4; PRODECOOP, 2008). Total yearly turnover reaches US$ 10 million and is for 81% generated from direct coffee sales. Costs for processing, transport, exports and administration represent 12% of all expenses, while for training and technical support another 12% of the budget s sed. Financing costs only represent 7%. Short-time borrowing is limited to US$ 330.000 and enables to provide credit to 500 farmers (30% women), with a satisfactory global repayment rate of 98.86 %. During past years a positive corporate return could be maintained, and consequently the internal reserves (mainly fixed assets) represent more than US$ 2 million (see Figure 5). Liquidity rates are, however, still low (1.2%) and steadily declining.

Figure 4: PRODECOOP Yearly Results 1997-2008 (in C$)

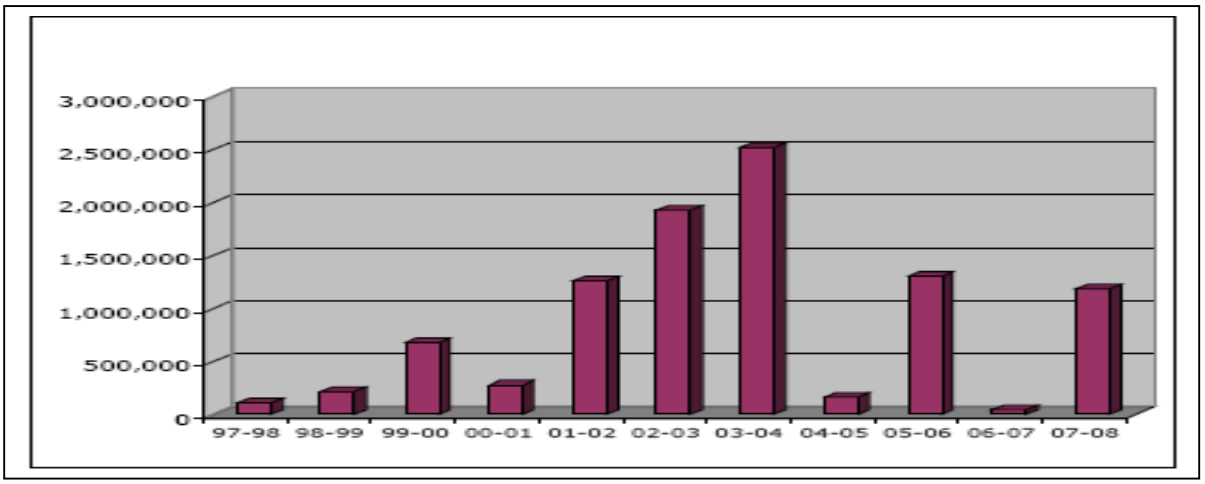
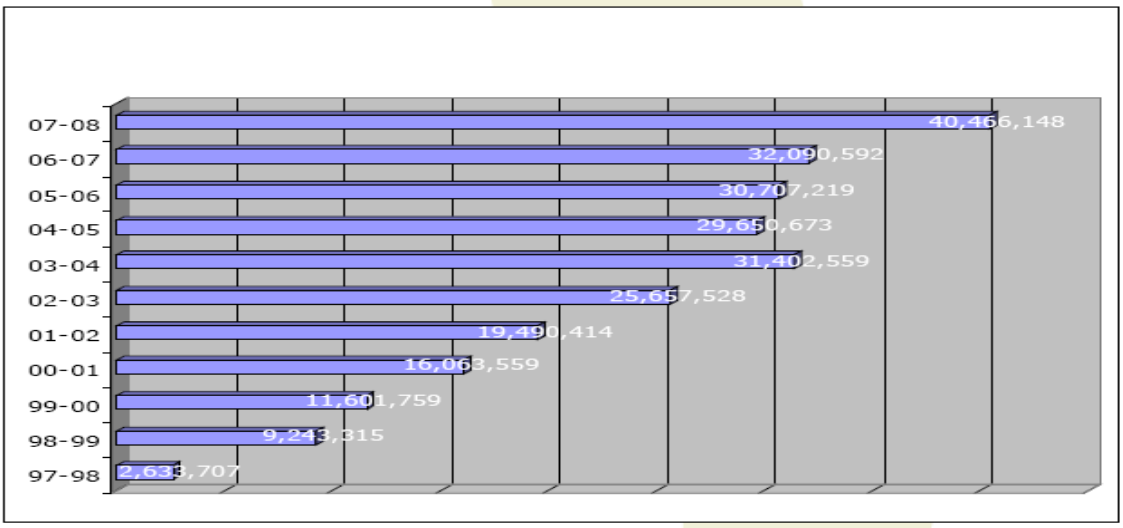


Figure 5: PRODECOOP Reserves 1997-2008 (in C$)



6. Descriptive Statistics

Table 3 provides and overview of the descriptive statistics of the field sample (mean and standard deviation). Coffee area of PRODECOOP farmers is around 4.3 mzs, whereas Café Practices farmers are slightly larger (5.6 mzs.) and independent producers slightly smaller (3.3 mzs.). Consequently, yearly household income of Café Practices farmers is 27% higher compared to PRODECOOP farmers (total € 3010 or €750 per capita), and income of independent farmers is 35 % lower. Coffee represents 75-82% of household income.

Within household expenditures, farmers with Organic, RFA and CP labels spend considerably more on education and housing compared to conventional producers. Health indicators of PRODECOOP farmers are not necessary better compared to the control groups.. PRODECOOP farmers do not, however, express greater satisfaction with their income situation compared to the past. In terms of fairness attitudes, PRODECOOP farmers demonstrate considerably higher willingness to compensate for adverse weather events, but are also far more strict regarding losses caused by limited efforts.

Assets of PRODECOOP farmers are largely in line with independent farmers, but RFA and CP producers possess more assets. Organic PRDECOOP farmers are especially poor in assets. CP farmers appear with highest access and se of credit, whereas RFA producers receive least credit. Savings are generally low, but highest amongst organic PRODECOOP farmers.

Coffee prices show low variation between the groups, with slightly higher prices received by organic PRODECOOP and RFA farmers. Coffee yields are, however, considerably higher on RGA and CP farms. Coffee yields within PRODECOOP are highly variable, with critically low levels especially on conventional PRODECOOP farms. On the other hand, input costs and labour costs on PRDECOOP farms are higher compared to all control groups. Differences in yields can partly be explained by the higher degree of coffee renovation on RFA and CP farms. Also other fixed investments on PRODECOOP farms are lower, even while their willingness to invest is higher. Quality management indicators (particularly field selection, frequency of harvesting and post-harvest processing) and GAP practices (mainly related to input use, pruning intensity and soil cover) are slightly lower on PRODECOOP farms.

With respect to gender relationships, few differences are observed in terms of empowerment. PRODECOOP women do have more frequent ownership of land and houses and receive more institutional assistance. Amongst PRODECOOP households, the male share in household activities is higher, but the female share in coffee activities is lower. PRODECOOP members also participate more in community organizations and demonstrate considerably larger identification and satisfaction with their own organization. This is, however, not directly expressed in greater loyalty or less side-sales.

Regarding delivery contracts, PRODECOOP farmers emphasize the importance of price dimensions, whereas for Independent farmers direct payments are more important. CP framers apply slightly more Sustainable Practices, but Good Agricultural Practices are also widely applied by Independent Farmers. Organic PRODECOOP producers are best able to control fermentation, but have higher losses in processing. Otherwise, RFA and CP producers face greater warehouse losses.

Table 3: Descriptive Statistics

	Prodecoop (N=152)		PRODECOOP Conventional (N=77)		PRODECOOP Organic (N=76)		Rainforest Alliance (N=45)		Café Practice (N=45)		Independent (N=72)	
Variable Name	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
Household Income												
Non Farm_Income	3704,31	15617,89	2595,13	8134,99	4793,95	20593,66	11967,11	46903,36	5639,56	18827,53	3719,44	15022,74
Services Income	3413,02	11635,95	4287,08	14301,37	2471,05	7929,67	4026,67	14329,73	4853,33	16858,25	2783,33	14932,18
Coffee Income	76712,83	167500,44	74289,55	118245,39	78464,18	206248,89	68132,84	98271,52	96482,78	146274,26	45043,75	65366,51
Other Agricultural Income	4717,51	9098,67	7530,90	11484,54	1807,49	3948,88	4064,97	7967,85	5874,22	8810,91	5379,31	7728,14
Total Income	88547,68	169836,78	88702,65	122612,19	87536,67	207553,46	88191,59	122473,42	112849,89	158759,57	56925,83	68871,99
Coffee Dependency Rate	80,58	23,28	78,47	23,25	82,83	23,12	82,14	23,83	81,92	19,07	76,44	25,18
NonFarm Income (per capita)	926,08	3904,47	648,78	2033,75	1198,49	5148,42	2991,78	11725,84	1409,89	4706,88	929,86	3755,68
Services Income (per capita)	853,25	2908,99	1071,77	3575,34	617,76	1982,42	1006,67	3582,43	1213,33	4214,56	695,83	3733,04
Coffee Income (per capita)	19178,21	41875,11	18572,39	29561,35	19616,05	51562,22	17033,21	24567,88	24120,69	36568,57	11260,94	16341,63
Other Agricultural Income (pc)	1179,38	2274,67	1882,72	2871,14	451,87	987,22	1016,24	1991,96	1468,56	2202,73	1344,83	1932,04
Total Household Income (pc)	22136,92	42459,20	22175,66	30653,05	21884,17	51888,37	22047,90	30618,35	28212,47	39689,89	14231,46	17218,00
Household Expenditures												
Household Expenditure (per capita)	76042,37	92102,77	70603,20	71994,89	81674,88	108663,91	98203,56	151513,56	87239,53	148088,54	59056,32	85736,93
Food Expenditures (pc)	5420,06	3102,00	5046,31	3134,89	5815,22	3019,70	4972,06	1891,37	4645,99	2698,22	4647,95	2332,27
Education Expenditures (pc)	6392,27	16980,04	5122,15	10274,75	7730,13	21738,12	9116,67	28589,87	6513,33	12710,49	5412,50	17464,37
Housing Expenditures (pc)	7237,93	5011,03	6896,34	5707,81	7590,17	4146,76	6775,56	3477,09	7246,55	5448,63	6217,41	6817,75
Health Expenditures (pc)	4401,76	8731,59	4634,23	9695,21	4144,74	7610,11	7928,00	19279,97	4143,33	6094,65	2916,67	7186,47
Other Expenditures (pc)	99494,39	115580,63	92302,23	90928,50	106955,14	135925,76	126995,84	189494,13	109788,74	166757,39	78250,85	107637,9
Wealth												
Better off_than 5 yearsago	1,30	0,65	1,24	0,61	1,36	0,69	1,47	0,81	1,56	0,84	1,53	0,84
Better off than today	1,18	0,42	1,19	0,40	1,17	0,44	1,42	0,66	1,16	0,42	1,31	0,52
Total Assets	78103,25	266290,96	123639,40	367193,66	31375,99	30281,93	106443,11	398914,38	175226,11	447451,03	78872,85	288898,0
Amount of Credit	14028,56	52852,18	12045,77	17194,74	16168,42	73142,13	10788,89	18191,06	43555,56	126168,59	18145,83	48000,69
Total Savings	800,65	3289,91	500,00	2160,75	1098,68	4119,08	466,67	2180,49	0,00	0,00	163,89	1057,54
Coffee Production												
Coffee Production Area (mz)	4,36	3,54	4,39	3,45	4,34	3,63	4,53	4,61	5,64	5,13	3,13	2,46
Coffee Average Price (cord)	198,03	56,94	192,71	47,40	204,04	64,98	213,19	52,56	202,79	74,32	192,95	44,58
Coffee Production (qq)	49,76	100,04	43,83	56,27	55,32	130,33	51,60	91,59	101,32	157,69	41,47	89,21
Coffee Yields (qq/mzs)	15,22	26,62	12,87	13,85	17,46	35,09	19,71	37,11	22,54	26,13	20,11	43,93

Input Costs	1247,34	5810,81	1676,63	7577,73	837,70	3031,53	490,01	1158,28	234,27	455,11	397,49	1145,68
Labour Costs	1237,43	5965,70	1901,79	8212,13	560,36	1403,18	843,42	2691,24	1012,76	3644,83	539,18	2143,09
Harvesting Labour Costs	313,71	211,56	338,15	215,02	288,70	204,90	367,92	253,29	332,96	290,55	284,15	213,12
Production 5 years ago	34,89	27,06	33,55	28,46	35,99	25,58	35,51	26,00	37,54	28,52	30,06	31,75
Production Today	34,32	20,24	32,79	18,82	35,75	21,54	31,29	19,73	43,38	24,25	34,00	22,14
Production Next Season	45,41	25,62	45,69	28,26	44,99	22,61	37,04	18,09	53,16	33,64	38,67	23,08
Coffee Renovation	0,37	0,73	0,51	0,91	0,23	0,42	0,41	0,56	0,51	0,87	0,30	0,49
Investments & Risk												
Risk Perception	1,23	0,38	1,26	0,39	1,18	0,36	1,23	0,36	1,13	0,23	1,20	0,34
Productive Use of Investments	8545,10	2262,10	8397,44	2541,04	8715,79	1928,11	8689,56	1805,45	10188,89	6741,40	9390,28	4539,72
Productive Use of Investments (%)	14,55	22,62	16,03	25,41	12,84	19,28	13,10	18,05	-1,89	67,41	6,10	45,40
Gender												
Women Empowerment (Household)	2,13	0,74	2,02	0,76	2,26	0,70	2,14	0,80	2,29	0,67	2,31	1,49
Women_Empowement (Coop)	1,89	1,30	1,83	0,93	1,96	1,60	1,73	0,99	1,94	0,94	1,90	0,95
House Ownership	1,77	0,88	1,69	0,87	1,86	0,87	1,42	0,69	1,66	0,80	1,52	0,75
Plot Ownership	1,42	0,73	1,33	0,68	1,53	0,79	1,36	0,71	1,52	0,81	1,49	0,79
Institutional Support	1,40	0,51	1,35	0,46	1,44	0,55	1,41	0,54	1,38	0,56	1,35	0,46
Feder Crontrol	2,05	0,44	1,99	0,47	2,11	0,40	2,03	0,44	2,10	0,41	1,90	0,49
Women Awareness	4,34	0,66	4,38	0,70	4,30	0,61	4,19	0,64	4,33	0,58	4,30	0,89
Female Activity Share	39,10	18,11	36,79	18,17	41,50	17,73	38,04	20,56	42,37	20,16	41,94	20,41
Female Coffee Participation	9,17	16,94	9,28	15,92	8,93	17,96	9,65	14,60	11,17	21,28	12,10	20,22
Gender Conciousness	2,84	0,99	2,69	0,95	2,99	1,02	2,96	1,03	2,78	1,06	3,02	1,03
Organization & Participation												
Participation in other organizations	0,15	0,36	0,14	0,35	0,16	0,37	0,09	0,29	0,07	0,25	0,07	0,26
Identification with Organization	3,85	1,53	3,77	1,58	3,95	1,47	2,25	2,07	2,27	2,00	0,26	0,79
Organization Functions	3,71	1,46	3,44	1,44	4,01	1,43	2,21	2,03	2,12	1,84	0,28	0,84
Organization Strength	3,85	1,55	3,64	1,61	4,08	1,45	2,33	2,12	2,28	2,00	0,29	0,88
Satisfaction Techical Assistance	7,81	2,56	7,15	3,04	8,51	1,69	5,19	4,18	4,20	3,84	0,51	1,63
Satisfaction Comercal Assistance	8,85	1,77	8,54	2,19	9,18	1,09	5,57	4,34	4,96	4,12	0,55	1,70
Average Loyalty	3,07	1,27	2,91	1,22	3,25	1,30	3,51	0,31	3,35	0,61	3,31	1,32
Side Sales (Percentage)	7,71	20,09	11,31	24,43	3,92	13,34	0,98	5,25	20,31	31,81	7,55	19,92

Contracts												
Price	4,87	0,34	4,83	0,41	4,92	0,23	4,89	0,32	4,73	0,62	4,86	0,37
Cash Payment	4,81	0,46	4,76	0,53	4,86	0,35	4,84	0,42	4,82	0,44	4,75	0,53
Product Delivery	4,56	0,82	4,52	0,87	4,61	0,76	4,58	0,87	4,51	0,97	4,58	0,78
Payment Time	4,48	0,93	4,52	0,77	4,44	1,06	4,51	0,89	4,62	0,83	4,97	4,37
Prefinance Credit	4,81	0,56	4,80	0,56	4,83	0,56	4,80	0,46	5,69	6,03	4,80	0,43
Quality Control	4,80	0,46	4,80	0,39	4,80	0,52	4,73	0,62	4,80	0,46	4,74	0,54
Transaction Place	4,79	0,47	4,73	0,55	4,85	0,36	4,80	0,46	4,78	0,42	4,73	0,68
Health												
Days Lost	2,46	5,06	2,32	5,03	2,62	5,09	1,02	2,19	2,27	3,71	1,33	2,27
Monthly Medical Expenses	773,07	1858,94	658,33	1380,67	946,45	2289,20	915,56	2391,84	1555,56	3606,86	669,44	2501,36
Sustainability & Quality												
Sustainable Practices	9,81	2,03	9,79	1,86	9,83	2,19	9,89	1,58	10,62	1,03	9,43	1,92
Harvesting Frequency	3,05	0,34	3,00	0,32	3,11	0,35	3,11	0,57	3,11	0,49	3,42	2,07
Days Before Delivering	1,56	1,02	1,88	1,07	1,25	0,87	1,64	0,98	1,70	0,92	2,01	0,81
Plot Losses	1,12	1,38	1,21	1,47	1,04	1,27	1,09	1,52	0,87	1,16	0,54	1,07
Buyers Losses	2,49	2,44	1,97	2,38	3,00	2,40	1,73	2,35	2,00	2,31	0,43	1,31
Bean Size	0,12	1,12	0,23	1,57	0,00	0,00	0,00	0,00	0,04	0,30	0,10	0,63
Plant Density	3262,44	323,33	3232,44	354,83	3297,67	286,23	3191,11	389,53	3313,11	337,99	3121,47	572,87
Imperfections (Percentage)	0,70	1,63	0,51	1,29	0,89	1,90	0,80	1,60	0,62	1,34	0,33	0,99
Fermentation (Percentage)	0,50	2,11	0,77	2,77	0,21	0,98	0,47	1,22	0,67	1,88	0,57	2,19
Warehouse Loss (Percentage)	0,25	0,99	0,21	0,83	0,29	1,13	0,36	1,09	0,38	1,28	0,06	0,29
Humidity	42,01	0,58	42,01	0,71	42,01	0,42	42,00	0,64	42,02	0,15	42,19	0,62
Number GAP Practices	7,73	1,78	8,24	1,44	7,21	1,93	7,84	1,93	8,38	1,25	8,64	1,71
Quality Awareness	4,48	0,38	4,42	0,41	4,54	0,33	4,47	0,44	4,40	0,38	4,51	0,49
Fairness												
Compensation Weather Loss	152,06	34,67	156,09	33,18	148,55	36,15	145,33	33,75	141,89	33,26	138,54	31,62
Compensation Effort Loss	20,07	29,42	21,86	32,86	17,96	25,35	19,89	29,82	31,89	40,86	26,60	35,74

7. Matching

Given the fact that the participation of farmers in each of the labelling initiatives is likely to be due to self-selection, we need to compose a balanced sample composed of farm-households that exhibit likewise characteristics with respect to the chance of being selected to deliver under a particular coffee standard.

The central issue for impact evaluation requires answering the following question: 'What would have happened to a participant household if they would not have participated in the fair trade scheme?' This hypothetical situation is known as the counterfactual, and the way it is constructed is a key feature for correctly analyzing the impact of a program or policy (Bourguignon, 1999). Problems arise since in cross-sectional studies we cannot observe both outcomes for the same individual at the same time. Just taking the mean outcome of non-participants as an approximation is likely to generate a "selection bias", since participants and non-participants usually differ even in the absence of treatment.

We relied on a "matching approach" (Rubin, 1974; Rosenbaum and Rubin, 1983; Rubin and Thomas, 1996; Heckman et al., 1997; Smith, 1997) as possible solution for the selection problem. Its basic idea is to find within a group of non-participants those individuals who are similar to the participants in all relevant pre-treatment characteristics *X*. Once that is accomplished, differences in outcomes of this adequate control group and of participants can be attributed to the program. Since conditioning on all relevant covariates might be limited in case of having a high dimensional vector *X*, Rosenbaum and Rubin (1983) suggest the use of so-called balancing scores *b(X)*, i.e. functions of the relevant observed covariates *X* such that the conditional distribution of *X* given by *b(X)* is independent of assignment into treatment. A commonly used balancing score in the literature is the based on the probability of participating in the program given observed characteristics *X*. Matching procedures based on this balancing score are known as Propensity Score Matching (PSM) and will be applied for our subsequent analysis of the Fair Trade impacts (Caliendo and Kopeing, 2005).

In order to implement the PSM estimation, data collection for the different case studies included not only a sample of farmers participating in organizations with Fair Trade certification but also a sample of non-participant farmers.After presenting the main characteristics and outcome variables for both groups, and comparing their means, we proceed with the estimation of the Propensity Score (pscore) by using a Probit model. Only real exogenous variables that influence the participation decision but are not influenced by FT participation should be included in this model. The propensity score is estimated for each farmer in the complete sample by using the regression's predicted probability of having FT certification. With the distribution of the propensity scores we proceed to identify the regions of "common-support". These regions are set after eliminating the observations in the non-participant group with a p_score lower than the minimum p_score in the participant group, and the observations in the participant group with a p_score higher than the maximum p_score in the non-participant group. The matching estimation is performed only for observations on this common-support. In order to "balance" the sample of FT farmers with the samples of the two control groups we estimate the probability of having FT certification based on a set of exogenous characteristics and pre-treatment variables (see Table 2).

We performed *Propensity Score Matching* techniques, estimating Probit functions for the likelihood of FT participation. The key variables selected for the probit are related to inherent household characteristics (family size, age household head, education household head), location data (year of settlement, initial land size, distances to plot and town, distances to health centre and clinic), and land characteristics (total farm size, coffee area). These

characteristics are considered to influence the likelihood of FT affiliation, since FT programs tend to target on established but poor farm-households that have less access to regular markets and public services.

The full probit results are included in Annex B. Distance to market place and health facilities are generally significant. In a similar vein, the cultivated area of coffee and/or total farm size is significant predictor in all models. Dependency rate turns out to be significant for PRODECOOP members and Independent farmers, whereas education and age are more important determinants for the Rainforest Alliance and Café Practices certification. Most Probit regressions have an pseudo R^2 of beyond 25 %; the comparison with individual farmers shows the lowest fit (15%), while the comparison between FT and RFA reaches a high fit (55%).

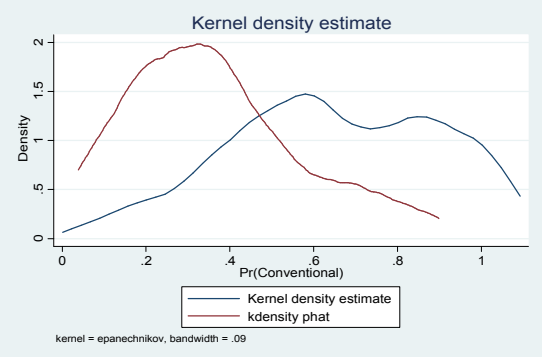
Table 4 provides information regarding the number of cases that remain within the Common Support domain in each of the 7 matching equations. In all cases, the sample size remains satisfactory and. Distribution of p_scores before/after matching are provides in the graph 6. As can be noticed, the domain of common support is highest for the comparison between PRODECOOP and Independent farmers, and still acceptable for the comparisons with both private labels.

Table 4: Observations on/off common support

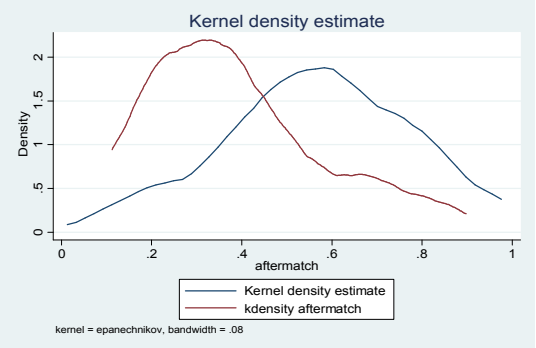
	Final Sample Before Matching	On Support After Matching	Off Support
FT Organic	75	69	6
FT Conventional	77	61	16
Total	152	130	22
Rainforest Alliance	45	29	16
Fair Trade/Prodecoop	155	72	83
Total	200	101	99
			0
Café Practices	45	39	6
Fair Trade/Prodecoop	151	150	1
Total	196	189	7
Independent	74	74	0
Fair Trade/Prodecoop	155	133	22
Total	229	207	22
Rainforest Alliance	44	29	15
Organic Prodecoop	58	52	6
Total	102	81	21
Café Practice	45	34	11
Organic Prodecoop	67	35	32
Total	112	69	43
Independent	72	46	26
Organic Prodecoop	76	66	10
Total	148	112	36

Figure 6: Matching: Distribution of Propensity Scores

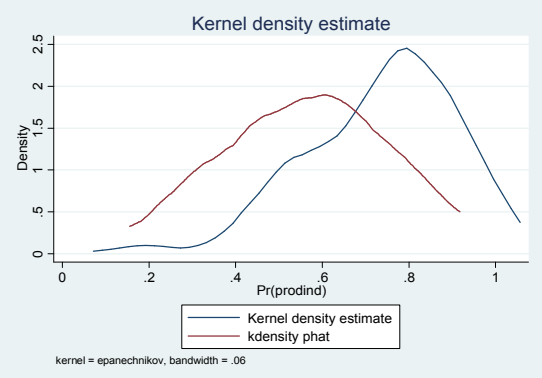
Organic PRODECOOP before matching



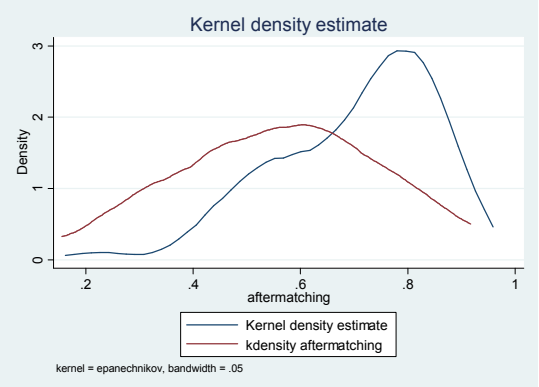
Organic PRODECOOP after matching



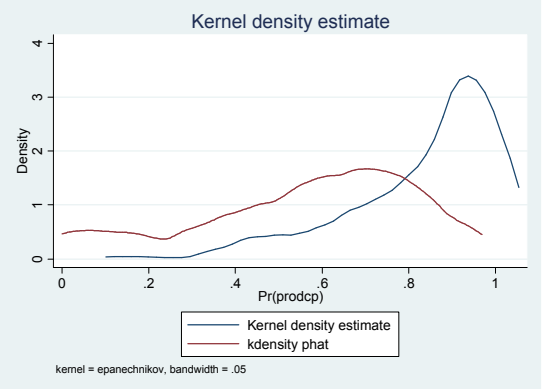
FT-INDIVIDUAL before matching



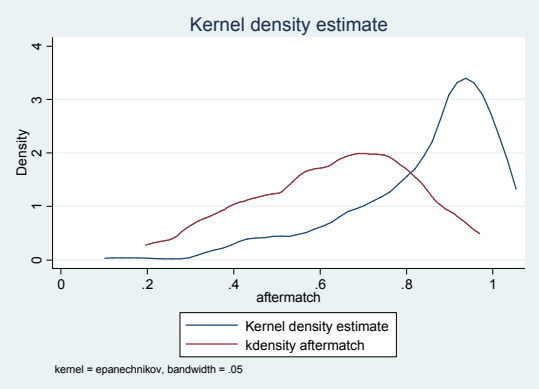
FT-INDIVIDUAL after matching



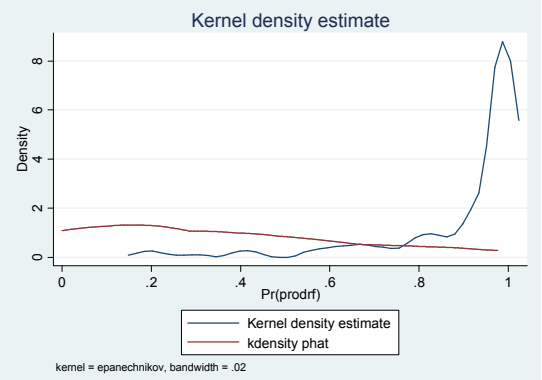
FT-CP before matching



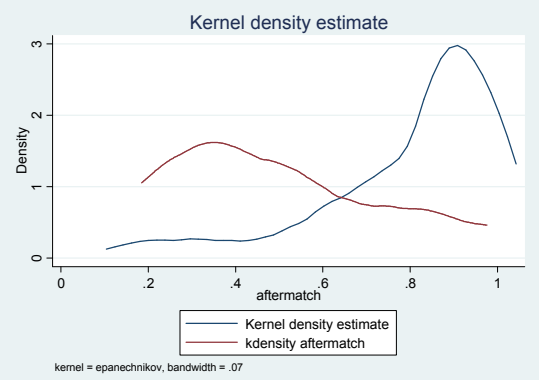
FT-CP after matching



FT_RFA before matching



FT_RFA after matching



8. Impact Analysis: Welfare Effects

For the analysis of the real welfare effects at farm-household level, we used three different matching algorithms to guarantee the robustness of results:

a) Nearest Neigbour (one-to-one) matching[5]: each treatment observation (= PRODECOOP) compared to the control group that is closest in terms of propensity score;
b) Three Nearest Neigbours: uses the weighted average of the three closest neigbours in terms of propensity scores;
c) Kernel matching: non-parametric estimate that uses the weighted average of all cases in the control group to construct the counterfactual.

The comparison between Treatment and Control groups involves 4 different simulations:

1. Organic vs. Conventional Coffee within PRODECOOP
2. FT-PRODECOOP vs. Independent Farmers
3. FT-PRODECOOP vs. Café Practices
4. FT PRODECOOP vs. Rainforest Alliance

Other comparisons that review particular differences only for organic PRODECOOP farmers with respect to private labels and non-certified farms are included in Annex D. Since higher prices in organic production largely compensate for lower yields, welfare effects are rather insignificant.

The full results are reported in Tables 5-8. We highlight the most important outcomes for each of the research questions:

a) *Welfare Effects*

Total household incomes of all categories of coffee-producers are generally in line with each other and significant differences between standards are not registered. Compared to RFA farms, PRODECOOP farmers generate significantly more other agricultural income, and also maintain higher health expenditures compared to Independent producers, but the latter group has higher educational and overall expenditures. No significant subjective welfare changes compared to past performance are registered, but Independent Farmers and Rainforest Alliance producers express more confidence in future income improvements.

PRODECOOP farms are most dependent on coffee production (88-90 % of household income). They also possess more assets and have better credit access (compared to Rainforest Alliance producers). Similarly, PRODECOOP Farmers have slightly more savings compared to Individual Farmers and Rainforest Alliance producers. Consequently, PRODECOOP farmers exhibit more risk acceptance and are also more involved in coffee renovation. However, total coffee renovation on Rainforest Alliance farms is significantly larger compared to PRODECOOP. PRODECOOP farms use more inputs in coffee production compared to Independent,, but Café Practices farmers are still more inclined towards input intensification.

b) *Gender relations*

Few significant differences are registered with respect to gender relationships. Despite much effort, women inside PRODECOOP do not express stronger gender awareness or larger participation. Within PRODECOOP, women in conventional coffee farms are somewhat stronger involved in organizational activities. Only house ownership by women is more frequent amongst PRODECOOP families compared to Independent farmers. Women in RFA households receive more institutional support and exhibit higher gender consciousness.

[5] Nearest neighbour refers to farms in the comparison group with the closest propensity score to each of the farms in the treatment group.

c) Organizational development

PRODECOOP generally outperforms Independent farmers and Café Practices producers with respect to their appreciation for the Cooperative organization and satisfaction with service provision. However, Rainforest Alliance farmers are still more identified with their organization. This effect reverses if only Organic PRODECOOP farmers are included. Compared to Rainforest Alliance farms, PRODECOOP members are less loyal to their organization and sell a larger share of production outside the cooperative. PRODECOOP members engaged in Organic production are more loyal than their conventional counterparts.

With respect to the contractual delivery dimensions, PRODECOOP members particularly appreciate pre-finance and cash payments. Other producers also devote attention to aspects of payment time (no delays) and direct payments (upon delivery). Regarding sustainable farm management, Independent and Café Practices farmers use more GAP practices, even while PRODECOOP farms outperform Café Practices producers. Quality losses at plot and factory level are slightly higher amongst PRODECOOP farmers (compared to Independent producers), but the latter face more delivery delays. RFA farmers reap advantages of early deliveries, while Café Practices producers rely on fewer harvesting rounds (thus saving labour costs) . Regarding the experimental question on Fairness, PRODECOOP farmers are considerably more willing to accept losses due to unforeseen weather events, but are also stricter if losses are occasioned by reduced effort. This difference is particularly striking in comparison with Independent producers.

Some important differences are particularly relevant for Organic farms. Organic PRODECOOP producers receive significantly higher coffee prices, but RFA farms outperform them in terms of yield. Organic PRODECOOP farms maintain most adequate controls on fermentation and humidity, but face somewhat higher post-harvest losses. Organic PRODECOOP production is particularly labour-intensive compared to Independent and Café Practices producers, but the latter use more harvesting labour force. PRODECOOP farms with organic production generate slightly higher income, but also rely more on other (non-farm, services and cropping) income sources.

The overall comparison between the Treatment and the Control groups reveals that direct income and expenditures effects of Fair Trade are fairly limited and at best modest. This is fully in line with earlier findings in other settings (Ruben, 2008). Especially Organic PRODECOOP production benefits from higher prices, but private labels outperform PRODECOOP in terms of yield performance. On the other hand, wealth effects are clearly registered in terms of more asset ownership, better credit access and more savings. This translates into higher input intensity, engagement in coffee renovation and sometimes more labour involvement.

Institutional implications of Fair Trade are most clearly registered. The role of the PRODECOOP organization is strongly appreciated. Gender empowerment is, however, not significantly induced. Otherwise, behavioural and attitudinal changes related to Fair Trade farmers show that they are considerably less risk-averse and exhibit stronger fairness attitudes.

The Fair Trade affiliation of PRODECOOP is strongly related to pricing (particularly for organic produce) and tends to enhance (over-)specialization in coffee. Consequently, loyalty is easily reduced if outside buyers offer better prices. Moreover, increased attention for supply chain quality management and GAP practices pays off. Both private standards are more involved in quality-enhancing practices and thus generally guarantee better (and higher quality) coffee yields.

Table 5: Difference Analysis PRODECOOP FT Conventional / FT Organic

Conventional & Organic within Prodecoop Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	2681,97	2013,11	668,85	2772,33	0,24		2681,97	2820,33	-138,36	4236,74	-0,03		2681,97	2101,87	580,09	3845,64	0,15	
Services_Income	5245,77	983,61	4262,16	2804,15	1,52		5245,77	1288,52	3957,25	2585,07	1,53		5245,77	1178,07	4067,70	2491,21	1,63	*
Coffee_Income	74566,97	74296,23	270,74	29842,05	0,01		74566,97	65075,46	9491,50	44850,15	0,21		74566,97	60930,31	13636,66	40323,62	0,34	
Other_Agri_Income	6564,10	2143,50	4420,60	1868,18	2,37	**	6564,10	1817,10	4747,00	1649,23	2,88	***	6564,10	1977,18	4586,91	1611,04	2,85	***
Total_Income	89058,80	79436,45	9622,35	30902,76	0,31		89058,80	71001,41	18057,39	45286,20	0,40		89058,80	66187,43	22871,37	40787,06	0,56	
Coffee_Dependency	78,60	91,59	-12,99	5,85	-2,22	**	78,60	88,75	-10,16	5,02	-2,02	**	78,60	87,87	-9,27	5,11	-1,82	*
Non_Farm_Income_PC	670,49	503,28	167,21	693,08	0,24		670,49	705,08	-34,59	1059,18	-0,03		670,49	525,47	145,02	961,41	0,15	
Services_Income_PC	1311,44	245,90	1065,54	701,04	1,52		1311,44	322,13	989,31	646,27	1,53		1311,44	294,52	1016,93	622,80	1,63	*
Coffee_Income_PC	18641,74	18574,06	67,68	7460,51	0,01		18641,74	16268,87	2372,88	11212,54	0,21		18641,74	15232,58	3409,16	10080,91	0,34	
Other_Agri_Income_PC	1641,02	535,88	1105,15	467,04	2,37	**	1641,02	454,27	1186,75	412,31	2,88	***	1641,02	494,30	1146,73	402,76	2,85	***
Total_Income_PC	22264,70	19859,11	2405,59	7725,69	0,31		22264,70	17750,35	4514,35	11321,55	0,40		22264,70	16546,86	5717,84	10196,77	0,56	
Household_Expenditure_PC	75229,17	86325,85	-11096,68	34014,06	-0,33		75229,17	75685,04	-455,87	22944,02	-0,02		75229,17	78454,00	-3224,83	21485,00	-0,15	
Food_Expenditure_PC	5074,82	6390,34	-1315,52	858,67	-1,53		5074,82	6153,20	-1078,38	693,76	-1,55		5074,82	5925,84	-851,02	656,60	-1,30	
Education_Expenditure_PC	5448,00	6479,51	-1031,51	7141,72	-0,14		5448,00	5595,57	-147,57	4496,50	-0,03		5448,00	6615,95	-1167,95	4101,27	-0,28	
Housing_Expenditure_PC	7043,56	8003,27	-959,71	1277,42	-0,75		7043,56	7737,49	-693,94	1116,59	-0,62		7043,56	7474,72	-431,16	1070,21	-0,40	
Health_Expenditure_PC	5324,75	6181,97	-857,21	2216,59	-0,39		5324,75	4542,62	782,13	1938,47	0,40		5324,75	4496,03	828,72	1881,07	0,44	
FHH_Expenditure_PC	98120,30	113380,93	-15260,63	42584,99	-0,36		98120,30	99713,93	-1593,63	28756,68	-0,06		98120,30	102966,55	-4846,24	26928,02	-0,18	
Better_off_than_5_years_ago	1,30	1,28	0,02	0,20	0,08		1,30	1,27	0,02	0,15	0,15		1,30	1,25	0,04	0,14	0,29	
Better_off_than_today	1,16	1,20	-0,03	0,13	-0,25		1,16	1,14	0,02	0,10	0,22		1,16	1,14	0,03	0,09	0,31	
Total_Assets	100159,48	32976,79	67182,69	32064,32	2,10	**	100159,48	35118,97	65040,51	32075,35	2,03	**	100159,48	34089,78	66069,70	32021,95	2,06	**
Amount_of_Credit	10608,20	5073,77	5534,43	2225,59	2,49	***	10608,20	9461,75	1146,45	15016,82	0,08		10608,20	9191,85	1416,34	13209,87	0,11	
Total_Savings	606,56	352,46	254,10	562,26	0,45		606,56	770,49	-163,93	847,49	-0,19		606,56	764,15	-157,60	798,14	-0,20	
Coffee_Prod_Area	4,32	5,21	-0,89	1,13	-0,79		4,32	4,25	0,06	0,85	0,07		4,32	4,22	0,10	0,79	0,13	
Coffee_Ave_Price	192,28	234,40	-42,11	17,63	-2,39	**	192,28	223,42	-31,13	13,70	-2,27	**	192,28	221,73	-29,44	12,79	-2,30	**
Coffee_Production_QQ	46,05	63,02	-16,97	43,08	-0,39		46,05	47,23	-1,19	27,56	-0,04		46,05	44,43	1,62	24,58	0,07	
Coffee_Yields	13,63	17,64	-4,01	10,80	-0,37		13,63	15,68	-2,05	7,32	-0,28		13,63	14,71	-1,07	6,53	-0,16	
Input_Cost	2012,87	320,86	1692,01	1099,50	1,54		2012,87	467,90	1544,97	1252,70	1,23		2012,87	440,55	1572,32	1218,68	1,29	
Labour_Cost	1962,95	285,30	1677,66	1149,74	1,46		1962,95	355,30	1607,65	1177,54	1,37		1962,95	322,98	1639,97	1170,86	1,40	
Harvestng_Labour_Cost	349,77	348,33	1,44	59,42	0,02		349,77	299,10	50,67	46,79	1,08		349,77	298,06	51,71	45,89	1,13	
QQ_Production_5_years_ago	31,00	29,60	1,40	5,09	0,28		31,00	34,20	-3,20	5,78	-0,55		31,00	34,02	-3,02	5,36	-0,56	
QQ_Production_Today	31,79	33,97	-2,18	4,92	-0,44		31,79	32,21	-0,42	4,60	-0,09		31,79	32,10	-0,31	4,39	-0,07	
QQ_Production_Next_Season	45,02	42,11	2,90	5,51	0,53		45,02	45,14	-0,13	5,72	-0,02		45,02	44,24	0,78	5,48	0,14	
Real_Coffee_Renovation	0,60	0,18	0,42	0,15	2,87	***	0,60	0,19	0,41	0,15	2,79	***	0,60	0,21	0,39	0,15	2,67	***
Risk_Perception	1,24	1,10	0,14	0,06	2,20	**	1,24	1,10	0,14	0,08	1,68	*	1,24	1,12	0,12	0,08	1,49	
Productive_Use_Investments	8442,62	8475,41	-32,79	576,25	-0,06		8442,62	8597,81	-155,19	481,55	-0,32		8442,62	8652,56	-209,94	469,43	-0,45	
Productive_Use_Investments_Percentage	15,57	15,25	0,33	5,76	0,06		15,57	14,02	1,55	4,82	0,32		15,57	13,47	2,10	4,69	0,45	
Women_Empow_HH	2,05	2,24	-0,19	0,16	-1,20		2,05	2,23	-0,18	0,15	-1,20		2,05	2,23	-0,18	0,15	-1,19	
Women_Empow_ORG	1,86	1,38	0,48	0,23	2,08	**	1,86	1,51	0,35	0,33	1,04		1,86	1,50	0,36	0,31	1,18	
House_Ownership	1,72	1,49	0,23	0,22	1,06		1,72	1,59	0,13	0,19	0,68		1,72	1,61	0,11	0,19	0,57	
Plot_Ownership	1,33	1,25	0,08	0,18	0,47		1,33	1,30	0,03	0,15	0,21		1,33	1,33	0,00	0,16	-0,01	
Got_Institutional_Help	1,35	1,26	0,09	0,12	0,74		1,35	1,30	0,05	0,11	0,49		1,35	1,32	0,03	0,11	0,30	
Who_Crontrol	1,98	2,13	-0,15	0,09	-1,70	*	1,98	2,17	-0,18	0,09	-1,98	*	1,98	2,16	-0,18	0,09	-1,90	*
Women_Awareness	4,45	4,08	0,37	0,15	2,49	***	4,45	4,08	0,37	0,14	2,73	***	4,45	4,10	0,35	0,13	2,67	***
Female_Share	37,84	35,10	2,75	4,07	0,67		37,84	35,56	2,29	3,57	0,64		37,84	35,84	2,00	3,58	0,56	
Female_Coffee_Share	8,73	5,27	3,45	2,84	1,22		8,73	5,32	3,41	2,43	1,41		8,73	5,49	3,24	2,44	1,33	
Gender_Conciouness	2,70	3,11	-0,41	0,23	-1,77	*	2,70	3,01	-0,31	0,21	-1,45		2,70	3,02	-0,32	0,21	-1,54	
Participation_in_organization	0,15	0,13	0,02	0,09	0,19		0,15	0,09	0,05	0,08	0,67		0,15	0,09	0,06	0,08	0,77	
Total_Identifiaction_to_Organization	3,60	2,96	0,64	0,44	1,46		3,60	3,21	0,39	0,34	1,13		3,60	3,31	0,28	0,34	0,84	
Total_Organization_Function	3,33	2,89	0,44	0,42	1,05		3,33	3,24	0,09	0,33	0,26		3,33	3,36	-0,03	0,32	-0,09	
Total_Organization_Strenght	3,45	3,09	0,36	0,44	0,81		3,45	3,37	0,08	0,34	0,23		3,45	3,48	-0,03	0,34	-0,10	
Total_Satisfaction_with_Techincal_Assistance	7,50	8,77	-1,27	0,53	-2,40	***	7,50	8,62	-1,12	0,47	-2,37	**	7,50	8,64	-1,14	0,46	-2,48	***
Total_Satisfaction_with_Comercialization_Assisteance	8,51	9,30	-0,79	0,34	-2,31	**	8,51	9,18	-0,67	0,36	-1,88	*	8,51	9,18	-0,67	0,35	-1,93	
Average_Loyalty	2,92	3,05	-0,13	0,25	-0,51		2,92	3,12	-0,20	0,25	-0,81		2,92	3,17	-0,25	0,27	-0,91	
Side_Sales_Percentage	9,59	2,00	7,59	3,68	2,06	**	9,59	1,33	8,26	3,36	2,46	***	9,59	2,06	7,53	3,62	2,08	**
Price	4,82	4,96	-0,14	0,07	-2,08	**	4,82	4,96	-0,14	0,07	-2,23	**	4,82	4,96	-0,14	0,07	-2,06	**
Cash_Payment	4,76	4,94	-0,18	0,09	-2,03	**	4,76	4,91	-0,15	0,09	-1,61	*	4,76	4,90	-0,13	0,09	-1,45	
Product_Deliery	4,62	4,70	-0,08	0,17	-0,45		4,62	4,73	-0,11	0,15	-0,75		4,62	4,72	-0,11	0,16	-0,66	
Payment_Time	4,61	4,29	0,32	0,30	1,05		4,61	4,36	0,25	0,22	1,11		4,61	4,39	0,22	0,21	1,07	
Pre_Credit	4,89	4,81	0,08	0,18	0,43		4,89	4,83	0,06	0,11	0,50		4,89	4,82	0,06	0,11	0,59	
Quality_Control	4,84	4,89	-0,05	0,11	-0,45		4,84	4,89	-0,05	0,09	-0,55		4,84	4,86	-0,02	0,10	-0,20	
Transaction_Place	4,76	4,89	-0,13	0,12	-1,08		4,76	4,91	-0,15	0,09	-1,63	*	4,76	4,89	-0,12	0,09	-1,33	
Days_Lost	2,72	2,43	0,30	1,00	0,30		2,72	2,02	0,70	1,16	0,60		2,72	2,11	0,61	1,13	0,54	
Montly_Medical_Expenses	646,72	918,03	-271,31	535,39	-0,51		646,72	684,21	-37,49	370,27	-0,10		646,72	751,31	-104,59	433,58	-0,24	
Sustainable_Practices	9,69	10,08	-0,39	0,47	-0,83		9,69	10,21	-0,52	0,44	-1,19		9,69	10,11	-0,42	0,42	-1,00	
Harvesting_Number	3,02	3,03	-0,02	0,07	-0,25		3,02	3,03	-0,02	0,07	-0,24		3,02	3,03	-0,01	0,07	-0,19	
Days_Before_Delivering	1,75	1,25	0,50	0,21	2,40	***	1,75	1,18	0,57	0,19	3,01	***	1,75	1,22	0,53	0,19	2,82	***
Plot_Losses	1,34	1,57	-0,23	0,35	-0,66		1,34	1,63	-0,28	0,30	-0,94		1,34	1,55	-0,21	0,29	-0,71	
Buyers_Losses	2,25	3,23	-0,98	0,61	-1,62	*	2,25	3,52	-1,28	0,53	-2,43	***	2,25	3,26	-1,01	0,51	-1,96	*
Coffee_Size_Quality	0,30	0,00	0,30	0,23	1,30		0,30	0,00	0,30	0,23	1,30		0,30	0,00	0,30	0,23	1,30	
Plant_Density	3270,98	3374,10	-103,11	64,13	-1,61	*	3270,98	3373,01	-102,02	68,67	-1,49		3270,98	3371,11	-100,12	66,87	-1,50	
Imperfection_Percentage	0,60	0,93	-0,34	0,47	-0,72		0,60	0,75	-0,15	0,37	-0,40		0,60	0,89	-0,29	0,36	-0,79	
Fermentation_Percentage	0,74	0,51	0,23	0,47	0,49		0,74	0,20	0,54	0,39	1,38		0,74	0,20	0,54	0,38	1,43	
WareHouse_Percentage	0,16	0,16	0,00	0,21	0,00		0,16	0,11	0,05	0,22	0,25		0,16	0,08	0,08	0,22	0,37	
Humidity_Coffee	42,05	42,00	0,05	0,10	0,50		42,05	41,99	0,06	0,11	0,56		42,05	41,99	0,06	0,11	0,56	
Number_GAP_Practices	8,38	7,51	0,87	0,42	2,08	**	8,38	7,34	1,04	0,37	2,84	***	8,38	7,39	0,99	0,36	2,75	***
Quality_Awareness	4,46	4,50	-0,05	0,09	-0,57		4,46	4,48	-0,02	0,08	-0,32		4,46	4,46	0,00	0,08	-0,06	
Weather_First_Person	152,13	149,67	2,46	9,44	0,26		152,13	144,40	7,73	7,61	1,02		152,13	142,64	9,49	7,48	1,27	
Effort_First_Person	21,39	25,41	-4,02	7,12	-0,56		21,39	26,04	-4,64	5,97	-0,78		21,39	25,58	-4,19	5,80	-0,72	

Table 6: Difference Analysis FT-PRODECOOP / Independent Farmers

Fair Trade & Independent Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	2533,53	4447,74	-1914,21	3515,56	-0,54		2533,53	3477,44	-943,91	2736,81	-0,34		2533,53	2758,03	-224,50	2457,29	-0,09	
Services_Income	3565,35	7028,57	-3463,22	3764,31	-0,92		3565,35	6243,61	-2678,26	2854,17	-0,94		3565,35	6225,06	-2659,70	2577,19	-1,03	
Coffee_Income	64286,15	56988,72	7297,43	20196,32	0,36		64286,15	52280,08	12006,08	17757,24	0,68		64286,15	52672,24	11613,91	17071,61	0,68	
Other_Agri_Income	4791,27	4368,35	422,93	1465,35	0,29		4791,27	3942,08	849,19	1422,45	0,60		4791,27	4165,60	625,67	1469,47	0,43	
Total_Income	75176,31	72833,38	2342,93	20844,71	0,11		75176,31	65943,21	9233,10	18124,03	0,51		75176,31	65820,93	9355,38	17407,39	0,54	
Coffee_Dependency	80,06	78,75	1,31	5,00	0,26		80,06	78,06	2,00	4,72	0,42		80,06	78,39	1,67	4,41	0,38	
Non_Farm_Income_PC	633,38	1111,94	-478,55	878,89	-0,54		633,38	869,36	-235,98	684,20	-0,34		633,38	689,51	-56,12	614,32	-0,09	
Services_Income_PC	891,34	1757,14	-865,80	941,08	-0,92		891,34	1560,90	-669,56	713,54	-0,94		891,34	1556,26	-664,93	644,30	-1,03	
Coffee_Income_PC	16071,54	14247,18	1824,36	5049,08	0,36		16071,54	13070,02	3001,52	4439,31	0,68		16071,54	13168,06	2903,48	4267,90	0,68	
Other_Agri_Income_PC	1197,82	1092,09	105,73	366,34	0,29		1197,82	985,52	212,30	355,61	0,60		1197,82	1041,40	156,42	367,37	0,43	
Total_Income_PC	18794,08	18208,35	585,73	5211,18	0,11		18794,08	16485,80	2308,28	4531,01	0,51		18794,08	16455,23	2338,85	4351,85	0,54	
Household_Expenditure_PC	65993,06	70328,21	-4335,15	19524,50	-0,22		65993,06	75232,92	-9239,86	16513,09	-0,56		65993,06	77132,43	-11139,37	14901,05	-0,75	
Food_Expenditure_PC	5292,29	4519,37	772,92	526,16	1,47		5292,29	4914,43	377,87	448,20	0,84		5292,29	4981,01	311,28	435,81	0,71	
Education_Expenditure_PC	4273,44	8022,18	-3748,74	4382,21	-0,86		4273,44	8334,21	-4060,77	3327,79	-1,22		4273,44	8812,53	-4539,09	2971,70	-1,53	
Housing_Expenditure_PC	6957,90	7038,52	-80,61	1674,00	-0,05		6957,90	6744,09	213,81	1259,92	0,17		6957,90	6565,90	392,00	1138,72	0,34	
Health_Expenditure_PC	4181,73	1915,04	2266,69	1137,37	1,99	*	4181,73	3280,45	901,28	1470,47	0,61		4181,73	3501,20	680,53	1359,20	0,50	
FHH_Expenditure_PC	86698,43	91823,31	-5124,88	24523,00	-0,21		86698,43	98506,10	-11807,67	20706,38	-0,57		86698,43	100993,08	-14294,65	18682,86	-0,77	
Better_off_than_5_years_ago	1,26	1,50	-0,23	0,17	-1,33		1,26	1,55	-0,29	0,15	-1,93	*	1,26	1,49	-0,23	0,14	-1,61	*
Better_off_than_today	1,19	1,29	-0,11	0,10	-1,01		1,19	1,27	-0,08	0,10	-0,82		1,19	1,29	-0,10	0,09	-1,15	
Total_Assets	62426,23	61557,29	868,94	58875,25	0,01		62426,23	69356,60	-6930,38	54788,60	-0,13		62426,23	88566,63	-26140,41	49419,57	-0,53	
Amount_of_Credit	14672,18	12270,68	2401,50	5928,54	0,41		14672,18	11646,62	3025,56	8591,24	0,35		14672,18	14596,15	76,04	7933,82	0,01	
Total_Savings	695,49	150,38	545,11	331,46	1,64	*	695,49	151,88	543,61	281,31	1,93	*	695,49	149,76	545,72	267,45	2,04	**
Coffee_Prod_Area	3,65	3,97	-0,32	0,54	-0,59		3,65	3,78	-0,13	0,46	-0,28		3,65	3,79	-0,14	0,43	-0,33	
Coffee_Ave_Price	197,62	190,77	6,85	9,80	0,70		197,62	188,50	9,12	8,64	1,06		197,62	192,46	5,16	8,33	0,62	
Coffee_Production_QQ	41,09	45,09	-4,00	22,05	-0,18		41,09	44,52	-3,42	16,67	-0,21		41,09	41,85	-0,76	15,00	-0,05	
Coffee_Yields	15,26	17,21	-1,95	10,74	-0,18		15,26	17,32	-2,06	8,05	-0,26		15,26	15,98	-0,72	7,22	-0,10	
Input_Cost	916,64	285,77	630,87	298,38	2,11	**	916,64	244,29	672,35	281,68	2,39	***	916,64	298,46	618,18	301,68	2,05	**
Labour_Cost	881,47	1370,60	-489,14	546,33	-0,90		881,47	901,00	-19,54	420,52	-0,05		881,47	999,10	-117,63	385,68	-0,31	
Harvestng_Labour_Cost	287,61	344,65	-57,05	44,77	-1,27		287,61	312,71	-25,10	37,23	-0,67		287,61	311,69	-24,08	36,89	-0,65	
QQ_Production_5_years_ago	33,58	33,97	-0,39	5,55	-0,07		33,58	31,95	1,62	5,62	0,29		33,58	32,13	1,44	5,44	0,26	
QQ_Production_Today	33,65	37,23	-3,59	4,38	-0,82		33,65	37,90	-4,25	3,78	-1,13		33,65	37,64	-3,99	3,81	-1,05	
QQ_Production_Next_Season	45,28	43,27	2,01	4,98	0,40		45,28	43,03	2,25	4,47	0,50		45,28	43,44	1,83	4,20	0,44	
Real_Coffee_Renovation	0,41	0,32	0,09	0,10	0,90		0,41	0,31	0,10	0,11	0,95		0,41	0,33	0,08	0,10	0,84	
Risk_Perception	1,21	1,23	-0,02	0,06	-0,28		1,21	1,19	0,02	0,05	0,40		1,21	1,18	0,03	0,06	0,48	
Productive_Use_Investments	8612,03	9631,58	-1019,55	1051,22	-0,97		8612,03	9730,83	-1118,80	816,30	-1,37		8612,03	9470,03	-858,00	732,24	-1,17	
Productive_Use_Investments_Percentage	13,88	3,68	10,20	10,51	0,97		13,88	2,69	11,19	8,16	1,37		13,88	5,30	8,58	7,32	1,17	
Women_Empow_HH	2,14	2,59	-0,45	0,29	-1,56		2,14	2,55	-0,41	0,26	-1,59		2,14	2,57	-0,43	0,24	-1,79	*
Women_Empow_ORG	1,89	2,11	-0,21	0,21	-1,00		1,89	2,13	-0,24	0,20	-1,20		1,89	2,12	-0,22	0,19	-1,17	
House_Ownership	1,79	1,50	0,29	0,16	1,78	*	1,79	1,61	0,18	0,15	1,23		1,79	1,60	0,19	0,14	1,34	
Plot_Ownership	1,45	1,48	-0,03	0,17	-0,17		1,45	1,62	-0,17	0,15	-1,14		1,45	1,56	-0,11	0,14	-0,81	
Got_Institutional_Help	1,41	1,37	0,04	0,10	0,41		1,41	1,41	0,00	0,08	0,02		1,41	1,42	-0,01	0,08	-0,08	
Who_Crontrol	2,08	1,94	0,14	0,10	1,42		2,08	1,94	0,13	0,09	1,55		2,08	1,94	0,14	0,08	1,63	*
Women_Awareness	4,36	4,18	0,19	0,12	1,55		4,36	4,30	0,06	0,16	0,38		4,36	4,33	0,03	0,15	0,23	
Female_Share	40,37	43,39	-3,02	4,73	-0,64		40,37	45,92	-5,55	3,82	-1,45		40,37	47,25	-6,88	3,54	-1,94	*
Female_Coffee_Share	10,09	13,11	-3,02	4,88	-0,62		10,09	14,59	-4,50	3,77	-1,19		10,09	15,72	-5,62	3,52	-1,60	*
Gender_Conciouness	2,85	2,82	0,04	0,22	0,17		2,85	2,99	-0,14	0,19	-0,70		2,85	2,93	-0,08	0,18	-0,42	
Participation_in_organization	0,14	0,13	0,02	0,06	0,24		0,14	0,09	0,06	0,05	1,14		0,14	0,07	0,07	0,05	1,38	
Total_Identifiaction_to_Organization	3,69	0,14	3,55	0,17	21,24	***	3,69	0,15	3,54	0,17	20,84	***	3,69	0,17	3,52	0,19	18,71	***
Total_Organization_Function	3,58	0,17	3,40	0,18	19,45	***	3,58	0,18	3,40	0,17	19,84	***	3,58	0,20	3,37	0,19	18,01	***
Total_Organization_Strenght	3,69	0,17	3,52	0,18	19,57	***	3,69	0,18	3,51	0,18	19,51	***	3,69	0,21	3,48	0,20	17,57	***
Total_Satisfaction_with_Techincal_Assistance	7,84	0,28	7,56	0,29	26,46	***	7,84	0,31	7,53	0,30	24,95	***	7,84	0,35	7,49	0,35	21,70	***
Total_Satisfaction_with_Comercialization_Assisteance	8,77	0,34	8,42	0,28	29,81	***	8,77	0,35	8,41	0,28	30,46	***	8,77	0,40	8,36	0,32	26,14	**
Average_Loyalty	3,05	3,35	-0,30	0,30	-1,01		3,05	3,25	-0,20	0,25	-0,83		3,05	3,24	-0,19	0,23	-0,83	
Side_Sales_Percentage	7,48	8,44	-0,96	4,35	-0,22		7,48	9,95	-2,47	3,47	-0,71		7,48	9,90	-2,42	3,54	-0,68	
Price	4,87	4,80	0,07	0,08	0,84		4,87	4,83	0,04	0,07	0,53		4,87	4,83	0,04	0,07	0,51	
Cash_Payment	4,81	4,79	0,02	0,11	0,19		4,81	4,81	0,00	0,09	0,00		4,81	4,78	0,03	0,09	0,32	
Product_Deliery	4,56	4,54	0,02	0,19	0,11		4,56	4,53	0,03	0,15	0,23		4,56	4,52	0,05	0,14	0,33	
Payment_Time	4,53	4,46	0,08	0,14	0,55		4,53	4,92	-0,38	0,77	-0,50		4,53	4,82	-0,28	0,69	-0,41	
Pre_Credit	4,79	4,76	0,03	0,09	0,31		4,79	4,81	-0,02	0,09	-0,19		4,79	4,81	-0,01	0,08	-0,17	
Quality_Control	4,79	4,74	0,04	0,09	0,47		4,79	4,66	0,13	0,10	1,27		4,79	4,65	0,14	0,09	1,49	
Transaction_Place	4,78	4,78	-0,01	0,09	-0,09		4,78	4,67	0,11	0,13	0,88		4,78	4,65	0,12	0,11	1,06	
Days_Lost	2,74	1,14	1,59	0,64	2,51	***	2,74	1,88	0,85	0,60	1,42		2,74	1,76	0,98	0,59	1,67	*
Montly_Medical_Expenses	847,97	986,47	-138,50	624,21	-0,22		847,97	1404,76	-556,79	471,69	-1,18		847,97	1210,52	-362,55	436,37	-0,83	
Sustainable_Practices	9,75	10,10	-0,35	0,40	-0,86		9,75	9,95	-0,20	0,35	-0,58		9,75	10,04	-0,28	0,34	-0,84	
Harvesting_Number	3,05	3,55	-0,50	0,49	-1,02		3,05	3,40	-0,36	0,36	-0,98		3,05	3,36	-0,32	0,32	-0,98	
Days_Before_Delivering	1,49	2,00	-0,51	0,19	-2,71	***	1,49	2,07	-0,57	0,16	-3,55	***	1,49	2,10	-0,61	0,15	-3,95	***
Plot_Losses	1,14	0,61	0,53	0,24	2,24	**	1,14	0,71	0,43	0,22	1,95	*	1,14	0,76	0,38	0,20	1,86	*
Buyers_Losses	2,66	0,61	2,05	0,35	5,82	***	2,66	0,85	1,81	0,33	5,54	***	2,66	0,83	1,83	0,32	5,77	***
Coffee_Size_Quality	0,10	0,02	0,08	0,11	0,73		0,10	0,13	-0,04	0,15	-0,24		0,10	0,14	-0,04	0,14	-0,27	
Plant_Density	3274,31	3249,85	24,46	129,48	0,19		3274,31	3166,02	108,29	103,71	1,04		3274,31	3150,96	123,35	94,00	1,31	
Imperfection_Percentage	0,68	0,53	0,16	0,22	0,73		0,68	0,42	0,26	0,20	1,30		0,68	0,45	0,24	0,21	1,14	
Fermentation_Percentage	0,25	0,39	-0,14	0,30	-0,47		0,25	0,63	-0,38	0,40	-0,95		0,25	0,56	-0,31	0,36	-0,85	
WareHouse_Percentage	0,26	0,06	0,20	0,17	1,21		0,26	0,13	0,14	0,14	0,97		0,26	0,12	0,14	0,16	0,88	
Humidity_Coffee	42,02	42,08	-0,06	0,14	-0,44		42,02	42,20	-0,17	0,12	-1,49		42,02	42,18	-0,15	0,11	-1,39	
Number_GAP_Practices	7,71	9,05	-1,33	0,41	-3,23	***	7,71	8,94	-1,23	0,32	-3,86	***	7,71	8,86	-1,14	0,30	-3,76	***
Quality_Awareness	4,50	4,51	-0,01	0,10	-0,05		4,50	4,55	-0,05	0,08	-0,65		4,50	4,56	-0,06	0,08	-0,69	
Weather_First_Person	151,73	142,56	9,17	6,96	1,32		151,73	136,44	15,29	6,04	2,53	***	151,73	137,83	13,90	5,75	2,42	**
Effort_First_Person	18,95	26,58	-7,63	8,20	-0,93		18,95	33,68	-14,74	6,59	-2,24	**	18,95	32,21	-13,26	6,10	-2,18	**

Table 7: Difference Analysis FT-PRODECOOP / CAFÉ Practices

Fair Trade & Café Practice Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	3295,60	8796,67	-5501,07	8938,89	-0,62		3295,60	8340,67	-5045,07	12772,70	-0,39		3295,60	9483,62	-6188,02	15680,42	-0,39	
Services_Income	4041,28	64,00	3977,28	1142,08	3,48	***	4041,28	1386,67	2654,61	6422,83	0,41		4041,28	1672,32	2368,96	7861,42	0,30	
Coffee_Income	69505,85	74301,87	-4796,01	61587,28	-0,08		69505,85	75943,73	-6437,88	58633,13	-0,11		69505,85	84036,50	-14530,64	71503,86	-0,20	
Other_Agri_Income	5095,82	14317,20	-9221,38	4835,01	-1,91	*	5095,82	8347,73	-3251,91	6996,59	-0,46		5095,82	15388,89	-10293,07	8585,30	-1,20	
Total_Income	81938,56	97479,73	-15541,18	63418,24	-0,25		81938,56	94018,80	-12080,24	64567,40	-0,19		81938,56	110581,33	-28642,77	78839,36	-0,36	
Coffee_Dependency	79,84	76,39	3,45	9,53	0,36		79,84	84,66	-4,81	7,45	-0,65		79,84	77,61	2,23	9,06	0,25	
Non_Farm_Income_PC	823,90	2199,17	-1375,27	2234,72	-0,62		823,90	2085,17	-1261,27	3193,17	-0,39		823,90	2370,91	-1547,01	3920,11	-0,39	
Services_Income_PC	1010,32	16,00	994,32	285,52	3,48	***	1010,32	346,67	663,65	1605,71	0,41		1010,32	418,08	592,24	1965,36	0,30	
Coffee_Income_PC	17376,46	18575,47	-1199,00	15396,82	-0,08		17376,46	18985,93	-1609,47	14658,28	-0,11		17376,46	21009,12	-3632,66	17875,97	-0,20	
Other_Agri_Income_PC	1273,96	3579,30	-2305,34	1208,75	-1,91	*	1273,96	2086,93	-812,98	1749,15	-0,46		1273,96	3847,22	-2573,27	2146,32	-1,20	
Total_Income_PC	20484,64	24369,93	-3885,29	15854,56	-0,25		20484,64	23504,70	-3020,06	16141,85	-0,19		20484,64	27645,33	-7160,69	19709,84	-0,36	
Household_Expenditure_PC	76065,66	82516,52	-6450,86	65224,24	-0,10		76065,66	74365,57	1700,09	47223,18	0,04		76065,66	67020,20	9045,46	57822,29	0,16	
Food_Expenditure_PC	5358,86	4291,28	1067,58	1153,47	0,93		5358,86	4861,37	497,49	945,40	0,53		5358,86	4241,98	1116,88	1148,52	0,97	
Education_Expenditure_PC	5808,12	3178,00	2630,12	7187,02	0,37		5808,12	4895,33	912,79	6753,33	0,14		5808,12	4087,37	1720,75	8251,20	0,21	
Housing_Expenditure_PC	7342,29	6127,99	1214,30	1838,58	0,66		7342,29	6572,67	769,63	1334,63	0,58		7342,29	5958,54	1383,75	1607,35	0,86	
Health_Expenditure_PC	4757,80	10537,14	-5779,34	14399,10	-0,40		4757,80	6110,73	-1352,93	9012,79	-0,15		4757,80	5839,78	-1081,98	11069,96	-0,10	
FHH_Expenditure_PC	99332,73	106650,93	-7318,20	81992,95	-0,09		99332,73	96805,67	2527,06	59223,89	0,04		99332,73	87147,86	12184,87	72518,02	0,17	
Better_off_than_5_years_ago	1,31	1,26	0,05	0,31	0,15		1,31	1,24	0,07	0,23	0,30		1,31	1,21	0,09	0,28	0,34	
Better_off_than_today	1,17	1,13	0,03	0,23	0,15		1,17	1,11	0,06	0,19	0,30		1,17	1,10	0,06	0,23	0,27	
Total_Assets	67849,34	141390,40	-73541,06	260578,04	-0,28		67849,34	166191,22	-98341,88	164102,08	-0,60		67849,34	149446,74	-81597,40	201356,20	-0,41	
Amount_of_Credit	12173,13	27266,00	-15092,87	14012,35	-1,08		12173,13	28848,00	-16674,87	24511,09	-0,68		12173,13	32850,73	-20677,59	29985,22	-0,69	
Total_Savings	816,67	400,00	416,67	2454,06	0,17		816,67	382,22	434,44	1523,81	0,29		816,67	388,82	427,85	1863,75	0,23	
Coffee_Prod_Area	4,32	3,61	0,71	2,01	0,35		4,32	3,40	0,92	1,61	0,57		4,32	3,78	0,53	1,97	0,27	
Coffee_Ave_Price	196,70	216,79	-20,09	33,09	-0,61		196,70	212,28	-15,58	22,99	-0,68		196,70	210,33	-13,63	28,09	-0,49	
Coffee_Production_QQ	47,32	32,47	14,85	32,68	0,45		47,32	39,29	8,02	24,72	0,32		47,32	33,30	14,02	29,85	0,47	
Coffee_Yields	14,81	13,14	1,67	7,06	0,24		14,81	16,22	-1,41	5,35	-0,26		14,81	12,13	2,68	6,39	0,42	
Input_Cost	1200,62	141,57	1059,05	557,45	1,90	*	1200,62	896,23	304,38	6434,27	0,05		1200,62	1149,45	51,17	7904,88	0,01	
Labour_Cost	1281,18	283,67	997,51	944,66	1,06		1281,18	533,64	747,54	1540,84	0,49		1281,18	603,26	677,92	1861,67	0,36	
Harvestng_Labour_Cost	316,24	278,37	37,87	129,34	0,29		316,24	317,71	-1,47	102,77	-0,01		316,24	303,99	12,25	125,77	0,10	
QQ_Production_5_years_ago	34,95	48,73	-13,78	14,08	-0,98		34,95	49,19	-14,24	15,58	-0,91		34,95	48,13	-13,18	19,09	-0,69	
QQ_Production_Today	34,73	43,64	-8,91	20,88	-0,43		34,73	51,07	-16,34	17,57	-0,93		34,73	51,54	-16,81	21,58	-0,78	
QQ_Production_Next_Season	45,98	54,91	-8,93	26,46	-0,34		45,98	59,40	-13,42	19,96	-0,67		45,98	60,30	-14,32	24,49	-0,58	
Real_Coffee_Renovation	0,38	0,14	0,24	0,32	0,76		0,38	0,29	0,10	0,28	0,35		0,38	0,27	0,11	0,35	0,32	
Risk_Perception	1,21	1,09	0,12	0,14	0,86		1,21	1,07	0,13	0,12	1,13		1,21	1,08	0,13	0,14	0,88	
Productive_Use_Investments	8589,33	9266,67	-677,33	564,83	-1,20		8589,33	9264,44	-675,11	488,07	-1,38		8589,33	9188,01	-598,68	585,49	-1,02	
Productive_Use_Investments_Percentage	14,11	7,33	6,77	5,65	1,20		14,11	7,36	6,75	4,88	1,38		14,11	8,12	5,99	5,85	1,02	
Women_Empow_HH	2,18	2,74	-0,56	0,67	-0,83		2,18	2,70	-0,52	0,45	-1,15		2,18	2,72	-0,54	0,55	-0,97	
Women_Empow_ORG	1,92	2,24	-0,32	0,44	-0,72		1,92	1,78	0,14	0,32	0,43		1,92	2,16	-0,24	0,39	-0,61	
House_Ownership	1,78	1,93	-0,15	0,36	-0,42		1,78	1,47	0,31	0,26	1,22		1,78	1,89	-0,11	0,31	-0,35	
Plot_Ownership	1,43	1,92	-0,49	0,36	-1,37		1,43	1,44	-0,01	0,25	-0,04		1,43	1,86	-0,44	0,31	-1,42	
Got_Institutional_Help	1,41	1,18	0,23	0,24	0,92		1,41	1,34	0,07	0,17	0,40		1,41	1,22	0,19	0,21	0,89	
Who_Crontrol	2,05	2,12	-0,06	0,23	-0,27		2,05	2,08	-0,02	0,15	-0,15		2,05	2,12	-0,07	0,19	-0,35	
Women_Awareness	4,32	4,69	-0,37	0,20	-1,82	*	4,32	4,55	-0,23	0,18	-1,28		4,32	4,66	-0,34	0,22	-1,59	
Female_Share	39,72	35,06	4,66	8,17	0,57		39,72	38,49	1,24	6,96	0,18		39,72	37,20	2,52	8,50	0,30	
Female_Coffee_Share	8,98	6,42	2,56	3,64	0,70		8,98	4,75	4,24	5,87	0,72		8,98	6,65	2,33	7,15	0,33	
Gender_Conciouness	2,86	3,79	-0,93	0,48	-1,93	*	2,86	3,47	-0,61	0,39	-1,58		2,86	3,61	-0,75	0,47	-1,58	
Participation_in_organization	0,15	0,06	0,09	0,15	0,59		0,15	0,08	0,07	0,12	0,59		0,15	0,09	0,06	0,14	0,39	
Total_Identifiaction_to_Organization	3,81	1,60	2,22	0,49	4,53	***	3,81	1,48	2,33	0,35	6,72	***	3,81	1,63	2,18	0,42	5,22	***
Total_Organization_Function	3,67	1,50	2,16	0,48	4,52	***	3,67	1,25	2,42	0,34	7,02	***	3,67	1,55	2,11	0,41	5,10	***
Total_Organization_Strenght	3,80	1,64	2,17	0,49	4,44	***	3,80	1,52	2,28	0,34	6,62	***	3,80	1,67	2,14	0,41	5,18	***
Total_Satisfaction_with_Techincal_Assistance	7,77	3,29	4,48	0,78	5,74	***	7,77	3,49	4,28	0,57	7,56	***	7,77	3,40	4,37	0,68	6,45	***
Total_Satisfaction_with_Comercialization_Assisteance	8,80	3,39	5,42	0,81	6,69	***	8,80	3,61	5,19	0,57	9,07	***	8,80	3,51	5,30	0,69	7,63	***
Average_Loyalty	3,09	4,02	-0,93	0,69	-1,35		3,09	3,89	-0,80	0,53	-1,51		3,09	3,89	-0,80	0,65	-1,24	
Side_Sales_Percentage	7,87	8,10	-0,23	9,44	-0,02		7,87	15,80	-7,93	6,47	-1,23		7,87	8,45	-0,58	7,87	-0,07	
Price	4,87	4,98	-0,10	0,19	-0,54		4,87	4,96	-0,09	0,13	-0,69		4,87	4,97	-0,09	0,16	-0,58	
Cash_Payment	4,81	4,93	-0,12	0,21	-0,60		4,81	4,92	-0,12	0,17	-0,69		4,81	4,93	-0,12	0,21	-0,58	
Product_Deliery	4,57	4,79	-0,22	0,27	-0,80		4,57	4,71	-0,14	0,21	-0,69		4,57	4,81	-0,24	0,25	-0,95	
Payment_Time	4,50	4,69	-0,19	0,44	-0,44		4,50	4,51	-0,02	0,29	-0,06		4,50	4,69	-0,19	0,35	-0,56	
Pre_Credit	4,80	4,91	-0,10	0,17	-0,61		4,80	4,95	-0,15	0,12	-1,21		4,80	4,94	-0,14	0,15	-0,97	
Quality_Control	4,79	4,89	-0,10	0,39	-0,26		4,79	4,79	0,00	0,25	-0,01		4,79	4,76	0,03	0,31	0,11	
Transaction_Place	4,79	4,94	-0,16	0,17	-0,95		4,79	4,96	-0,17	0,12	-1,44		4,79	4,96	-0,17	0,14	-1,18	
Days_Lost	2,48	1,21	1,27	1,74	0,73		2,48	1,54	0,94	1,16	0,82		2,48	1,39	1,09	1,39	0,78	
Montly_Medical_Expenses	765,53	4554,67	-3789,13	11288,90	-0,34		765,53	2333,89	-1568,36	6944,93	-0,23		765,53	1939,49	-1173,95	8539,46	-0,14	
Sustainable_Practices	9,80	9,39	0,41	0,73	0,55		9,80	8,77	1,03	0,59	1,74	*	9,80	9,34	0,46	0,72	0,64	
Harvesting_Number	3,06	3,61	-0,55	0,25	-2,24	**	3,06	3,34	-0,28	0,20	-1,36		3,06	3,53	-0,47	0,25	-1,88	*
Days_Before_Delivering	1,54	1,71	-0,17	0,43	-0,39		1,54	1,43	0,11	0,33	0,34		1,54	1,66	-0,12	0,40	-0,30	
Plot_Losses	1,13	2,06	-0,93	1,26	-0,74		1,13	1,84	-0,71	1,05	-0,67		1,13	2,18	-1,06	1,29	-0,82	
Buyers_Losses	2,56	3,41	-0,85	0,90	-0,95		2,56	3,21	-0,65	0,67	-0,97		2,56	3,21	-0,65	0,81	-0,80	
Coffee_Size_Quality	0,12	0,00	0,12	0,09	1,30		0,12	0,00	0,12	0,09	1,30		0,12	0,00	0,12	0,09	1,30	
Plant_Density	3264,35	3079,33	185,02	248,68	0,74		3264,35	3256,78	7,58	169,43	0,04		3264,35	3066,79	197,56	207,45	0,95	
Imperfection_Percentage	0,76	0,53	0,23	0,54	0,43		0,76	0,97	-0,22	0,38	-0,57		0,76	0,56	0,20	0,46	0,43	
Fermentation_Percentage	0,52	0,09	0,43	1,23	0,35		0,52	0,22	0,30	1,06	0,29		0,52	0,25	0,27	1,30	0,21	
WareHouse_Percentage	0,27	0,05	0,22	0,19	1,14		0,27	0,07	0,20	0,14	1,50		0,27	0,07	0,20	0,16	1,30	
Humidity_Coffee	42,05	42,05	0,00	0,28	0,00		42,05	42,05	-0,01	0,20	-0,03		42,05	42,06	-0,01	0,25	-0,04	
Number_GAP_Practices	7,77	8,75	-0,98	0,22	-4,38	***	7,77	8,55	-0,78	0,19	-4,15	***	7,77	8,76	-0,99	0,21	-4,73	***
Quality_Awareness	4,48	4,55	-0,06	0,19	-0,32		4,48	4,36	0,12	0,13	0,90		4,48	4,53	-0,04	0,16	-0,27	
Weather_First_Person	150,77	162,13	-11,37	13,53	-0,84		150,77	145,97	4,80	10,56	0,45		150,77	160,56	-9,79	12,83	-0,76	
Effort_First_Person	20,80	14,43	6,37	18,58	0,34		20,80	17,72	3,08	12,37	0,25		20,80	19,04	1,76	15,11	0,12	

Table 8: Difference Analysis FT-PRODECOOP / Rainforest Alliance

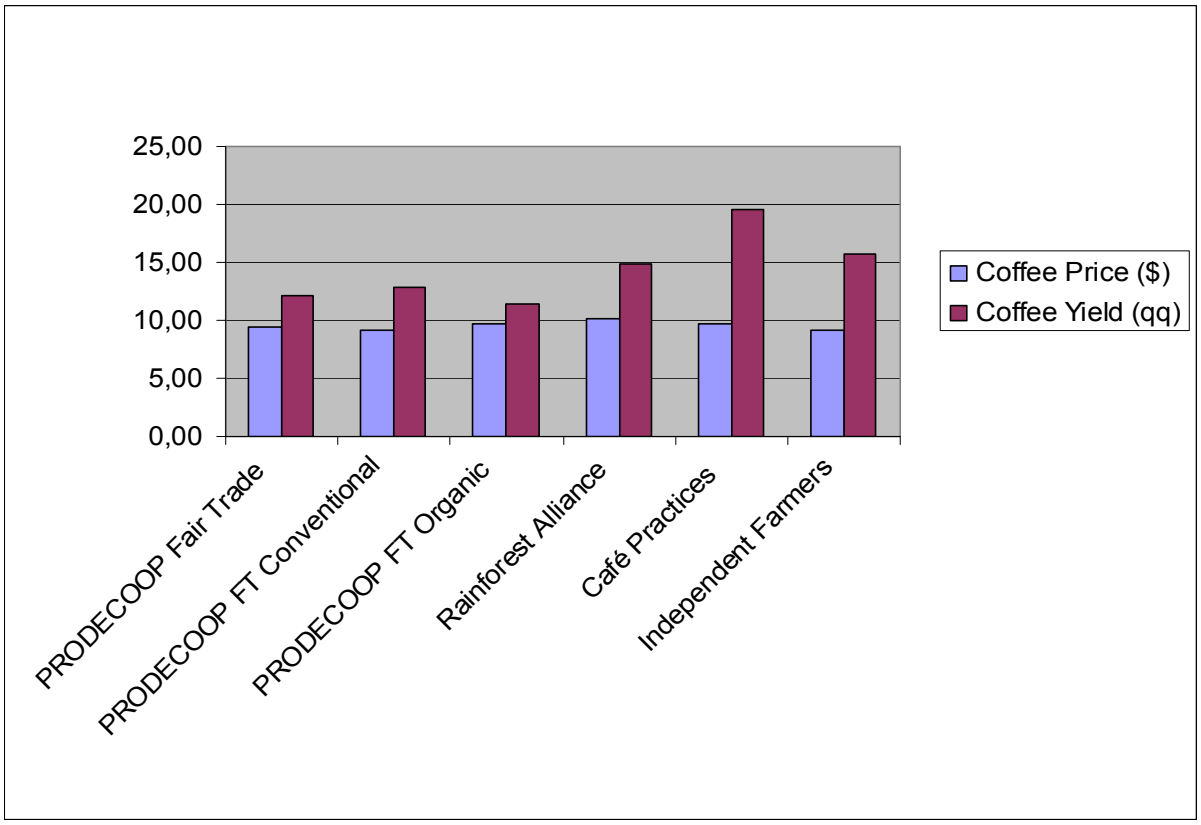
Fair Trade & Rainforest Alliance Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	2277,42	4307,74	-2030,32	3388,13	-0,60		2277,42	6684,09	-4406,67	5190,89	-0,85		2614,81	7994,50	-5379,68	4916,74	-1,09	
Services_Income	4916,13	3870,97	1045,16	3760,87	0,28		4916,13	4000,00	916,13	3003,58	0,31		3155,56	3471,64	-316,08	2751,91	-0,11	
Coffee_Income	103893,71	108294,84	-4401,13	45056,94	-0,10		103893,71	74502,15	29391,56	35865,30	0,82		91311,30	67938,94	23372,36	35906,27	0,65	
Other_Agri_Income	8793,87	5162,26	3631,61	2290,45	1,59		8793,87	3074,73	5719,14	1927,74	2,97	***	8057,78	2031,20	6026,58	1900,70	3,17	***
Total_Income	119881,13	121635,81	-1754,68	46325,39	-0,04		119881,13	88260,97	31620,16	37227,16	0,85		105139,44	81436,27	23703,17	36651,66	0,65	
Coffee_Dependency	76,47	80,04	-3,57	7,62	-0,47		76,47	79,13	-2,66	6,01	-0,44		75,71	79,32	-3,61	6,23	-0,58	
Non_Farm_Income_PC	569,35	1076,94	-507,58	847,03	-0,60		569,35	1671,02	-1101,67	1297,72	-0,85		653,70	1998,62	-1344,92	1229,19	-1,09	
Services_Income_PC	1229,03	967,74	261,29	940,22	0,28		1229,03	1000,00	229,03	750,90	0,31		788,89	867,91	-79,02	687,98	-0,11	
Coffee_Income_PC	25973,43	27073,71	-1100,28	11264,23	-0,10		25973,43	18625,54	7347,89	8966,33	0,82		22827,82	16984,74	5843,09	8976,57	0,65	
Other_Agri_Income_PC	2198,47	1290,56	907,90	572,61	1,59		2198,47	768,68	1429,78	481,93	2,97	***	2014,44	507,80	1506,65	475,18	3,17	***
Total_Income_PC	29970,28	30408,95	-438,67	11581,35	-0,04		29970,28	22065,24	7905,04	9306,79	0,85		26284,86	20359,07	5925,79	9162,92	0,65	
Household_Expenditure_PC	76418,21	144138,52	-67720,31	46550,62	-1,45		76418,21	96888,29	-20470,08	28659,43	-0,71		69876,57	102677,29	-32800,72	28008,82	-1,17	
Food_Expenditure_PC	5686,06	5620,15	65,91	1040,15	0,06		5686,06	5850,93	-164,87	967,75	-0,17		5405,56	6140,38	-734,82	816,88	-0,90	
Education_Expenditure_PC	6406,45	19708,06	-13301,61	9880,35	-1,35		6406,45	11266,13	-4859,68	5700,26	-0,85		6682,22	11972,91	-5290,69	5640,87	-0,94	
Housing_Expenditure_PC	8556,17	8294,31	261,86	1871,11	0,14		8556,17	8006,91	549,25	1740,06	0,32		6886,92	8256,07	-1369,15	1119,61	-1,22	
Health_Expenditure_PC	3309,68	7296,77	-3987,10	2411,08	-1,65	*	3309,68	4119,35	-809,68	1636,58	-0,49		2977,78	4585,66	-1607,88	1656,73	-0,97	
FHH_Expenditure_PC	100376,57	185057,82	-84681,25	58289,11	-1,45		100376,57	126131,62	-25755,05	36006,62	-0,72		91829,05	133632,31	-41803,26	35118,81	-1,19	
Better_off_than_5_years_ago	1,29	1,35	-0,06	0,23	-0,28		1,29	1,41	-0,12	0,18	-0,65		1,33	1,49	-0,16	0,19	-0,82	
Better_off_than_today	1,13	1,00	0,13	0,06	2,11	**	1,13	1,19	-0,06	0,11	-0,61		1,07	1,09	-0,02	0,10	-0,18	
Total_Assets	147759,65	44460,97	103298,68	61367,77	1,68	*	147759,65	37023,71	110735,94	60924,98	1,82	*	132471,52	36316,09	96155,43	67649,29	1,42	
Amount_of_Credit	10870,97	7654,84	3216,13	3019,77	1,07		10870,97	8192,47	2678,49	2792,33	0,96		11185,19	8423,65	2761,54	3004,30	0,92	
Total_Savings	419,35	2903,23	-2483,87	1666,17	-1,49		419,35	1946,24	-1526,88	946,81	-1,61	*	407,41	1969,13	-1561,73	908,89	-1,72	*
Coffee_Prod_Area	5,91	6,95	-1,04	1,55	-0,67		5,91	5,19	0,72	1,13	0,63		5,31	4,79	0,52	1,04	0,49	
Coffee_Ave_Price	195,10	192,56	2,53	12,66	0,20		195,10	196,76	-1,67	11,75	-0,14		196,50	196,72	-0,22	11,48	-0,02	
Coffee_Production_QQ	57,55	45,52	12,03	17,14	0,70		57,55	59,92	-2,37	22,30	-0,11		54,67	37,18	17,48	21,71	0,81	
Coffee_Yields	13,25	9,18	4,08	3,85	1,06		13,25	19,99	-6,74	7,43	-0,91		14,01	13,00	1,01	7,16	0,14	
Input_Cost	2905,55	340,89	2564,66	2117,29	1,21		2905,55	360,27	2545,28	2134,27	1,19		911,93	485,53	426,39	564,70	0,76	
Labour_Cost	3380,16	197,16	3183,00	2325,27	1,37		3380,16	380,28	2999,88	2332,17	1,29		547,59	585,41	-37,82	332,57	-0,11	
Harvestng_Labour_Cost	368,11	377,42	-9,31	79,37	-0,12		368,11	305,74	62,37	59,85	1,04		340,98	281,92	59,06	57,51	1,03	
QQ_Production_5_years_ago	35,77	42,82	-7,05	9,86	-0,72		35,77	37,55	-1,78	7,74	-0,23		33,67	38,54	-4,87	7,86	-0,62	
QQ_Production_Today	33,52	42,90	-9,39	5,92	-1,59		33,52	38,63	-5,12	5,02	-1,02		33,26	38,23	-4,97	4,94	-1,01	
QQ_Production_Next_Season	46,06	52,13	-6,06	7,17	-0,85		46,06	47,14	-1,08	6,43	-0,17		45,74	47,75	-2,01	6,83	-0,29	
Real_Coffee_Renovation	0,55	0,17	0,38	0,17	2,27	**	0,55	0,21	0,34	0,17	2,08	**	0,60	0,25	0,35	0,18	1,94	*
Risk_Perception	1,19	1,24	-0,05	0,13	-0,38		1,19	1,20	-0,01	0,09	-0,08		1,16	1,21	-0,05	0,08	-0,66	
Productive_Use_Investments	8629,03	9064,52	-435,48	559,33	-0,78		8629,03	8929,03	-300,00	510,22	-0,59		8796,30	8889,86	-93,57	435,09	-0,22	
Productive_Use_Investments_Percentage	13,71	9,35	4,35	5,59	0,78		13,71	10,71	3,00	5,10	0,59		12,04	11,10	0,94	4,35	0,22	
Women_Empow_HH	2,14	2,30	-0,16	0,24	-0,66		2,14	2,32	-0,17	0,19	-0,89		2,16	2,24	-0,08	0,20	-0,42	
Women_Empow_ORG	2,02	2,26	-0,24	0,29	-0,83		2,02	2,27	-0,25	0,39	-0,64		2,02	2,34	-0,32	0,38	-0,86	
House_Ownership	1,74	2,03	-0,29	0,27	-1,06		1,74	1,94	-0,19	0,23	-0,85		1,81	2,01	-0,19	0,24	-0,82	
Plot_Ownership	1,32	1,52	-0,19	0,24	-0,82		1,32	1,59	-0,27	0,19	-1,40		1,30	1,59	-0,29	0,19	-1,57	
Got_Institutional_Help	1,32	1,67	-0,35	0,19	-1,89	*	1,32	1,63	-0,31	0,14	-2,23	**	1,35	1,71	-0,36	0,15	-2,48	***
Who_Crontrol	2,01	1,88	0,13	0,16	0,81		2,01	2,06	-0,05	0,12	-0,38		2,06	2,04	0,02	0,13	0,17	
Women_Awareness	4,36	4,34	0,02	0,20	0,10		4,36	4,40	-0,04	0,17	-0,24		4,30	4,36	-0,06	0,18	-0,34	
Female_Share	32,65	40,21	-7,56	5,67	-1,33		32,65	44,31	-11,66	4,35	-2,68	***	32,08	43,81	-11,73	4,21	-2,79	***
Female_Coffee_Share	4,49	11,34	-6,84	6,13	-1,12		4,49	10,24	-5,75	4,33	-1,33		5,08	13,37	-8,29	4,09	-2,03	**
Gender_Conciouness	2,65	3,29	-0,64	0,34	-1,92	*	2,65	3,20	-0,55	0,27	-2,05	**	2,63	3,09	-0,46	0,27	-1,71	*
Participation_in_organization	0,10	0,42	-0,32	0,13	-2,55	***	0,10	0,30	-0,20	0,09	-2,19	**	0,11	0,22	-0,11	0,09	-1,14	
Total_Identifiaction_to_Organization	3,80	4,65	-0,85	0,37	-2,32	**	3,80	4,52	-0,72	0,34	-2,09	**	3,69	4,50	-0,81	0,37	-2,20	**
Total_Organization_Function	3,34	4,61	-1,27	0,35	-3,61	***	3,34	4,61	-1,27	0,31	-4,10	***	3,24	4,55	-1,31	0,33	-3,96	***
Total_Organization_Strenght	3,64	4,68	-1,04	0,37	-2,85	***	3,64	4,65	-1,01	0,33	-3,02	***	3,53	4,64	-1,11	0,36	-3,05	***
Total_Satisfaction_with_Techincal_Assistance	7,11	8,05	-0,94	0,84	-1,11		7,11	8,37	-1,26	0,70	-1,80	*	6,81	8,36	-1,54	0,75	-2,05	**
Total_Satisfaction_with_Comercialization_Assisteance	8,94	9,40	-0,47	0,48	-0,97		8,94	9,34	-0,40	0,44	-0,93		8,85	9,37	-0,52	0,48	-1,07	
Average_Loyalty	2,98	3,30	-0,32	0,50	-0,64		2,98	3,14	-0,16	0,35	-0,47		2,91	3,21	-0,30	0,35	-0,85	
Side_Sales_Percentage	17,48	4,52	12,97	6,27	2,07	**	17,48	2,95	14,54	5,58	2,61	***	17,67	2,73	14,94	6,11	2,44	***
Price	4,75	4,98	-0,23	0,10	-2,24	**	4,75	4,95	-0,20	0,10	-1,90	*	4,72	4,94	-0,23	0,12	-1,96	*
Cash_Payment	4,65	4,94	-0,29	0,13	-2,26	**	4,65	4,85	-0,20	0,14	-1,44		4,67	4,83	-0,16	0,13	-1,18	
Product_Deliery	4,56	4,65	-0,10	0,21	-0,45		4,56	4,57	-0,01	0,20	-0,07		4,56	4,60	-0,03	0,21	-0,15	
Payment_Time	4,46	4,08	0,39	0,36	1,07		4,46	4,22	0,24	0,29	0,85		4,42	4,16	0,26	0,28	0,91	
Pre_Credit	4,70	4,83	-0,13	0,26	-0,49		4,70	4,83	-0,13	0,19	-0,66		4,73	4,79	-0,06	0,20	-0,30	
Quality_Control	4,87	4,91	-0,03	0,08	-0,41		4,87	4,80	0,07	0,10	0,72		4,85	4,80	0,05	0,10	0,51	
Transaction_Place	4,78	4,88	-0,10	0,11	-0,86		4,78	4,83	-0,06	0,11	-0,50		4,75	4,86	-0,11	0,12	-0,95	
Days_Lost	3,29	1,90	1,39	2,15	0,65		3,29	2,25	1,04	1,60	0,65		3,70	2,82	0,88	1,71	0,52	
Montly_Medical_Expenses	769,35	535,48	233,87	692,15	0,34		769,35	845,16	-75,81	442,75	-0,17		735,19	975,63	-240,45	551,02	-0,44	
Sustainable_Practices	10,10	9,84	0,26	0,68	0,38		10,10	9,76	0,33	0,55	0,60		10,04	9,51	0,53	0,54	0,97	
Harvesting_Number	3,06	3,10	-0,03	0,14	-0,24		3,06	3,15	-0,09	0,10	-0,89		3,07	3,12	-0,04	0,10	-0,43	
Days_Before_Delivering	2,08	1,65	0,44	0,29	1,52		2,08	1,33	0,75	0,26	2,88	***	1,98	1,28	0,70	0,24	2,90	***
Plot_Losses	0,94	0,94	0,00	0,37	0,00		0,94	0,83	0,11	0,33	0,33		1,07	0,77	0,31	0,33	0,92	
Buyers_Losses	2,00	2,10	-0,10	0,73	-0,13		2,00	2,68	-0,68	0,61	-1,11		2,26	2,57	-0,31	0,63	-0,49	
Coffee_Size_Quality	0,16	0,00	0,16	0,16	1,00		0,16	0,00	0,16	0,16	1,00		0,19	0,00	0,19	0,19	1,00	
Plant_Density	3197,74	3221,06	-23,32	90,51	-0,26		3197,74	3292,82	-95,08	78,40	-1,21		3214,81	3283,92	-69,10	78,98	-0,87	
Imperfection_Percentage	0,53	0,77	-0,24	0,45	-0,54		0,53	1,20	-0,67	0,43	-1,56		0,43	0,87	-0,45	0,40	-1,13	
Fermentation_Percentage	0,77	0,55	0,23	0,55	0,41		0,77	0,29	0,48	0,50	0,98		0,89	0,05	0,84	0,56	1,51	
WareHouse_Percentage	0,26	0,35	-0,10	0,41	-0,24		0,26	0,63	-0,38	0,29	-1,29		0,30	0,66	-0,36	0,29	-1,22	
Humidity_Coffee	42,26	42,10	0,16	0,22	0,74		42,26	41,99	0,27	0,18	1,50		42,19	42,04	0,15	0,16	0,91	
Number_GAP_Practices	8,39	7,94	0,45	0,51	0,88		8,39	7,43	0,96	0,40	2,38	***	8,30	7,46	0,83	0,40	2,08	**
Quality_Awareness	4,42	4,43	-0,01	0,13	-0,09		4,42	4,50	-0,08	0,10	-0,83		4,37	4,54	-0,16	0,10	-1,59	
Weather_First_Person	150,97	148,39	2,58	10,84	0,24		150,97	146,94	4,03	7,88	0,51		151,11	147,22	3,89	8,13	0,48	
Effort_First_Person	15,32	22,58	-7,26	8,61	-0,84		15,32	18,82	-3,49	6,67	-0,52		17,59	19,48	-1,88	6,89	-0,27	

9. Effectiveness and Sustainability

The appraisal of the performance PRODECOOP coffee production in a comparative perspective offers some useful insights in the competitive position of Fair Trade in the region. PRODECOOP Organic coffee clearly outperforms conventional FT and Independent Coffee production is terms of prices, but independent producers are able to reach a substantial higher yield. Both private labels (RFA and CP) record 20-40% higher yields per unit of land and slightly higher prices (see Figure 7).

Figure 7: Coffee Prices and Yields



The recorded differences in yield and prices indicate that FT/PRODECOOP producers mainly generate advantages in terms of market exchange, whereas adjustment of their production systems is more delayed. The direct FT price advantage of roughly 5 % beyond the remuneration received by Individual farmers is further extended with Premium payments (annually US$ 200.000 or $ 90/member, equivalent to 4% of household income) that are mainly used for collective purposes, loans to women's groups and fellowships.

Mayor differences in yield that are recorded indicate lower productivity on organic FT farms that is basically explained by the lower nutrient efficiency uptake of organic fertilizers. Conventional FT producers within PRODECOOP also face additional disadvantages related to lower plant density and older plantations. Furthermore, GAP practices are more commonly applied by producers delivering under private (CP/RFA) labels. The latter standards are also likely to be more stringent with respect to quality, since their market-conform delivery price can only be raised for coffee that is used for premium processing.

For a closer analysis of the distribution of prices and yields within each of the different coffee standards we elaborated distribution functions (see Figure 8 & 9).

Figure 8: Yield Distribution

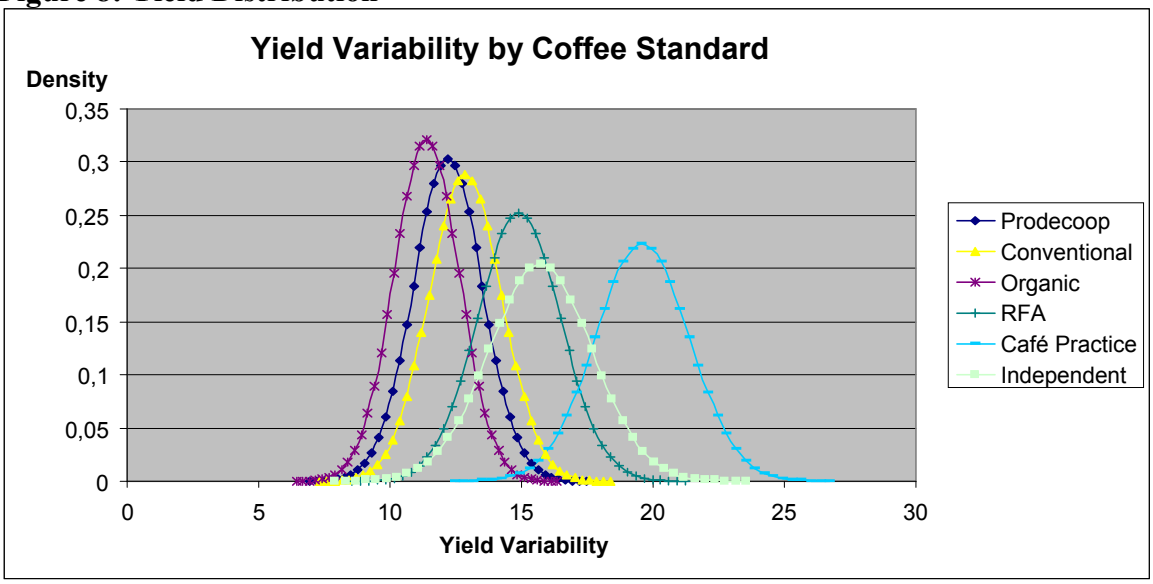


Figure 9: Price Distribution

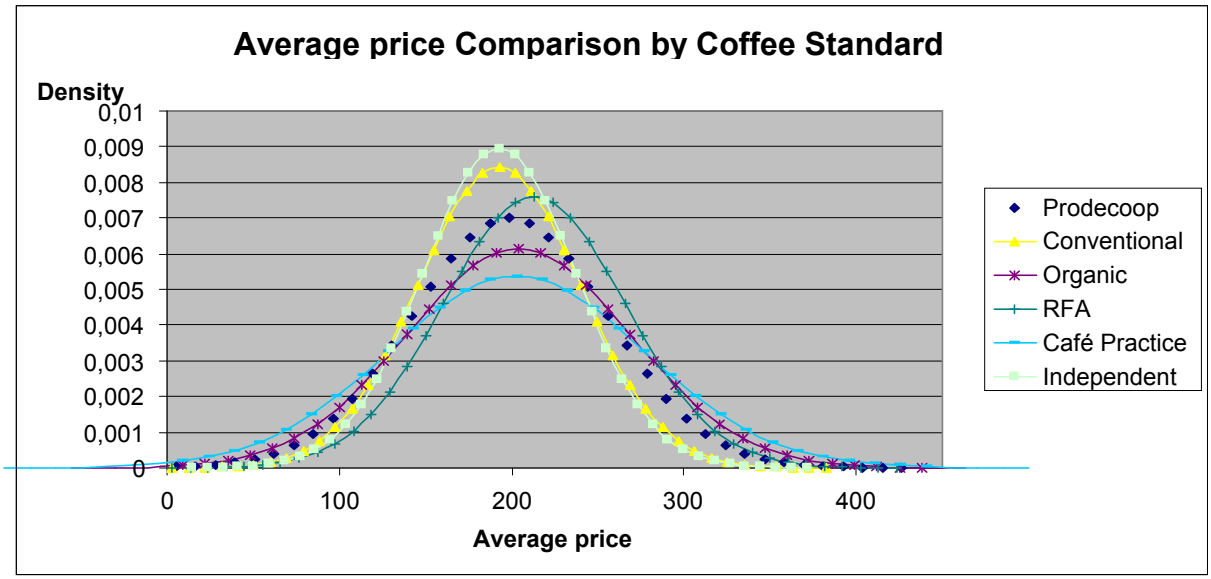


Figure 10: Quality Distribution

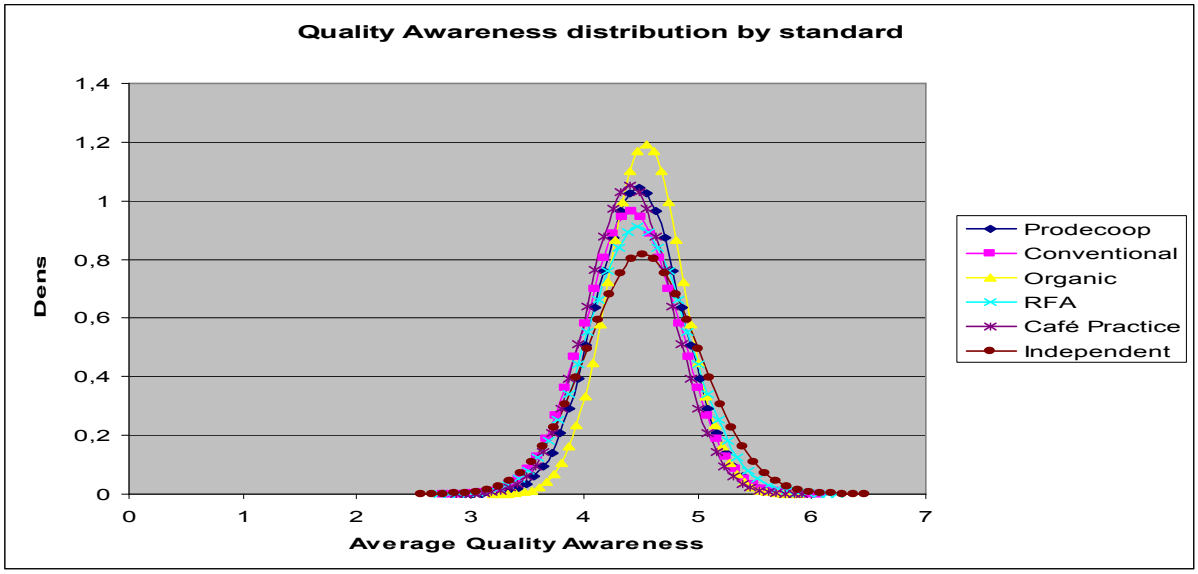
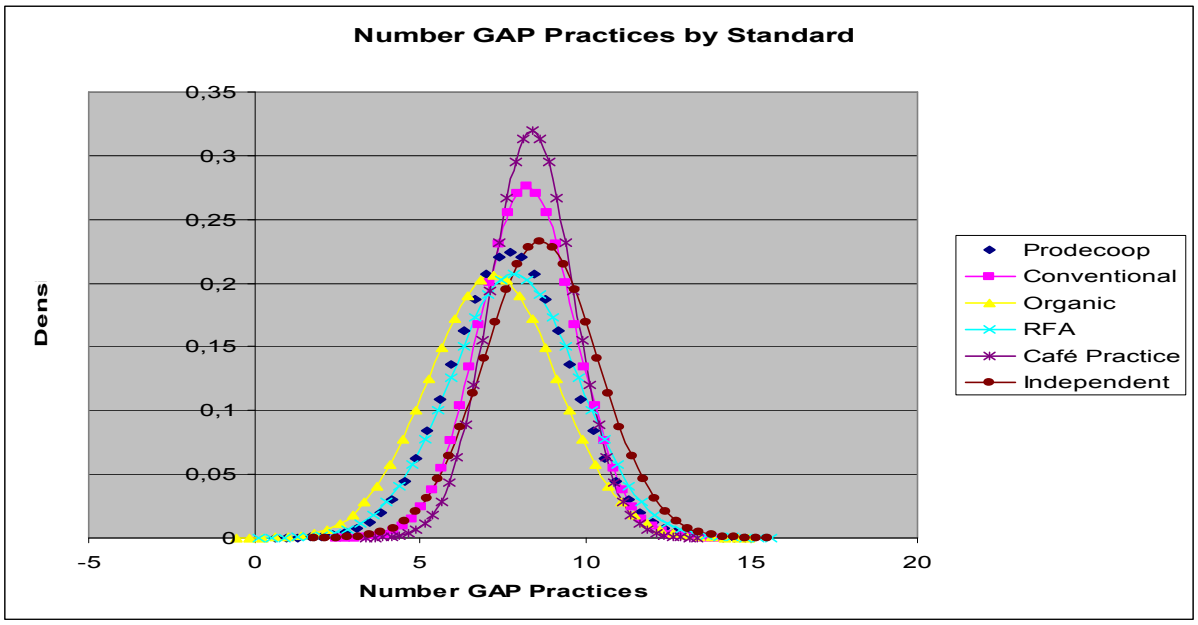
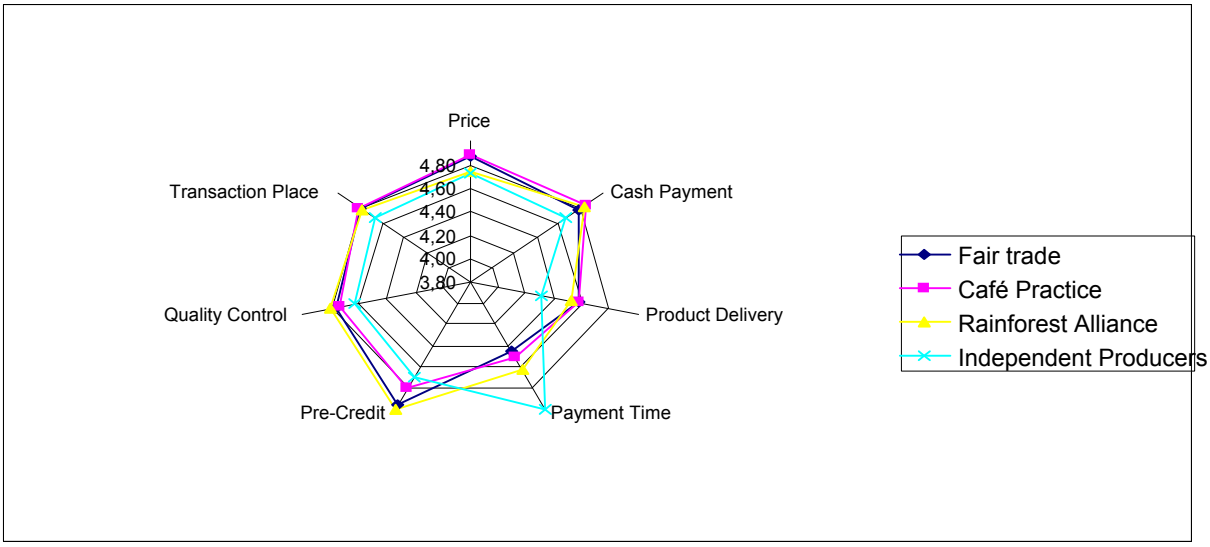


Figure 11: GAP Practices



Whereas PRODECOOP organic farmers exhibit little variability in yield, RFA/CP and Independent Farmers have a higher spread in yields and benefit from a larger proportion of high-performing units. Similarly, price distributions are more evenly spread for CP and Organic FT producers, while amongst RFA and CP farmers there is a higher share of well-remunerated units. This is most likely related to differences in coffee plantations (degree of renovation), application of good agricultural practices (see Figure 11) and quality differences forthcoming from coffee management and processing (see Figure 10).

Figure 12: Comparison of Main Contract Dimensions



With respect to the importance attached to different contractual delivery dimensions (see Figure 12), Fair Trade PRODECOOP producers devote most attention to pre-financing arrangements and cash payments. The same holds for Rainforest Alliance producers and to some extent to Café Practices farmers. Independent farmers attach far more importance to direct payments upon delivery, but pay less attention to convenient transaction place and stringent quality controls. For all producers, the price remains the most important contracting criterion.

Most significant differences between producers delivering under each of the standards are reported in Annex C. Percentage changes of the difference between treatment and control groups are calculated in order to indicate the magnitude of the effects (see Table 9 for an overview). In economic terms, Organic FT and RFA/CP producers are have more diversified income composition and are less dependent on coffee. FT producers also possess more assets, but credit access is not significantly better compared to private labels. Regarding coffee production, PRODECOOP farms are more involved in coffee renovation and apply more GAP practices and variable inputs, but this is not directly translated into higher prices or better yields. This is mainly due to differences in quality management at farm and factory level. Moreover, PRODECOOP farmers are more frequently involved in side sales.

There is little evidence that PRODECOOP households exhibit greater gender awareness or higher gender participation. Identification and satisfaction with the cooperative organization is generally strong amongst PRODECOOP members (compared to Individual and CP producers), but cooperatives delivering under RFA label are still more appreciated.

In general terms, FT/PRODECOOP performs better compared to independent producers, especially in terms of organizational/attitudinal aspects and health behaviour. Major differences with respect to Café Practices are particularly related to the institutional embeddedness of the cooperative organization, whereas Rainforest Alliance farmers show considerable higher involvement of women in production and household decision-making.

Table 9: Significant Differences of Fair Trade/PRODECOOP (% differences of FT performance compared to controls)

Variable	Organic Fair Trade	Independent Producers	Rainforest Alliance	Cafe Practices
Income & Expenditures				
Services Income	77.5			58.6
Other Agricultural Income	69.9		74.8	-202.0
Coffee Dependency	-11.8			
Health Expenditures		-16.3	-54.0	
Wealth				
Total Assets	66.0	65.9	2.65	
Amount of Credit	13.4			
Savings		78.5	-383.3	
Better-off Today			11.5	
Better-off 5 years ago		-18.2		
Coffee				
Coffee Price	-15.3			
Coffee Renovation	65.2		58.1	
Risk Perception	9.5			
Input Costs		67.4		4.3
Gender				
Women Empowerment Organization	19.5			
Women Empowerment Household		-19.9		
Institutional Support			-27.0	
Female House Ownership		10.6		
Female Share HH Activities		-17.0	-36.6	
Female Coffee Participation		-55.7	-163.3	
Women Control	- 9.0	6.6		
Women Awareness	7.9			- 8.0
Gender Consciousness	-12.0		-17.6	-26.1
Organization & Participation				
Participation in Organizations			-96,8	
Identification with Organization		95,3	-22,1	57,1
Organizational Function		94,3	-40,3	57,6
Organizational Strength		94,4	-31,5	56,1
Satisfaction Technical Assistance	-15.2	95.8	-22,6	56,3
Satisfaction Commercial Assistance	- 7.9	95.4		60.2
Side Sales	78.5		84.5	
Health				
Days Lost		35.7		
Contract Dimensions				
Price	- 2.9		- 4.8	
Cash Payment	- 2.8		- 3.4	
Transaction Place	- 2.6			
Sustainability & Quality				
Days Before Delivering	30.3	-40,7	35.3	
Plot Losses	-15.3	33,4		
Buyers Losses	-45.0	68,7		
Plant Density	- 3.1			
Harvesting rounds				-15.3
Number GAP Practices	11.8	-14.8	10.0	-12.8
Fairness				
Weather losses		9.3		
Effort losses		-70.0		

10. Prospects and Outlook

This study aims to aassess the socio-economic impact of Coffee Fair Trade labelling at farm-household and cooperative level. Therefore, the performance of producers affiliated to PRODECOOP has been compared with otherwise identical individual farmers and with producers that deliver coffee under two private standards (Rainforest Alliance, Café Practices). Main attention is given to three main issues:

a) Changes in income and related socio-economic conditions of farmers associated to PRODECOOP base-level cooperatives;
b) Improvements in the position of women and gender relationships (within households and cooperatives);
c) Development of organizational and managerial capacities and skills (e.g. quality management, adoption of best practices and loyalty in delivery contracts).

Welfare Effects of Fair Trade

Farm-households with Cafe Practices and Rainforest Alliance certification usually have a higher education level and a somewhat smaller family size. Total family income of (conventional) PRODECOOP households is higher than the income raised by Independent farmers and Rainforest Alliance producers, but Café Practices farms still outperform all other types. Conventional PRODECOOP farmers and Rainforest Alliance producers depend for 75-80% of their family income on coffee, while Independent farmers and Café Practices producers are more diversified in their income sources. Organic PRODECOOP farms reach a lower yield, but this is largely compensated by a somewhat higher price. In the following, we focus on average PRODECOOP/Fair Trade performance o both conventional and organic producers.

PRODECOOP farmers have significant more assets and better access to credit, particularly compared to Independent Producers. Access to credit for producers delivering under both private labels is, however, usually larger. Technical and commercial assistance provided by PRODECOOP is highly appreciated, but Café Practices farmers give even higher scores for the services they receive. Even while Fair Trade are quite loyal to their organization, side sales outside the organization are considerably lower for private labels. In addition, certified farmers apply in general more sustainable farming practices.

For all producers, the price remains the most important contract dimension (see Figure 12), but Independent producers also attach great importance to direct cash payments upon delivery and are less concerned about transaction place and quality controls. Fair Trade farmers and Rainforest Alliance producers strongly appreciate pre-finance credit as part of the delivery contract.

PRODECOOP members are generally able to negotiate a better selling price compared to Independent producers, but the latter still reach somewhat better yields. Moreover, side sales by Fair Trade producers are fairly high. From a business point of view, coffee production under private standards is considerably more productive, thus enabling these farmers to generate overall higher incomes.

The economic effects of Fair Trade are thus mainly positive in comparison with independent farming, but net returns and household revenues of producers delivering under Rainforest Alliance and Café Practices are still higher. This is further reinforced by less exclusive

dependency on coffee that enables farmers to finance required investments in coffee renovation from other income sources.

Organization, Participation & Gender Empowerment

By far the most important contribution of PRODECOOP refers to the strengthening of local farmers' organization. Strongest positive effects are registered in comparison to the group of Independent producers and also with respect to cooperatives delivering to Café Practices. The organizational performance of Rainforest Alliance cooperatives sometimes exceeds the scores of PRODECOOP, mainly because these farmers have a wider participation in other community organizations.

The internal roles and organizational of PRODECOOP strictly maintain principles of 'span of control', with relatively small base-level units and decentralized technical and operational assistance. This proved to be a viable strategy for managing internal heterogeneity and to enable a process where latecomers catch up with frontrunners.

The contribution of PRODECOOP to gender empowerment and gender awareness is still disappointing. Even while several consciousness-raising activities, workshops and targeted credit programs have been launched, there is still little evidence that women structurally increased their bargaining power at household or community level. Apparently, the trickle-down effect of organized gender activities towards concrete decision-making environments is still seriously hampered.

In conclusion, major tangible effects of PRODECOOP/Fair Trade are registered at institutional and cooperative level. Secondary effects at behavioural and attitudinal levels stay behind expectation, especially in the fields of gender participation and loyalty. Private labels show considerably stronger performance in production and quality management.

Organizational-managerial Capacities and Skills

HIVOS support for the development of the PRODECOOP coffee consortium has certainly provided an important contribution towards the strengthening of the federative structure of coffee processing and trade in Northern Nicaragua. The shift from political support for the farmers' organization at national level (UNAG) to reinforcement of entrepreneurial capacities at regional and local level is well perceived given the changing political conditions in Nicaragua.

The Dutch support is well connected to the broad package of socio-economic and agro-ecological recovery measures taken after hurricane Mich affected the *Segovias* region. Since almost all cooperatives nowadays possess Fair Trade certification, new comparative advantages should be based on dynamic efficiency or quality criteria. Moreover, non-certified independent farmers largely benefit from regional externalities that raise the market price close to the prevailing Fair Trade price. Strangely enough, a similar effect on the wage rate could not be observed – given the excess rural labour supply – and wages at Fair Trade farms do not significantly differ from ruling wages elsewhere in the rural sector.

The strategy for reinforcing market access to smallholder producers is base don certification and standards as an important first step, but further improvement of their competitive position within the coffee value chain asks for in-depth investments in (organic) coffee renovation,

advanced coffee processing and quality management practices. Given the recent development in the world coffee market, innovation and quality upgrading are of vital importance. The emphasis devoted by HIVOS to dynamic improvement standards is therefore fully justified, but concrete incentives for guiding farmers' behaviour at the base level are still scarcely available within PRODECOOP.

Moreover, Fair Trade is meeting increasingly challenges from other types of standards. Most of these private standards are based on direct B2B (*business-to-business*) agreements and maintain market-conform prices. The importance of guaranteed minimum prices and the payment of the FT premium become less important compared to the price premium that can be obtained based on intrinsic product attributes and improved production systems. The recent arrival of Café Practices, Rainforest Alliance and UTZ-Certified coffee in the Segovias region marks a new wave of market segmentation that enables especially the better performing cooperatives to engage in more profitable delivery contracts.

These market tendencies may present several problems for PRODECOOP. The current internal heterogeneity between (and within) base-level cooperatives already imposes constraints on solidarity and loyalty. Some base-level cooperatives prefer to explore options for multi-certification, while others are still fully engaged with the initial transition towards improved production systems. PRODECOOP fully recognizes this situation and hired an external advisor for a thorough analysis of the functioning of the federative organization and of the relationship between the base-level cooperatives and the federation.

The Dutch support to PRODECOOP played a particularly important role for reducing transaction costs during the initial stage of Fair Trade certification. Once having access to this market segment, PRODECOOP was able to contract (inter)national loans that remain limited to about half of the value of coffee production. Further options for strengthening PRODECOOP as a service-providing agency strongly depend on the consolidated trust in the organization, agreements regarding the type of service provision, the room for participation of women and youth, and the pro-active engagement into new market trends.

In summary, it appears that Fair Trade provides a valuable contribution for the recovery and renovation of coffee production, but that further incentives for improving coffee yields and quality performance are still limited. Private labels tend to perform better in subsequent stages of market development to enhance further upgrading of production systems and management regimes. It might therefore be important to consider a strategy of temporary Fair Trade support at the initial stage for creating market access, followed by the subsequent graduation of farmers towards delivery under private standards

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Annex A: List of Indicators

	Household Characteristics	
v1	Household Head Age	Number in Years
v2	Years of Living in Area	Number Years Head HH living in the area
v3	Family Average Age	Sum of the family members are and divided by family members
v4	Family Head Academic Level	From 1 to 10, 10 = higher (more education)
v5	Land at Beginning	Land at the beginning, land with witch the producer started.
v6	Time From House to Plot	Minutes from the house to the Plot
v7	Time from Plot to Town	Minutes from the Plot to Town
v8	Family Members	Number of Family Members
V9	Time houseto health Centre	Minutes from House to the Health Center
v10	Time house Hospital	Minutes from the House to the Hospital
	Coffee Production	
v11	Coffee_Production_2004_QQ	Production in Quintals
v12	Area_Coffee	Coffee area at production (Mzs)
v13	Area_other_Crops	Other Crop area in production (Mzs)
v14	Total_Area	Total Area in Production (Mzs)
	Household Income Composition	
v16	Non_Farm_Income	Income from work out side its own plot (mostly jornalero). Córdobas
v17	Services_Income	Income in Córdobas from a service delived (Transport of Small Shop)
v18	Coffee_Income	Income generated by coffee in córdobas
v19	Other_Agri_Income	Income generated by other agricultural products in córdobas (maize Beans, vegetables, fruits)
v20	Total_Income	Summ of all above income sources in Córdobas
v21	Coffee_Dependency	coffee income divided by Total Income
v22	Non_Farm_Income_PC	Income from work outside own plot (mostly jornalero) per capita. Córdobas
v23	Services_Income_PC	Income in Córdobas from a service delivery (Transport of Small Shop)
v24	Coffee_Income_PC	Income generated by coffee in córdobas
v25	Other_Agri_Income_PC	Income generated by other agricultural products in córdobas (maize Beans, vegetables, fruits)
v26	Total_Income_PC	Sum of all income sources in Córdobas
	Household Expenditures	
v27	Household_Expenditure_PC	HH expenditures in córdobas
v28	Food_Expenditure_PC	In Córdobas
v29	Education_Expenditure_PC	In Córdobas
v30	Housing_Expenditure_PC	In Córdobas
v31	Health_Expenditure_PC	In Córdobas
v32	FHH_Expenditure_PC	In Córdobas

	Wealth	
v33	Better_off_than_5_years_ago	Today Economic Situation Better off than 5 years ago (1 to 3, 1 = Better)
v34	Better_off_than_today	Economic Situation in 5 years (1 to 3, 1 = Better)
v35	Total_Assets	Sum of assets (agricultural / HH) in córdobas
v36	Amount_of_Credit	Total Credit in Córdobas
v37	Total_Savings	Total Savings in Córdobas
	Coffee Production Systems	
v38	Coffee_Prod_Area	Total Coffee on production area
v39	Coffee_Ave_Price	Average price in córdobas per QQ
v40	Coffee_Production_QQ	Coffee production in QQ
v41	Coffee_Yields	Coffee Production / Coffee Area
v42	Input_Cost	Coffee input cost in Córdobas
v43	Labour_Cost	Coffee labour cost in córdobas
v44	Harvestng_Labour_Cost	Harvesting labbour cost in córdobas
v45	QQ_Production_5_years_ago	QQ_Production_5_years_ago
v46	QQ_Production_Today	QQ_Production_Today
v47	QQ_Production_Next_Season	QQ_Production_Next_Season
v48	Real_Coffee_Renovation	Investments in coffee renovation (real investments)
	Investments & Risk	
v49	Risk_Perception	Index on risk perception answers (closer to 1, producer is risk taker)
v50	Productive_Use_Investments	Percentage of investment disposition in production
v51	Productive_Use_Investments_Percentage	Percentage of investment disposition in HH
	Gender	
v52	Women_Empow_HH	Index of women decisions on production, consumption, house investments, education
v53	Women_Empow_ORG	Index of women decisions on participation and decisions at organization
v54	House_Ownership	Percentage from 1 to 3, closer to 1 = male
v55	Plot_Ownership	Percentage from 1 to 3, closer to 1 = male
v56	Got_Institutional_Help	Index of the questions related to institutional aid, credit, training, technical assistance
v57	Who_Crontrol	6 item average, range between 1 and 2, closer to 2 = women
v58	Women_Awareness	Index questions Gender awareness (6 item average range from 1 to five, 5= highest).
v59	Female_Share	Female Share in HH activities (11 items)
v60	Female_Coffee_Share	Female Coffee Share, 7 items related
v61	Gender_Conciousness	Index of questions 8.8 (range from 1 to 5, 5 = agree completely) average of 5 items
	Organization & Participation	
v62	Participation_in_organization	Number of organizations with membership
v63	dentifiaction_to_Organization	1 to 5, 5 = highest. 5 items to construct the index
v64	Organization_Function	1 to 5, 5 = highest. 5 items to construct the index
v65	Organization_Strength	1 to 5, 5 = highest. 5 items to construct the index

v66	Satisfaction_with_Technical_Assistance	1 to 10, 10 = highest
v67	Satisfaction_with_Comercialization_Assistance	1 to 10, 10 = highest
v68	Average_Loyalty	Index of 14.1 (range 1 to 5, 5 high loyalty), 10 item index
v69	Side_Sales_Percentage	Percentage of side sales
	Contract Attributes	
v70	Price	Contract Attributes Averages (1 to 5, 5 = very important)
v71	Cash_Payment	Contract Attributes Averages (1 to 5, 5 = very important)
v72	Product_Deliery	Contract Attributes Averages (1 to 5, 5 = very important)
v73	Payment_Time	Contract Attributes Averages (1 to 5, 5 = very important)
v74	Prefinance_Credit	Contract Attributes Averages (1 to 5, 5 = very important)
v75	Quality_Control	Contract Attributes Averages (1 to 5, 5 = very important)
v76	Transaction_Place	Contract Attributes Averages (1 to 5, 5 = very important)
	Health	
v77	Days_Lost	Number of days lost due to illness
v78	Montly_Medical_Expenses	Amount of Córdobas per month
	Sustainability & Quality	
v79	Sustainable_Practices	number of practices applied by producers
v80	Harvesting_Number	number of time, producers harvest the same plot
v81	Days_Before_Delivering	Days the coffee is maintain at the producer plot before delivered to the buyer
v82	Plot_Losses	% of losses at plot
v83	Buyers_Losses	% of losses at buyers storage center
v84	Coffee_Size_Quality	Size of the coffee grain (higher better quality)
v85	Plant_Density	Number of plant per MZ
v86	Imperfection_Percentage	Percentage of imperfections present at the producer side
v87	Fermentation_Percentage	Percentage of fermentation at the producer side
v88	WareHouse_Percentage	Losses at warehouse (beneficio)
v89	Humidity_Coffee	Percentage of Humidity at the producer side
v90	Number_GAP_Practices	Number of GAP practices
v91	Quality_Awareness	Index of quality practices to get high quality coffee (1 to 5, 5 is very important)
	Fairness	
v92	Weather_First_Person	Experiment scenario A, answers from 0 to 200 (case of income loss to due weather failure)
v93	Effort_First_Person	Experiment scenario B, answers from 0 to 200 (case of income loss due to scarce efforts)

Annex B: Probit estimates

	PRODECOOP Conventional -Organic			PRODECOOP Fair Trade -Independent			PRODECOOP Fair Trade - Rainforest			PRODECOOP Fair Trade - Café Practices		
Variable	Coeff.	SE	Sig	Coeff.	SE	Sig	Coeff.	SE	Sig	Coeff.	SE	Sign.
Dependency Rate	-0.02355	0.01073	**	0.01386	0.00778	*	0.00308	0.01436		0.00530	0.01021	
Years settlement	0.01271	0.00872		0.00394	0.00717		0.01654	0.01125		0.01414	0.00889	*
HH Education	-0.01054	0.01042		-0.01625	0.00707	**	-0.02747	0.01331	**	-0.02006	0.00981	**
HH Head Age	-0.07234	0.07735		0.12373	0.06675	*	-0.08436	0.09099		-0.16304	0.06180	***
Initial Land	0.01240	0.01294		0.00586	0.01044		-0.01456	0.01766		0.01123	0.01458	
Time to plot	-0.00466	0.00706		-0.00415	0.00517		-0.00107	0.00870		0.02391	0.00998	**
Time to Town	0.00661	0.00277	**	-0.00324	0.00211	*	0.00877	0.00388	**	-0.00898	0.00335	***
Family Size	-0.07357	0.06207		0.01292	0.04595		0.12194	0.08311		0.11391	0.06939	**
Past coffee production (2004)	0.00096	0.00254		-0.00032	0.00111		0.00435	0.00274		0.00077	0.00122	
Area Coffee	-0.05760	0.04564	**	0.10198	0.04280	**	0.08335	0.04224	*	-0.01336	0.03088	
Total Farm Area	0.06272	0.03086	**	0.00970	0.01771		-0.09696	0.02771	***	-0.02773	0.01212	**
Time to clinic	0.01232	0.00477	***	-0.00582	0.00251	**	-0.02510	0.00680	***	-0.01406	0.00356	***
Time to hospital	0.00531	0.00296	*	-0.00330	0.00209	*	0.02883	0.00726	***	-0.00065	0.00304	
Constant	0.34243	0.72330		0.55347	0.56817		0.53163	0.92415		0.90911	0.69081	
Number of Observations	152			229			200			196		
LR chi2(13)	49.14			42.77			118.63			58.48		
Prob > chi2	0.0000			0.0000			0.0000			0.0000		
Pseudo R2	0.2332			0.1484			0.5562			0.2769		
Log Likelihood	-80.775629			-122.70673			-47.318469			-76.360643		

Annex C: Significant Differences Conventional & Organic FT within Prodecoop

	Neighbor (1)			Neighbor (3)			Kernel		
Variable	Controls	Difference	% Change	Controls	Difference	% Change	Controls	Difference	% Change
Services_Income	5245,77	4262,16	0,81	5245,77	3957,25	0,75	5245,77	4067,70	0,78
Other_Agri_Income	6564,10	4420,60	0,67	6564,10	4747,00	0,72	6564,10	4586,91	0,70
Coffee_Dependency	78,60	-12,99	-0,17	78,60	-10,16	-0,13	78,60	-9,27	-0,12
Services_Income_PC	1311,44	1065,54	0,81	1311,44	989,31	0,75	1311,44	1016,93	0,78
Other_Agri_Income_PC	1641,02	1105,15	0,67	1641,02	1186,75	0,72	1641,02	1146,73	0,70
Total_Assets	100159,48	67182,69	0,67	100159,48	65040,51	0,65	100159,48	66069,70	0,66
Amount_of_Credit	10608,20	5534,43	0,52	10608,20	1146,45	0,11	10608,20	1416,34	0,13
Coffee_Ave_Price	192,28	-42,11	-0,22	192,28	-31,13	-0,16	192,28	-29,44	-0,15
Real_Coffee_Renovation	0,60	0,42	0,70	0,60	0,41	0,69	0,60	0,39	0,65
Risk_Perception	1,24	0,14	0,11	1,24	0,14	0,11	1,24	0,12	0,09
Women_Empow_ORG	1,86	0,48	0,26	1,86	0,35	0,19	1,86	0,36	0,19
Who_Crontrol	1,98	-0,15	-0,08	1,98	-0,18	-0,09	1,98	-0,18	-0,09
Women_Awareness	4,45	0,37	0,08	4,45	0,37	0,08	4,45	0,35	0,08
Gender_Conciouness	2,70	-0,41	-0,15	2,70	-0,31	-0,12	2,70	-0,32	-0,12
Total_Satisfaction_with_Techincal_Assistance	7,50	-1,27	-0,17	7,50	-1,12	-0,15	7,50	-1,14	-0,15
Total_Satisfaction_with_Comercialization_Assisteance	8,51	-0,79	-0,09	8,51	-0,67	-0,08	8,51	-0,67	-0,08
Side_Sales_Percentage	9,59	7,59	0,79	9,59	8,26	0,86	9,59	7,53	0,78
Price	4,82	-0,14	-0,03	4,82	-0,14	-0,03	4,82	-0,14	-0,03
Cash_Payment	4,76	-0,18	-0,04	4,76	-0,15	-0,03	4,76	-0,13	-0,03
Transaction_Place	4,76	-0,13	-0,03	4,76	-0,15	-0,03	4,76	-0,12	-0,03
Days_Before_Delivering	1,75	0,50	0,29	1,75	0,57	0,32	1,75	0,53	0,30
Buyers_Losses	2,25	-0,98	-0,44	2,25	-1,28	-0,57	2,25	-1,01	-0,45
Plant_Density	3270,98	-103,11	-0,03	3270,98	-102,02	-0,03	3270,98	-100,12	-0,03
Number_GAP_Practices	8,38	0,87	0,10	8,38	1,04	0,12	8,38	0,99	0,12

Annex C: Significant Differences PRODECOOP FT - Independent Producers

	Neighbor (1)			Neighbor (3)			Kernel		
Variable	Controls	Difference	% Change	Controls	Difference	% Change	Controls	Difference	% Change
Health_Expenditure_PC	4181,73	2266,69	0,54	4181,73	901,28	0,22	4181,73	680,53	0,16
Better_off_than_5_years_ago	1,26	-0,23	-0,18	1,26	-0,29	-0,23	1,26	-0,23	-0,18
Total_Savings	695,49	545,11	0,78	695,49	543,61	0,78	695,49	545,72	0,78
Input_Cost	916,64	630,87	0,69	916,64	672,35	0,73	916,64	618,18	0,67
Women_Empow_HH	2,14	-0,45	-0,21	2,14	-0,41	-0,19	2,14	-0,43	-0,20
House_Ownership	1,79	0,29	0,16	1,79	0,18	0,10	1,79	0,19	0,11
Who_Crontrol	2,08	0,14	0,07	2,08	0,13	0,06	2,08	0,14	0,07
Female_Share	40,37	-3,02	-0,07	40,37	-5,55	-0,14	40,37	-6,88	-0,17
Female_Coffee_Share	10,09	-3,02	-0,30	10,09	-4,50	-0,45	10,09	-5,62	-0,56
Total_Identifiaction_to_Organization	3,69	3,55	0,96	3,69	3,54	0,96	3,69	3,52	0,95
Total_Organization_Function	3,58	3,40	0,95	3,58	3,40	0,95	3,58	3,37	0,94
Total_Organization_Strenght	3,69	3,52	0,95	3,69	3,51	0,95	3,69	3,48	0,94
Total_Satisfaction_with_Techincal_Assistance	7,84	7,56	0,96	7,84	7,53	0,96	7,84	7,49	0,96
Total_Satisfaction_with_Comercialization_Assisteance	8,77	8,42	0,96	8,77	8,41	0,96	8,77	8,36	0,95
Days_Lost	2,74	1,59	0,58	2,74	0,85	0,31	2,74	0,98	0,36
Days_Before_Delivering	1,49	-0,51	-0,34	1,49	-0,57	-0,38	1,49	-0,61	-0,41
Plot_Losses	1,14	0,53	0,47	1,14	0,43	0,38	1,14	0,38	0,33
Buyers_Losses	2,66	2,05	0,77	2,66	1,81	0,68	2,66	1,83	0,69
Number_GAP_Practices	7,71	-1,33	-0,17	7,71	-1,23	-0,16	7,71	-1,14	-0,15
Weather_First_Person	151,73	9,17	0,06	151,73	15,29	0,10	151,73	13,90	0,09
Effort_First_Person	18,95	-7,63	-0,40	18,95	-14,74	-0,78	18,95	-13,26	-0,70

Annex C: Significant Differences PRODECOOP FT - Rainforest Alliance

	Neighbor (1)			Neighbor (3)			Kernel		
Variable	Controls	Difference	% Change	Controls	Difference	% Change	Controls	Difference	% Change
Other_Agri_Income	8793,87	3631,61	0,41	8793,87	5719,14	0,65	8057,78	6026,58	0,75
Other_Agri_Income_PC	2198,47	907,90	0,41	2198,47	1429,78	0,65	2014,44	1506,65	0,75
Health_Expenditure_PC	3309,68	-3987,10	-1,20	3309,68	-809,68	-0,24	2977,78	-1607,88	-0,54
Better_off_than_today	1,13	0,13	0,11	1,13	-0,06	-0,06	1,07	-0,02	-0,02
Total_Assets	147759,65	103298,68	0,70	147759,65	110735,94	0,75	132471,52	96155,43	0,73
Total_Savings	419,35	-2483,87	-5,92	419,35	-1526,88	-3,64	407,41	-1561,73	-3,83
Real_Coffee_Renovation	0,55	0,38	0,69	0,55	0,34	0,62	0,60	0,35	0,58
Got_Institutional_Help	1,32	-0,35	-0,27	1,32	-0,31	-0,24	1,35	-0,36	-0,27
Female_Share	32,65	-7,56	-0,23	32,65	-11,66	-0,36	32,08	-11,73	-0,37
Female_Coffee_Share	4,49	-6,84	-1,52	4,49	-5,75	-1,28	5,08	-8,29	-1,63
Gender_Conciouness	2,65	-0,64	-0,24	2,65	-0,55	-0,21	2,63	-0,46	-0,18
Participation_in_organization	0,10	-0,32	-3,33	0,10	-0,20	-2,11	0,11	-0,11	-0,97
Total_Identifiaction_to_Organization	3,80	-0,85	-0,22	3,80	-0,72	-0,19	3,69	-0,81	-0,22
Total_Organization_Function	3,34	-1,27	-0,38	3,34	-1,27	-0,38	3,24	-1,31	-0,40
Total_Organization_Strenght	3,64	-1,04	-0,29	3,64	-1,01	-0,28	3,53	-1,11	-0,31
Total_Satisfaction_with_Techincal_Assistance	7,11	-0,94	-0,13	7,11	-1,26	-0,18	6,81	-1,54	-0,23
Side_Sales_Percentage	17,48	12,97	0,74	17,48	14,54	0,83	17,67	14,94	0,85
Price	4,75	-0,23	-0,05	4,75	-0,20	-0,04	4,72	-0,23	-0,05
Cash_Payment	4,65	-0,29	-0,06	4,65	-0,20	-0,04	4,67	-0,16	-0,03
Days_Before_Delivering	2,08	0,44	0,21	2,08	0,75	0,36	1,98	0,70	0,35
Number_GAP_Practices	8,39	0,45	0,05	8,39	0,96	0,11	8,30	0,83	0,10

Annex C: Significant Differences PRODECOOP FT - CAFE Practices

	Neighbor (1)			Neighbor (3)			Kernel		
Variable	Controls	Difference	% Change	Controls	Difference	% Change	Controls	Difference	% Change
Services_Income	4041,28	3977,28	0,98	4041,28	2654,61	0,66	4041,28	2368,96	0,59
Other_Agri_Income	5095,82	-9221,38	-1,81	5095,82	-3251,91	-0,64	5095,82	-10293,07	-2,02
Services_Income_PC	1010,32	994,32	0,98	1010,32	663,65	0,66	1010,32	592,24	0,59
Other_Agri_Income_PC	1273,96	-2305,34	-1,81	1273,96	-812,98	-0,64	1273,96	-2573,27	-2,02
Input_Cost	1200,62	1059,05	0,88	1200,62	304,38	0,25	1200,62	51,17	0,04
Women_Awareness	4,32	-0,37	-0,08	4,32	-0,23	-0,05	4,32	-0,34	-0,08
Gender_Conciouness	2,86	-0,93	-0,32	2,86	-0,61	-0,21	2,86	-0,75	-0,26
Total_Identifiaction_to_Organization	3,81	2,22	0,58	3,81	2,33	0,61	3,81	2,18	0,57
Total_Organization_Function	3,67	2,16	0,59	3,67	2,42	0,66	3,67	2,11	0,58
Total_Organization_Strenght	3,80	2,17	0,57	3,80	2,28	0,60	3,80	2,14	0,56
Total_Satisfaction_with_Techincal_Assistance	7,77	4,48	0,58	7,77	4,28	0,55	7,77	4,37	0,56
Total_Satisfaction_with_Comercialization_Assisteance	8,80	5,42	0,62	8,80	5,19	0,59	8,80	5,30	0,60
Sustainable_Practices	9,80	0,41	0,04	9,80	1,03	0,11	9,80	0,46	0,05
Harvesting_Number	3,06	-0,55	-0,18	3,06	-0,28	-0,09	3,06	-0,47	-0,15
Number_GAP_Practices	7,77	-0,98	-0,13	7,77	-0,78	-0,10	7,77	-0,99	-0,13

Annex C: Significant Differences ORGANIC FT - Independent Producers

	Neighbor (1)			Neighbor (3)			Kernel		
Variable	Controls	Difference	%	Controls	Difference	%	Controls	Difference	%
Services_Income	2118,18	-6281,82	-2,97	2118,18	-8663,64	-4,09	2118,18	-8776,56	-4,14
Household_Expenditure_PC	61790,11	-59964,30	-0,97	61790,11	-51409,11	-0,83	61790,11	-68893,69	-1,11
Education_Expenditure_PC	4128,64	-11166,82	-2,70	4128,64	-10969,09	-2,66	4128,64	-12931,82	-3,13
Health_Expenditure_PC	3340,91	-4645,45	-1,39	3340,91	-2060,61	-0,62	3340,91	-4685,07	-1,40
Better_off_than_today	1,18	-0,32	-0,27	1,18	-0,26	-0,22	1,18	-0,34	-0,29
Total_Assets	27932,18	-191314,08	-6,85	27932,18	-191229,98	-6,85	27932,18	-258513,27	-9,26
Total_Savings	810,61	765,15	0,94	810,61	795,45	0,98	810,61	756,47	0,93
Input_Cost	934,36	708,11	0,76	934,36	730,46	0,78	934,36	748,15	0,80
Harvestng_Labour_Cost	258,85	-105,44	-0,41	258,85	-112,33	-0,43	258,85	-108,40	-0,42
QQ_Production_5_years_ago	32,69	11,40	0,35	32,69	3,65	0,11	32,69	5,29	0,16
House_Ownership	1,82	0,35	0,19	1,82	0,36	0,20	1,82	0,29	0,16
Who_Crontrol	2,13	0,15	0,07	2,13	0,23	0,11	2,13	0,23	0,11
Female_Coffee_Share	9,83	-15,50	-1,58	9,83	-7,16	-0,73	9,83	-9,70	-0,99
Participation_in_organization	0,15	0,11	0,70	0,15	0,12	0,77	0,15	0,13	0,86
Total_Identifiaction_to_Organization	3,82	3,73	0,98	3,82	3,63	0,95	3,82	3,64	0,95
Total_Organization_Function	3,89	3,78	0,97	3,89	3,65	0,94	3,89	3,66	0,94
Total_Organization_Strenght	3,95	3,84	0,97	3,95	3,71	0,94	3,95	3,72	0,94
Total_Satisfaction_with_Techincal_Assistance	8,67	8,48	0,98	8,67	8,24	0,95	8,67	8,26	0,95
Total_Satisfaction_with_Comercialization_Assisteance	9,23	9,00	0,98	9,23	8,75	0,95	9,23	8,76	0,95
Average_Loyalty	3,19	0,40	0,12	3,19	0,24	0,07	3,19	0,42	0,13
Side_Sales_Percentage	4,36	-7,80	-1,79	4,36	-9,48	-2,17	4,36	-8,40	-1,93
Quality_Control	4,80	0,37	0,08	4,80	0,25	0,05	4,80	0,22	0,05
Transaction_Place	4,84	0,31	0,06	4,84	0,27	0,05	4,84	0,24	0,05
Harvesting_Number	3,09	-0,32	-0,10	3,09	-0,23	-0,07	3,09	-0,27	-0,09
Days_Before_Delivering	1,20	-1,03	-0,86	1,20	-0,94	-0,78	1,20	-0,98	-0,82
Buyers_Losses	3,24	1,95	0,60	3,24	2,11	0,65	3,24	2,17	0,67
Imperfection_Percentage	0,85	0,47	0,55	0,85	0,57	0,67	0,85	0,50	0,59
Fermentation_Percentage	0,15	-0,62	-4,10	0,15	-0,57	-3,73	0,15	-0,67	-4,42
WareHouse_Percentage	0,26	0,24	0,94	0,26	0,21	0,82	0,26	0,22	0,87
Humidity_Coffee	42,02	-0,36	-0,01	42,02	-0,25	-0,01	42,02	-0,33	-0,01
Number_GAP_Practices	7,06	-1,80	-0,26	7,06	-2,36	-0,33	7,06	-2,25	-0,32

Annex C: Significant Differences ORGANIC FT - Rainforest Alliance

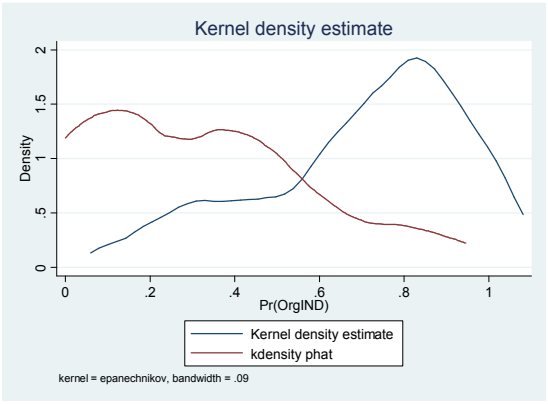
	Neighbor (1)			Neighbor (3)			Kernel		
Variable Sample |	Controls	Difference	% Change	Controls	Difference	% Change	Controls	Difference	% Change
QQ_Production_Today	39,19	10,71	0,27	39,19	8,56	0,22	39,19	9,27	0,24
QQ_Production_Next_Season	47,54	15,25	0,32	47,54	10,65	0,22	47,54	10,60	0,22
Total_Satisfaction_with_Techincal_Assistance	8,40	2,17	0,26	8,40	2,08	0,25	8,40	1,89	0,23
Total_Satisfaction_with_Comercialization_Assisteance	9,13	2,57	0,28	9,13	2,27	0,25	9,13	2,00	0,22
Buyers_Losses	3,19	1,62	0,51	3,19	1,19	0,37	3,19	1,11	0,35
Better_off_than_today	1,12	-0,54	-0,48	1,12	-0,29	-0,26	1,12	-0,34	-0,31
Coffee_Yields	12,40	-40,82	-3,29	12,40	-19,97	-1,61	12,40	-22,79	-1,84
Total_Identifiaction_to_Organization	3,99	1,03	0,26	3,99	1,24	0,31	3,99	1,13	0,28
Total_Organization_Function	4,05	1,13	0,28	4,05	1,30	0,32	4,05	1,19	0,29
Total_Organization_Strenght	4,08	1,11	0,27	4,08	1,25	0,31	4,08	1,14	0,28
Days_Lost	3,31	2,35	0,71	3,31	2,33	0,70	3,31	2,29	0,69
House_Ownership	1,87	0,49	0,26	1,87	0,45	0,24	1,87	0,50	0,27
Fermentation_Percentage	0,10	-0,87	-9,00	0,10	-0,60	-6,27	0,10	-0,81	-8,39
Total_Savings	1201,92	1163,46	0,97	1201,92	471,15	0,39	1201,92	438,92	0,37
Coffee_Production_QQ	45,74	-86,50	-1,89	45,74	-36,07	-0,79	45,74	-43,90	-0,96
Productive_Use_Investments	9026,92	275,19	0,03	9026,92	883,01	0,10	9026,92	676,84	0,07
Productive_Use_Investments_Percentage	9,73	-2,75	-0,28	9,73	-8,83	-0,91	9,73	-6,77	-0,70
Price	4,92	0,23	0,05	4,92	0,12	0,02	4,92	0,14	0,03

Annex C: Significant Differences ORGANIC FT - CAFE PRACTICES

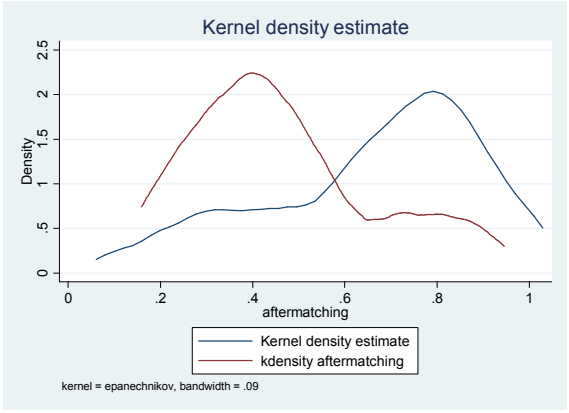
	Neighbor (1)			Neighbor (3)			Kernel		
Variable	Controls	Difference	% Change	Controls	Difference	% Change	Controls	Difference	% Change
Total_Savings	1814,29	1814,29	1,00	1814,29	1814,29	1,00	1814,29	1814,29	1,00
Coffee_Production_QQ	33,07	-95,97	-2,90	33,07	-80,03	-2,42	33,07	-66,55	-2,01
Coffee_Yields	11,16	-25,81	-2,31	11,16	-18,22	-1,63	11,16	-19,44	-1,74
Labour_Cost	396,60	350,60	0,88	396,60	-191,80	-0,48	396,60	70,93	0,18
QQ_Production_Today	32,66	-11,97	-0,37	32,66	-14,96	-0,46	32,66	-9,91	-0,30
Women_Empow_ORG	1,60	-0,62	-0,39	1,60	-0,39	-0,25	1,60	-0,43	-0,27
Plot_Ownership	1,34	-0,47	-0,35	1,34	-0,20	-0,15	1,34	-0,25	-0,19
Women_Awareness	4,05	-0,37	-0,09	4,05	-0,25	-0,06	4,05	-0,30	-0,07
Female_Share	37,95	-16,30	-0,43	37,95	-10,78	-0,28	37,95	-14,12	-0,37
Female_Coffee_Share	5,45	-10,47	-1,92	5,45	-5,83	-1,07	5,45	-7,62	-1,40
Total_Identifiaction_to_Organization	3,78	2,14	0,57	3,78	1,54	0,41	3,78	1,81	0,48
Total_Organization_Function	3,88	2,39	0,62	3,88	1,80	0,46	3,88	2,03	0,52
Total_Organization_Strenght	3,98	2,38	0,60	3,98	1,63	0,41	3,98	1,93	0,49
Total_Satisfaction_with_Techincal_Assistance	8,27	4,81	0,58	8,27	3,96	0,48	8,27	4,24	0,51
Total_Satisfaction_with_Comercialization_Assisteance	9,01	5,27	0,58	9,01	4,49	0,50	9,01	4,76	0,53
Side_Sales_Percentage	2,71	-19,14	-7,05	2,71	-18,67	-6,88	2,71	-16,03	-5,91
Price	4,98	0,29	0,06	4,98	0,17	0,03	4,98	0,31	0,06
Cash_Payment	4,95	0,12	0,02	4,95	0,08	0,02	4,95	0,14	0,03
Payment_Time	4,33	-0,30	-0,07	4,33	-0,49	-0,11	4,33	-0,34	-0,08
Montly_Medical_Expenses	1123,71	-2264,86	-2,02	1123,71	-1602,00	-1,43	1123,71	-1609,70	-1,43
Sustainable_Practices	10,03	-0,80	-0,08	10,03	-0,68	-0,07	10,03	-0,81	-0,08
Plot_Losses	1,37	0,54	0,40	1,37	0,67	0,49	1,37	0,71	0,51
Number_GAP_Practices	7,71	-0,89	-0,11	7,71	-0,56	-0,07	7,71	-0,60	-0,08
Effort_First_Person	22,71	-26,71	-1,18	22,71	-23,71	-1,04	22,71	-21,63	-0,95

ANNEX D: RESULTS for Organic Farming

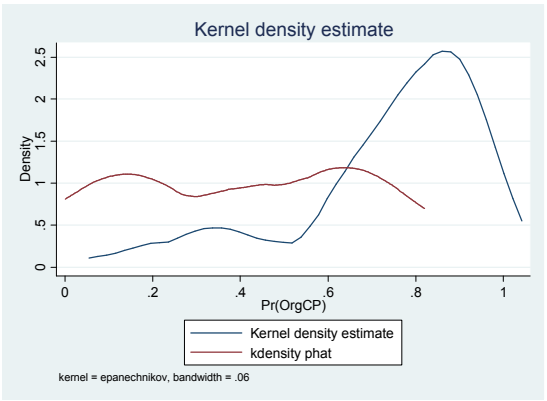
Organic FT-Independent before matching



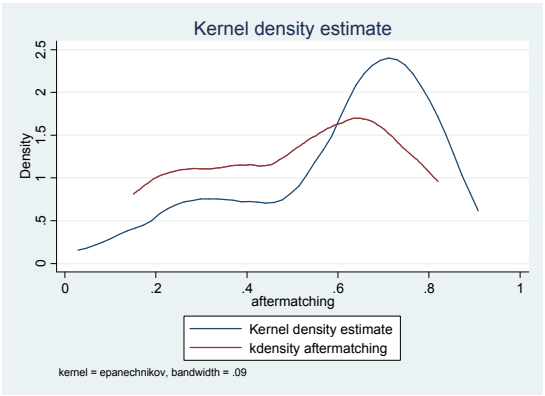
Organic FT-Independent after matching



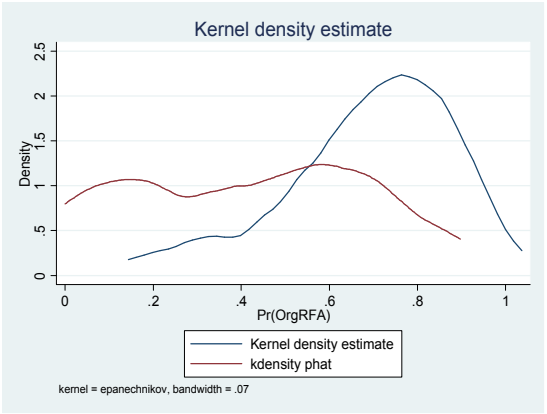
Organic FT-CP before matching



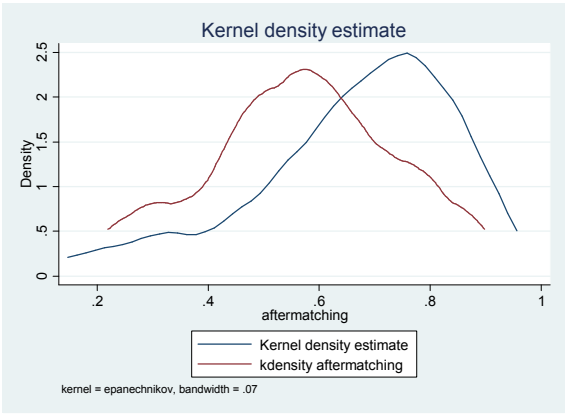
Organic FT-CP after matching



Organic FT-RFA before matching



Organic FT-RFA after matching



Probit Estimates Organic Farming

	PRODECOOP ORGANIC Fair Trade -Independent			PRODECOOP ORGANIC Fair Trade - Rainforest			PRODECOOP ORGANIC Fair Trade - Café Practices		
	Coeff.	SE	Sig	Coeff.	SE	Sig	Coeff.	SE	Sig
Variable	0.02594	0.01039	*	0.01293	0.01187		-0.00382	0.01251	
Family Size	-0.00121	0.01058		-0.00743	0.01129		-0.00149	0.01061	
Years settlement	-0.01446	0.01019		-0.01861	0.01318		0.00535	0.01290	
HH Education	0.18841	0.10176		-0.19375	0.13077		0.09954	0.09718	
HH Head Age	-0.00431	0.01912	*	0.02330	0.02041		-0.00834	0.02663	
Initial Land	-0.00235	0.00671		0.01151	0.01010		0.01711	0.01183	*
Time to plot	-0.00619	0.00276		-0.00941	0.00370		-0.00049	0.00357	
Time to Town	0.04304	0.06387	**	0.10312	0.08355	**	0.03886	0.08469	
Past coffee production	0.00121	0.00158		-0.00445	-.00221		-0.00336	0.00129	**
Area Coffee	0.08782	0.05950	*	-0.05678	0.05809	**	-0.00679	0.06329	
Farm Area	0.01409	0.03400		-0.00427	0.04086		-0.04105	0.04488	
Time to clinic	-0.01523	0.00500	***	-0.01208	0.00636	*	-0.02020	0.00664	***
Time to hospital	-0.00743	0.00300	**	-0.00163	0.00369		-0.00218	0.00395	
Constant	0.05007	0.82918		1.92530	1.03596	*	0.80966	0.91026	
Number of Observations	148			102			112		
LR chi2(13)	67.13			32.81			44.55		
Prob > chi2	0.0000			0.0018			0.0000		
Pseudo R2	0.3274			0.2352			0.2952		
Log Likelihood	-68.964677			-53.333866			-53.181135		

Annex D1: Difference Analysis FT Organic PRODECOOP / Independent Farmers

Organic & Independent Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	2456,67	3487,88	-1031,21	7789,55	-0,13		2456,67	4281,82	-1825,15	4796,09	-0,38		2456,67	4196,41	-1739,74	4567,48	-0,38	
Services_Income	2118,18	8400,00	-6281,82	7941,76	-0,79		2118,18	10781,82	-8663,64	4830,40	-1,79	*	2118,18	10894,75	-8776,56	4532,92	-1,94	*
Coffee_Income	65617,20	48018,18	17599,02	31767,49	0,55		65617,20	72413,38	-6796,19	31918,05	-0,21		65617,20	73537,42	-7920,22	31333,69	-0,25	
Other_Agri_Income	1431,97	3146,82	-1714,85	1978,85	-0,87		1431,97	3120,40	-1688,43	1524,13	-1,11		1431,97	2518,34	-1086,37	1649,67	-0,66	
Total_Income	71624,02	63052,88	8571,14	34006,09	0,25		71624,02	90597,42	-18973,41	32540,34	-0,58		71624,02	91146,91	-19522,90	31962,77	-0,61	
Coffee_Dependency	82,72	74,99	7,74	9,69	0,80		82,72	74,56	8,17	7,16	1,14		82,72	77,13	5,59	7,30	0,77	
Non_Farm_Income_PC	614,17	871,97	-257,80	1947,39	-0,13		614,17	1070,45	-456,29	1199,02	-0,38		614,17	1049,10	-434,93	1141,87	-0,38	
Services_Income_PC	529,55	2100,00	-1570,45	1985,44	-0,79		529,55	2695,45	-2165,91	1207,60	-1,79	*	529,55	2723,69	-2194,14	1133,23	-1,94	*
Coffee_Income_PC	16404,30	12004,55	4399,75	7941,87	0,55		16404,30	18103,35	-1699,05	7979,51	-0,21		16404,30	18384,36	-1980,06	7833,42	-0,25	
Other_Agri_Income_PC	357,99	786,70	-428,71	494,71	-0,87		357,99	780,10	-422,11	381,03	-1,11		357,99	629,59	-271,59	412,42	-0,66	
Total_Income_PC	17906,00	15763,22	2142,78	8501,52	0,25		17906,00	22649,36	-4743,35	8135,08	-0,58		17906,00	22786,73	-4880,72	7990,69	-0,61	
Household_Expenditure_PC	61790,11	121754,41	-59964,30	42355,98	-1,42		61790,11	113199,22	-51409,11	26745,92	-1,92	*	61790,11	130683,80	-68893,69	25419,30	-2,71	***
Food_Expenditure_PC	5868,04	4888,18	979,86	966,92	1,01		5868,04	5032,52	835,53	698,84	1,20		5868,04	4767,11	1100,93	690,28	1,59	
Education_Expenditure_PC	4128,64	15295,45	-11166,82	9078,27	-1,23		4128,64	15097,73	-10969,09	5538,12	-1,98	*	4128,64	17060,46	-12931,82	5219,83	-2,48	***
Housing_Expenditure_PC	7207,07	6720,42	486,65	3502,58	0,14		7207,07	7411,17	-204,10	2156,24	-0,09		7207,07	7240,83	-33,76	2033,70	-0,02	
Health_Expenditure_PC	3340,91	7986,36	-4645,45	3485,71	-1,33		3340,91	5401,52	-2060,61	2261,87	-0,91		3340,91	8025,98	-4685,07	2214,92	-2,12	**
FHH_Expenditure_PC	82334,77	156644,83	-74310,06	53104,65	-1,40		82334,77	146142,14	-63807,38	33584,88	-1,90		82334,77	167778,18	-85443,41	31912,75	-2,68	***
Better_off_than_5_years_ago	1,29	1,12	0,17	0,25	0,68		1,29	1,28	0,01	0,21	0,05		1,29	1,28	0,01	0,22	0,03	
Better_off_than_today	1,18	1,50	-0,32	0,18	-1,75	*	1,18	1,44	-0,26	0,15	-1,75	*	1,18	1,52	-0,34	0,15	-2,31	**
Total_Assets	27932,18	219246,26	-191314,08	97621,46	-1,96	*	27932,18	219162,16	-191229,98	91538,12	-2,09		27932,18	286445,45	-258513,27	85951,20	-3,01	***
Amount_of_Credit	17489,39	14280,30	3209,09	11470,20	0,28		17489,39	11517,68	5971,72	10605,63	0,56		17489,39	13563,49	3925,91	14680,43	0,27	
Total_Savings	810,61	45,45	765,15	366,29	2,09	**	810,61	15,15	795,45	333,11	2,39	**	810,61	54,14	756,47	444,74	1,70	*
Coffee_Prod_Area	3,54	4,03	-0,49	0,94	-0,52		3,54	4,34	-0,80	0,72	-1,12		3,54	4,46	-0,92	0,70	-1,31	
Coffee_Ave_Price	199,19	189,91	9,28	15,64	0,59		199,19	188,96	10,23	13,77	0,74		199,19	191,28	7,91	13,82	0,57	
Coffee_Production_QQ	57,07	25,67	31,40	22,38	1,40		57,07	50,88	6,19	21,05	0,29		57,07	44,35	12,71	20,96	0,61	
Coffee_Yields	19,31	8,95	10,35	7,11	1,46		19,31	15,50	3,81	6,76	0,56		19,31	13,77	5,54	7,15	0,77	
Input_Cost	934,36	226,24	708,11	429,45	1,65	*	934,36	203,90	730,46	466,51	1,57		934,36	186,20	748,15	458,80	1,63	*
Labour_Cost	607,74	279,06	328,68	253,74	1,30		607,74	380,05	227,69	698,20	0,33		607,74	356,16	251,58	657,69	0,38	
Harvestng_Labour_Cost	258,85	364,29	-105,44	78,51	-1,34		258,85	371,18	-112,33	53,17	-2,11	**	258,85	367,25	-108,40	52,20	-2,08	**
QQ_Production_5_years_ago	32,69	21,29	11,40	5,82	1,96	*	32,69	29,04	3,65	5,96	0,61		32,69	27,40	5,29	5,82	0,91	
QQ_Production_Today	33,85	33,29	0,56	5,39	0,10		33,85	39,19	-5,34	5,54	-0,96		33,85	39,60	-5,75	5,51	-1,04	
QQ_Production_Next_Season	43,33	36,80	6,53	6,71	0,97		43,33	42,23	1,10	6,12	0,18		43,33	40,19	3,15	5,95	0,53	
Real_Coffee_Renovation	0,25	0,38	-0,12	0,16	-0,78		0,25	0,27	-0,01	0,12	-0,10		0,25	0,37	-0,12	0,13	-0,90	
Risk_Perception	1,16	1,20	-0,04	0,07	-0,53		1,16	1,15	0,02	0,07	0,26		1,16	1,17	0,00	0,07	-0,03	
Productive_Use_Investments	8763,64	9516,67	-753,03	817,53	-0,92		8763,64	9349,49	-585,86	637,22	-0,92		8763,64	9521,62	-757,98	1371,17	-0,55	
Productive_Use_Investments_Percentage	12,36	4,83	7,53	8,18	0,92		12,36	6,51	5,86	6,37	0,92		12,36	4,78	7,58	13,71	0,55	
Women_Empow_HH	2,26	2,31	-0,05	0,26	-0,19		2,26	2,26	0,00	0,30	0,01		2,26	2,32	-0,05	0,42	-0,13	
Women_Empow_ORG	1,95	2,22	-0,26	0,37	-0,70		1,95	2,22	-0,26	0,31	-0,85		1,95	2,15	-0,20	0,31	-0,64	
House_Ownership	1,82	1,47	0,35	0,20	1,70	*	1,82	1,45	0,36	0,19	1,90	*	1,82	1,53	0,29	0,20	1,41	
Plot_Ownership	1,53	1,50	0,03	0,27	0,11		1,53	1,51	0,03	0,22	0,12		1,53	1,55	-0,02	0,22	-0,10	
Got_Institutional_Help	1,45	1,40	0,04	0,15	0,27		1,45	1,41	0,04	0,12	0,29		1,45	1,41	0,03	0,12	0,27	
Who_Crontrol	2,13	1,98	0,15	0,12	1,25		2,13	1,90	0,23	0,11	2,05	**	2,13	1,90	0,23	0,11	2,06	**
Women_Awareness	4,39	4,47	-0,09	0,16	-0,54		4,39	4,33	0,05	0,25	0,21		4,39	4,36	0,03	0,25	0,12	
Female_Share	41,96	54,41	-12,44	7,47	-1,67		41,96	49,44	-7,48	5,64	-1,33		41,96	50,24	-8,27	5,65	-1,46	
Female_Coffee_Share	9,83	25,32	-15,50	8,25	-1,88		9,83	16,98	-7,16	5,56	-1,29		9,83	19,53	-9,70	5,32	-1,82	*
Gender_Concioueness	2,98	3,20	-0,22	0,32	-0,70		2,98	3,03	-0,05	0,26	-0,19		2,98	3,05	-0,07	0,29	-0,25	
Participation_in_organization	0,15	0,05	0,11	0,08	1,37		0,15	0,04	0,12	0,08	1,50	*	0,15	0,02	0,13	0,07	1,76	*
Total_Identifiaction_to_Organization	3,82	0,09	3,73	0,23	16,47	***	3,82	0,19	3,63	0,21	17,22	***	3,82	0,19	3,64	0,21	17,48	***
Total_Organization_Function	3,89	0,11	3,78	0,24	15,60	***	3,89	0,24	3,65	0,22	16,69	***	3,89	0,23	3,66	0,21	17,05	***
Total_Organization_Strenght	3,95	0,11	3,84	0,24	15,67	***	3,95	0,24	3,71	0,22	16,74	***	3,95	0,23	3,72	0,22	17,08	***
Total_Satisfaction_with_Techincal_Assistance	8,67	0,18	8,48	0,32	26,26	***	8,67	0,42	8,24	0,29	28,32	***	8,67	0,40	8,26	0,28	29,36	***
Total_Satisfaction_with_Comercialization_Assisteance	9,23	0,23	9,00	0,34	26,55	***	9,23	0,48	8,75	0,27	32,66	***	9,23	0,46	8,76	0,25	34,47	***
Average_Loyalty	3,19	2,79	0,40	0,53	0,75	***	3,19	2,95	0,24	0,39	0,61		3,19	2,77	0,42	0,39	1,07	
Side_Sales_Percentage	4,36	12,16	-7,80	8,31	-0,94		4,36	13,85	-9,48	5,40	-1,76	*	4,36	12,77	-8,40	5,34	-1,57	
Price	4,91	4,80	0,11	0,14	0,77		4,91	4,77	0,14	0,09	1,44		4,91	4,78	0,13	0,09	1,50	
Cash_Payment	4,87	4,78	0,10	0,19	0,52		4,87	4,81	0,07	0,12	0,55		4,87	4,81	0,06	0,12	0,54	
Product_Deliery	4,59	4,35	0,24	0,19	1,25		4,59	4,44	0,16	0,15	1,04		4,59	4,43	0,16	0,15	1,06	
Payment_Time	4,48	4,38	0,10	0,21	0,48		4,48	5,12	-0,64	1,39	-0,46		4,48	4,74	-0,26	1,30	-0,20	
Pre_Credit	4,82	4,75	0,07	0,14	0,49		4,82	4,81	0,01	0,12	0,12		4,82	4,83	-0,01	0,11	-0,11	
Quality_Control	4,80	4,42	0,37	0,17	2,21	**	4,80	4,55	0,25	0,16	1,52		4,80	4,58	0,22	0,16	1,38	
Transaction_Place	4,84	4,53	0,31	0,15	2,01	**	4,84	4,58	0,27	0,21	1,28		4,84	4,61	0,24	0,20	1,21	
Days_Lost	2,79	2,50	0,29	1,02	0,28		2,79	2,50	0,29	0,91	0,32		2,79	2,06	0,73	0,89	0,82	
Montly_Medical_Expenses	862,58	731,82	130,76	471,92	0,28		862,58	1939,39	-1076,82	810,59	-1,33		862,58	1304,60	-442,02	772,38	-0,57	
Sustainable_Practices	9,71	10,15	-0,44	0,75	-0,59		9,71	10,09	-0,38	0,53	-0,72		9,71	10,04	-0,32	0,53	-0,61	
Harvesting_Number	3,09	3,41	-0,32	0,22	-1,47		3,09	3,32	-0,23	0,17	-1,35		3,09	3,36	-0,27	0,17	-1,63	*
Days_Before_Delivering	1,20	2,23	-1,03	0,29	-3,58	***	1,20	2,14	-0,94	0,25	-3,70	***	1,20	2,18	-0,98	0,25	-3,93	*
Plot_Losses	1,03	1,03	0,00	0,43	0,00		1,03	0,96	0,07	0,34	0,20		1,03	0,88	0,15	0,33	0,46	
Buyers_Losses	3,24	1,29	1,95	0,54	3,63	***	3,24	1,14	2,11	0,44	4,79	***	3,24	1,07	2,17	0,45	4,78	*
Coffee_Size_Quality	0,00	0,09	-0,09	0,13	-0,72		0,00	0,21	-0,21	0,20	-1,05		0,00	0,13	-0,13	0,19	-0,71	
Plant_Density	3330,65	3215,15	115,50	151,02	0,76		3330,65	3186,78	143,87	126,96	1,13		3330,65	3200,64	130,01	124,80	1,04	
Imperfection_Percentage	0,85	0,38	0,47	0,30	1,59		0,85	0,28	0,57	0,32	1,79	*	0,85	0,35	0,50	0,32	1,55	
Fermentation_Percentage	0,15	0,77	-0,62	0,34	-1,84	*	0,15	0,72	-0,57	0,57	-0,99		0,15	0,82	-0,67	0,65	-1,03	
WareHouse_Percentage	0,26	0,02	0,24	0,14	1,68	*	0,26	0,05	0,21	0,15	1,37		0,26	0,03	0,22	0,16	1,44	
Humidity_Coffee	42,02	42,38	-0,36	0,20	-1,82	*	42,02	42,26	-0,25	0,16	-1,51		42,02	42,34	-0,33	0,16	-2,05	**
Number_GAP_Practices	7,06	8,86	-1,80	0,49	-3,70	***	7,06	9,42	-2,36	0,54	-4,41	***	7,06	9,31	-2,25	0,53	-4,28	***
Quality_Awareness	4,55	4,53	0,03	0,15	0,18		4,55	4,54	0,01	0,11	0,09		4,55	4,59	-0,04	0,11	-0,33	
Weather_First_Person	148,71	137,12	11,59	9,37	1,24		148,71	141,67	7,05	8,01	0,88		148,71	140,15	8,56	8,84	0,97	
Effort_First_Person	18,41	29,62	-11,21	14,41	-0,78		18,41	32,95	-14,55	10,62	-1,37		18,41	30,99	-12,58	10,18	-1,24	

Annex D2: Difference Analysis FT Organic PRODECOOP / CAFÉ Practices

Orgsnic & Café Practice Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	962,86	2156,57	-1193,71	1175,08	-1,02		962,86	1185,52	-222,67	1298,52	-0,17		962,86	3168,10	-2205,25	4902,08	-0,45	
Services_Income	2142,86	5828,57	-3685,71	6625,85	-0,56		2142,86	7702,86	-5560,00	4731,02	-1,18		2142,86	4514,29	-2371,44	4588,17	-0,52	
Coffee_Income	64204,09	72267,14	-8063,06	43617,44	-0,18		64204,09	96570,95	-32366,87	34731,75	-0,93		64204,09	68864,36	-4660,27	34221,28	-0,14	
Other_Agri_Income	2088,84	1060,86	1027,98	1081,37	0,95		2088,84	3970,29	-1881,45	1789,87	-1,05		2088,84	2939,66	-850,82	1787,72	-0,48	
Total_Income	69398,64	81313,14	-11914,51	49357,83	-0,24		69398,64	109429,62	-40030,98	37985,30	-1,05		69398,64	79486,41	-10087,77	37687,90	-0,27	
Coffee_Dependency	85,49	87,67	-2,18	5,19	-0,42		85,49	87,89	-2,39	5,42	-0,44		85,49	84,31	1,18	6,07	0,19	
Non_Farm_Income_PC	240,71	539,14	-298,43	293,77	-1,02		240,71	296,38	-55,67	324,63	-0,17		240,71	792,03	-551,31	1225,52	-0,45	
Services_Income_PC	535,71	1457,14	-921,43	1656,46	-0,56		535,71	1925,71	-1390,00	1182,76	-1,18		535,71	1128,57	-592,86	1147,04	-0,52	
Coffee_Income_PC	16051,02	18066,79	-2015,76	10904,36	-0,18		16051,02	24142,74	-8091,72	8682,94	-0,93		16051,02	17216,09	-1165,07	8555,32	-0,14	
Other_Agri_Income_PC	522,21	265,21	257,00	270,34	0,95		522,21	992,57	-470,36	447,47	-1,05		522,21	734,91	-212,71	446,93	-0,48	
Total_Income_PC	17349,66	20328,29	-2978,63	12339,46	-0,24		17349,66	27357,40	-10007,75	9496,33	-1,05		17349,66	19871,60	-2521,94	9421,97	-0,27	
Household_Expenditure_PC	95710,69	77792,14	17918,54	29219,46	0,61		95710,69	65702,59	30008,10	27777,50	1,08		95710,69	77746,06	17964,62	44506,37	0,40	
Food_Expenditure_PC	5793,94	5028,34	765,60	1040,46	0,74		5793,94	4575,66	1218,29	824,90	1,48		5793,94	4654,98	1138,96	831,40	1,37	
Education_Expenditure_PC	10061,14	6334,29	3726,86	5427,69	0,69		10061,14	5505,71	4555,43	5425,64	0,84		10061,14	6766,80	3294,34	5588,77	0,59	
Housing_Expenditure_PC	7638,53	8973,75	-1335,22	1864,01	-0,72		7638,53	7119,93	518,60	1397,63	0,37		7638,53	7518,44	120,09	1437,64	0,08	
Health_Expenditure_PC	5280,00	3917,14	1362,86	2080,09	0,66		5280,00	3511,43	1768,57	1943,40	0,91		5280,00	3544,06	1735,94	2252,73	0,77	
FHH_Expenditure_PC	124484,30	102045,66	22438,64	36738,57	0,61		124484,30	86415,32	38068,98	34863,38	1,09		124484,30	100230,34	24253,96	51264,67	0,47	
Better_off_than_5_years_ago	1,37	1,60	-0,23	0,24	-0,94		1,37	1,48	-0,10	0,20	-0,53		1,37	1,54	-0,17	0,24	-0,72	
Better_off_than_today	1,17	1,14	0,03	0,17	0,17		1,17	1,15	0,02	0,13	0,15		1,17	1,12	0,05	0,13	0,42	
Total_Assets	39599,00	63264,54	-23665,54	16079,57	-1,47		39599,00	105604,99	-66005,99	81889,45	-0,81		39599,00	100698,98	-61099,98	97486,33	-0,63	
Amount_of_Credit	7214,29	28000,00	-20785,71	31610,27	-0,66		7214,29	31309,52	-24095,24	20706,65	-1,16		7214,29	29867,53	-22653,24	20304,65	-1,12	
Total_Savings	1814,29	0,00	1814,29	959,27	1,89		1814,29	0,00	1814,29	959,27	1,89	*	1814,29	0,00	1814,29	959,27	1,89	*
Coffee_Prod_Area	5,02	3,89	1,13	1,41	0,80		5,02	4,95	0,08	1,41	0,05		5,02	4,03	1,00	1,44	0,69	
Coffee_Ave_Price	216,00	220,16	-4,16	22,95	-0,18		216,00	213,94	2,06	21,45	0,10		216,00	213,81	2,19	21,37	0,10	
Coffee_Production_QQ	33,07	129,04	-95,97	62,33	-1,54		33,07	113,10	-80,03	41,52	-1,93	*	33,07	99,62	-66,55	40,41	-1,65	*
Coffee_Yields	11,16	36,97	-25,81	10,12	-2,55	***	11,16	29,38	-18,22	7,23	-2,52	**	11,16	30,60	-19,44	7,10	-2,74	***
Input_Cost	410,37	245,71	164,66	180,85	0,91		410,37	164,76	245,61	157,37	1,56		410,37	214,99	195,38	156,07	1,25	
Labour_Cost	396,60	46,00	350,60	189,01	1,85	*	396,60	588,40	-191,80	1010,69	-0,19		396,60	325,67	70,93	978,90	0,07	
Harvestng_Labour_Cost	319,86	341,09	-21,23	94,10	-0,23		319,86	366,39	-46,53	77,33	-0,60		319,86	331,52	-11,66	79,37	-0,15	
QQ_Production_5_years_ago	36,63	30,49	6,14	7,05	0,87		36,63	29,69	6,94	6,96	1,00		36,63	28,85	7,77	6,93	1,12	
QQ_Production_Today	32,66	44,63	-11,97	8,76	-1,37		32,66	47,62	-14,96	6,56	-2,28	**	32,66	42,56	-9,91	6,53	-1,52	
QQ_Production_Next_Season	45,46	50,46	-5,00	9,64	-0,52		45,46	54,33	-8,88	9,37	-0,95		45,46	47,62	-2,16	9,35	-0,23	
Real_Coffee_Renovation	0,22	0,29	-0,07	0,17	-0,38		0,22	0,41	-0,18	0,24	-0,78		0,22	0,39	-0,17	0,23	-0,72	
Risk_Perception	1,20	1,09	0,11	0,10	1,14		1,20	1,10	0,10	0,08	1,19		1,20	1,10	0,10	0,08	1,19	
Productive_Use_Investments	8542,86	10885,71	-2342,86	2835,19	-0,83		8542,86	9838,10	-1295,24	1869,60	-0,69		8542,86	9858,37	-1315,52	1799,68	-0,73	
Productive_Use_Investments_Percentage	14,57	-8,86	23,43	28,35	0,83		14,57	1,62	12,95	18,70	0,69		14,57	1,42	13,16	18,00	0,73	
Women_Empow_HH	2,22	2,44	-0,21	0,21	-1,03		2,22	2,29	-0,07	0,17	-0,41		2,22	2,34	-0,12	0,18	-0,67	
Women_Empow_ORG	1,60	2,22	-0,62	0,30	-2,09	**	1,60	1,99	-0,39	0,26	-1,50		1,60	2,03	-0,43	0,27	-1,62	*
House_Ownership	1,63	1,88	-0,25	0,26	-0,95		1,63	1,79	-0,17	0,23	-0,73		1,63	1,91	-0,28	0,23	-1,22	
Plot_Ownership	1,34	1,81	-0,47	0,26	-1,83	*	1,34	1,54	-0,20	0,22	-0,92		1,34	1,60	-0,25	0,22	-1,14	
Got_Institutional_Help	1,35	1,30	0,05	0,13	0,41		1,35	1,31	0,04	0,13	0,33		1,35	1,31	0,04	0,16	0,22	
Who_Crontrol	2,11	2,11	0,00	0,14	0,00		2,11	2,02	0,09	0,12	0,75		2,11	2,07	0,05	0,12	0,38	
Women_Awareness	4,05	4,42	-0,37	0,19	-1,92	*	4,05	4,31	-0,25	0,16	-1,54		4,05	4,35	-0,30	0,16	-1,82	*
Female_Share	37,95	54,25	-16,30	7,03	-2,32	**	37,95	48,73	-10,78	5,22	-2,07	**	37,95	52,07	-14,12	5,15	-2,74	***
Female_Coffee_Share	5,45	15,92	-10,47	6,32	-1,66	*	5,45	11,28	-5,83	4,33	-1,35		5,45	13,08	-7,62	4,50	-1,70	*
Gender_Concioueness	2,91	2,72	0,19	0,34	0,55		2,91	2,71	0,20	0,29	0,69		2,91	2,77	0,13	0,30	0,44	
Participation_in_organization	0,11	0,06	0,06	0,08	0,68		0,11	0,13	-0,02	0,09	-0,22		0,11	0,08	0,03	0,09	0,40	
Total_Identifiaction_to_Organization	3,78	1,64	2,14	0,58	3,72	***	3,78	2,24	1,54	0,51	3,01	***	3,78	1,97	1,81	0,54	3,32	***
Total_Organization_Function	3,88	1,49	2,39	0,54	4,39	***	3,88	2,08	1,80	0,50	3,60	***	3,88	1,85	2,03	0,51	3,98	***
Total_Organization_Strenght	3,98	1,60	2,38	0,59	4,00	***	3,98	2,35	1,63	0,52	3,13	***	3,98	2,05	1,93	0,54	3,55	***
Total_Satisfaction_with_Techincal_Assistance	8,27	3,46	4,81	1,12	4,29	***	8,27	4,31	3,96	0,90	4,38	***	8,27	4,03	4,24	0,94	4,54	***
Total_Satisfaction_with_Comercialization_Assisteance	9,01	3,74	5,27	1,11	4,74	***	9,01	4,53	4,49	0,91	4,93	***	9,01	4,25	4,76	0,98	4,85	***
Average_Loyalty	3,19	3,33	-0,15	0,21	-0,70		3,19	3,46	-0,27	0,21	-1,32		3,19	3,39	-0,20	0,21	-0,93	
Side_Sales_Percentage	2,71	21,86	-19,14	9,58	-2,00	**	2,71	21,38	-18,67	7,46	-2,50	***	2,71	18,74	-16,03	7,43	-2,16	**
Price	4,98	4,69	0,29	0,18	1,61	*	4,98	4,81	0,17	0,12	1,37		4,98	4,67	0,31	0,14	2,18	**
Cash_Payment	4,95	4,83	0,12	0,11	1,09		4,95	4,87	0,08	0,08	0,97		4,95	4,80	0,14	0,09	1,63	*
Product_Deliery	4,64	4,74	-0,11	0,20	-0,54		4,64	4,71	-0,08	0,18	-0,44		4,64	4,66	-0,02	0,18	-0,12	
Payment_Time	4,33	4,63	-0,30	0,28	-1,09		4,33	4,82	-0,49	0,24	-2,02	**	4,33	4,66	-0,34	0,25	-1,32	
Pre_Credit	4,82	4,97	-0,15	0,14	-1,07		4,82	4,92	-0,10	0,14	-0,75		4,82	5,30	-0,48	1,59	-0,30	
Quality_Control	4,89	4,89	0,00	0,12	0,02		4,89	4,89	0,00	0,11	0,02		4,89	4,89	0,00	0,11	-0,03	
Transaction_Place	4,89	4,89	0,00	0,13	0,03		4,89	4,83	0,06	0,11	0,55		4,89	4,86	0,03	0,11	0,28	
Days_Lost	2,40	3,40	-1,00	1,38	-0,73		2,40	3,85	-1,45	1,22	-1,19		2,40	3,49	-1,09	1,21	-0,90	
Montly_Medical_Expenses	1123,71	3388,57	-2264,86	1362,05	-1,66	*	1123,71	2725,71	-1602,00	1060,49	-1,51		1123,71	2733,42	-1609,70	1038,84	-1,55	
Sustainable_Practices	10,03	10,83	-0,80	0,43	-1,85	*	10,03	10,70	-0,68	0,39	-1,75	*	10,03	10,84	-0,81	0,39	-2,11	**
Harvesting_Number	3,06	3,23	-0,17	0,13	-1,27		3,06	3,17	-0,11	0,11	-1,05		3,06	3,14	-0,09	0,13	-0,66	
Days_Before_Delivering	1,40	1,80	-0,40	0,28	-1,42		1,40	1,72	-0,32	0,25	-1,30		1,40	1,65	-0,25	0,25	-1,00	
Plot_Losses	1,37	0,83	0,54	0,35	1,55		1,37	0,70	0,67	0,31	2,16		1,37	0,67	0,71	0,32	2,20	**
Buyers_Losses	2,83	2,09	0,74	0,75	0,98		2,83	1,72	1,10	0,66	1,69		2,83	2,13	0,70	0,68	1,04	
Coffee_Size_Quality	0,00	0,11	-0,11	0,13	-0,89		0,00	0,06	-0,06	0,08	-0,69		0,00	0,07	-0,07	0,08	-0,83	
Plant_Density	3237,14	3298,57	-61,43	122,29	-0,50		3237,14	3299,33	-62,19	101,88	-0,61		3237,14	3266,07	-28,92	100,39	-0,29	
Imperfection_Percentage	0,94	0,83	0,11	0,54	0,21		0,94	0,59	0,35	0,47	0,75		0,94	0,68	0,26	0,47	0,55	
Fermentation_Percentage	0,17	0,34	-0,17	0,24	-0,71		0,17	0,36	-0,19	0,43	-0,44		0,17	0,52	-0,35	0,51	-0,68	
WareHouse_Percentage	0,14	0,57	-0,43	0,35	-1,22		0,14	0,30	-0,15	0,33	-0,47		0,14	0,64	-0,50	0,37	-1,35	
Humidity_Coffee	41,94	42,00	-0,06	0,06	-1,00		41,94	42,00	-0,06	0,06	-1,00		41,94	42,01	-0,06	0,07	-0,90	
Number_GAP_Practices	7,71	8,60	-0,89	0,40	-2,20	**	7,71	8,28	-0,56	0,42	-1,35		7,71	8,32	-0,60	0,41	-1,46	
Quality_Awareness	4,49	4,50	-0,02	0,11	-0,17		4,49	4,44	0,04	0,09	0,46		4,49	4,51	-0,03	0,10	-0,27	
Weather_First_Person	139,86	131,86	8,00	10,18	0,79		139,86	135,19	4,67	9,35	0,50		139,86	131,10	8,75	9,43	0,93	
Effort_First_Person	22,71	49,43	-26,71	14,55	-1,84	*	22,71	46,43	-23,71	11,38	-2,08	**	22,71	44,35	-21,63	11,24	-1,93	*

Table D3: Difference Analysis FT Organic PRODECOOP / Rainforest Alliance

Organic & Rainforest Alliance Matching

	Neighbor (1)						Neighbor (3)						Kernel					
Variable Sample |	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.	Treated	Controls	Difference	S.E.	T-stat	Sig.
Non_Farm_Income	6750,00	4990,38	1759,62	5932,44	0,30		6750,00	6507,05	242,95	4689,41	0,05		6750,00	5951,89	798,11	4720,32	0,17	
Services_Income	2826,92	6600,00	-3773,08	5643,16	-0,67		2826,92	4646,15	-1819,23	4313,29	-0,42		2826,92	5661,89	-2834,97	4369,81	-0,65	
Coffee_Income	85242,21	37071,35	48170,87	33958,31	1,42		85242,21	42288,17	42954,05	41802,94	1,03		85242,21	43289,54	41952,67	42032,14	1,00	
Other_Agri_Income	1626,92	2995,17	-1368,24	2661,93	-0,51		1626,92	2236,61	-609,68	2016,72	-0,30		1626,92	2875,75	-1248,82	2043,51	-0,61	
Total_Income	96446,06	51656,90	44789,16	36557,37	1,23		96446,06	55677,98	40768,08	42837,64	0,95		96446,06	57779,07	38666,99	43088,23	0,90	
Coffee_Dependency	80,02	78,17	1,85	7,84	0,24		80,02	80,90	-0,88	7,14	-0,12		80,02	79,19	0,83	7,22	0,11	
Non_Farm_Income_PC	1687,50	1247,60	439,90	1483,11	0,30		1687,50	1626,76	60,74	1172,35	0,05		1687,50	1487,97	199,53	1180,08	0,17	
Services_Income_PC	706,73	1650,00	-943,27	1410,79	-0,67		706,73	1161,54	-454,81	1078,32	-0,42		706,73	1415,47	-708,74	1092,45	-0,65	
Coffee_Income_PC	21310,55	9267,84	12042,72	8489,58	1,42		21310,55	10572,04	10738,51	10450,74	1,03		21310,55	10822,38	10488,17	10508,04	1,00	
Other_Agri_Income_PC	406,73	748,79	-342,06	665,48	-0,51		406,73	559,15	-152,42	504,18	-0,30		406,73	718,94	-312,21	510,88	-0,61	
Total_Income_PC	24111,51	12914,22	11197,29	9139,34	1,23		24111,51	13919,49	10192,02	10709,41	0,95		24111,51	14444,77	9666,75	10772,06	0,90	
Household_Expenditure_PC	71733,63	52058,65	19674,98	21736,03	0,91		71733,63	63979,19	7754,45	39700,67	0,20		71733,63	67919,78	3813,86	40240,85	0,09	
Food_Expenditure_PC	6066,75	5113,90	952,85	718,04	1,33		6066,75	5312,46	754,29	602,24	1,25		6066,75	5273,20	793,55	605,63	1,31	
Education_Expenditure_PC	5202,69	3069,23	2133,46	4333,65	0,49		5202,69	4308,65	894,04	8409,31	0,11		5202,69	4817,41	385,29	8526,21	0,05	
Housing_Expenditure_PC	7676,87	6524,28	1152,59	929,33	1,24		7676,87	6791,91	884,96	998,53	0,89		7676,87	6869,31	807,56	1007,41	0,80	
Health_Expenditure_PC	3980,77	2890,38	1090,38	2850,00	0,38		3980,77	4207,69	-226,92	2486,23	-0,09		3980,77	4512,00	-531,23	2514,62	-0,21	
FHH_Expenditure_PC	94660,71	69656,45	25004,26	26961,48	0,93		94660,71	84599,90	10060,81	49559,75	0,20		94660,71	89391,69	5269,02	50233,45	0,10	
Better_off_than_5_years_ago	1,21	1,54	-0,33	0,26	-1,24		1,21	1,47	-0,26	0,23	-1,17		1,21	1,52	-0,31	0,23	-1,35	
Better_off_than_today	1,12	1,65	-0,54	0,21	-2,53	***	1,12	1,41	-0,29	0,17	-1,76	*	1,12	1,46	-0,34	0,17	-2,01	**
Total_Assets	34588,15	86902,98	-52314,83	185142,44	-0,28		34588,15	83142,18	-48554,03	117249,64	-0,41		34588,15	72261,63	-37673,48	118898,22	-0,32	
Amount_of_Credit	21288,46	6903,85	14384,62	14000,50	1,03		21288,46	5977,56	15310,90	12991,97	1,18		21288,46	5574,13	15714,33	13013,03	1,21	
Total_Savings	1201,92	38,46	1163,46	639,04	1,82	*	1201,92	730,77	471,15	901,14	0,52		1201,92	763,00	438,92	907,55	0,48	
Coffee_Prod_Area	4,12	3,04	1,08	0,70	1,55		4,12	3,39	0,73	1,14	0,64		4,12	3,42	0,70	1,15	0,61	
Coffee_Ave_Price	205,25	191,98	13,27	17,00	0,78		205,25	199,21	6,04	15,82	0,38		205,25	193,91	11,34	15,96	0,71	
Coffee_Production_QQ	45,74	132,24	-86,50	44,54	-1,94	*	45,74	81,81	-36,07	31,92	-1,13		45,74	89,64	-43,90	32,22	-1,36	
Coffee_Yields	12,40	53,22	-40,82	16,57	-2,46	***	12,40	32,37	-19,97	11,03	-1,81	*	12,40	35,19	-22,79	11,18	-2,04	**
Input_Cost	967,02	700,10	266,92	684,28	0,39		967,02	478,60	488,42	582,62	0,84		967,02	433,94	533,08	584,89	0,91	
Labour_Cost	673,52	1385,38	-711,87	1099,07	-0,65		673,52	902,28	-228,76	723,66	-0,32		673,52	742,28	-68,76	732,84	-0,09	
Harvestng_Labour_Cost	266,37	279,25	-12,88	59,53	-0,22		266,37	273,87	-7,51	62,84	-0,12		266,37	298,38	-32,01	63,59	-0,50	
QQ_Production_5_years_ago	39,49	35,63	3,86	8,01	0,48		39,49	33,60	5,89	6,74	0,87		39,49	33,87	5,62	6,81	0,83	
QQ_Production_Today	39,19	28,48	10,71	6,89	1,55		39,19	30,63	8,56	5,71	1,50		39,19	29,92	9,27	5,76	1,61	*
QQ_Production_Next_Season	47,54	32,29	15,25	6,00	2,54	***	47,54	36,88	10,65	5,50	1,94	*	47,54	36,94	10,60	5,54	1,91	*
Real_Coffee_Renovation	0,25	0,37	-0,12	0,18	-0,65		0,25	0,39	-0,15	0,14	-1,02		0,25	0,39	-0,14	0,15	-0,97	
Risk_Perception	1,19	1,13	0,05	0,09	0,57		1,19	1,13	0,05	0,08	0,65		1,19	1,13	0,05	0,08	0,63	
Productive_Use_Investments	9026,92	8751,73	275,19	660,01	0,42		9026,92	8143,91	883,01	523,10	1,69	*	9026,92	8350,08	676,84	528,67	1,28	
Productive_Use_Investments_Percentage	9,73	12,48	-2,75	6,60	-0,42		9,73	18,56	-8,83	5,23	-1,69	*	9,73	16,50	-6,77	5,29	-1,28	
Women_Empow_HH	2,30	1,94	0,36	0,24	1,50		2,30	1,99	0,30	0,22	1,36		2,30	2,05	0,25	0,23	1,09	
Women_Empow_ORG	2,04	1,71	0,33	0,35	0,93		2,04	1,64	0,40	0,35	1,13		2,04	1,67	0,37	0,35	1,05	
House_Ownership	1,87	1,38	0,49	0,24	2,02	**	1,87	1,41	0,45	0,20	2,22	**	1,87	1,37	0,50	0,21	2,42	***
Plot_Ownership	1,44	1,32	0,13	0,20	0,62		1,44	1,24	0,21	0,18	1,15		1,44	1,24	0,21	0,18	1,13	
Got_Institutional_Help	1,35	1,46	-0,11	0,21	-0,51		1,35	1,54	-0,18	0,16	-1,12		1,35	1,50	-0,15	0,17	-0,90	
Who_Crontrol	2,07	2,10	-0,03	0,14	-0,22		2,07	2,14	-0,07	0,11	-0,62		2,07	2,14	-0,07	0,11	-0,70	
Women_Awareness	4,31	4,17	0,13	0,23	0,58		4,31	4,18	0,12	0,18	0,68		4,31	4,13	0,18	0,19	0,96	
Female_Share	38,19	46,41	-8,22	8,19	-1,00		38,19	40,97	-2,78	5,86	-0,47		38,19	41,53	-3,34	5,93	-0,56	
Female_Coffee_Share	6,90	11,04	-4,15	5,11	-0,81		6,90	9,35	-2,46	3,96	-0,62		6,90	9,22	-2,33	4,00	-0,58	
Gender_Conciouness	3,04	2,88	0,16	0,37	0,44		3,04	2,90	0,14	0,29	0,48		3,04	3,01	0,03	0,30	0,11	
Participation_in_organization	0,17	0,21	-0,04	0,13	-0,31		0,17	0,12	0,05	0,09	0,57		0,17	0,10	0,07	0,09	0,76	
Total_Identifiaction_to_Organization	3,99	2,96	1,03	0,66	1,57		3,99	2,75	1,24	0,53	2,34	**	3,99	2,86	1,13	0,53	2,10	**
Total_Organization_Function	4,05	2,91	1,13	0,66	1,73	*	4,05	2,75	1,30	0,53	2,46	**	4,05	2,86	1,19	0,53	2,22	**
Total_Organization_Strenght	4,08	2,97	1,11	0,68	1,64	*	4,08	2,83	1,25	0,55	2,29	**	4,08	2,94	1,14	0,55	2,07	**
Total_Satisfaction_with_Techincal_Assistance	8,40	6,23	2,17	1,25	1,74	*	8,40	6,33	2,08	0,97	2,13	**	8,40	6,51	1,89	0,99	1,92	*
Total_Satisfaction_with_Comercialization_Assisteance	9,13	6,56	2,57	1,33	1,93	*	9,13	6,86	2,27	1,03	2,19	**	9,13	7,12	2,00	1,05	1,91	*
Average_Loyalty	3,35	3,37	-0,01	0,21	-0,06		3,35	3,45	-0,10	0,21	-0,46		3,35	3,42	-0,07	0,21	-0,31	
Side_Sales_Percentage	5,54	0,65	4,88	3,23	1,51		5,54	1,26	4,28	2,69	1,59		5,54	1,40	4,14	2,70	1,53	
Price	4,92	4,69	0,23	0,14	1,62	*	4,92	4,80	0,12	0,10	1,22		4,92	4,78	0,14	0,10	1,43	
Cash_Payment	4,86	4,58	0,28	0,19	1,49		4,86	4,76	0,09	0,13	0,71		4,86	4,72	0,14	0,13	1,05	
Product_Deliery	4,61	4,69	-0,08	0,17	-0,45		4,61	4,58	0,04	0,20	0,18		4,61	4,57	0,04	0,21	0,19	
Payment_Time	4,41	4,54	-0,13	0,24	-0,55		4,41	4,48	-0,07	0,23	-0,32		4,41	4,53	-0,12	0,23	-0,52	
Pre_Credit	4,80	4,87	-0,07	0,15	-0,44		4,80	4,85	-0,05	0,15	-0,32		4,80	4,88	-0,08	0,15	-0,53	
Quality_Control	4,82	4,87	-0,05	0,14	-0,36		4,82	4,83	-0,01	0,18	-0,07		4,82	4,84	-0,02	0,18	-0,11	
Transaction_Place	4,84	4,87	-0,03	0,13	-0,21		4,84	4,85	-0,01	0,13	-0,07		4,84	4,88	-0,04	0,13	-0,31	
Days_Lost	3,31	0,96	2,35	1,00	2,34	**	3,31	0,98	2,33	1,00	2,33	**	3,31	1,02	2,29	1,01	2,28	**
Montly_Medical_Expenses	815,96	461,54	354,42	350,31	1,01		815,96	748,72	67,24	676,65	0,10		815,96	737,78	78,18	684,75	0,11	
Sustainable_Practices	10,02	10,67	-0,65	0,49	-1,33		10,02	10,28	-0,26	0,45	-0,58		10,02	10,26	-0,25	0,45	-0,54	
Harvesting_Number	3,12	3,23	-0,12	0,17	-0,70		3,12	3,12	0,00	0,14	0,00		3,12	3,17	-0,05	0,14	-0,37	
Days_Before_Delivering	1,29	1,50	-0,21	0,32	-0,66		1,29	1,26	0,03	0,28	0,12		1,29	1,26	0,03	0,28	0,11	
Plot_Losses	1,06	0,81	0,25	0,52	0,48		1,06	1,01	0,05	0,42	0,12		1,06	1,00	0,06	0,42	0,14	
Buyers_Losses	3,19	1,58	1,62	0,80	2,02	**	3,19	2,00	1,19	0,67	1,78	*	3,19	2,08	1,11	0,68	1,65	*
Coffee_Size_Quality	0,00	0,00	0,00	0,00	.		0,00	0,00	0,00	0,00	.		0,00	0,00	0,00	0,00	.	
Plant_Density	3287,94	3098,08	189,87	128,48	1,48		3287,94	3179,49	108,46	96,37	1,13		3287,94	3155,30	132,64	97,46	1,36	
Imperfection_Percentage	0,75	1,12	-0,37	0,61	-0,60		0,75	0,99	-0,24	0,51	-0,48		0,75	1,13	-0,38	0,51	-0,74	
Fermentation_Percentage	0,10	0,96	-0,87	0,38	-2,27	**	0,10	0,70	-0,60	0,33	-1,83	*	0,10	0,90	-0,81	0,33	-2,42	***
WareHouse_Percentage	0,21	0,21	0,00	0,39	0,00		0,21	0,21	0,00	0,34	0,00		0,21	0,25	-0,04	0,35	-0,11	
Humidity_Coffee	42,02	42,04	-0,02	0,10	-0,19		42,02	42,02	0,00	0,08	0,00		42,02	42,03	-0,01	0,08	-0,18	
Number_GAP_Practices	7,21	7,85	-0,63	0,52	-1,23		7,21	7,74	-0,53	0,47	-1,14		7,21	7,83	-0,62	0,47	-1,30	
Quality_Awareness	4,51	4,50	0,01	0,15	0,07		4,51	4,50	0,01	0,12	0,11		4,51	4,47	0,04	0,12	0,34	
Weather_First_Person	147,69	154,04	-6,35	10,71	-0,59		147,69	142,69	5,00	9,18	0,54		147,69	144,56	3,13	9,27	0,34	
Effort_First_Person	18,94	10,00	8,94	7,37	1,21		18,94	10,96	7,98	6,48	1,23		18,94	12,83	6,11	6,54	0,93	