

# How Standards Compete: Comparative impact of coffee certification in Northern Nicaragua

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## Abstract

Smallholder producers are increasingly subject to different types of standards that offer specific conditions for their market incorporation. The proliferation of private and voluntary standards raises questions regarding their real impact on farmers' welfare and their role in upgrading of value chains.

Based on extensive fieldwork and careful matching of 315 farmers in Northern Nicaragua that produce coffee under Fair Trade, Rainforest Alliance and Café Practices labels or deliver to independent traders we compare the effects on income, production and investments. Moreover, the implications of different contract conditions for risk behaviour, organizational force, loyalty and gender attitudes are assessed.

We conclude that Fair Trade provides better prices compared to independent producers, but private labels outcompete Fair Trade in terms of yield and quality performance. While Fair Trade can be helpful to support initial market incorporation, private labels offer more suitable incentives for quality upgrading.

*Keywords:* Voluntary and Private Standards; Fair Trade; Responsible Trade; Welfare Effects; Coffee; Nicaragua.

## 1. Introduction

Standards are increasingly promoted as a critical device for enhancing market integration and reducing poverty of smallholder producers in developing countries. Whereas public and generic private standards were initially launched to guarantee minimum requirements for international trade and delivery to wholesale and retail outlets, voluntary and private standards become more important to reinforce the competitive position of smallholder producer groups in international value chains (Henson, 2006; Henson & Reardon, 2005)

Voluntary standards for the promotion of equitable market access by coffee smallholder cooperatives started some 25 years ago with the launch of the Fair Trade label. This certification regime guarantees producers a minimum selling price and provides a (joint) premium for community development programs. Large private coffee companies resisted these purchasing conditions, arguing that output price support may favour production inefficiencies. However, recent initiatives for private standards - promoted under certification by Rainforest Alliance, Utz Certified and Café Practices - for processors like Starbucks, Sara Lee, Nestlé and Kraft focus on improvement of production and processing practices to enhance input efficiency and quality upgrading. These private business-to-business (B2B) standards buy coffee under market-conform conditions and support farmers' income through dynamic efficiency gains.

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Whereas the global market share of Fair Trade coffee currently represents roughly 2-3 % of world trade, private labels for responsible, sustainable and/or ethical trade are rapidly expanding their market participation and report a combined market share up to 25 % (TCC, 2009). The mainstreaming of private standards at the consumer/retail end of the supply chain is to a certain extent accompanied by a proliferation of certification regimes at the producer side. This gives rise to concerns regarding the emergence of new types of market segmentation and raises legitimate questions on the appropriate type of incentives for supporting the development of smallholder production. On the other hand, the coexistence of different standard regimes may offer new opportunities for considering the precise role of certification standards for different categories of producers and during the producer's life cycle within specific upgrading pathways.

The main objective of this article is to assess the comparative performance of voluntary and private coffee standards for the welfare of individual smallholder families. We therefore provide a detailed comparison of differences in production, yields, prices and delivery contracts and their implications for farm-household income, investments and expenditures. In addition, due attention is given to secondary effects on (intra-)household behaviour in terms of gender participation, risk management practices and fairness attitudes. Finally, organizational and management effects are addressed regarding farmers' attitudes towards the cooperative organization, loyalty in delivery contracts, and the likelihood of adoption of sustainable practices and quality upgrading programs.

This article is based on results from an extensive field survey conducted amongst 315 coffee producers in the *Las Segovias* region in Northern Nicaragua. The sample is composed of 150 Fair Trade producers (75 organic; 75 conventional) and three different control groups: independent farmers (75), farmers delivering under the private label of Rainforest Alliance label (45) and farmers involved in Starbucks's Cafe Practices 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.

The remainder of this article is structured as follows. First we discuss the potential role of voluntary and private standards for reducing poverty and enhancing competitiveness in international value chains. Hereafter, we outline the contribution of standards for the development of the Nicaraguan coffee sector and the discuss the current proliferation of labels. This is followed by a concise description of the field research methods used for an un-biased comparison of different labels. The next section presents major results in terms of a comparison of income and production effects, institutional and behavioural implications, and management practices that are associated to different standards. Finally, we conclude with a discussion on policy implications and prospects for dovetailing different standards towards the needs of specific types of smallholder coffee producers.

## **2. Standards for Poverty Reduction and Upgrading**

Voluntary standards are based on the paradigm of structural poverty reduction for peasants living in 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 & Peluassy, 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 standards and certification regimes. (Henson, 2006; Giovannucci & Ponte, 2005). Parallel to the rise of minimum delivery conditions from the retail sector (GlobalGAP), societal organizations have started with the development of standards for Fair Trade (FLO/Max Havelaar), ecological/sustainable trade (Rainforest Alliance) and more recently Responsible Trade (UTZ Certified). 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).

Standards are increasingly considered also as instruments for reinforcing dynamic competitiveness of producers. Main attention is given 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.

The current proliferation of standards may easily lead to new dimensions of market segmentation, but can also be considered as a results 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 Café Practices and Rainforest Alliance, offer opportunities to both smallholder groups and plantations for mainstreaming coffee supplies that are delivered under market-conform conditions, while receiving 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.

There are several major differences in the procedures and criteria underlying voluntary standards (Fair Trade), sector-wide standards (Rainforest Alliance) and corporate standards (Café Practices). While the former are usually supported by (inter)national NGOs, the latter rely on business-to-business arrangements. Consequently, voluntary standards mainly

emphasize organizational issues (e.g. democratic cooperative organization, gender participation, etc.), whereas for sector-wide and corporate standards improvements in production methods (e.g. compliance with Good Agricultural Practices, quality upgrading) are considered of primary importance. This also implies that voluntary standards tend to focus on sales volumes, whereas sector-wide and private standards emphasize resource management through input intensification. In addition, delivery contracts for Fair Trade strongly focus on price stability and pre-finance conditions, while for Rainforest Alliance and Café Practices other aspects related to payment frequency and transaction place are considered more important. Table 1 provides a concise characterization of the different standards conditions.

**Table 1: Comparison of Coffee Standards**

	Fair Trade (FLO)	Rainforest Alliance (RFA)	Café Practices (Starbucks)
Start (year)	1989	1993	2004
Traded Volume (MT)	78.500	62.000	120.500
Pricing	Minimum floor price	Market price	Market price + Performance premium
Premium	FLO premium	Quality premium	Quality premium
Credit	Pre-finance (up to 50% of value)	Through (local) banks	Farmer Loan Fund
Standards	Minimum & Progress standards	Minimum compliance thresholds (14 critical criteria)	Scorecard (with 74 indicators)
Verification	FLO-Cert	Local auditors (internal)	Scientific Certification Systems (CSC)
Key aspects	Labour, livelihoods & participation	Sustainable resource management practices	Production and Quality management
Technical Assistance/ Capacity Building	Local farmers' organizations	Technical Assistance through SAN	Good Agricultural Practices (GAP)
Supply chain coverage	Supply chain records	Chain of Custody requirements	Supply Chain Traceability
Community outreach	Premium use for community programs	Linkages with input suppliers and labourers	Projects in coffee communities
Main focus	Fairness	Sustainability	Responsible sourcing

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 Peluessy (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 (2007) provides 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 been analyzed in several earlier studies. Detailed studies from coffee cooperatives in Costa Rica (Ronchi, 2002), Nicaragua (Bacon, 2005; Bacon et al., 2008) 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, and improvements in 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; Reynolds 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 or 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).

Recent 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 (see also: Bacon et al., 2008). Evidence from these studies suggests that participation in alternative trade networks reduces exposure and vulnerability to variable commodity prices. In a similar vein, Reynolds (2002) also points to the price premium as a critical element to offset other adverse conditions that affect the quality of life. Farmers linked to coffee cooperatives selling to alternative markets received higher average prices and also felt more secure regarding 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. These findings 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 provoked the perceived decline in the quality of living conditions.

### **3. Coffee Production and Competing 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 and the liberalization of trade, recovery of coffee production remained slow due to limited financing options and structurally low world prices (Vakis et al., 2004).

During the last decades world coffee prices show a continuous decline. 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 started to support coffee producers. In 1990, the Nicaraguan government initiated 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 (Lara-Estrada, 2005).

The structure and competitiveness of the Nicaraguan coffee cluster indicates major opportunities and constraints for upgrading of coffee production (Villanueva et al., 2006). Natural conditions are most favourable, but infrastructure and technical 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. 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 cooperatives 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). In national coffee exports, 4% is organically certified and 3% obtained Fair Trade certification. Average certification costs range between 2-4 US\$ cents/lb. Foreign non-governmental organizations strongly supported Fair Trade initiatives in Nicaragua, mainly during their initial certification trajectory. Given limited public support to the agricultural sector in general, restrictive credit policies and a restrained entrepreneurial and business climate, the cooperative sector is almost fully dependent on civil-lateral support (both grants from NGOs and through MFI loans). The number of coffee labels is, however, rapidly increasing and the proliferation of standards may lead to new types of market segmentation.

A major question regarding the role of different standards for supporting smallholder linkages with value chain refers to their contribution for (a) creating market access and (b) enhancing upgrading practices. While the former effect is limited to static comparative advantages, the latter points to more dynamic implications of improving market competitiveness (Giovannucci and Ponte, 2005). The current proliferation of coffee standards may thus be considered as an indication of increasing stratification within the Nicaraguan smallholder coffee sector. Consequently, it becomes increasingly important to be able to identify which types of standards are most appropriate to support specific categories of producers, and whether and how producers may be able to graduate from a simple initial standard towards other - more demanding and potentially more rewarding- certification regimes.

#### **4. Impact measurement**

Many impact studies regarding trade standards suffer from methodological biases since no corrections are made for differences in farm-household characteristics when comparing different categories of farmers. For instance, if smaller and poorer farmers are the ones that usually become engaged in Fair Trade, other farmers with similar intrinsic characteristics should be used as comparison group in order to get an unbiased impact measurement. The principal objective of this study is to evaluate impact by using information on a balanced sample of Fair Trade coffee producers in the Northern Nicaragua and comparing them with other smallholder coffee producers delivering under two different private labels (Rainforest Alliance and Café Practices) and with Non-FT producers sharing similar characteristics.

The field study provides a comparison between Fair Trade farmers that deliver organic and conventional coffee through the PRODECOOP coffee consortium<sup>1</sup> with three different control groups of farmers delivering to other (non)certified coffee outlets. The sample thus includes three categories of producers: (1) Fair Trade farmers delivering Organic and Conventional coffee under the FLO label, (2) Cooperative farmers delivering coffee under other private labels (Rainforest Alliance and Café Practices), representing Control Group 1, and (3) Independent farmers delivering to conventional outlets, representing Control Group 2.

The study is based on a cross-sectional impact assessment with a balanced sample of delivering to each of the market outlets. Due the absence of a base-line study, the only possibility to ascertain the impact of Fair Trade affiliation is to compare their performance with otherwise identical farmers delivering to other market outlets. We therefore selected 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.

The main purpose is to determine significant net differences between 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. To enable sound matching of Fair Trade farmers with the control households, a stratified sample was taken considering the altitude 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 neighbour's independent farmers (see Table 2). In addition, we included we included 45 farmers with Café Practices (Starbucks) label and another 45 farmers with Rainforest Alliance certification.

**Table 2: Sample Composition**

Altitude	Certification of Production Systems					Total
	Fair Trade Organic	Fair Trade Conventional	Independent (not certified)	Café Practices	Rainforest Alliance	
800 - 1000 m	25	25	25			75
1000 - 1200 m	25	25	25			75
> 1200 m	25	25	25			75
Private Labels				45	45	90
Total	75	75	75	45	45	315

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 eligible for deliveries under a particular coffee standard. We therefore performed *Propensity Score Matching* (PSM) techniques, estimating Probit functions for the likelihood of receiving particular certification regime. The key variables selected for the probit are related to inherent

<sup>1</sup> 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) process-sing 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.

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). The full probit results are presented in Table 3.

>> INSERT Table 3 <<

After matching, the number of cases that remain within the Common Support domain is determined. In all cases, the sample size remains satisfactory and most Probit regressions have a pseudo  $R^2$  beyond 25 %. The comparison with individual farmers shows the lowest fit (15%), while the comparisons with rainforest Alliance and Café Practices reach high fit (28-55%). Distributions of the Propensity Scores before/after matching are also depicted in graphs (see Annex 1) that demonstrate reliable overlaps.

For the final analysis of the real welfare effects at farm-household level, we used three different matching algorithms to guarantee robustness of results: (a) nearest neighbour (one-to-one) matching where each treatment observation (= FT) is compared to the controls that are closest in terms of propensity score; (b) three nearest neighbours, using the weighted average of the three closest neighbours in terms of propensity scores; and (c) Kernel matching, a non-parametric estimate that uses the weighted average of all cases in the control group to construct the counterfactual. Main results are discussed in the following section.

## 5. Comparison of Standards

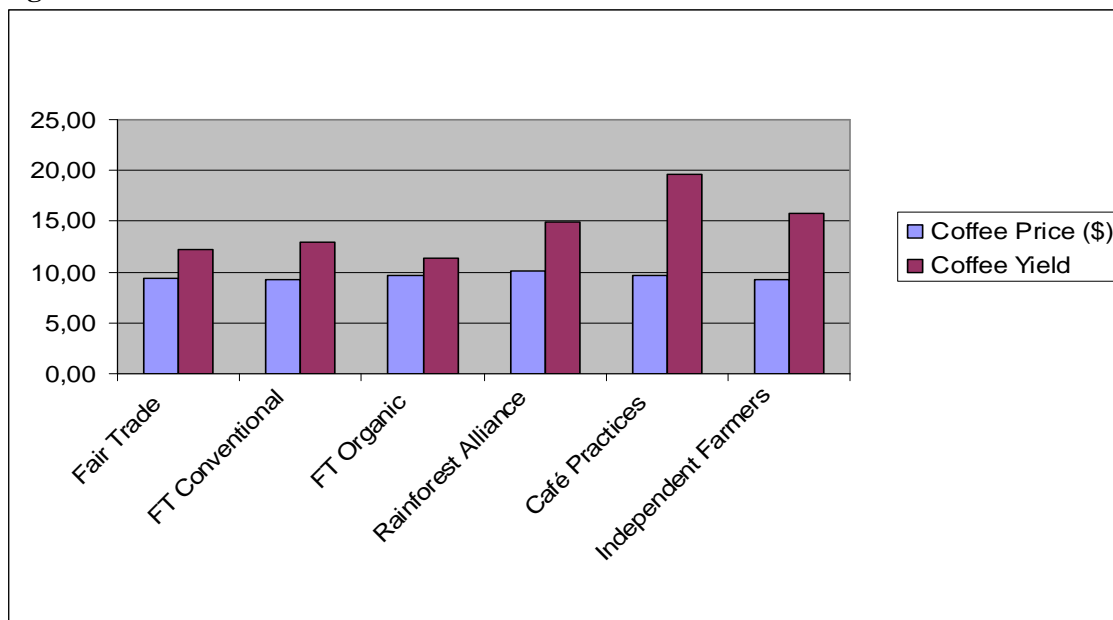
The assessment of the impact of different coffee standards is based on the analysis of significant differences in performance on selected parameters. The comparison focuses on implications of coffee standards for farm household welfare, production and livelihood strategies. Main attention is given to four categories of impact: (a) structural factors influencing the likelihood of market outlet and contract choice, (b) derived impact on production (yield, prices and quality), household income, investments and wealth (assets, investments, savings), (c) behavioural effects for risk and loyalty attitudes, cooperative affiliation and willingness to invest, and (d) indirect impact of premium use, capacity building, gender relations, bargaining power and identity construction. We thus identify the impact of standards mainly at the household level, but also include some intra-household aspects (i.e. gender relationships) and several effects forthcoming from membership of the cooperative organization.

Different standards may select specific categories of producers for certification. Coffee areas of FT farmers are on average around 3 ha., whereas farms with CP certification are slightly larger (3.9 ha.) and independent producers somewhat smaller (2.3 ha.). Consequently, yearly household income of CP farmers is about a quarter higher compared to FT farmers (total € 3010 or €750 per capita), but income of independent farmers is 35 % lower. Coffee represents between 75% (RFA) and 82% (FT) of household income. Asset ownership of FT farmers is largely in line with independent farmers, but organic FT farmers are especially poor in assets, while RFA and CP producers possess more assets. CP farmers appear with highest access and use of credit, whereas RFA producers receive less credit. Savings are generally low, but highest amongst organic FT farmers (basically for insurance purposes). Regarding household expenditures, farmers with Organic FT, RFA and CP labels spend considerably more on education, health and housing compared to conventional FT producers. FT farmers do not, however, express greater satisfaction with their income situation compared to the past.

The appraisal of the performance coffee standards in a comparative perspective offers some useful insights in the competitive position of Fair Trade vis-à-vis other private labels in the region. Fair Trade 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. On the other hand, input costs and labour costs on FT farms are higher compared to all control groups. Differences in yields can mainly be explained by more careful plant and product quality management at RFA and CP farms. Both private labels thus record 20-40% higher yields per unit of land and receive slightly higher prices (see Figure 1).

**Figure 1: Differences in Price and Yields between Coffee Standards**



The recorded differences in yield and prices indicate that FT producers mainly generate advantages in terms of market exchange, whereas adjustment of their production systems is more delayed. Lower productivity at organic FT farms is basically explained by reduced nutrient efficiency uptake of organic fertilizers. Conventional FT producers 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 more stringent with respect to quality, since their market-conform delivery price can only be raised for coffee that is used for premium processing.

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 student fellowships for children). With respect to the importance attached to different contractual delivery dimensions, FT producers devote most attention to pre-financing arrangements and cash payments. The same holds for RFA producers and to some extent to CP 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 important performance differences between Fair Trade and private labels are registered with respect to the distribution of yields, quality standards and the application of good agricultural practices (see Annex 2). Rainforest Alliance and Café Practices producers not only reach on average higher yields, but also have a larger segment of producers with high quality performance (see also: Kilian et al., 2006; Zuniga-Arias et al., 2009). In quality terms, a large segment of independent producers show beyond average performance. This is likely to be related to the frequency of application of GAP practices, where Café Practices and Rainforest

Alliance farmers show considerably higher averages. Combined, these production management strategies are translated into a higher average coffee price - and a larger segment of coffee rewarded at premium price - for producers delivering under Café Practices and Rainforest Alliance labels.

**Table 4: Significant Differences between Coffee Standards  
(% differences in performance compared to Fair Trade)**

Variable	Independent Producers	Rainforest Alliance	Cafe Practices
<b>Income &amp; Expenditures</b>			
Services Income			- 58.6
Other Agricultural Income		74.8	202.0
Health Expenditures	16.3	54.0	
<b>Wealth</b>			
Total Assets	-65.9	- 2.6	
Savings	-78.5	383.3	
Better-off Today		- 11.5	
Better-off 5 years ago	18.2		
<b>Coffee</b>			
Coffee Renovation		-58.1	
Risk Perception			
Input Costs	-67.4		- 4.3
<b>Gender</b>			
Women Empowerment Household	19.9		
Institutional Support		27.0	
Female House Ownership	-10.6		
Female Share Home Activities	17.0	36.6	
Female Coffee Participation	55.7	163.3	
Women Control	- 6.6		
Women Awareness			8.0
Gender Consciousness		17.6	26.1
<b>Organization &amp; Participation</b>			
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	-95,8	22,6	-56,3
Satisfaction Commercial Assistance	-95,4		-60,2
Side Sales/Loyalty		-84,5	
<b>Contract Dimensions</b>			
Price		4.8	
Cash Payment		3.4	
<b>Sustainability &amp; Quality</b>			
Days Before Delivering	40,7	-35,3	
Plot Losses	-33,4		
Buyers Losses	-68,7		
Harvesting rounds			15,3
Number GAP Practices	14,8	-10,0	12,8
<b>Fairness</b>			
Compensation for Weather losses	- 9,3		
Compensation for Effort losses	70,0		

Most significant differences between producers delivering under each of the standards are reported in Table 4. Percentage changes of the difference between treatment and control groups are calculated in order to indicate the magnitude of the effects. In economic terms, RFA/CP producers maintain a more diversified income composition and are less dependent solely on coffee. FT producers possess more assets, but credit access is only slightly better compared to private labels. Regarding coffee production, FT farms are more involved in coffee renovation but still apply less GAP practices and variable inputs. This explains why their efforts are not directly translated into higher prices or better yields. This is mainly due to differences in quality management at farm and factory level. Moreover, FT farmers are more frequently involved in side sales. In terms of fairness attitudes, FT farmers demonstrate considerably higher willingness to compensate for adverse weather events, but are also far more strict regarding losses caused by limited efforts

In institutional aspect, FT performs better compared to independent producers in terms of organizational support provided by the cooperative and some attitudinal effects. Identification and satisfaction with the cooperative organization is generally strong amongst FT members (compared to Individual and CP producers), but cooperative services of farmers delivering under RFA label are still more appreciated. Major differences with respect to CP are particularly related to the institutional embeddedness of the cooperative organization, whereas Rainforest Alliance farmers show higher involvement of women in production and household decision-making. There is, however, little evidence that FT households exhibit greater gender awareness or higher gender participation. This may imply that some private labels are more effective in pursuing participation and ownership perceptions.

## **6. Prospects and Outlook**

This article aims to assess the socio-economic impact of coffee labelling at farm-household and cooperative level. Therefore, the performance of FT producers has been compared with otherwise identical individual farmers and with producers that deliver coffee under two private standards (RFA, CP) Main attention is given to the impact of standards to provide suitable incentives for: (a) changes in coffee production, crop management, income and related socio-economic conditions ,(b) changes in attitudes and gender relationships (within households and cooperatives), and (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) FT households is higher than the income raised by Independent farmers and RFA producers, but CP farms still outperform all other types. Conventional FT farmers and RFA producers depend for 75-80% of their family income on coffee, while Independent farmers and CP producers are more diversified in their income sources.

FT 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 FT Cooperatives is highly appreciated, but CP farmers give even higher scores for the services they receive. Even while FT 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, but Independent producers also attach great importance to direct cash payments upon delivery and are less concerned about transaction place and quality controls. FT farmers and RFA producers strongly appreciate pre-finance credit as part of the delivery contract. FT 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 FT 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 FT are thus mainly positive in comparison with independent farming, but net returns and household revenues of producers delivering under RFA 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 FT 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 CP. The organizational performance of RFA cooperatives sometimes exceeds the scores of FT cooperatives, mainly because these farmers also maintain wider participation with other community organizations. The internal roles and organizational of FT 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 downside is that FT farmers remain fairly encapsulated in their local organization.

The contribution of FT 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 FT standards 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*

NGO support for the development of the FT coffee consortium has certainly provided an important contribution towards the strengthening of the federative structure of coffee processing and trade in Northern Nicaragua. This support is well connected to the broad package of socio-economic and agro-ecological recovery measures taken after hurricane Mitch 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 based on 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 given to dynamic improvement standards is therefore fully justified, but concrete incentives for guiding farmers' behaviour at the base level are still scarcely available.

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 FT. 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. Support for FT certification played a particularly important role for reducing transaction costs during the initial stage of market integration. Once having access to this market segment, FT was able to support preferential (inter)national loans, but their size remains limited to about half of the value of coffee production. Further options for strengthening FT 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 conclusion, it appears that FT 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 may 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 B2B standards.

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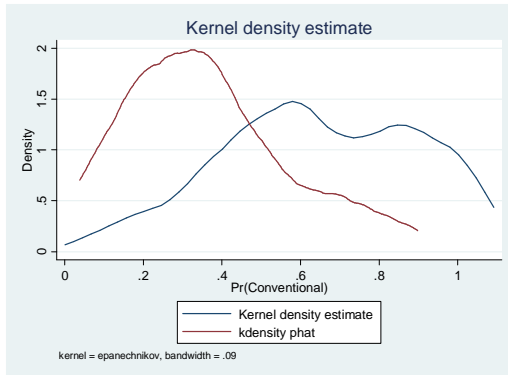
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**Table 3: Propensity Score Matching**

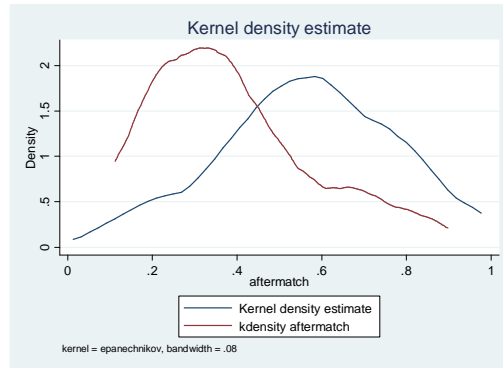
Variable	Fair Trade Conventional -Organic			Fair Trade - Independent producers			Fair Trade - Rainforest Alliance			Fair Trade - Café Practices		
	Coeff.	SE	Sig	Coeff.	SE	Sig	Coeff.	SE	Sig	Coeff.	SE	Sign.
Dependency Rate	-0.02355	0.01073	**	0.01386	0.00778	*	0.00308	0.01436		0.00530	0.01021	
Years of settlement	0.01271	0.00872		0.00394	0.00717		0.01654	0.01125		0.01414	0.00889	*
Education	-0.01054	0.01042		-0.01625	0.00707	**	-0.02747	0.01331	**	-0.02006	0.00981	**
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	
No. 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		
Matching	On support	Off-support		On support	Off-support		On support	Off-support		On support	Off-support	
Treatment	61	9		72	83		150	1		133	22	
Control	69	16		29	16		39	6		74	0	
Total	130	22		101	99		189	7		207	22	

## Annex 1: Matching Results

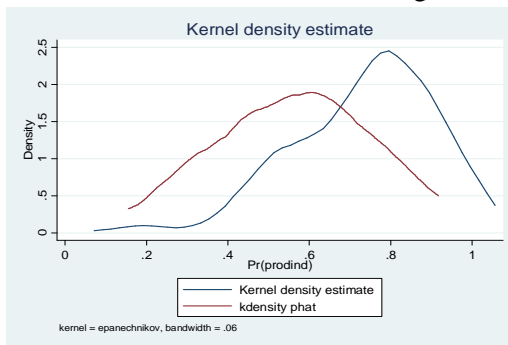
### Conventional FT before matching



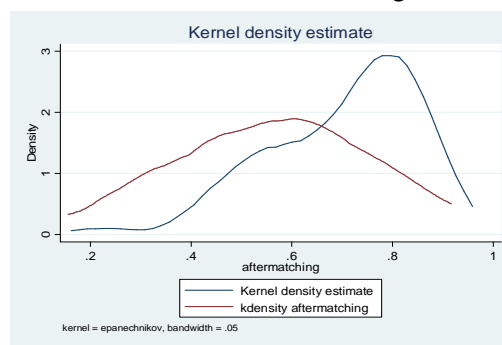
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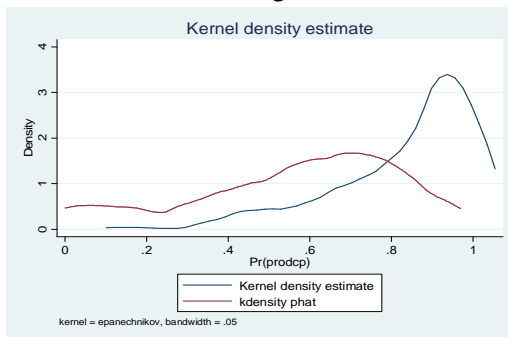
### FT-INDIVIDUAL before matching



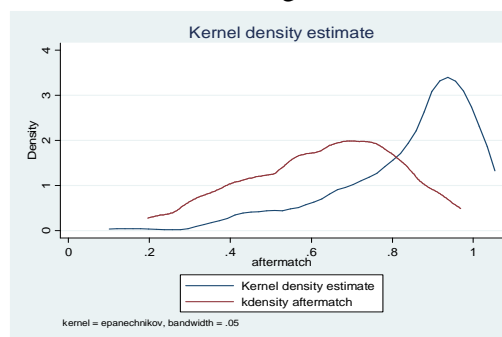
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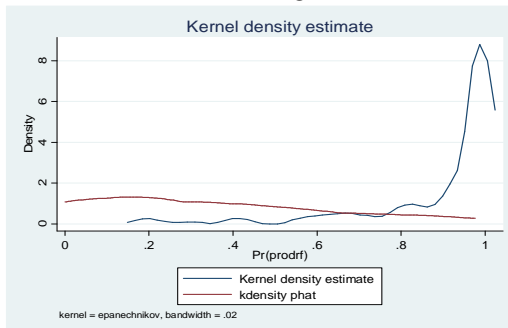
### FT-CP before matching



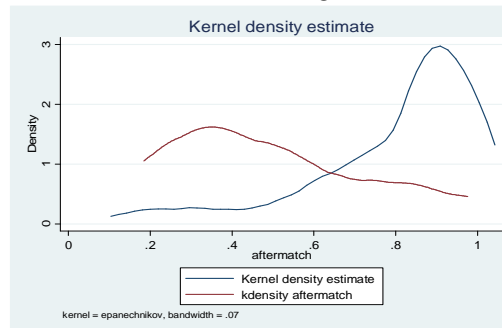
### FT-CP after matching



### FT-RFA before matching



### FT-RFA after matching



## Annex 2: Distribution Functions

