Does Fair Trade Deliver on Its Core Value Proposition? Effects on Income, Educational Attainment, and Health in Three Countries

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Alternative trade organizations (ATOs) based on philosophies of social justice and/or environmental well-being are establishing new channels of trade and marketing. Partisans promote ATOs as systems to transfer benefits from consumers in the wealthy northern hemisphere to producers in the poor southern hemisphere. The central public policy question is whether the well-being of poor agricultural producers in the southern hemisphere is actually being improved by fair-trade practices, or are consumers who buy products on this premise deceived? The research reported here partially answers the question whether participation in a fair-trade coffee marketing channel delivers benefits to small-scale producers in Latin America. The authors employ a survey methodology to compare TransFair USA (TF) cooperative participants and nonparticipating farmers in three countries on socioeconomic indicators of well-being. According to the analysis, the economic effects of fair-trade participation are unassailable; the effects on educational and health outcomes are uneven. However, TF cooperative participation positively affects educational attainment and the likelihood that a child is currently studying. The authors find positive health-related consequences of TF cooperative participation.

Keywords: fair trade, ethical marketing, coffee, economic impact, educational impact, health impact, Latin America

Alternative trade organizations (ATOs) based on philosophies of social justice and/or environmental well-being are carving out spaces alongside traditional agricultural export sectors by establishing new channels of trade and marketing. Partisans of ATOs promote these as systems to transfer value from consumers in the wealthy northern hemisphere to commodity and craft producers in the poor southern hemisphere (Rice 2001; Witkowski 2005). At the same time, market trends confirm that ethical and social responsibility is becoming a major competitive factor in consumer marketing (Iwanow, McEachern, and Jeffrey 2005; Wells 2007; Zweibach 2007). Fairly traded products constitute a substantial and growing share of these trends (*Datamonitor* 2005; *The Economist* 2006; Grolleau and BenAbid 2001; The National Coffee Association of USA 2005). By 2001, global fair-trade sales had grown to reach an estimated US$550 million, with fairly traded goods, mainly food, being sold in more than 43,000 supermarket locations across Europe (European Fair Trade Association 2001). The Fairtrade Foundation estimated that its own total U.K. retail sales were worth £92 million in 2003, up by 100% in the two years since 2001 (Wall 2005).

The value proposition of fairly traded products rests on the idea that by buying such products, the consumer can both satisfy his or her demand for benefits and, at the same time, improve the well-being of poor producers elsewhere in the world. In other words, fairly traded products add value that consists of satisfying the consumer's altruistic or ethical demands. As a public policy matter, we evaluate this value proposition in the case of fairly traded coffee. Specifically, we ask the question, Are consumers receiving the value they anticipate, which is beyond their ability to evaluate individually, or are they being deceived?

The research we report provides a partial answer to the question whether participation in a prominent U.S. ATO—TransFair USA [hereinafter, TF)—in the fair-trade coffee marketing channel delivers income, education, and health benefits to small-scale coffee producers in developing countries. To address our research question, we collected quantitative measures in three countries with substantial fair-trade

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marketing. We employed a survey methodology to compare TF cooperative participants and nonparticipating farmers on several socioeconomic indicators of well-being.

Context: Fairly Traded Coffee

Coffee is a substantial part of the fair-trade product portfolio. According to TransFair Canada, estimated retail sales for its coffee in Canada in 2003 rose to $19.3 million, from $12.7 million in 2002. Worldwide, fairly traded coffee experienced a 14% growth in 2003 over the previous year (Harris 2004). Fair-trade coffee in Europe ranges from capturing less than 1% of the national coffee market in France to 5% in Switzerland. Organic coffee accounts for approximately 3% of the specialty coffee imports in the United States (Rice 2001). Overall, the sustainable coffee market, which includes ATO-produced organic, fair-trade, bird-friendly, and directly marketed "relationship coffees" without third-party certification of environmental or social benefits, represents .48% of the total coffee market and 2.8% of the specialty market in North America. Nevertheless, in 2003, more than 18 million pounds of fair-trade-certified coffee were roasted in the United States, a 91% growth rate from 2002 (Lyon 2006). By the end of 2006, according to TF, fair-trade coffee farmers earned approximately $91 million in social premiums from the United States, in addition to earning the higher fair-trade price for their coffee. As of June 1, 2007, the social premium price component has doubled, providing substantially more revenue for farmers to invest in their communities (http://www.transfairusa.org/content/certification/coffee_program.php). In the United States, the dramatic expansion of organic food retailing is among the factors fueling fair-trade sales growth (Wells 2007).

Within the fair-trade movement, Latin Americans produce the bulk of the coffee—especially certified organic coffee. In recent years, production and marketing cooperatives in Latin America have carved out a small but potentially significant space within the coffee sector, a realm traditionally dominated by powerful interests (often processors, creditors, and/or exporters) within the producing countries (Rice 2001).

The larger fair-trade movement, of which coffee is a part, has its origins in Europe, where Catholic youth founded a development charity in the Netherlands in 1959. Conferences by the United Nations Conference on Trade and Development during the 1960s produced the noncharity concept of "trade not aid" on the part of developing countries. The idea quickly spread throughout Western Europe. In 1986, the fair-trade coffee company Equal Exchange was founded in Canton, Mass. In 1988, the Netherlands became the first country to launch a fair-trade consumer label, Max Havelaar, which continues to figure prominently among fairly traded products. The label was created through a partnership between the Mexican coffee cooperative Union of Indigenous Communities of the Isthmus Region and the Dutch development organization Solidaridad (Lyon 2006). The ideals and standards of fair trade have been incorporated into certification programs, all of which now have joined into an umbrella group known as the Fairtrade Labelling Organizations International. As with other commodities that have moved within the fair-trade community (e.g., cocoa, honey, sugar), the social justice concerns at the heart of these organizations mean that the initial focus of coffee specialist ATOs was on growers receiving a fair price for the coffee they produce (Rice 2001).

As part of a process of increasing mainstream marketing of fair trade, the message of fair trade is shifting from participation in an international program of trade reform to "shopping for a better world" (Low and Davenport 2005, p. 495), or "ethical globalization" (Witkowski 2005) "motivated by the political choices and conscious reflexivity of Northern consumers" (Lyon 2006, p. 452). Thus, creating a better, more equitable world, especially for agricultural producers in the southern hemisphere, has become central to the value proposition of many ATOs, including TF (see www.transfairusa.org). This trend has also generated criticisms that ATOs do little to fundamentally alter power relations between producers and consumers (Lyon 2006) and that encouraging more consumption does nothing to reduce consumption-related pathologies considered by some to afflict the planet, its ecosystems, and consumers in general (Johnston 2002). Consequently, in recent discussions of research priorities, several authors have argued for prioritizing research to assess the social impact of fair-trade practices on Southern hemisphere producers, which are the raison d'être of ATOs; this research should lead to a greater understanding of the distribution of benefits and inform evaluation of the effectiveness of ATOs (Moore 2004; Witkowski 2005).

What practices define a fair-trade ATO? Fair trade normally involves all or a combination of the following practices:

- A fair-trade organization works within a marketing channel that does not use profit-oriented market intermediaries but rather links producers organized in cooperatives directly with wholesalers through a single market intermediary, such as TF, which is a subsidiary of TransFair International. TransFair ensures product quality and logistics functions. In this way, a far higher share of the eventual retail price of the producer's goods is supposed to be returned to the producer.
- Historically, qualifying ATOs, such as TF, register with the International Coffee Register in the Netherlands and are approved to establish commercial agreements with licensed importers. The International Coffee Register maintains a database on fair-trade coffee organizations and coordinates annual inspections of the groups (Rice 2001).
- Monetary costs of certification and inspection in the fair-trade sector are borne in part by the producer cooperatives and, in part, by the importers and licensed roasters/distributors. Importers, such as TF, pay no license fee but are expected to provide credit to producer groups (Rice 2001).
- Fair-trade organizations guarantee a price floor (currently $1.30 per pound for coffee), which includes a social premium designed to protect producers from dramatic downward fluctuations in world market prices while passing on a portion of any windfalls to producer cooperative organizations.
- Participating importers, such as TF, must buy their coffee directly from certified small coffee producers, they must offer long-term contracts that extend at least beyond one annual harvest, they must pay a price premium of $1.30 per pound and an additional $.20 per pound premium for dual-certified organic/fair-trade coffee, and they must offer producer organi-

zations prefinancing covering at least 60% of the annual contract (Lyon 2006; see also http://www.transfairusa.org/content/certification/coffee_program.php).

- An important aspect of ATOs is their distribution of technical, price, and market information to producers through cooperative structures, information traditionally hoarded by market intermediaries to their advantage.
- Cooperatives are composed of local producers that cooperate on production, product quality marketing, and social welfare initiatives, such as women's programs, health, and education. A share of the higher price paid to TF cooperatives for their coffee is reserved for investment in the latter initiatives.
- A not-for-profit agency, such as TF, provides support to cooperatives for developing educational programs on production techniques; marketing; and family education, health, and welfare.
- Retail marketing of the product as "fairly traded" is an attribute that may increase the value perception among ethically motivated end consumers.

In summary, the evolving intent of fair-trade ATOs is to lift the living conditions and welfare of the local producers, who have traditionally found themselves in a vulnerable position (Bacon 2005)—price takers relative to global commodity markets and in a weak bargaining position relative to traditional local market intermediaries—and, as a result, have long experienced stagnant or declining incomes and family welfare. As can be inferred from the foregoing summary and from TF promotional material (e.g., http://www.transfairusa.org/content/Downloads/devo-impact-brochure.pdf), fair-trade ATOs operate on the assumption that if given the chance, commodity producers in the southern hemisphere would prefer to invest in more sustainable production, send their children to Western-oriented schools, improve their health status and health care in terms of northern hemisphere health standards promoted by the United Nations and other aid organizations, and better their overall quality of life (see also Bacon 2005).

As we stated previously, the aim of the research reported here is to respond to calls for better evaluations of fair-trade marketing channels and, in so doing, provide a partial answer to the question whether participation in the fair-trade coffee marketing channel delivers economic and social welfare benefits to small-scale producers in developing countries, as has been claimed. The answer to this research question is critical for the continued credibility of the value proposition that differentiates fair-trade products in the consumer marketplace of developed countries in terms of quality and social justice attributes (Lyon 2006). The answer is also important to fair-trade organizations, such as TF, and their supporters that want to evaluate the ethicality and effectiveness of their interventions in these market channels. The credibility of fair trade is also an important component of transformative consumer discourses that seek alternative models of consumer conduct and economic development in an era of globalization, ecological, and political insecurity (Lyon 2006; Nicholls 2002; Nicholls and Opal 2005). However, the presumption guiding our research (we hesitate to use the word "hypothesis") is that this intervention, like so many other interventions in the "development" of Latin America and other parts of the globe marginalized by the current organization of the world economy, does not produce detectable positive results (Easterly 2006, 2007; Sanchez 2002).

Method

TransFair USA, a major fair-trade coffee broker, was awarded a grant by the Tinker Foundation in 2003 to study the impact of fair-trade practices on coffee producers with small productive units in Latin America. The Agribusiness program at the University of Nebraska initiated the study under agreement with TF. The study was implemented in 2004–2005. Our basic research method was to select a random sample of TF coffee farmers in each country and compare them on economic, educational, and health measures with a random sample of comparable non-TF farmers in that country, which served as a control group. Because the locations in which TF cooperatives exist are selected by fair-trade organizations, such as TF, and because farmer cooperatives in those locations self-select in terms of their participation, it is not possible to impose the conditions of random assignment to treatment conditions and random selection of participants as in a laboratory experiment. Rather, the study is a controlled comparison, and care must be taken to rule out major competing explanations for differences between TF and non-TF farmers.

To address the research question identified previously, we chose a survey methodology designed to measure a combination of socioeconomic indicators. Dictating this choice was our desire to develop statistically reliable results to supplement those produced through case studies and journalistic reports that predominate in the existing literature and generally report favorable outcomes (Auroi 2003; MacDonald 2006; Nicholls and Opal 2005; Parrish, Luzadis, and Bentley 2005; Raynolds, Murray, and Taylor 2004; Ronchi 2002). In addition, we wanted to measure indicators that are familiar to philanthropic and donor organizations that are a source of grants to ATOs, such as TF, rather than indicators that are emerging in the literature on corporate social responsibility, such as triple-bottom-line accounting, balanced scorecard, or return on social investments.

Sample

We selected three countries with substantial fair-trade marketing through TF for the study: Nicaragua, Peru, and Guatemala. Along with Ecuador and Mexico, these countries devote the largest amounts of land to the production of alternative coffees in Latin America. Along with Mexico and Colombia, the largest numbers of coffee producers involved in fair-trade initiatives live in these three countries. We excluded Mexico and Colombia from analysis because of ongoing civil strife in the coffee-producing region that would have likely compromised research efforts, and we excluded Ecuador because it is not a major exporter through TF channels. Thus, our study included the most important fair-trade coffee exporting countries in Latin America in which conditions for proper survey administration could be guaranteed.

The population under study includes coffee producers and their families whose productive units are small and, thus, fair-trade certifiable (1–3 hectares of coffee produc-

tion per adult over the age of 18 living in the household) and who are currently producing coffee in traditional coffee areas under homogeneous environmental and social conditions. The two types of farmers surveyed include fair-trade-certified farmers, who meet the additional criteria of at least three years of participation in TF cooperatives and affiliation with cooperatives with consistent sales of at least 30% of their production to TF cooperative buyers, and non-TF-independent farmers, who may or may not be affiliated with other cooperative entities.

To the extent possible, we were careful to establish the sampling frame and sample selection procedures for this work, given that TF and non-TF farmers might vary in several ways in addition to TF participation that could affect their economic and personal outcomes. For example, TF farmers in a country might have different average size of holdings or might work under different climate, geological, infrastructure, or distance-to-market conditions than non-TF farmers. Furthermore, the number of members in a TF cooperative might have an impact on the effect of TF participation, such that larger cooperatives are expected to offer more complete services and aid to their members. To counter several potential threats to the validity of TF versus non-TF comparisons, we used a stratified cluster sampling plan.

First, the TF cooperatives in a country were stratified into three groups—small, medium, and large—according to the number of members of the cooperative. Each stratum comprised an approximately equal number of cooperatives. Then, we selected TF cooperatives (the "clusters") by simple random sampling from the strata in which they were classified. The number of TF farmers selected from each stratum was proportionate to the total number of TF farmers in that stratum. We selected a sufficient number of cooperatives (but at least two) at random from a stratum to account for the number of farmers that needed to be sampled from that stratum. This kept the number of cooperatives low, which in turn kept the costs of the survey field work within reasonable bounds.

In the second stage of the cluster sampling, we selected coffee producers by simple random sampling from within each cooperative, using as the sampling frame a recent list of all producers in each cooperative (cooperative census data). Because the number of TF farmers selected from each stratum was proportional to the total number of farmers in the stratum, there were fewer farmers from small cooperatives and more from larger cooperatives. This plan ensured that there was minimum bias in the sample toward TF farmers from larger or smaller cooperatives; a TF farmer from a large cooperative had almost the same probability of being selected as one from a smaller cooperative.

We could not make the selection of non-TF farmers (the control group) from the same communities in which the TF farmers were selected because being a member of a TF cooperative is a matter of self-selection in each community in which TF cooperatives exist. Farmers from the same community who chose not to participate in the TF system may have dramatic differences in their holdings, practices, demographics, or outlooks from the farmers in that same community who elected to participate. Thus, to select the non-TF control farmers, we needed to choose an adjacent community in which no TF cooperative operated but with comparable climate, geographical, and growing conditions, such as altitude, and similar infrastructure and distances to market. Ideally, all selected non-TF farmers had holdings of 1–3 hectares per adult household member, similar to the selected TF farmers. We used these procedures and criteria to reduce systematic sources of error in our results.

Local conditions affected sampling tactics. Because of the unavailability of detailed data on local farmers in Nicaragua, we employed a randomized grid sampling technique for choosing non-TF farmers in communities close to the TF cooperative community. In Guatemala, in which data on local farmers were also unavailable, we employed a random sampling of farmers from a list based on oral information from neighbors in communities adjacent to the randomly selected TF communities. In Peru, because there are detailed census data, we were able to select individuals from the paired non-TF communities at random, using a random numbering procedure. In total, we questioned more than 1200 heads of households in the three countries, two-thirds of whom were TF participants (see Table 1).

There are some possible ways sample design biases could theoretically account for differences in the outcomes of TF and non-TF farmers. For example, if the TF farmers on average have more land, they are likely to sell more coffee, make higher incomes, and have better educational and health outcomes overall. If the TF farmers have larger families, they may have better outcomes due to having more available workers or worse outcomes due to having more mouths to feed. If the heads of households in TF farms are older, perhaps they have more status in their communities and can achieve better outcomes, or if they are younger, they may have more energy to build up their farms. Thus, we believed that it was necessary to measure these potential confounding effects.

As Tables 2, 3, and 4 show, TF and non-TF farmers were usually comparable in terms of their household sizes, ages, and holding sizes, though there were some statistically significant differences despite the careful sampling methods. Given the large sample sizes in this study and the resulting

Table 1. Sample Size in Each Country

	Fair Trade					
Country	**Small Co-ops**	**Medium Co-ops**	**Large Co-ops**	**TF Total**	**Nonmembers**	**Total**
Peru	30	117	130	277	125	402
Nicaragua	57	70	212	339	123	462
Guatemala	64	85	116	265	140	405
Total	151	272	458	881	388	1269

power of the F-tests, it would be unlikely to find no significant differences at all in these characteristics between the randomly chosen TF and the non-TF farmers. However, even when statistically significant, the differences are small. Note that eta-square results in the final columns of these tables indicate that members and nonmembers are comparable because the degree of association is low. Thus, we can argue that differences between TF and non-TF farmers on our dependent measures are probably not particularly due to these kinds of demographic and size-of-holding differences. However, in making comparisons between TF and non-TF farmers, we nonetheless control for these factors through analysis of variance (ANOVA) and regression methods. Although we cannot claim that our sample selection matches the ideals outlined in sampling textbooks, we believe that the most important sources of sample design error have been minimized or controlled.

Questionnaire Administration

We designed the questionnaire in Spanish, and except for a few questions that were modified to accommodate country specificities (i.e., local currency, units of land area, schooling characteristics, unique illnesses, and sustainable agricultural practices), we implemented the same set of questions in the three locations. This consistency also reflects the notion that TF emphasizes the same kinds of production, product quality, education, and social welfare initiatives in the cooperatives in which it intervenes. The questionnaire consisted of four sections. Section 1 focused on the production and marketing processes. Section 2 focused on the local living conditions and a self-assessment of producers' well-being. Section 3 focused on household members' education. Section 4 inquired about the health condition of family members and their access to modern health care. In this article, our analysis concentrates on the results of Sections 1, 3, and 4.

A field director, who supervised data collection in all three countries and thus helped guarantee quality across countries, along with local supervisors conducted workshops for data collectors, which were held at central locations for regions targeted for study. Interviewers participated in a one-day workshop, with additional training of several hours for those who would go to non-TF communities. Training groups were made up of 5–15 interviewers, mostly young men, some of whom had experience in coffee-related survey work. Interviewers either knew the co-op members well and were members of co-op families or were knowledgeable about the communities and were identified with the help of local community leaders or teachers. Those working with comparative communities were selected on the basis of their maturity, knowledge of the area, and capacity to work under conditions of duress. In Nicaragua, for example, all interviewers in workshops were allowed to conduct field interviews, but inexperienced interviewers were assigned fewer interviews and returned to field headquarters for evaluation on a given date. They were assigned interview areas closest to their home communities.

In general, interviewers were given numbered questionnaires and support materials and were issued a list of names of people to be interviewed; the list was to be assigned by the team. In Nicaragua, for example, groups of three to four interviewers formed a team and usually worked together with one cooperative. The team leader was responsible for team coordination and collecting completed interviews as well as contacting fieldwork directors when necessary.

Interviewers were instructed about the need to record farmer responses objectively and, if necessary, to write additional comments on the empty back pages of the interview form. The need for complete interviews to receive pay was emphasized, as well as other contingencies of fieldwork. A calendar was set for execution of fieldwork and collection review of interviews. Full payment to interviewers was made contingent on all successfully completed interviews being handed to field directors.

Completed interviews were collected at workshop sites on previously agreed-on days with the interviewer teams. Interviews were evaluated individually with each interviewer, and necessary corrections were made. Corrections made were based on discussion with interviewer and team leader and field director. Independent interviewers conducted random spot reinterviews to ensure that interviews were indeed conducted with those who were selected for inclusion in the sample. These procedures resulted in few incomplete or spoiled questionnaires being returned. Completed questionnaires were coded and converted into computer files in each study country, and both questionnaires and computer files were sent to the United States for analysis.

Table 2. Average Number of Dependents per Household: ANOVA Test of Significant Differences

	M		ANOVA		
Country	TF Members	Non-members	F-Test	*p*-Value	η^2
Peru	4.20	4.14	.08	.7808	.0001
Nicaragua	2.78	3.15	8.74	.0033	.0191
Guatemala	5.44	5.20	1.12	.2898	.0028

Table 3. Mean Age of the Household Head: ANOVA Test of Significant Differences

	M		ANOVA		
Country	TF Members	Non-members	F-Test	*p*-Value	η^2
Peru	55.73	51.94	7.2170	.0075	.0178
Nicaragua	44.29	43.78	.1215	.7276	.0003
Guatemala	45.19	43.51	1.4931	.2225	.0037

Table 4. Mean Coffee Total Area (in Hectares): ANOVA Test of Significant Differences

	M		ANOVA		
Country	TF Members	Non-members	F-Test	*p*-Value	η^2
Peru	3.36	2.43	31.5913	<.0001	.0734
Nicaragua	4.56	3.51	9.9459	.0017	.0212
Guatemala	2.26	2.06	3.6531	.0567	.0090

Analytic Procedure

Dependent Variables

We attempted to determine the effects of producers' participation in TF's fair-trade coffee-buying program on economic outcomes, educational outcomes, and patterns of illness and treatment compared with those of non-TF producers. Furthermore, we explored differences between short- and long-term TF participants. We selected as dependent variables two commonly employed indicators of educational outcome: maximum grade obtained in terms of years of formal education and the probability of being currently in school. For patterns of illness, we measured the frequencies of each of six locally common diseases per person in each family, described as they are generally understood in those countries: malaria, dengue, anemia, colds and fever, respiratory infections, and diarrhea. We also measured the frequency with which professional medical care was obtained in treating each type of disease. Finally, for global analysis, we constructed indexes of health and treatment for each family from the frequencies of diseases and medical care.

Analyses

To compare TF and non-TF farmers on the various dependent measures, we conducted ANOVAs (between subjects) with the covariates of coffee total area, age of head of household, and number of dependents in the household. Contrary to a priori expectations, our analyses revealed no consistent patterns of difference based on co-op or community size, so we do not report these results.

For educational outcomes, we ran two separate sets of analyses, one that included the entire population of household members and one that included only dependents ages 6–13 years. We report the latter analyses. Our rationale for conducting the latter analysis is that children younger than age 6, who make up a substantial share of the population, are not expected to attend school; thus, their presence in the sample would dilute the effects of TF on educational outcomes. Moreover, people older than age 13 will encompass many people too old to have their primary educational experiences affected by participation in TF's initiative. In addition, expecting TF participation to dramatically affect tertiary or even secondary education attainment in rural areas of these poor countries (gross national income per capita: Guatemala = $2,400, Nicaragua = $910, and Peru = $2,610; The World Bank 2005) may be too strong a test of TF's impact. Indeed, in 1997–1999, net secondary school enrollment in Nicaragua was only 53% among girls and 49% among boys; in Guatemala, it was only 32% among girls and 38% among boys; and in Peru, it was 61% among girls and 62% among boys (http://globalis.gvu.unu.edu; http://www.earthtrends.org). We report the analyses on children ages 6–13 because the results of these analyses are uniformly more robust (i.e., they explain more variance than the analyses run on the entire sample from each country). In these analyses, we replaced the age of the head of household with the age of the child as a covariate.

Furthermore, we employed two approaches in the analysis of the effects of producers' participation on educational outcomes. To assess maximum grade obtained in terms of years of formal education, we ran a series of standard regressions, which we describe in greater detail subsequently. To assess the probability of being currently in school, we ran binomial logistic regressions because we measured the dependent measure on a binary scale (in school versus not in school). To try to account for the indirect effect of participation in the fair-trade marketing scheme on educational outcomes, we also analyzed paths of association among interrelated variables. In these analyses, we assess grade obtained and likelihood of a child currently attending school, but we tried to determine whether the effects of higher income earned through participation in the TF marketing scheme could be detected on these dependent measures.

Results

Economic Outcomes

As Table 5, Panels A–C, shows, after we control for holding size, age of head of household, and number of household members, TF farmers outproduce non-TF farmers. Holding size is a significant predictor of productivity, but the results show that TF farmers outproduce non-TF farmers even when we include this effect; thus, TF farmers are more efficient users of their land and more productive. Furthermore, as Table 6, Panels A–C, shows, TF farmers obtain higher prices than non-TF farmers. These results are gratifying because the fair-trade concept is designed to accomplish exactly these outcomes, but this success comes against the backdrop of obdurate rural poverty in these countries. However, our study provides independent confirmation that TF is delivering on this aspect of its core value proposition. Participating farmers garner an increased share of coffee prices relative to nonparticipating farmers.

Educational Attainment

Regression Analysis

Pooling data across countries, we ran an ordinary linear regression of the level of education (years of formal education, maximum grade achieved) against the following:

1. Respondent (0 = female, and 1 = male),
2. Number of dependents (numeric),
3. Total income from coffee (numeric in U.S. dollars),
4. Live on the farmstead (0 = no, and 1 = yes),
5. TF membership (0 = nonmember, and 1 = member),
6. Long-term TF membership (0 = less than five years of participation, and 1 = at least six years of participation),[1]
7. Sex of the person (0 = female, and 1 = male),
8. Age of the child (numeric),
9. Dummy Nicaragua (0 = Guatemala or Peru, and 1 = Nicaragua), and
10. Dummy Guatemala (0 = Peru or Nicaragua, and 1 = Guatemala).

We included sex of the respondent as an independent variable because we know that male and female roles in

[1]Long-term TF members were observed only in Guatemala.

child rearing vary in these countries, and thus respondents may report different levels of schooling for their children. We wanted to factor out bias due to these differences in household roles. We included income as a proxy for TF participation because we found a consistent pattern in which higher incomes from coffee marketing accrued to TF members (see Table 6, Panels A–C). We also measured the effect of TF membership directly because we reasoned that membership is likely to entail exposure to interventions whose goal is to improve agricultural practice, education, and health care. We also included years of membership in the fair-trade cooperative system as an independent measure because we reasoned that household investments in education or health care might lag their experience of higher income from coffee sales. In other words, other expenditure or investment priorities might intervene before households would risk investing in education. We included sex as an independent variable because disparities in educational attainment are regularly reported in these countries (see previous discussion), and TF places a priority on equality of treatment for female members of its cooperatives. We included number of dependents as an independent variable for several reasons. School fees increase with numbers of school-age children and thus may constrain school attendance, and sometimes peasant households limit the numbers of children they are willing to send to formal education programs to meet labor requirements in the household. We included living on the farmstead as an independent variable, reasoning that residential location might foster either heightened school attendance if proximate to local schools or absenteeism if farmsteads are scattered over the production area.

The results of the regression analysis appear in Table 7. The model is statistically significant and explains 63.3% of the variability in the level of education of children ages 6–13 ($F = 225.92$, d.f. = 11, $p < .0001$). As the highest condition index (16.54) indicates, the regression is not affected by multicollinearity. The estimated coefficients for sex of the person, sex of the respondent, living on the farmstead, and TF membership are not statistically different from zero at the 5% confidence level, suggesting that there are no direct TF effects on educational attainment. Only the age of the child and the level of household income from coffee are positively correlated with the number of schooling years of children ages 6–13. In other words, there is an indirect effect of TF membership through higher coffee income on educational attainment. As we expected, the number of dependents has a negative effect on the educational achievement of the members of the family. The negative and statistically significant country dummy variables indicate that Peru has a higher average level of educational attainment among children ages 6–13 than Nicaragua and Guatemala, a confirmation of standard indicators (http://earthtrends.wri.org/pdf_library/country_profiles/pop_cou_604.pdf). How-

Table 5. APO (Arabe Pergamino Oreado) Traded Volume: Regression with Dependent Variable: Coffee Volume Sold by Family

A: Guatemala				
Independent Variable	**Estimate**	**SE**	**t-Test**	***p*-Value**
Intercept	.727955738	.46313849	1.57	.1168
TF membership**	.376491611	.16157863	2.33	.0203
Age of the household head	–.008157191	.00603154	–1.35	.1770
Coffee total area***	1.651723301	.28586705	5.78	<.0001
Number of dependents	.052954796	.03642561	1.45	.1468
F-test (*p*-value)	12.23 (<.0001)			
R^2	.114297			
B: Peru				
Independent Variable	**Estimate**	**SE**	**t-Test**	***p*-Value**
Intercept	.9910849111	.28023455	3.54	.0005
TF membership***	.4935280594	.11271778	4.38	<.0001
Age of the household head*	–.0074467304	.00394553	–1.89	.0599
Coffee total area***	.8789442027	.07761676	11.32	<.0001
Number of dependents*	.0397897384	.02389013	1.67	.0966
F-test (*p*-value)	49.89 (<.0001)			
R^2	.338480			
C: Nicaragua				
Independent Variable	**Estimate**	**SE**	**t-Test**	***p*-Value**
Intercept	.079063638	.49990307	.16	.8744
TF membership***	.739124046	.24288934	3.04	.0025
Age of the household head	–.002343556	.00804379	–.29	.7710
Coffee total area***	1.229703868	.06905616	17.81	<.0001
Number of dependents	.151958406	.09277638	1.64	.1023
F-test (*p*-value)	92.02 (<.0001)			
R^2	.506949			

*$p < .10$.
**$p < .05$.
***$p < .01$.

Table 6. Regression with Dependent Variable: Price Obtained

A: Guatemala				
Independent Variable	**Estimate**	**SE**	**t-Test**	***p*-Value**
Intercept	6.318387628	.39226457	16.11	<.0001
TF membership**	1.149847202	.13950664	8.24	<.0001
Age of the household head	.002711125	.00536272	.51	.6135
Coffee total area	–.197793988	.24262671	–.82	.4155
Number of dependents	–.013564784	.03162345	–.43	.6682
F-test (*p*-value)	17.18 (<.0001)			
R^2	.160325			
B: Peru				
Independent Variable	**Estimate**	**SE**	**t-Test**	***p*-Value**
Intercept	1.829650066	.15979086	11.45	<.0001
TF membership**	.713667157	.06427213	11.10	<.0001
Age of the household head	–.003053039	.00224976	–1.36	.1755
Coffee total area*	.083342087	.04425739	1.88	.0604
Number of dependents*	.022985847	.01362225	1.69	.0923
F-test (*p*-value)	39.35 (<.0001)			
R^2	.287563			
C: Nicaragua				
Independent Variable	**Estimate**	**SE**	**t-Test**	***p*-Value**
Intercept	3.630879780	.41876181	8.67	<.0001
TF membership**	3.357192908	.20515182	16.36	<.0001
Age of the household head	–.002203877	.00671067	–.33	.7428
Coffee total area	–.025495129	.05774812	–.44	.6591
Number of dependents**	–.248341492	.07645613	–3.25	.0013
F-test (*p*-value)	76.60 (<.0001)			
R^2	.438705			

*$p < .10$.
**$p < .01$.

ever, the parameters of the country dummies are not statistically different from each other (F-test = .40, d.f. = 1, p = .5255).

Path Analysis

We reevaluated the effects of TF cooperative membership on the level of education of children ages 6–13 through a path analysis. This methodology enables us to capture not only the direct effects of TF membership on education but also its indirect effect through income level. The first equation of the structural model relates the level of education (Education) to the sex (Sex = 1 if male) and the age (Age) of the person, the place of residence (Farmstead = 1 if the person lives on the farmstead), the gender of the interview respondent (Respondent = 1 if male), the number of dependents (Dependents), and the level of income. The second equation relates income to the social involvement of the producer (Involvement[2]), the place of residence, TF membership (TF = 1 if member), the area planted (Area), and the number of dependents. Community involvement is a self-reported measure collected during the survey work. We hypothesized that there might be a positive relationship between perceived community involvement (because this entails potentially greater contact with the TF cooperative and its development programs) and the likelihood of sending children to a local school. Note that we did not include long-term TF membership in the second equation because the price paid by TF does not depend on the number of years a producer participates in the program. Schematically, the model is represented as follows:

$$\text{(1) Education} = a_0 + a_1\text{Respondent} + a_2\text{Dependents} + a_3\text{Income} + a_4\text{Farmstead} + a_5\text{TF} + a_6\text{Long-Term TF} + a_7\text{Sex} + a_8\text{Age} + a_9\text{Dummy Nicaragua} + a_{10}\text{ Dummy Guatemala} + e_0,$$

and

$$\text{(2) Income} = b_0 + b_1\text{TF} + b_2\text{Dependents} + b_3\text{Area} + b_4\text{Farmstead} + b_5\text{Dummy Nicaragua} + b_6\text{Dummy Guatemala} + b_7\text{Involvement} + e_1.$$

Figure 1 graphically represents the model, showing the two component equations in contrasting shades.

We estimated the model using three-stage least squares (3SLS). We measured the direct effect of TF on education by the coefficient a_5 and the indirect effect by $(a_3 \times b_1)$. The total effect is the sum of the direct and indirect effects. We also report the total effect of living on the farmstead and number of dependents.

Table 8 summarizes the results of the mathematical model illustrated in Figure 1. It shows that 63% of the variability in the level of education is explained. The maximum

[2]Social involvement is codified as high, medium, or low.

Table 7. Regression with Dependent Variables: 6- to 13-Year-Old Children's Educational Attainment

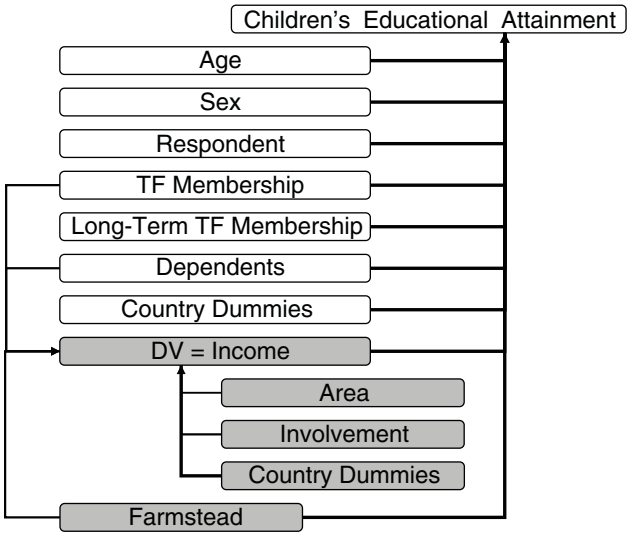
Variable	Parameter Estimate	SE	t-Value	*p*-Value
Intercept	2.3436	.1077	21.77	<.0001
Respondent	.0546	.0571	.96	.3388
Number of dependents*	–.0216	.0097	–2.24	.0252
Live on the farmstead	–.0170	.0494	–.34	.7312
Total income from coffee**	.0001	.0000	3.10	.002
TF membership	.0208	.0436	.48	.6331
Long-term TF membership	.0688	.0666	1.03	.3016
Sex of the child	–.0449	.0375	–1.20	.2314
Age of the child**	.4587	.0172	26.61	<.0001
Dummy Nicaragua**	–1.9242	.0579	–33.21	<.0001
Dummy Guatemala**	–1.7252	.0637	–27.07	<.0001
F-test (*p*-value)	225.92 (<.0001)			
Adjusted R^2	.6334			
Number of observations used	1303			
Degrees of freedom	11			
Highest condition index	16.54			

*$p < .05$.
**$p < .01$.
Notes: Dependent variable: level of education.

Table 8. 3SLS Regression: Educational Attainment of Children Ages 6–13 Years: Model Summary

Equation	d.f. Model	d.f. Error	R^2	Adjusted R^2	F-Test	*p*-Value
Education	11	1282	.6348	.6320	202.58	<.0001
Income	8	1285	.5580	.5555	180.11	<.0001

Figure 1. Path Model of Educational Attainment for Children Ages 8–13 Years



condition number is 17.45, indicating that the estimated model is not affected by multicollinearity.

As Tables 9 and 10 show, the data again reveal that income from coffee positively depends on TF membership and also on the number of dependents and the coffee area. Table 9 also shows that after we control for the covariates, the average income from coffee in Guatemala is not significantly different from the average income from coffee in Peru; however, income in Nicaragua is significantly higher than in the other two countries. We do not have an explanation for this, except that Nicaraguan cooperatives may be passing on a greater share of income to co-op members. The level of education is positively correlated with age and income, which is indicative of an indirect effect of TF membership on level of education. Consistent with our expectations, the number of dependents is negatively related to education. However, as Table 11 shows, the total effect of TF in the level of education of children ages 6–13, though positive, is not significant. Only the indirect effect of TF membership on education is significant. Living on the farmstead does not have a significant effect on the level of education. The number of dependents is negatively related to the level of education, and the total effect is less than the direct effect due to the positive indirect effect of having more workers on the farm, thus generating higher income.

Binomial Logistic Regression Analysis of the Probability of Currently Studying

After pooling data across countries, we ran a binomial logistic regression of "currently studying" (0 = no, and 1 = yes) as a function of the following:

1. Number of dependents (numeric),
2. Respondent (0 = female, and 1 = male),
3. Total income from coffee,
4. Live on the farmstead (0 = no, and 1 = yes),
5. TF membership (0 = nonmember, and 1 = members),

Table 9. 3SLS Regression: Educational Attainment of Children Ages 6–13 Years: Parameter Estimates

Effects	Parameter	Estimate	Approximate SE	t-Value	Approximate Pr > |t|
Education					
Constant	a_0	2.3587	.1078	21.880	<.0001
Respondent	a_1	.0516	.0574	.900	.369
Dependents*	a_2	–.0225	.0097	–2.320	.021
Income**	a_3	.0001	.0000	4.080	<.0001
Farmstead	a_4	–.0218	.0495	–.440	.660
TF membership	a_5	.0104	.0441	.240	.814
Long-term TF membership	a_6	.0651	.0669	.970	.330
Sex	a_7	–.0416	.0377	–1.100	.270
Age**	a_8	.4576	.0173	26.440	<.0001
Dummy Nicaragua**	a_9	–1.9521	.0583	–33.500	<.0001
Dummy Guatemala**	a_{10}	–1.7235	.0640	–26.950	<.0001
Income					
Constant	b_0	–769.9210	86.7193	–8.880	<.0001
TF**	b_1	181.9992	38.7189	4.700	<.0001
Dependents **	b_2	24.7572	8.3452	2.970	.003
Area**	b_3	424.2320	17.5076	24.230	<.0001
Farmstead	b_4	–15.0365	43.3763	–.350	.729
Dummy Nicaragua**	b_5	704.3555	47.3304	14.880	<.0001
Dummy Guatemala	b_6	9.8406	53.3091	.180	.854
Involvement	b_7	27.4840	24.9444	1.100	.271

*$p < .05$.
**$p < .01$.

Table 10. 3SLS Regression: Educational Attainment of Children Ages 6–13 Years: Systemwide Effects

Effect	Estimate	Approximate SE	t-Value	Approximate Pr > |t|	Label
TF direct	.0104	.0441	.240	.814	a_5
TF indirect**	.019629	.00638	3.08	.0021	$(b_1 \times a_3)$
TF total	.030019	.0433	.69	.4884	$A_5 + (b_1 \times a_3)$
Farmstead total	–.02339	.0496	–.47	.6373	$(b_4 \times a_3) + a_4$
Dependents total*	–.01981	.00969	2.04	.0411	$(b_2 \times a_3) + a_2$

*$p < .05$.
**$p < .01$.

6. Long-term TF membership (0 = less than five years of participation, and 1 = at least six years of participation),[3]
7. Sex of the person (0 = female, and 1 = male),
8. Age of the person (numeric),
9. Years of formal education (numeric),
10. Coffee total area (numeric),
11. Dummy Nicaragua (0 = Guatemala or Peru, and 1 = Nicaragua), and
12. Dummy Guatemala (0 = Peru or Nicaragua, and 1 = Guatemala).

We entered the variables in a single step.

The results of the binomial logistic regression appear in Table 11. Overall, the model is statistically significant (likelihood ratio chi-square = 33.15, d.f. = 10) and correctly predicts 66.4% of all responses. The statistically significant variables are the age of the child and TF membership. The likelihood that the child is currently studying decreases with the age of the child; that is, the older the child, the greater is the likelihood that the child drops out of school. Note that for Guatemala, for example, the official age for leaving school is 15 (http://dev.prenhall.com/divisions/hss/world reference/GT/education.html), which may heighten this tendency to leave school. For children ages 6–13, the effect of TF membership on the dropout rate is negative and statistically significant; that is, a child from a TF member household is 1.98 times more likely to be currently studying (all else being equal) than a child from a non-TF household. Thus, we can conclude the TF participation has a positive effect on current participation in primary education.

[3]Long-term TF members were observed only in Guatemala.

Incidence and Treatment of Illness

We report some selected results of our analysis of the illness data. We begin by asking which variables influence health in Peru, Nicaragua, and Guatemala. Then, we explore which

Table 11. Binomial Logistic Regression: Model of Children Ages 6–13 Years Currently Studying

	Estimates	SE	Wald	d.f.	Pr > χ^2	Odds Ratio Estimates
Intercept	2.1787	.6401	11.5858	1	.001	
Number of dependents	.0771	.0507	2.3083	1	.129	1.080
Respondent	–.3255	.3083	1.1148	1	.291	.722
Income*	–.0002	.0001	2.8019	1	.094	1.000
Live on the farmstead	.1222	.2600	.2207	1	.639	1.130
TF membership**	.6817	.2157	9.9896	1	.002	1.977
Long-term TF membership	–.1458	.4230	.1188	1	.730	.864
Sex of the person	–.1590	.1925	.6823	1	.409	.853
Age of the person**	–.3060	.1121	7.4529	1	.006	.736
Educational level	.0206	.1325	.0242	1	.876	1.021
Coffee area	.0076	.1098	.0047	1	.945	1.008
Dummy Nicaragua	.2363	.3737	.3998	1	.527	1.266
Dummy Guatemala*	.7618	.4068	3.5066	1	.061	2.142
N	1294					
Likelihood ratio (χ^2)			37.2301	10	.0002	

Association of Predicted Probabilities and Observed Responses

Percentage concordant	66.4
Percentage discordant	32.6
Percentage tied	1.1

*$p < .10$.
**$p < .01$.

variables influence the probability of not receiving medical treatment when needed. In each country, we collected data on reported illness of family members for a host of common ailments. We also collected data on variables that might affect illness, such as access to clean water. We summarize our results across countries and illnesses using two innovative indexes. To simplify the presentation of results across countries and illnesses and to address the first question, we construct an innovative index of health for each family:

$$\text{Health}_h = 100 \times \left(1 - \frac{1}{N_h}\sum_{j=1}^{N_h}\sum_{i} w_{ic} I_{ij}\right), \quad (3)$$

where h indexes families (h = 1, 2, …), j indexes family members within each family (j = 1, 2, …), i indexes illnesses (i = anemia, malaria, dengue, diarrhea, colds, respiratory infections), and c indexes countries (c = Nicaragua, Peru, Guatemala). The term N_h is the number of family members for which health information is available from the survey, I_{ij} is an indicator variable that takes the value of 1 if family member j suffered from illness i over the previous year, and w_{ic} is the ratio of total deaths caused by illness i to total deaths caused by all considered illnesses in country c (this number was drawn from secondary sources; see The World Health Organization 2004b). The health index takes the value of 100 when no family member suffered from any of the considered illnesses and 0 when all family members suffered from all considered illnesses.

The proposed model relates the index of health to the source of drinking water, the sex of the person, participation in the TF program, the length of participation, long-term TF membership, the number of dependents in the household, the availability of a latrine in the household, accumulated family wealth, the place of residence, total income from coffee, and the sex of the interview respondent. We included water source and latrine as variables in this index because water and sanitation quality are widely understood to affect morbidity, even though there may have been some confusion as to the local understanding of the term "latrine." The source of drinking water is classified as 1 = river, creek, natural fountain, or other; 2 = communal or own well; and 3 = communal water system. Note that higher values for water indicate safer water sources. The availability of a latrine in the household is classified as 0 = no and 1 = yes. The type of floor in the house is a proxy for accumulated family wealth and is classified as 0 = dirt or other and 1 = wood, cement, or brick because we presume that investments in improved housing stock (e.g., improved flooring) depend on the availability of disposable income. All other variables are classified as previously defined. Schematically, we can express the estimating regression as follows:

$$\begin{aligned}\text{Health} = {} & \delta_0 + \delta_1 \text{Water} + \delta_2 \text{Sex} + \delta_3 \text{TF} + \delta_4 \text{Long-TermTF} \\ & + \delta_5 \text{Dependents} + \delta_6 \text{Latrine} + \delta_7 \text{Floor} + \delta_8 \text{Farmstead} \\ & + \delta_9 \text{Respondent} + \delta_{10} \text{Income} + \delta_{11} \text{Dummy Nicaragua} \\ & + \delta_{12} \text{Dummy Guatemala}. \end{aligned} \quad (4)$$

The estimated model suggests that safer water sources, more accumulated wealth (proxied by the type of floors), being male, and living on the farmstead are positively associated with the health index (Table 12). The estimated model also suggests that, all else being equal, Nicaragua and Guatemala have lower health indexes than Peru. Furthermore, a t-test of equality of $\delta_{11} = \delta_{12}$ suggests that, all

Table 12. Ordinary Least Squares Regression: Dependent Variable: Health

Variable		Parameter Estimate	SE	t-Value	*p*-Value
Constant	δ_0	32.248	5.822	5.539	.000
Water***	δ_1	6.465	1.061	6.097	.000
Sex*	δ_2	9.024	4.399	2.051	.041
TF membership	δ_3	3.453	2.146	1.609	.108
Long-term TF membership**	δ_4	8.017	3.717	2.157	.031
Dependents	δ_5	–.509	.449	–1.133	.258
Latrine	δ_6	2.548	3.708	.687	.492
Floor***	δ_7	5.817	1.977	2.942	.003
Farmstead***	δ_8	7.720	2.497	3.092	.002
Respondent	δ_9	2.395	2.614	.916	.360
Income*	δ_{10}	.003	.002	1.757	.079
Dummy Nicaragua***	δ_{11}	–9.016	2.862	–3.150	.002
Dummy Guatemala***	δ_{12}	–16.605	3.067	–5.415	.000
R^2		.14502			
N		950			
F-test (*p*-value)		12.22 (<.0001)			

*$p < .10$.
**$p < .05$.
***$p < .01$.

else being equal, the average health index is lower in Guatemala than in Nicaragua (F-test = 4.40, d.f. numerator = 1, d.f. denominator = 937, $p = .0362$). Finally, after we control for other variables, participation in TF is not statistically significant. However, on average, participants with at least six years in the TF program had higher health indexes than other families. Although the absence of a direct TF membership effect is disappointing, length of participation seems to translate into higher health indexes. Moreover, note that social scientific work on disease shows that the relationships among poverty, illness, culture, and development interventions are anything but simple (Hahn 1999; Inhorn and Brown 1997; Loustaunau and Sobo 1997; Romanucci-Ross, Moerman, and Tancredi 1997).

To explore which variables influence the probability of not receiving medical treatment when needed, we construct the following innovative index of no treatment:

$$\text{NoTreatment}_h = 100 \times \left(\frac{1}{N_h} \sum_{j=1}^{N_h} \sum_i w_{ic} DT_{ij} \right), \quad (5)$$

where DT_{ij} is an indicator variables that takes the value of 1 if person j suffered from illness i and did not receive treatment and 0 if otherwise. All other symbols represent the same variables and relationships as in Equation 3. The no-treatment index can take any value from 0 (either no person in the family was ill, or if someone was ill, he or she got medical attention) to 100 (all people in the family suffered from all the considered illnesses, and nobody received medical attention for any of the illnesses).

The estimating model relates the no-treatment index to all the independent variables included in Equation 4. As Table 13 shows, the estimated parameters indicate that access to safer water resources and having more accumulated wealth (proxied by type of floors) are associated with lower probabilities of not receiving medical treatment when needed. Stated positively, improved household wealth (proxied by floors) and access to improved water quality are associated with a greater likelihood of treatment. The former is an indirect indicator of a TF effect. The mean of the no-treatment index is not statistically different in Peru and Nicaragua, but it is significantly higher in Guatemala than in the other two countries. Finally, producers' participation in the TF program is negatively associated with the no-treatment index, suggesting that, all else being equal, producers who participate in TF are more able to receive medical treatment when needed than nonparticipants. Furthermore, consistent with expectations, long-term participants have even better access to medical attention than short-term participants.

Discussion

In a review of fair trade as a strategy for "ethical globalization," Witkowski (2005, p. 29) notes,

> The websites of fair trade organizations like to feature their success stories in a variety of locations around the world. However, the efficacy of fair trade has not been adequately tested.... Impact studies mostly consist of case analyses based upon qualitative interviews and participant observations. They typically overlook the effects of fair trade on plantation workers and fail to make comparisons with similar producers lacking access to fair trade marketing.

Our study is a response to this and other challenges to make systematic comparisons of TF effects on producer participants in fair-trade marketing schemes with nonparticipants. Does participation in fair-trade coffee marketing deliver benefits to small-scale coffee producers as TF promises? Does it contribute to a "better world" and to "ethical globalization"? Specifically, are participating producers' incomes higher than those of nonparticipating producers? Are participating producers' educational and health status positively affected by their participation in the TF-sponsored cooperatives that invest in these sectors. As we argued previously, the answers to these questions interest researchers seeking alternative marketing approaches to foster economic devel-

Table 13. Ordinary Least Squares Regression: Dependent Variable: No Treatment

Variable		Parameter Estimate	SE	t-Value	*p*-Value
Constant	δ_0	25.330	4.996	5.070	.000
Water***	δ_1	–6.605	.910	–7.257	.000
Sex	δ_2	4.217	3.775	1.117	.264
TF membership**	δ_3	–3.923	1.841	–2.131	.033
Long-term TF membership***	δ_4	–11.563	3.190	–3.625	.000
Dependents*	δ_5	.705	.386	1.830	.068
Latrine	δ_6	.184	3.182	.058	.954
Floor***	δ_7	–6.957	1.697	–4.100	.000
Farmstead	δ_8	–.393	2.143	–.183	.855
Respondent	δ_9	.776	2.244	.346	.729
Income*	δ_{10}	–.002	.001	–1.651	.099
Dummy Nicaragua	δ_{11}	1.099	2.456	.448	.655
Dummy Guatemala***	δ_{12}	34.247	2.632	13.014	.000
R^2		.3276			
N		950			
F-test (*p*-value)		35.11 (<.0001)			

*$p < .10$.
**$p < .05$.
***$p < .01$.

opment, consumers of fairly traded products, trade organizations that endorse fair trade (e.g., Specialty Coffee Association of America), and retailers that offer fairly traded coffee in the consumer marketplace of developed countries (Lyon 2006). In summary, the truth value of these claims is central to the credibility of the value proposition that differentiates fair-trade value chains and fairly traded products from others. Moreover, the answer to these questions is important from a public policy perspective because consumer expenditures on fairly traded products continue to experience explosive growth, driven by the ethical concerns of consumers in the northern hemisphere (The Co-Cooperative Bank 2007; Fairtrade Labelling Organizations International 2007; Nicholls and Opal 2005).[4]

According to our analysis (e.g., Table 6, Panels A–C), TF cooperative participation positively and unequivocally affects income. It might be argued that this merely shows that TF is doing its job or that improved incomes are insufficient to protect small coffee producers from economic vulnerability (Bacon 2005). However, because we test against the null hypothesis of no effect and because interventions in agriculture and agricultural marketing systems in the least developed countries have an overall track record of failure (Arnould 2001; Awanyo 2001; Davis 2006; Fonchingong 1999; Gera 2004; Govindan and Babu 2001; Kaimowitz and Thiele 1999; Mwaisela 2000; Shriar 2007), reporting success for an innovative market-based value chain relying on quantitative measures across a cross-section of communities and countries enables us to reject the null hypothesis and represents support for the positive policy implications for intervention.

According to our path analysis, TF cooperative participation unevenly affects educational attainment and the likelihood that a child of primary school age is currently studying, an important component of quality of life for at least some participating farmers (Bacon 2005). We found that level of education is positively correlated with age and income and thus is indicative of an indirect effect of TF membership on level of education. However, although the total effect of TF in the level of education of children ages 6–13 is positive, it is not statistically significant. Only the indirect effect of TF membership on education is statistically significant. In contrast, our binomial regression analysis showed that a child from a TF member household is almost twice as likely to be currently studying as a child from a non-TF member household. Thus, we may conclude the TF participation has a positive incidence on current participation in primary education.

In considering these results, we note two issues. First, our sample focused on truly small producers, whose livelihoods and well-being are affected by forces other than TF participation alone (Bacon 2005). Second, household decision making with regard to educational choices is complex and affected by factors that we are not able to account for in these analyses. Consequently, the effects of TF participation on educational outcomes are likely to be uneven.

The study examined illness and health-seeking behavior. Reducing morbidity among the world's poor has become a renewed development priority (Sachs 2004; The World Health Organization 2004a) and is an important component of quality of life for some participating coffee producers (Bacon 2005). Although there are promising initiatives in health care provision for the poor (Carrin 2002; Rawlings 2005), the track record on reducing rural morbidity and mortality, especially among children, and inequity in access to care has been mixed (Jones et al. 2003; Wagstaff et al.

[4]Fair trade continues to show strong growth, with sales of products carrying the FAIRTRADE mark growing by 49%, reaching £285 million in 2006. The Fairtrade Foundation reports that the FAIRTRADE mark is now recognized by 57% of British adults, an increase of five percentage points in one year (The Cooperative Bank 2007). In the United States, the volume of fair-trade retail sales rose by 45% between 2005 and 2006, and the number of licensees increased from 534 to 615, a 15% increase (Fairtrade Labelling Organizations International 2007).

2004), in part because illness and household health seeking, like education, are affected by a host of cultural and economic factors (Hahn 1999; Inhorn and Brown 1997; Loustaunau and Sobo 1997; Romanucci-Ross, Moerman, and Tancredi 1997). Because illness is the result of complex causal mechanisms, we should not expect dramatic positive consequences of TF participation on co-op household members' health.

To address these issues parsimoniously, we developed a pair of health indexes, one for illness and one for patterns of treatment. The estimated model of factors contributing to our index of health suggests that safer water sources, more accumulated wealth, being male, and living on the farmstead are positively associated with the health index. Participation in fair trade alone is not a statistically significant indicator of health. However, on average, TF cooperative participants with at least six years in the TF program had higher health indexes than others, suggesting a complex but positive association between participation in TF cooperatives and improved health.

The study also examined treatment patterns for illness in our samples. In general, wealth indicators that are related to TF participation are positively related to treatment. Moreover, participation in the TF program is negatively associated with the no-treatment index, suggesting that TF participants are more likely to receive medical treatment when needed than nonparticipants. Furthermore, consistent with expectations, long-term TF participants have better access to medical attention than short-term participants, which is indicative of cooperative investments in health care education or facilities.

Limitations

In general, although the relationship between TF participation and outcome measures was uneven, TF participation is associated with an equal or better income, childhood education, and medical care. We cannot show with these data a causal relationship; to do so would require conducting a true experiment of randomly assigning farmers into TF and non-TF conditions regardless of their preferences, which would be unethical and impractical. The fair-trade condition was not randomly assigned. Fair-trade cooperatives have been established in places where receptive populations of farmers and other conditions that were desired by a fair-trade organization coalesced. Thus, at best, our "control group" of non-TF farmers can control for only certain potential alternative explanations, such as location, soil, weather, and distances to market. We could not control for enthusiasm for innovations, willingness to learn, or other alternative explanations for the results. Although it is unlikely that such psychological differences would be present from community to community, it is possible.

What we have presented instead is a cross-sectional baseline survey in which we tried to control for as many causal factors as possible and to select comparison groups in a way that eliminated as many alternative explanations as practically possible. Furthermore, we conducted our study on participants in fair-trade coffee marketing chains in Latin America, and its results should not be generalized to all fair-trade coffee value chains or to the experiences of producers of tea, bananas, cotton, or other fairly traded commodities. Nevertheless, this study has responded to calls for systematic assessments of fair-trade impacts on producers employing quantitative measures (Moore 2004; Witkowski 2005).

Further Research

Our study focused on addressing measures of social and economic impacts of participation in fair-trade initiatives. Consequently, we left much for further research. Not only could our measures be reexamined at a later point in time to assess longitudinal impacts and causation, but opportunities also abound for further research on fair-trade impact assessments using, for example, emerging business evaluation models, such as triple-bottom-line accounting, social accounting, balanced scorecard, and social return on investment (Witkowski 2005). Furthermore, social impact assessment could be extended to assess how income windfalls are employed. For example, if additional income is devoted to consumption at the expense of investments in health and education, the contribution of fair trade to the goals of improving producers' quality of life or the broader goal of sustainable human development may be called into question (Witkowski 2005). Finally, promoting agricultural sustainability and biodiversity is another facet of rural livelihood that several actors in the fair-trade movement promote, including TF. We examined sustainable practices in Guatemala and found a positive TF membership impact on the adoption of such practices, but a systematic review of the impacts of fair-trade initiatives on agricultural sustainability or biodiversity remains to be undertaken.

Conclusion

To our knowledge, this is the only study to conduct comparative quantitative analyses of the impacts of participation in fair-trade coffee supply chains in Latin America across randomly sampled populations. This study shows that, overall, participants derive benefits in terms of standard social indicators, even if these results are mixed. Given the generally poor state of social indicators reported from the southern hemisphere, despite decades of development assistance, our assessment of the results of TF's intervention in coffee marketing channels contributes to the positive assessments found in case studies of similar populations (Bacon 2005; Crowell 1997; Murray, Raynolds, and Taylor 2003; Raynolds, Murray, and Taylor 2004; Ronchi 2002). In addition, our study suggests that fair trade is not a panacea for third-world poverty. Nevertheless, from a social policy standpoint, fair trade's contribution to "building a better world" through market disintermediation cannot be cynically dismissed.

The mainstreaming of fair trade through ideas such as "shopping for a better world" (Low and Davenport 2005) or "ethical globalization" (Witkowski 2005) has generated criticisms from the ethical consumerism camp that challenges ATOs for failing to alter power relationships between producers and consumers (Lyon 2006) and encouraging more consumerism (Johnston 2002). Furthermore, as Witkowski notes (2005, p. 30),

> The involvement of multinational corporations, especially the introduction of private lines of fair trade brands,… increases the

risk that fair trade might become perceived by suspicious ethical consumers as just so much ethical posturing (Argenti 2004).

Thus, demonstrating that the core value proposition at the heart of fair trade is defensible in terms of social impact criteria may be of help to ATOs and other firms and organizations seeking to develop and justify to "suspicious" consumers alternative marketing–based value chains. Such a demonstration may bolster support for fair-trade policies and programs, such as the fair-trade-certified towns program (http://www.fairtrade.org.uk/get_involved/campaigns/fairtrade_towns/default.aspx), as among the ways to address challenges of equitable global economic development.

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