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Long-term impact of Fairtrade coffee certification on household income in India

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Abstract

Voluntary sustainability standards are increasing rapidly in global value chains with the aim of providing quality products and improving economic gains for smallholders. This is also true in the case of Fairtrade certification of small-scale coffee farmers. However, several studies on coffee certifications reveal mixed results on welfare impacts. One of the promising objectives of Fairtrade coffee is to improve the livelihoods of smallholder farmers. Against this background, I analyze the determinants for participation in Fairtrade and whether Fairtrade certification will make discernible changes in livelihoods for small-scale coffee farmers of Araku valley in India. Based on cross-sectional data of 386 households from 2011 and 2018, propensity score matching (PSM) and endogenous switching regression (ESR) methods are applied to the impact evaluation to reduce self-selection bias. The findings show that certified members show significantly 8% higher per capita income than non-certified members. The benefits being modest and certification systems gaining slower in momentum, challenges persist in the escalating capacity of cooperatives and gearing up awareness of Fairtrade in communities. Income gains have been significant among certified households indicating a pavement to sustainable livelihoods reducing income risk and improving poverty prevalent in the survey area. Higher farm gate prices and assured minimum prices of coffee have boosted the economic performance of coffee producers. The age of household head, participation in coffee training, livestock asset base, and years of cropping experience plays a crucial role for households to be certified. The results from propensity score matching (PSM) show Fairtrade coffee certification has positive impact on coffee farmers income. Similarly, results from endogenous switching regression (ESR) indicate that households that did not participate in Fairtrade would have benefited significantly from joining Fairtrade. The certified farmers directly benefit from price premiums and indirectly from communal infrastructures. Fairtrade certification should thus be promoted to reduce poverty and improve the livelihoods of smallholder coffee households in rural India.

Keywords: coffee, Fairtrade certification, cross-section, India, propensity score matching, endogenous switching regression

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Introduction

Sustainable coffee production remains a core-centered topic deliberating organic, eco-friendly, and Fairtrade coffee not only rewards premium prices but can also provide superior benefits that help producers improve their livelihoods. Coffee is one of the important high-value commodities and popular beverages in the world. As a cash crop, coffee provides a livelihood to approximately 25 million farmers and their families. Between 20% and 30% of coffee farms worldwide are operated by women. Whilst up to 70% of the labor force is provided by female household members (ICO, 2019). Fairtrade coffee certification is an instrument to empower smallholder farmers and communities to escape from poverty (Nunn, 2019; Wissel et al., 2012). In the certification, there exists a minimum price floor for products to be certified. Smallholder producers are benefitted from minimum assured prices, and premiums (Ruben and Fort, 2012). In delivering 'fair' prices to producers, the study on voluntary sustainability standards i.e., Fairtrade is interesting not only in improving income and welfare of producers but also developing their skills and capabilities to benefit their communities and environment as a whole. The main objectives of the research are to explore major determinants that lead coffee producer's decision to adopt Fairtrade certification, and to ascertain the income effect of Fairtrade certification on coffee farmers.

Data and Methodology

The household data for analysis has been collected from smallholder coffee farmers of Araku Valley of Andhra Pradesh in 2011 and 2018 through stratified random sampling. Coffee producers in Araku valley belong to a tribal group called Adhibasis who started slash and burn cultivation before starting shade-grown coffee plantations. To explore the factors for participation in Fairtrade certification, we employ probit regression models and Endogenous Switching Regression measures the intended impact of certification schemes. To overcome endogeneity and self-selection bias, Propensity Score Matching and Endogenous Switching Regression has been employed. Dealing with cross-sectional data, selection bias occurs as a common econometric application (Wooldridge, 2010). Selection bias occurs when adopters of certain programs self-select into groups concerning some unobservable factors by the researchers. The decision of a household to be Fairtrade certified is dependent on several factors; one or more factors may be correlated with the outcome variable of our interest. Hence, the decision to adopt certification is endogenous. Ordinary Least Square (OLS) estimations are unable to deal with self-selection bias that accounts for endogeneity especially in cross-sectional data and may lead to ambiguous results.

Results and Discussion

Table 1 explains the difference between explanatory variables for certified and non-certified households. The members of cooperatives i.e., certified farmers are found to have received higher number of trainings compared to non-certified in both the years. In the year 2011, there is no significant difference on monthly per capita income between two groups. However, in 2018, certified farmers have significantly higher monthly per capita income. Comparing the general household characteristics in different years of the coffee households, household size has decreased in 2018. In 2011, there are mainly male-headed households i.e., 86% which has reduced to 70% in 2018. The education status of households has been fairly low in Araku valley. In 2011 the average years of schooling were 2.6 which increased to 3.6 in 2018. This increase might be an effect of cooperative awareness, training, and campaigns of NGOs working in the valley. The number of livestock kept by household has been converted to Tropical Livestock Unit (TLU) converted using a common factor. In 2011, TLU was less than 1 whereas it increased to 1.27 in 2018. The average landholding has increased from 4.85 hectares to 5.29 in 2018. Amongst this area, almost 50% of the area has been used for coffee cultivation.

Despite the higher prices received for coffee produce, less effect has been seen on coffee productivity. The technical training on coffee has not been able to address lower coffee productivity. In 2018, coffee productivity has been reduced in Araku valley. Similar findings have been captured by Perfecto et al., (2005) that farmers receive higher prices for their certified coffee but are not able to address substantial yield losses. In the case of Nicaragua, Valkila (2009), and Ruben and Zuniga (2011) concluded that FT certification accounts for higher prices of coffee but not able to improve coffee yield, reduce poverty and wellbeing of farmers.

Table 1: Difference between explanatory variables for households

Variables	2011		t-test	2018		t-test
	Certified	Non-certified		Certified	Non-certified	
HH size	4.77(1.44)	4.41(1.44)	-1.93*	4.62(1.72)	4.14(1.59)	-1.87*
Gender	0.88(0.32)	0.85(0.35)	-0.45	0.77(0.42)	0.62(0.48)	-2.23**
Age	41.71(11.48)	40(11.50)	-0.97	46.48(13.57)	47.36(12.35)	0.70
Education	2.17(4.07)	3.4(4.59)	1.96	3.33(4.93)	4.09(4.83)	1.14
TLU	1.14(1.41)	0.65(0.77)	-2.74***	1.39(1.24)	1.01(1.31)	-2.24**
Total land	5.22(3.13)	4.30(2.20)	-1.29	5.18(2.69)	5.43(3.22)	-0.38
Total production (kg)	557.3(545.1)	338.9(436.9)	-3.65***	521.12(1832.4)	167.09(220.4)	-1.82*
Training	0.54(0.50)	0.32(0.47)	-3.17***	0.52(0.51)	0.60(0.49)	-2.83***
Cropping experience	15.05(9.33)	13.35(9.46)	-1.29	18.88(9.62)	18.15(9.86)	-0.38
Shock faced by HH	0.87(0.33)	0.84(0.36)	-0.45	0.89(0.30)	0.90(0.28)	0.22
Monthly per capita Income (PPP\$)	137.1(112.4)	100.3(116.4)	-0.62	249.6(374.2)	146.9(207.8)	-1.68*
N	110	78		115	88	

Figures in parenthesis explain the standard deviation

*p<0.1, **p<0.05, ***p<0.01

The positive coefficient of age, participation in training, tropical livestock unit, and cropping experience are significant at a 5% level of significance meaning households with these or more of these are likely to participate in Fairtrade. Households from Ananthagiri, Dumbbriguda, and Hukumpeta Mandals are likely to participate in certification with a 5% level of significance. The Wald Chi-square test statistics indicate that the explanatory variables are statistically significant ($p < 0.01$). Older and experienced farmers are likely to be motivated for certification due to reasons of good ties with extension service providers and know-how of production techniques over time. Coffee producers with access to extension training are likely to participate in Fairtrade (Jena and Grote, 2012, Bravo – Monroy et al., 2016). Certifications have positive impacts on the income of farmers through capacity building i.e., training in coffee which subsequently includes better agricultural practices and quality improvements (Utting, 2009; Ruben, 2017). In line with results obtained by Valkila (2009), yield levels of organic FT farmers are higher than the counterparts. The farm size variable is positive and significant which entails that larger farm size provides opportunities for household members and avenues for planting a wide range of crops (Jena et al, 2012). The number of coffee plants per plot and farm size are determinants of certification (Bravo – Monroy et al., 2016). The dummy variable off-farm income is not significant meaning it doesn't affect Fairtrade participation of the households. However, different literature assumes off-farm income is a livelihood diversification strategy and pushed farmer's incomes.

Table 2: First stage Probit regression of Propensity Score Matching

Variables	Coefficient	Marginal effect
HH size	0.046(0.052)	0.011(0.013)
Education of HH head	-2.30(72.52)	-0.59(18.71)
Gender	0.22(0.21)	0.057(0.054)
Age	0.069(0.038)*	0.017(0.009)
Age squared	-0.0007(0.0004)*	-0.0001(0.0001)

Education squared	-0.009(0.005)*	-0.002(0.001)
Tropical Livestock Unit	0.213(0.074)**	0.055(0.018)
Total Land	0.020(0.033)	0.005(0.008)
Land under coffee	0.020(0.083)	0.005(0.021)
Cropping experience	0.017(0.009)*	0.004(0.002)
Access to NFI	0.242(0.23)	0.060(0.059)
Training	0.477(0.176)**	0.123(0.044)
Shock faced by HH	0.259(0.234)	0.066(0.060)
Year dummy (1= 2018)	0.088(0.180)	0.022(0.046)
Educ*Member	2.50(72.52)	0.645(18.71)
Ananthagiri	0.82(0.33)**	0.21(0.08)
Araku	-0.001(0.197)	-0.000(0.052)
Dumbriguda	0.50(0.205)**	0.130(0.0051)
Madagula	-2.50(0.433)***	-0.54(0.08)
Hukumpeta	0.57(0.25)**	0.15(0.06)
Paderu	-1.34(0.21)***	-0.31(0.041)
N	364	
Pseudo R ²	0.33	
LR Chi ² (15)	164.95	

Conclusion and outlook

The overarching objective of the study was to explore determinants that drive households to venture into Fairtrade certification. Age of the household head, experience in coffee farming, livestock asset base, and participation in training are significant factors for certification status. The direct benefits from Fairtrade are higher farmgate prices with greater market access and effective participation in the value chain. The indirect benefits of certification from the study area are capacity-building activities like training, equipment support, and communal level infrastructure built in the valley. Access to credit, coffee production techniques, and cooperative bookkeeping are also some notable progresses among coffee producers. Since, Araku valley is characterized by extreme poverty, future research papers should include food security and nutrition aspects, facets of premium to portray actual impacts of certification standards on household welfare.

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