

Fair Trade and Free Entry: Can a Disequilibrium Market Serve as a Development Tool?

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Abstract

The Fair Trade coffee initiative attempts to channel charity from consumers to poor producers via increased prices. Though widely heralded, we show that the rules of the Fair Trade system permit complete arbitraging away of rents due to costly excess certification of output. Using data from an association of coffee cooperatives in Central America, we verify that arbitrage on this margin causes almost complete dissipation of producer rents, and that realized producer benefits are negative when the floor price does not bind. Our results illustrate how free entry undermines the attempt at extending charity via a price distortion in an otherwise competitive market.

Keywords: Fair Trade, development impact, coffee supply chains, cooperatives

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1. INTRODUCTION

The Fair Trade (FT) coffee initiative seeks to channel a charitable donation to producers by passing a price premium to them through commodity markets. The size of this market is huge; global FT sales were \$7 billion in 2011 (Elliot, 2012). The institutions that have arisen to attempt to perform this task are a network of non-governmental organizations operating a global regulatory mechanism that certifies producers and ensures that above-market prices are paid. Conveying rents to producers through a commodified supply chain is an endeavor that we expect to be beset by competitive pressures. How, then, does a competitive market with open access respond to this rent in its midst? This paper suggests a simple channel through which producer rents are eliminated by free entry: the certification of a larger amount of coffee than can be sold on the FT market. We use detailed micro-data that allow us to rigorously quantify the net price benefits that the FT system has provided to producers, and show how free entry and certification costs combine to dissipate producer rents.

FT certification is qualitatively different from other consumer certification mechanisms such as organic, bird-friendly, or fair labor standards because it explicitly seeks to enhance producer profits, whereas these other schemes seek to alter the production process used.² Higher FT consumer prices are intended to translate into higher producer profits, as opposed to a certification such as organic where higher consumer prices are necessary simply to cover the greater costs of producing organically. Overseen by FLO-CERT in Bonn, certifiers ensure that producers meet FT standards, and producers are then entitled to transact sales under the FT rules: prices must be above a fixed floor price and no less than 20¢/lb above the commodity market coffee price.³ This mechanism appears to have been extremely effective in enforcing the rules of FT transactions: prices in the market transact just as the FT system specifies they should, and there is little evidence of leakage or improper certification. Despite this, absent an overall control of the certified quantity of coffee, the current system encourages an excess certification of supply, ultimately arbitraging away all expected rents from the system. Our results suggest that the effort to transfer rents through prices in competitive, commodified markets may be quixotic.

² The first sentence of the legal Suggested Fair Trade Messaging reads: “Fair Trade Certified™ products directly support a better life for farmers and farm workers in the developing world through fair prices, community development, and environmental stewardship.” The last sentence reads: “all farmers and farm workers benefit from premiums that allow them to invest in building their communities and bettering their lives.” Since this is the main objective of FT, we are analyzing in this paper the transfer of a rent to producers through the price mechanism and not other potential benefits of the FT system.

³ The premium was raised from 10¢/lb in January 2011. Fair Trade USA, the US certification body, withdrew from FLO-CERT as of the end of 2011, but maintains the same price rules.

We illustrate the exact ways in which two core features of the current system--a floor price system and no control of excess certification--combine to generate rent dissipation. The presence of a FT floor price produces a financial service for producers that is most akin to a put option; the nominal FT premium is large only when the market price of coffee is low. To get access to the system cooperatives must certify, and since 2004 producers have borne this cost themselves. Certification confers the right to try to sell under the FT rules, but no guarantee of a market leaves the total quantity of certified output as a free margin on which arbitrage can occur. Far from the FT system exerting effort to control supply, the in-country certifiers who control the *de facto* supply are paid piece-rate for each certification performed, creating incentives towards excess certification. As a result the fraction of certified production actually sold through the FT market falls below one, and producers waste money by certifying output that will not be sold at FT prices.⁴

Our empirical tests use administrative records from a large Central American association of coffee cooperatives, thereafter referred to as the Association. This Association is always fully certified to sell through the FT system and yet, like the overall market, it manages to sell only one eighth to one fourth of its certified coffee at FT prices, depending on market conditions.⁵ We generate rigorous estimates of the effective FT premium, taking advantage of price data for those cooperatives whose production is split and sold on the FT and traditional markets. These estimates are then combined with the cost of certification and the FT sales share to calculate the net benefit to producers per pound of coffee from participating in the FT system.

We confirm that the share of coffee sold through the FT system falls when the price premium increases, an observational correlation that is inconsistent with producer decision-making and is indicative of oversupply during these years. This occurs in a manner that largely counteracts swings in the FT premium, leaving producer benefits low even when the floor price binds. We find that even at the peak of the coffee crisis (2001-03) when the FT price was 60¢/lb above a market price of 61¢/lb, producer cooperatives received an effective premium of only 10.3¢/lb. Applying these FT premiums estimated from 1997-2009 to the observed prices, we find that the average monetary benefit of the FT option over the period of our data amounted to \$20-\$50 per year for the median Guatemalan coffee grower, representing 4 to 10% of its coffee-related income. The average

⁴ The role of entry as a form of arbitrage is closely related to the argument in Hsieh and Moretti (2003), who show that because of the 6% commission charged across US real estate markets, increases in housing prices lead to a higher number of realtors per sale while leaving wages of real estate agents remain constant.

⁵ The Association has been selling organic coffee since 2002. Organic coffee has remained stable at 2-4% of the Association's annual sales volume and it is all sold under the FT label. We therefore cannot estimate the FT benefits for organic coffee for lack of a counterfactual, and only consider conventional (non-organic) coffee in this paper.

effective premium over the years 2005-2009 (when market prices were in excess of the floor price) appears to have been negative, consistent with a put-option interpretation of the contract.

2. EXCESS CERTIFICATION IN THE FAIR TRADE MARKET

The academic economics literature on FT is nascent despite the tremendous attention the movement has received in the popular press. Experiments on ‘ethical demand’ have shown that there exists significant willingness to pay for charity-linked products (Elfenbein and McManus, 2010; Hainmuller et al., 2011), motivated not only by the desire to transfer rent but also by an intrinsic utility from consuming these products (Poret and Chambolle, 2007) or from the desire to be seen doing good (Soetevent, 2011). Consistent with this, FT coffee consumers have been shown to be less price sensitive than non-FT consumers (Arnot et al., 2006; Basu and Hicks, 2008). The effect of FT on rent transfers has been debated with little consensus, with some arguing that they can be substantial (Smith, 2009) and others that they are limited (Haight, 2007; Henderson, 2008; Sidwell, 2008), and that the FT mechanism rewards low quality coffee (Henderson, 2008).

This study joins a more recent empirical literature estimating the benefits of FT for producers (Becchetti and Constantino, 2008; Utting-Chamorro, 2005; and Arnould, Plastina, and Ball, 2009). The process through which coffee cooperatives are certified in Central America is described in Berndt (2007). FT is generally found to have moderate positive effects. Dragusanu and Nunn (2013) show that income increases are limited to farm owners and skilled labor and do not extend to unskilled workers. That paper uses a fixed effects difference-in-differences analysis of FT certification in six Costa Rican cooperatives to estimate impacts on export prices, finding a significant but modest increase of about 4c/pound on average. Our paper contributes to this literature by estimating this price premium using detailed institutional data on more than 11,000 deliveries from the cooperatives to the Association that fed into 3,700 sales to the international market, and exploiting split deliveries in the Association’s supply chain to gain a rigorous control for quality in estimating price premiums.

2.1. Free Entry and the Certification Decision.

The global coffee price p is highly variable, driven largely by aggregate shocks such as weather in Brazil.⁶ Being a competitive market we assume that all producers are price-takers and that coffee

⁶ We suppress time subscripts through the theoretical presentation in order to simplify notations.

provides no rents to producers in expectation, although ex-post they will profit in some years and lose in others. The current FT mechanism attempts to create producer benefits through two separate mechanisms, namely by providing a floor price as well as a premium above the prevailing market price. The floor price p_f varies by regions of the world, and was set for Central America at \$1.21/lb until June 2008, when it was raised to \$1.25/lb. The ‘social premium’ ρ is a separate and additional payment for social investment, which was originally set at 5¢/lb until June 2007 when it was raised to 10¢/lb.⁷ The price-setting rule for FT coffee is then that producers should be paid no less than the floor price p_f or the market price p , whichever is higher, where the reference market is the New York Coffee Exchange ‘C’ contract (NY ‘C’ thereafter), plus the FT social premium (FLO, 2009).⁸

Once producers have paid the costs of certification they have the right to sell all of their output through the FT market but there is no guarantee that they will be able to do so. We define certification of a greater quantity than can be sold on the FT market as excess certification, while recognizing that it is optimal in the presence of free entry. Estimates of this quantity vary by year, but only somewhere between 1/2 and 1/7th of the certified output actually sells on the FT market.⁹ This arises because the current system is demand-constrained, meaning that the supply of certifiable output exceeds demand. This says that while producers must pay certification costs on all of their output, they receive FT rents on only a share of that output.¹⁰

Consider producers’ decisions if all output is of homogenous quality and each certified producer succeeds in selling the same share s of output through the FT channel.¹¹ We can then write the benefit of certification as:

⁷ The floor price and social premium were further raised to \$1.40/lb and 20¢/lb, respectively, in January 2011, beyond our observation period. The social premium is intended for “investment in social, environmental or economic development projects, decided upon democratically by producers within the farmers’ organization”

⁸ In order to be certified to sell through the FT system, producers must be family farmers organized in cooperatives, and the cooperative must pay the cost of certification inspections annually. The exact rules specified on Fair Trade International and FLO-CERT websites (<http://www.fairtrade.net> and <http://www.flo-cert.net/flo-cert/33.html>) clearly indicate that the only requirements are for individual applicants to satisfy standards, and that no overall limit on the number of entrants or the total volume of coffee certified can be used to reject an application.

⁹ See Muradian and Pelupessy (2005) and Haight (2007). It is conceptually possible that the FT producer criteria could be set so tightly that the system becomes supply-constrained, at which point the arbitrage pressure on rents might be expected to alter fundamentally. In this case producers would be willing to pay for access to the FT system, creating incentives for side-payments in certification and labelling that do not exist in the open access equilibrium.

¹⁰ We consider only the post-2004 period in which producers have paid certification costs themselves. We are attempting to model a global FT market in equilibrium, and cost recovery in certification as well as full supply-side adjustment are consistent with this idea of a FT market operating at scale.

¹¹ We refer to producers in this model even though the negotiating entities are the producer cooperatives.

$$B^{FT} = s(\rho + \max\{0, p_f - p\})q - c \quad (1)$$

where c is the cost of certification per unit of output. If there is free entry to the system then the expected net benefit of the FT system to producers must be zero:

$$E(B^{FT}) = 0 \Leftrightarrow sE(\rho + \max\{0, p_f - p\})q = c \quad (2)$$

meaning that in expectation the equilibrium FT sales share s^* is then given by:

$$s^* = \frac{c/q}{E(\rho + \max\{0, p_f - p\})} \quad (3)$$

An increase in the expected FT premium (whether due to the floor price in a bad market or due to the social premium) must be compensated for by a decrease in the share of FT certified coffee that can be sold on the market. The implication is that the benefits of the FT system pass ultimately into the hands of the certifiers; if this sector is competitive then FT benefits are exhausted completely in the costs of certifying coffee that is not sold at FT prices. If certifiers have market power then they will prove to be the ultimate beneficiaries of certification with free entry.

This equilibrium gives rise to a number of hypotheses on the relation between FT prices, sales, and certification rates:

- H1.** The ratio of FT coffee sales to FT certified coffee will be less than one.
- H2.** This ratio will move inversely to the FT premium.
- H3.** The actual net benefit to participation in the FT system will be negative in years in which the floor price turns out not to bind.
- H4.** Excess certification will push the effective long-run benefit of the FT system to producers to zero.

H1 and H4 arise directly from the assumption of free entry. H2 is implied by equation (3), and H3 will be true given equation (2) and a non-zero ex-ante probability that the floor binds. Because the certification decision is taken annually to cover a year's harvest, our empirical strategy estimates annual nominal FT premiums and then relates these to the degree of excess certification in each year.

3. DATA AND SPECIFICATION.

3.1. Data

The data consist of the Association's records on all non-organic coffee acquisitions and sales for the period 1997 to 2009.¹² Each year the Association procures coffee from about 100 cooperatives. Over the 13-year period, the Association purchased coffee from 296 cooperatives. Suppliers deliver un-husked (parchment) coffee in small batches from September to the following May. The median supplier provides 94,000 pounds of coffee per year, with an average of 280,000 pounds in 10 to 12 separate deliveries. The Association then processes and stocks the coffee, and sells green (unroasted) coffee beans to international buyers in bags of 150 pounds. Annual sales have increased from less than 100,000 bags to 250,000 bags over this 13-year period (Appendix Table A1). Shipment size has not increased; it is the number of sales that has increased from less than 200 per year to more than 400. Over the whole period, we thus observe 11,226 deliveries of coffee from cooperatives to the Association and 3,764 sales from the Association to international buyers.

Each sales price is negotiated between the Association and international buyers. Price negotiations revolve around a differential to be paid over the future NY 'C' price for the position just after the planned shipment. The coffee futures market has 5 positions per year, in March, May, July, September, and December. For example, a sale contract settled on December 8 for a shipment of coffee the following April, will use as reference price the December 8 quotation for the May position.¹³ Observed prices are driven by the future NY 'C' price plus a premium reflecting the quality of each sales lot and, when applicable, the FT social premium. We use the time series provided by the International Coffee Organization, labeled "Indicator price for other Arabica", to define what we refer to in the rest of the paper as the NYC price without quotation marks on the C.¹⁴ It is built as a monthly average of the future price for the following 2nd and 3rd positions after the contract date, which approximates the future price that serves in most contracts. Observed sales prices include the social premium, and so the empirically calculated FT premium in each year is

¹² The terminology used to characterize coffee transactions between the cooperatives, the Association, and international buyers is as follows. A "delivery" concerns a transfer of coffee from the cooperatives to the Association. A "sale" is between the Association and international buyers. Each sale is characterized by a shipment time, a number of bags, a price, and a quality.

¹³ Sale contracts proceed in two steps. In a first step, negotiation takes place and a contract is signed that specifies quantity, date of delivery, and the differential to be paid relative to the NY 'C'. The final price is "fixed" at a later date, when the NY 'C' price is read and applied to the contract.

¹⁴ http://www.ico.org/coffee_prices.asp

inclusive of the social premium. Given this systematic use of the futures market in sales contracts, the date associated with every sale is the shipment date. This is what we use in the rest of the paper.

Systematic records on quality are reported in the sale contract. They consist of 13 quality labels such as Extra Prime Washed, Prime Washed, Extra Prime, Strictly Hard Bean, Hard Bean, Small Bean, etc.

Figure 1 shows the evolution of market prices for traditional (non FT) and FT coffee for the 13 years of our analysis. The FT floor price has been binding for most of the 20 years since FT was established, except for periods around 1994 (frost damage in Brazil), 1997-99 (droughts in Brazil), and from 2006 to 2009 (world food crisis/commodity boom).¹⁵ Particularly during the coffee crisis of 1999-2003, FT was successful in delivering large nominal premiums to producers, in some cases exceeding 60¢/lb. The average non-FT coffee price received by the Association was very close to the NYC price in all years. The average FT price calculated from the Association data tracks the FT minimum price perfectly during periods in which the NYC price fell beneath the floor. During periods when the NYC price rose above the floor, the average FT price tracked the NYC price quite closely, with some small surplus visible in average prices.

3.2. Empirical Specification

A causal inference problem in estimating FT price premiums arises from the large variation in quality that exists in coffee markets. Because the only clear way of establishing quality is through price, it is particularly difficult to adjust observed price differentials for quality. At the simplest level, if the quality of coffee that becomes certified as FT varies systematically, then the raw difference between FT and non-FT prices is not a correct estimate of the effective price differential for a producer of a given quality. Even the panel variation across cooperatives (as used in Dragusanu and Nunn, 2013) may be biased if a large quality premium causes the differential FT quality selection to change over time. Further, de Janvry et al. (2013) suggest that the FT quality differential will be positively related to the FT premium: producers of high-quality coffee should be willing to sell through the FT market only when the FT premium available is high. Panel variation in the FT quality differential suggests that establishing a quality-corrected FT premium is an empirical challenge.

¹⁵ A steady decline of international price since 2011 however is leading coffee prices to fall below the floor price at the end of 2013.

Fortunately, the structure of the Association provides a unique opportunity to gain empirical traction on this problem beyond using recorded quality in the sale contract as controls. The complexity of the internal supply chain in the Association means that within a single year a given cooperative's production may be split into different sales lots that are sold through different channels. This allows us to gain quality control through a cooperative specific fixed effect. There are cases in which even a specific delivery of coffee from a cooperative is split and sold on both the FT and the traditional markets. While these transactions represent a subset of all the transactions, they give us the best possible counterfactual because the exact same coffee is sold on the traditional and the FT markets. The structure of the Association also provides a good environment in which to understand the extent of excess certification. Because the Association is very large and is able to sell only a fraction of its total output as FT (despite the legal right to sell it all) we observe the FT sales share directly in a large organization whose cooperatives are broadly representative of cooperatives in the country as a whole.¹⁶

4. RESULTS

4.1. Estimating the annual FT premium.

We start with the estimation of the quality-corrected price premium for coffee sold through the FT mechanism. Our preferred specification for this analysis is to use delivery-level fixed effects, meaning that the annual FT premium is identified off of the deliveries to the Association that were split within the supply chain and sold partly as FT and partly without the label. We restrict the sample to split deliveries with the same shipment month. This regression is shown in Column 1 of Table 1, where the units of observation are the delivery-sale pairs, and we include a dummy for FT sales in each year along with a delivery fixed effect. One may be concerned that these split lots are selected in a way that makes their FT premium differ from overall sales, and so in Column 2 we analyze the data for all the deliveries from the cooperatives to the Association, including the quality characteristics recorded in the data as categorical variables as well as fixed effects for the cooperative and the shipment month. These estimates are thus identified by the variation in prices within cooperative. Finally, in Column 3 we estimate a standard hedonic model at the sale level by simply including the categorical variables for the quality of the sale and the month of shipment fixed effect.

¹⁶ The share of certified coffee sold as FT is a market-level attribute, but because the Association is very large and certifies all of its output as FT, it provides a reasonable estimate of this share. Global certification data are not released by FLO, but we show that our estimates of excess certification track the few available global estimates quite closely.

Column 4 includes no quality controls at all and so gives the simple annual price difference between FT and non-FT sales in a given shipment month.

While quality variation was a concern *a priori*, in reality the estimated FT premiums are similar across the different specifications and samples. The estimates show that the nominal premium was quite significant in the years 2001 to 2004 with low NYC price, reaching an average of 60-64¢/lb over a market price of 63¢/lb, but falling to 6-9¢/lb over a market price of 126¢/lb in 2006-2008, even though the social premium in these years should have been at least 10¢/lb. Additional specifications, reported in Appendix Table A2, use the NYC price in lieu of shipment month fixed effects, a quality index instead of categories, different subsamples, and specify the dependent variable as the difference between the sale price and the NYC price. Results confirm the robustness of these estimates of the FT premiums.

The fact that estimated premiums are similar across specifications that radically vary the control for quality suggest that there is not substantial selection of coffee on quality between what is sold on the Fair Trade and the conventional markets, and that the ‘split’ deliveries are roughly representative of overall coffee deliveries. This is in particular due to the fact that, while coffee is a highly differentiated product across regions of the world and broad production conditions, coffee produced by small producers of the highlands of Central America is relatively homogeneous.¹⁷

4.2. Excess certification

In order to show that the ratio of FT coffee sales to FT certified coffee will be less than one and move inversely to the FT premium (H1 and H2), we first establish that the FT premium moves in accordance with the rules of the system (as visually apparent in Figure 1). The FT price rule suggests the following specification:

$$p_{st} = \beta_0 + \delta NYC_t + [\beta_1 \rho_t + \beta_2 (p_{ft} - NYC_t)] 1(p_{ft} > NYC_t) FT_{st} \\ + [\beta_3 \rho_t + \beta_4 (p_{ft} - NYC_t)] 1(p_{ft} \leq NYC_t) FT_{st} + \varepsilon_{st}$$

where p_{st} is the contract price of sale s with shipment at time t , NYC_t is the corresponding NYC price, ρ_t and p_{ft} the prevalent social premium and floor price at time t , and FT_{st} is a binary variable that indicates whether the sale was under a FT contract or not. The term in the first bracket captures the FT premium when the floor price is binding, the second bracket when the floor price is

¹⁷ In de Janvry et al. (2013), we estimate that the price difference attributable to quality is within a 10¢/lb range for most of the coffee sold by the Association and that the difference in quality between coffee sold with and without the FT label is less than 1.6¢/lb

not binding. If the price of coffee sold under the FT label was set at the required minimum, we should have $\beta_1 = \beta_2 = \beta_3 = 1, \beta_4 = 0$, and $\delta = 1$. Results are reported in Column 1 of Table 2. Although tests would reject these theoretical values, the point estimates are very close to those suggested by the rule. Hence, FT prices follow this minimum rule quite closely.

We can then relate the share of all sales that move through the FT market within the Association to this premium, providing evidence on predictions H1-H2. To date the literature has provided no systematic evidence on the total number of producers or coffee production that are FT certified. We were able to find three estimates of the share of certified coffee that was actually successfully sold on the FT market during the high-premium era: 13.6% in 2001 (Muradian and Pelupessy, 2005), around 50% in 2003 (Levi and Linton, 2003), and 23% in 2006 (Haight 2007).¹⁸ However, given that its coffee is all certified, the share of the Association's output sold on the FT market allows us to measure this quantity very exactly. Clearly, were it facing unconstrained demand and an effective premium, the Association would sell no coffee on the traditional market. This is what happens on the organic market. Less than 4% of the Association's coffee was organic, and it was all sold under the FT label. On the non-organic market, the share of coffee sold as FT averages around 20% and never exceeds 30%, confirming H1.

The share of coffee that was sold as FT was particularly low (down to 13%) in the years where the premium was high, and then as the premium fell over the past five years of our data the share of coffee sold as FT began to rise again, reaching 27% in 2008-09 (see Figure 2). The correlation between the nominal FT premium and the FT sales share is -0.8 in our data. This relationship is verified in the following linear probability model:

$$FT_{st} = \beta_0 + \beta_1(p_{ft} - NYC_t)1(p_{ft} > NYC_t) + \beta_2(p_{ft} - NYC_t)1(p_{ft} \leq NYC_t) + \varepsilon_{st}$$

where we expect to have $\beta_1 < 0$ and $\beta_2 = 0$. Results reported in Table 2, column 2, confirm this prediction. The predicted probabilities are consistent with our theoretical prediction H2: when the floor price is irrelevant the share of certified coffee sold on the FT market given in equation (3) should equal 30%, the per-unit cost of certification (3¢/lb, as established further down) divided by the social premium (10¢/lb).

The negative relationship between the FT premium and the share of coffee sold as FT is difficult to square with any decision that would be taken by the producer, and seems consistent only with a story in which supply piles into the market when the premium is high, driving down the share

¹⁸ All are from sources citing FLO's unpublished data: Reynolds (2002), and Calo and Wise (2005).

that certified producers are able to sell through the FT channel. Although estimates of the global FT sales share found in the literature do not agree exactly with the values from our data, it does appear that the Association provides a reasonable microcosm of the overall market in terms of the share sold through the FT market. The Association, uniquely certified to sell whatever it can as FT, saw its ability to move coffee through the FT channel most constrained by oversupply on the global market in years of high premium.

4.3. Net Benefit of FT Certification.

We now bring in the two quantities needed to speak to the net economic benefits of FT which are the subject of predictions H3 and H4. These are the rate of excess certification and the cost of certification. First, the product of the sales share and the premium gives the effective premium per unit of coffee *certified*, rather than per unit *sold* through FT. The negative correlation between the share of the coffee that the Association is able to sell as FT and the premium largely erases the differential average premium received across the years. This effective premium remained very low, never exceeding 12¢/lb while the coffee sold under the FT label carried a 60-70¢/lb nominal premium (see Figure 2 and Appendix Table A1).

Finally, in order to arrive at a correct estimate of net effective premiums, we need estimates of certification costs that the producers began to bear in 2004 (prior to this we set certification costs to zero). We use data on the number of members, workers, and processing facilities from a 2008 census of coffee cooperatives in Guatemala as well as the FLO-CERT table of certification costs for the period 2004-2006 (Appendix Table A3). Certification costs increase less than linearly with cooperative size, meaning that the per-pound costs are lower for larger organizations. We calculate that the average producer cooperative would have paid 5.7¢/lb to apply for certification in the first year and 3.09¢/lb to remain certified thereafter. The average association would have paid 2.30¢/lb to apply and 1.30¢/lb to recertify. The range of average certification costs thus lies between 1 and 6¢/lb, and we choose a value of 3¢/lb as being representative of the ongoing costs of certification for producer cooperatives. Subtracting this amount off of the effective quality-adjusted premium gives our final annual estimate of the per-pound benefit of FT certification.

Figure 2 combines the relevant information (FLO formula-based premium, quality-adjusted premium, share sold as FT, effective premium, and certification cost-adjusted effective premium) to demonstrate the net benefit of FT certification by year. The lowest line in Figure 2 gives our estimate of the effective net premium from FT certification. We see that this benefit has never

exceeded 12¢/lb (although coffee was selling for 65¢/lb when the premium was at its highest) and the average net premium over the 13 years of our data is 2.4¢/lb over an average NY 'C' price of 107¢/lb. Over the last five years, 2005-2009, the average result of participating in the FT market is a loss of 1.3¢/lb, confirming the put-option pricing of the FT contract due to the presence of the floor. These losses when the floor is not binding indicate that producers believe that they will in fact be able to exercise the FT option on at least some of their output in the event of another coffee crisis.¹⁹ These results are consistent with H4 (an overall very small benefit) and H3 (a negative benefit in years in which the floor price has been non-binding).

4.4. Producer Welfare

One way of assessing the welfare benefits of the FT system is to calculate the prices that the Association would have received under several counterfactual scenarios. We can look at the mean and variance of observed prices, and compare these to what would have obtained 1) if the Association had not been FT certified, and 2) if all certified coffee could have been sold at FT prices. Average prices would have been 110.6¢/lb without FT and 135.4¢/lb if all coffee had been sold at the FT price; the observed average price was 115.0¢/lb. The standard deviation of prices would have been 32.4¢/lb without FT and 14.2¢/lb if all coffee had been sold at the FT price, while the observed value was 32.0¢/lb. This illustrates the extent to which excess certification dampens the potential benefits promised by the FT price rule.

We can also assess the welfare value of these price effects for producers by combining them to the sales and coffee price pass-through for a representative sample of Guatemalan coffee farmers. To do this, we use the 2006 *Encuesta Nacional de Condiciones de Vida* (ENCOVI), a nationally representative household survey, and focus on coffee producing households that are members of a producer organization or cooperatives and hence the target population of FT. Among these households, median coffee sales for that year were 2,645 lbs of unhusked (parchment) coffee, which corresponds to roughly 2,108 lbs of green coffee. This means that if the whole FT average effective transfer of 2.4¢/lb were transferred through to producers, household income would have increased

¹⁹ From a 2011 census that we did of all coffee cooperatives in Guatemala, 35% belongs to a second-level association that is FT certified on their behalf, 26% to second level associations that do not carry the FT certification (nor are these independently certified), and 39% are independent. Among these independent cooperatives 12% are or have been FT certified, bringing the total share of cooperatives that are FT certified to 15%. However 11% of them cancelled their certification since 2006, when the price of coffee was more favorable, all giving the cost of certification as the main reason for the cancellation.

by about \$50.6 over the course of a year relative to a median reported coffee sales value of \$502, and median annual consumption of \$3500. However, these data also suggest that producers actually receive around 38¢/lb in a year where the NY'C' market price was just over a dollar, so if an analogous share of the FT premium is passed through, this average benefit would fall to $\$50.6 \times 0.38$, a gain of \$19.2 per year.

5. CONCLUSION

FT is a highly visible and widely used mechanism to attempt at channeling benefits to certified poor producers through the price system. Economic logic predicts that this effort to provide rents to producers in an otherwise commodified market will be subject to arbitrage pressures. In this paper we suggest that the rent induces the certification of more output than can be sold, consequently eroding producer benefit without contravening any rule of the FT mechanism. Our estimates of the effective premium are composed of three basic quantities: the nominal FT premium net of quality, the share of certified coffee sold as FT, and the per-unit costs of certification. Because of the internal diversity and second-tier certification of our study institution, we have an unusual ability to look at price variation within seasons, within individual cooperatives, and even within specific deliveries across FT and non-FT sales. We therefore believe that the most rigorously estimated part of the study is the nominal FT premium. As for the share sold as FT, there is no particular reason to believe that any one institution is representative of the market as a whole. However, the average share sold as FT by our study institution (22%) is close to the average of independent estimates of the global sales share (26%) and so it appears that this institution is broadly representative of the overall market.²⁰ Finally, our per-unit certification cost (3¢/lb) is for recertifying a large cooperative, and therefore if anything underestimates the cost for an average-sized cooperative considering the decision to undertake certification on the margin. These results provide important insights into the working of the FT coffee market.

Is the fundamental idea of trying to transfer resources via a competitive market flawed, or is there simply a problem with the current FT mechanism? One way of describing the problem with the current system is that it is a contract specifying only prices and leaving quantity and quality as open parameters. Here we show how quantity adjustment generates arbitrage, and in a separate

²⁰ Replacing the observed annual share sold as FT from our institution with the constant average from the independent estimates (26%) makes virtually no difference to our results; the peak effective premium would be 2-3¢/lb higher during the coffee crisis but would still have been negative for four of the last five years.

paper we demonstrate how unspecified quality serves as an additional dimension through which rents are dissipated (de Janvry et al., 2013). Lack of transparency in the rent dissipation mechanisms helps explain the puzzling coincidence of persistent high popularity of FT coffee among ethical consumers and lack of substantial benefits to producers. Consumers cannot easily infer the two scalars they would need to know to correctly gauge producer rents: the share of coffee from this certified producer that was *not* sold as FT, and the price of this exact same coffee on the traditional market.

One solution to the open access problem presented here would be the creation of FT supply management via tight eligibility restrictions. A supply-constrained system could in theory generate producer rents, and yet there is an enormous extensive margin of genuinely poor and deserving coffee producers to choose from. Any such label is likely to come under well-known forms of competitive pressure, as well as facing potential entry by alternative labeling schemes. This can already be seen in the multiplication of similar labels, such as Whole Foods' 'Whole Trade' label, Equal Exchange, and the recent resignation of Fair Trade USA from the international Fair Trade Labeling Organization so as to be able to 'extend the benefits of Fair Trade to millions more farmers and workers'.²¹ Alternatively, individual buyers or roasters of coffee can elect to transact with specific producers at above-market prices via 'direct trade', but precisely because they do not exploit commodity exchanges these systems are likely to be difficult to scale up due to high transaction costs. The logic laid out in this paper suggests that well-intentioned consumers may be better served by institutions that transfer benefits directly to producers or their organizations rather than trying to channel them through product markets.

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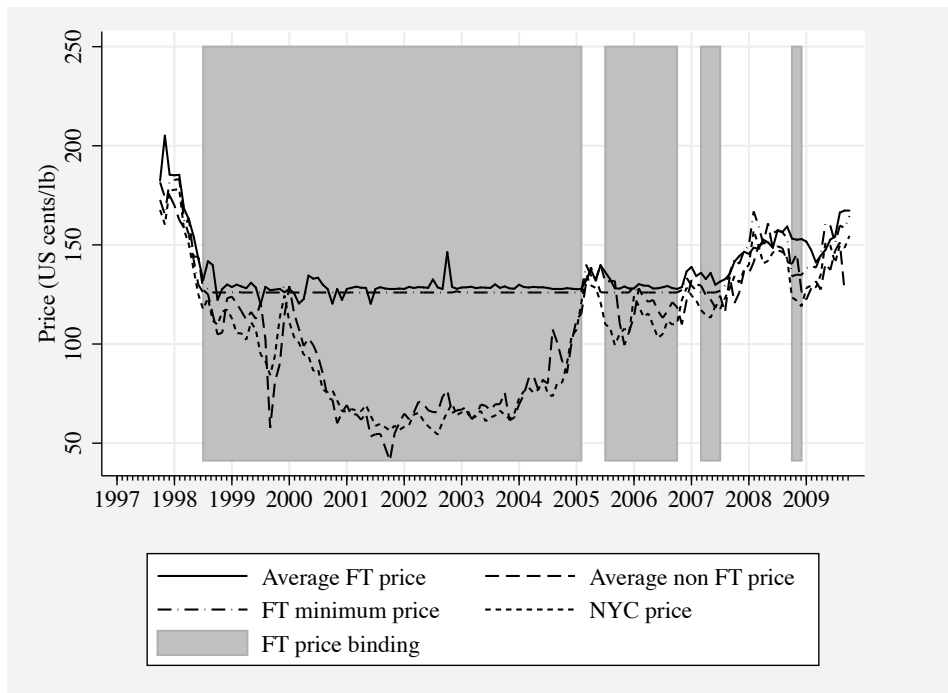


Figure 1. Evolution of coffee prices over time (US¢/lb)

Note: NYC price is from the International Coffee Organization Indicator price for other Arabica (www.ico.org/coffee_prices.asp). Average prices are from the Association sales data.

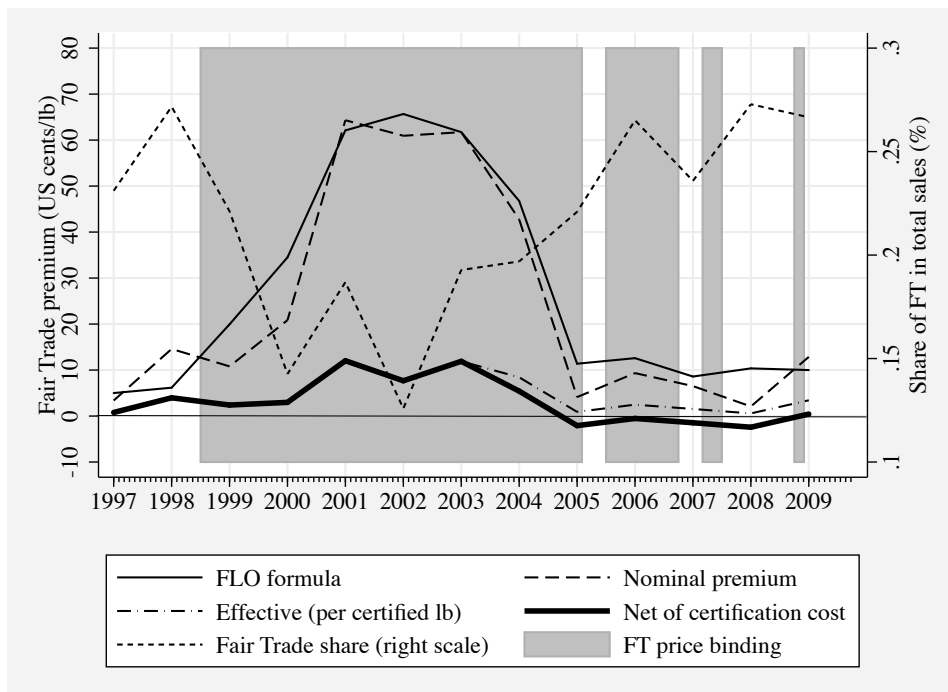


Figure 2. FT premium and share of non-organic coffee sold under FT contracts

Note: The FLO formula premium is calculated as the difference between the FT minimum price and the NYC. The Nominal FT premium is from column (2) in Table 1. The effective premium is obtained by multiplying the nominal premium by the share of coffee sold as FT. Subtracting 3¢/lb of certification costs starting in 2004 gives the effective net premium. Fair Trade share is from the Association sales data.

Table 1. Establishing the quality-adjusted annual FT nominal premium

	Contract price (US cts/lb)			
	(1)	(2)	(3)	(4)
Fair trade premium				
1997	4.73** [1.03]	3.38** [1.05]	6.35 [5.21]	11.25* [5.17]
1998	22.50** [1.19]	14.59** [0.68]	13.34** [2.68]	9.33** [3.07]
1999	10.95** [0.70]	10.80** [0.57]	12.58** [1.51]	10.79** [1.70]
2000	20.35** [0.83]	20.84** [1.23]	24.07** [2.80]	25.14** [2.94]
2001	61.11** [0.65]	64.32** [0.62]	64.47** [1.08]	64.57** [1.09]
2002	52.80** [3.21]	60.94** [0.71]	61.96** [1.26]	61.85** [1.24]
2003	53.83** [1.44]	61.73** [0.31]	60.43** [0.67]	59.23** [0.77]
2004	45.22** [1.73]	42.75** [0.86]	44.16** [1.38]	42.40** [1.43]
2005	2.63 [2.62]	4.12** [0.82]	6.05** [1.05]	4.89** [1.14]
2006	6.76** [1.23]	9.34** [0.45]	7.70** [0.61]	6.89** [0.70]
2007	9.14** [1.16]	6.52** [0.59]	7.23** [0.86]	6.71** [0.97]
2008	3.34* [1.32]	2.09** [0.62]	4.93** [1.18]	4.73** [1.24]
2009	2.83 [3.44]	12.85** [1.14]	13.60** [1.38]	12.07** [1.46]
Controls				
Quality categories	-	Y	Y	N
Shipment month FE	-	Y	Y	Y
Coop FE	-	Y	-	-
Delivery FE	Y	N	-	-
Observations	4,403	16,309	3,764	3,764
Number of deliveries / coops FE	1,451	296		
R-squared	0.68	0.92	0.90	0.86

Robust standard errors in brackets. * significant at 5%, ** significant at 1%

Quality categories are: Prime-Washed, Extra Prime Washed, HB, SHB, Fancy SHB, SHB-HH, SHB-EPW, GAP, and Small Beans. All regressions also control for UTZ certification.

Samples: (1) deliveries sold partly as FT and partly as non-FT with same shipment month; (2) all deliveries; (3) and (4) all sales

Table 2. Price and excess certification in the presence of the FT floor price.

	Contract price (US cts/lb) (1)	Probability that sale is transacted through the FT market (coefficients x 100) (2)
Fair Trade floor price binding		
FT * Social premium	0.91** [0.12]	
FT * (FT floor price - NYC price)	0.92** [0.01]	
(FT floor price - NYC price)		-0.11** [0.03]
Fair Trade floor price not binding		
FT * Social premium	0.79** [0.11]	
FT * (FT floor price - NYC price)	0.11* [0.04]	
(FT floor price - NYC price)		-0.02 [0.08]
NYC price	0.98** [0.01]	
Constant	8.00** [1.00]	31.59** [1.30]
Observations	3,764	3,764
R-squared	0.82	0.00

Robust standard errors in brackets. * significant at 5%; ** significant at 1%

Observations on all sales during the period of observation 1997-2009. The FT floor price is \$1.21/lb until June 2008, and \$1.25/lb afterwards. The social premium is 5¢/lb until June 2007 and 10¢/lb afterwards. The reference NYC price for each sale is a monthly average of the future price for the following 2nd and 3rd positions after the date on which the sale contract was signed. FT is an indicator that the sale was transacted through the FT market.