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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. We show that the rules of the Fair Trade system permit this rent to be eliminated due to free entry and costly excess certification of output. Using data from an association of coffee cooperatives in Central America, we verify that expected producer benefits are close to zero when we take into account the output that is certified but not sold as FT. Our results illustrate how free entry undermines the attempt at extending charity via a price distortion in an otherwise competitive market.

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JEL Codes: O12, D45, P46

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 price premiums to producers through a commodified supply chain is an endeavor that we expect to be beset by competitive pressures. This paper suggests a simple channel through which producer benefits are undermined 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 delivered to producers, and show how free entry and certification costs combine to dissipate producer benefits.

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

[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.

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 (10¢/lb up until January 2011, which is the period covered by our data).[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, due to the absence of an overall control of the certified quantity of coffee the current system encourages an excess certification of supply. Our results suggest that the effort to transfer rents through prices in competitive, commodified markets may be quixotic.

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 undermine producer benefits. The FT system offers certified producers a price floor as well as a price premium above the prevailing market price. To get access to the system cooperatives must be certified, and since 2004 producers have borne the cost of certification themselves. Certification confers the right to try to sell produce under the FT rules, but does not guarantee that they will be able to do so. Indeed, 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 direct incentives towards excess certification. There is indeed ample room for over certification since, according to FLO (reported in Murray et al., 2006), the capacity of small producers who could meet the FT requirements is about seven times the actual volume of FT sales. As a result the fraction of certified production actually

[3] Fair Trade USA, the US certification body, withdrew from FLO-CERT as of the end of 2011, but maintains the same price rules.

sold through the FT market falls below one, and producers waste money by certifying output that will not be sold at FT prices.[4] These features, combined with a variable and uncertain market price, should lead to a degree of excess certification that is increasing in the FT price premium and leaves expected producer benefits close to zero.

Our empirical tests use administrative records from a large Central American association of coffee cooperatives, thereafter referred to as the Association. This Association is fully certified to sell coffee produced by its members 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 certified under 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

[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 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.

swings in the FT premium, leaving producer benefits low even when the floor price binds. We find that 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 10.4¢/lb. Applying these FT premiums estimated for the period 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 effective premium over the years 2005-2009 (when market prices were in excess of the floor price) appears to have been negative, consistent with free entry in the presence of a floor price. This analysis suggests that the price premiums in the FT system have largely flowed towards certifiers rather than producers as intended by the consumers of FT coffee.

2. Excess Certification in the Fair Trade Market

While demand for 'fair traded' products is clearly substantial (Elfenbein and McManus, 2010; Hainmuller et al., 2011), there has long been a debate as to the extent of a rent transfer under this system (Smith, 2009, Haight, 2007; Henderson, 2008; Sidwell, 2008).[6] This study joins a recent empirical literature using data from producer countries to estimate benefits directly (Becchetti and Constantino, 2008; Utting-Chamorro, 2005; and Arnould, Plastina, and Ball, 2009; Dragusanu and Nunn; 2013). FT is generally found to have moderate positive effects. Dragusanu and Nunn use a fixed effects difference-in-differences analysis of FT certification in six Costa Rican cooperatives to

[6] Experiments on 'ethical demand' have shown that there exists significant willingness to pay for charity-linked products 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).

estimate impacts on export prices, finding a significant but modest increase of about 4c/pound. Our paper contributes to this literature by estimating this price premium using detailed institutional data on more than 11,500 cooperative deliveries and 3,700 sales to the international market, exploiting split deliveries in the Association's supply chain to achieve a rigorous control for quality in estimating price premiums. Furthermore, we can use the sales of the Association to calculate the annual fraction of certified coffee actually sold through FT, a statistic that is not available for the market as a whole.

The global coffee price p is highly variable, driven largely by aggregate shocks such as weather in Brazil.[7] Being a competitive market we assume that all producers are price-takers and that coffee 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.[8] 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,

[7] We suppress time subscripts in order to simplify notations.

[8] 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"

2009).

In order to be certified to sell through the FT system, producers must be family farmers organized in cooperatives that respect a "set of minimum standards for socially responsible production and trade" (member farm size, electoral process and democratic organization, contractual transparency and reporting), and the cooperative must pay the cost of certification inspections annually (Berndt, 2007).[9] 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 larger 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.[10] 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

[9] 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.

[10] 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.

certification costs on all of their output, they receive FT rents on only a share of that output.[11]

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.[12] We can then write the benefit of certification as:

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

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:

$$E\left[B^{FT}\right] = 0 \Leftrightarrow E\left[s^*\left(\rho + \max\left\{0, p_f - p\right\}\right)\right] = c \tag{2}$$

where s^* is the equilibrium FT sales share. 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.

This equilibrium gives rise to four 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.

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[11] 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.

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

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 (2), 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. EMPIRICAL ANALYSIS.

3.1. Data and identification strategy.

The data consist of the Association's records on all non-organic coffee acquisitions and sales for the period 1997 to 2009 (please see Online Appendix for details of data construction).[13] Each year the Association procures coffee from about 100 cooperatives. These cooperatives deliver coffee in small batches from September to the following May. The Association then processes and stocks the coffee, and sells it to international buyers in bags of 150 pounds. Over the whole period, we observe 11,602 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

[13] 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.

international buyers. Prices are driven by the future NYC price for the time of planned delivery plus a premium reflecting the quality of each sales lot and, when applicable, the FT social premium. The date associated with every sale is the shipment date. 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 (recall the FT price should be $\rho + \max(p_f, p)$). The FT floor price has been binding for most of the 20 years since FT was established, except for 1994 (frost damage in Brazil), 1997-99 (droughts in Brazil), and from 2006 to 2009 (world food crisis/commodity boom).[14] 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. Estimating the annual FT premium.

Coffee markets feature substantial premiums for high-quality output such as from Central America. Incentives for high-quality producers to sell through FT should increase with the FT premium, suggesting that the quality of FT coffee should rise with the premium (de Janvry et al 2013). This creates a causal inference problem in estimating FT price premiums because the only clear way of establishing quality is through price, and yet we want to control for quality to measure

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

price premiums. Fortunately, the structure of the Association provides a unique opportunity to gain empirical traction on this problem. The complexity of the internal supply chain in the Association means that a given cooperative's delivery may be split into different sales lots that are sold through different channels. These deliveries split between FT and non-FT markets give us the best possible counterfactual because the exact same coffee is sold on both markets at the same time. 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 region as a whole.[15]

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

[15] 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.

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 price model at the sale level by simply including the categorical variables for the quality of the sale and the month of shipment fixed effect. 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, suggesting that the split deliveries are broadly representative of coffee deliveries. 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 5-9¢/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.

Next, we calculate the share of certified coffee that sold on the FT market for each year for the Association. 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).[16] However, given that its coffee is all certified, the share of

[16] All are from sources citing FLO's unpublished data: Raynolds (2002), and Calo and Wise (2005).

the Association's output sold on the FT market allows us to measure this quantity very exactly. In keeping with hypothesis H1, Figure 2 shows that the sales share for the Association never climbs above 28% and falls as low as 13% at the peak of the coffee crisis. Clearly, were it facing unconstrained demand and an effective premium, the Association would sell no coffee on the traditional market.[17] In Column 1 of Table 2 we show that prices for sales transacted on the FT market conform very closely to the rules of the system, including the social premium and staying at the floor level when market prices fall below that (see Appendix for details of this analysis). In Column 2 we test our hypothesis H2, confirming the sales share moves inversely with the FT premium. These results suggest that when the floor price is irrelevant the share of certified coffee sold on the FT market equals 31.6%, almost exactly the per-unit cost of certification (3¢/lb, as established further down) divided by the social premium (10¢/lb), as can be inferred from equation (2).

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 a producer, and seems consistent only with a story in which supply piles into the market when the premium is high, driving down the share that certified producers are able to sell through the FT channel. 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.

Hypotheses H3 and H4 speak to the net economic benefits of FT. To calculate these we first take the product of the sales share and the nominal premium. This gives the effective premium per unit of coffee *certified,* rather than per unit *sold* through FT. The negative correlation between the

[17] 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.

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 60-65¢/lb nominal premium (see Figure 2 and Appendix Table A1). The average effective premium over the 13 years of our data is 4.4¢/lb over an average NY 'C' price of 107¢/lb, and only 1.8¢/lb over the last five years, 2005-2009. We can then use data on the size and facilities of the cooperatives in our survey to calculate average certification costs (see Appendix for details) and come to a figure of 3¢/lb. This amount should be subtracted off of the effective premium since 2004 to give the net benefit, indicating that the average result of participating in the FT market has only been 2.5¢/lb for the whole period of observation and a loss of 1.2¢/lb over the last five years.

3.3. Producer welfare.

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.[18] 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).

How large are these estimated net benefits of FT in terms of producer welfare? One way of

[18] 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.

assessing the welfare benefits of the FT system is to calculate the prices that the Association would have received under several counterfactual scenarios: 1) without any FT certification, and 2) if all certified coffee could have been sold at FT prices Average prices would have been 110.7¢/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 14.3¢/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 use data from the 2006 *Encuesta Nacional de Condiciones de Vida* (ENCOVI), a nationally representative household survey, on coffee producing cooperative member households. Median coffee sales 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 2.5¢/lb were transferred through to producers, household income would have increased by about $52.7 over the course of a year relative to a median reported coffee sales value of $502, a 1.5% increase over median annual consumption of $3500. However, these data also suggest that producers actually receive around 38¢/lb for a dollar of sales, so if an analogous share of the FT premium is passed through, the average benefit would fall to $52.7*0.38, a gain of $20 per year (.6% of consumption).

4. CONCLUSION

FT is a highly visible and widely used mechanism to try to channel benefits towards certified producers using a price mechanism. 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, 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. We believe that the most

rigorously estimated part of the study is the nominal FT premium. As for the share sold as FT, 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 a range of values for the certification costs will tell a similar overall story. The net benefit from Fair Trade has only been 2.5¢/lb over the 1997-2009 period, representing an average gain for coffee producer of about 1.5% of annual consumption We therefore believe that these results are informative as to global open access issues in the FT coffee market.

If the current FT system is failing to transfer benefits to coffee producers, could an alternate mechanism do so? One solution to the open access problem presented here would be the tightening of FT supply constraints via stronger 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'.[19] 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 give benefits to producers directly rather than trying to transfer benefits as

[19] http://fairtradeforall.com/q-and-a/making-it-happen/why-is-fair-trade-usa-leaving-the-international-fairtrade-system/

product market rents.

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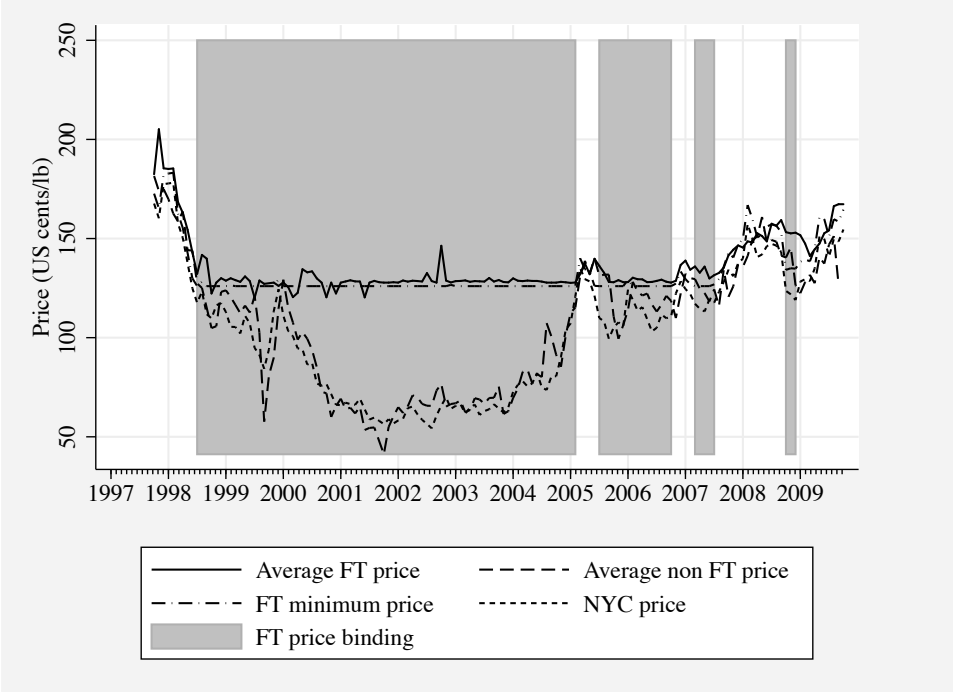

Figure 1. Evolution of coffee prices over time (US¢/lb)

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.

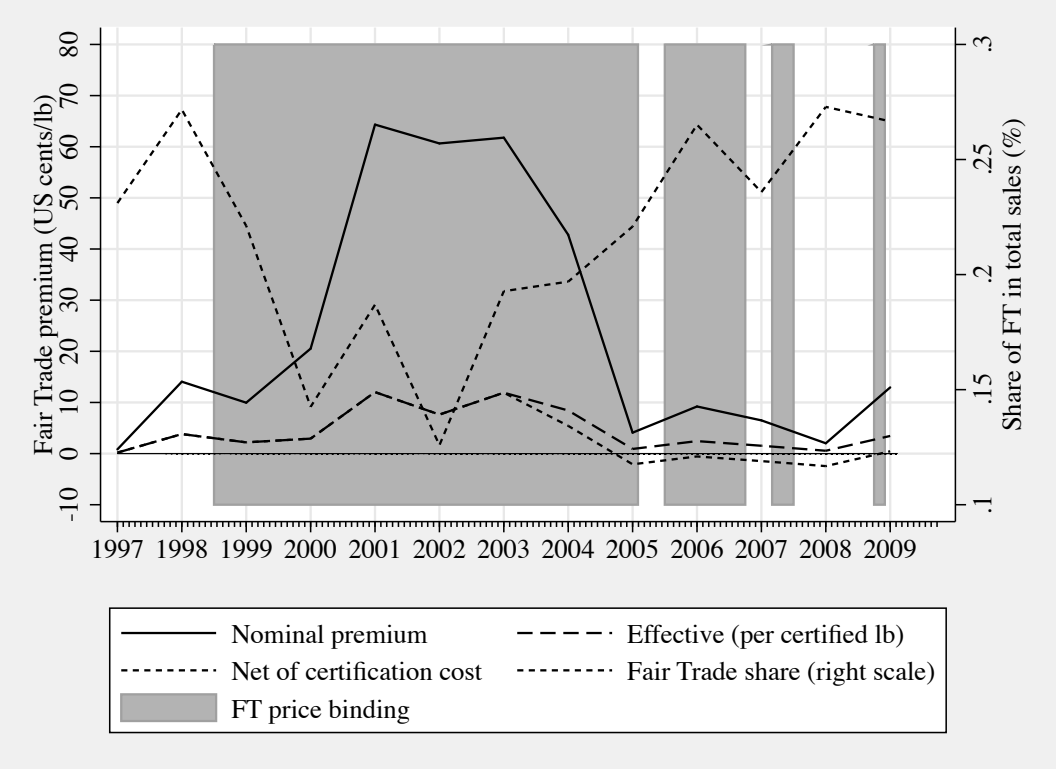

Figure 2. FT premium and share of non-organic coffee sold under FT contracts

Note: The quality-adjusted 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. Fair Trade share is from the Association sales data.

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

Estimation of the fair trade premium

	Contract price (US cts/lb)			
	(1)	(2)	(3)	(4)
Fair trade premium				
1997	4.73**	0.83	6.35	11.25*
	[1.03]	[1.69]	[5.21]	[5.17]
1998	22.50**	14.06**	13.34**	9.33**
	[1.19]	[0.94]	[2.68]	[3.07]
1999	10.95**	9.95**	12.58**	10.79**
	[0.70]	[0.98]	[1.51]	[1.70]
2000	20.35**	20.52**	24.07**	25.14**
	[0.83]	[1.29]	[2.80]	[2.94]
2001	61.11**	64.33**	64.47**	64.57**
	[0.65]	[0.64]	[1.08]	[1.09]
2002	52.80**	60.64**	61.96**	61.85**
	[3.21]	[0.83]	[1.26]	[1.24]
2003	53.83**	61.77**	60.43**	59.23**
	[1.44]	[0.34]	[0.67]	[0.77]
2004	45.22**	42.78**	44.16**	42.40**
	[1.73]	[0.91]	[1.38]	[1.43]
2005	2.63	4.10**	6.05**	4.89**
	[2.62]	[0.88]	[1.05]	[1.14]

2006	6.76**	9.21**	7.70**	6.89**
	[1.23]	[0.52]	[0.61]	[0.70]
2007	9.14**	6.50**	7.23**	6.71**
	[1.16]	[0.69]	[0.86]	[0.97]
2008	3.34*	2.02**	4.93**	4.73**
	[1.32]	[0.67]	[1.18]	[1.24]
2009	2.83	12.94**	13.60**	12.07**
	[3.44]	[1.22]	[1.38]	[1.46]
Controls				
Quality categories	-	Y	Y	N
Shipment month FE	-	Y	Y	Y
Coop FE	-	Y	-	-
Delivery FE	Y	N	-	-
Observations	4,403	18,234	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)	Probability that sale is transacted through the FT market (coefficients x 100)
	(1)	(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**	31.59**
	[1.00]	[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.