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Coffee, cooperatives, and *choba-choba*: the role of non-market labor networks in building equitable supply chains

Café, cooperativas y choba-choba: el rol de las redes laborales fuera del mercado la reconstrucción de cadenas de valor equitativas

Noah H. Enelow*

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Resumen extendido

La certificación de Comercio Justo (*Fairtrade*) se presenta como una importante intervención de mercado en el comercio internacional de bienes de consumo, a través del cual los pequeños productores agrícolas y artesanales, en regiones en vías de desarrollo, pueden obtener mejores precios de venta y conseguir acceso al crédito y la asistencia técnica. Las cooperativas, o asociaciones de productores, son un modo de organización clave a través del cual la mayoría de sistemas de certificación de comercio justo ofrecen sus beneficios. Sin embargo, muchas cooperativas, incluso aquellas que ofrecen primas de comercio justo, se debilitan por el persistente y significativo número de ventas externas hechas por sus mismos miembros a comerciantes intermediarios privados que trabajan para compañías que pertenecen a inversionistas. Debido a las ventas externas, las cooperativas son a menudo incapaces de garantizar un suministro confiable de café de sus miembros. Este artículo es el primero en establecer una conexión explícita entre las prácticas comerciales de los miembros de las cooperativas y las prácticas de trabajo agrícola que los miembros usan en el campo. El estudio económico presentado en el presente trabajo señala que los productores que utilizan proporcionalmente más métodos no comerciales de trabajo en sus campos, que incluye una tradición indígena de intercambio laboral llamada *choba-choba*, participan proporcionalmente en menos ventas externas.

El artículo examina el problema de ventas externas en la cooperativa de café Oro Verde de la región Lamas al norte de Perú, que abarca tanto indígenas de Lamas (Lamista) como comunidades mestizas. Las ventas externas han sido un problema para Oro Verde en el pasado, en el que un 46% de todo el café producido por los miembros se vendía a los intermediarios privados durante 2007. Los miembros de la cooperativa Oro Verde hacen uso de tres prácticas laborales: el trabajo conjunto basado en relaciones familiares, la mano de obra contratada y la costumbre indígena de intercambio laboral y por turnos conocida como *choba-choba*. La presencia de la costumbre *choba-choba* como reserva de trabajo no comercial compensa las imperfecciones en los mercados de trabajo y de crédito.

* Noah H. Enelow, Ph.D., Universidad de Massachusetts. Economista Senior, Ecotrust. nenelow@ecotrust.org

Esto mediante la reducción de necesidades de dinero en efectivo de los productores y la satisfacción de las alzas repentinas de demanda de trabajo. El pago en especie por el trabajo hecho también conlleva un menor costo de oportunidad cuando hay un involuntario desempleo local.

La hipótesis central de este estudio es que el acceso a la práctica *choba-choba* facilita patrocinio a la cooperativa y reduce las ventas externas. Los resultados de unas variables instrumentales (IV) del modelo probit confirman esta hipótesis, demostrando que los miembros de las cooperativas de café que hacen un uso más intenso del *choba-choba*, así como del trabajo en familia, participan en menos ventas externas y más ventas a través de la cooperativa en proporción a su cosecha total. Estos resultados indican que las prácticas laborales no comerciales, que incluye el trabajo en familia y *choba-choba*, desempeñan una función de apoyo en el fomento de la estabilidad y viabilidad financiera del mercadeo de las cooperativas agrícolas. Tres importantes implicaciones se derivan de estos resultados. Primero, las prácticas laborales no comerciales pueden desempeñar un papel importante en el proceso de construcción de instituciones agrícolas cooperativas y democráticas en los países en vías de desarrollo. Segundo, el proceso de formación de instituciones y relaciones de mercado cooperativas puede ser más exitoso en comunidades con fuertes estructuras locales de cooperación e intercambio no comercial preexistentes. Tercero, y en términos más generales, los patrones de intercambio no comercial son capaces de influir en los resultados del mercado. Fuertes relaciones de intercambio no comercial, como *choba-choba* pueden, por tanto, desempeñar un papel clave en la construcción del mercado socialmente equitativo que fue imaginado por los creadores del sistema de Comercio Justo.

Palabras claves: América Latina, Perú, café, comercio justo, cooperativas, desarrollo económico rural, mano de obra agrícola.

Abstract

Agrarian marketing cooperatives are potentially important tools for rural development. However, many cooperatives experience significant outside sales to private intermediaries, even when offering price premiums through fair trade or organic certification programs. Outside sales weaken cooperatives by increasing supply uncertainty and making advance contracting more risky. This paper studies the problem of outside sales in a single coffee cooperative in northern Peru. Empirical results from an instrumental variables (IV) probit model suggest that coffee cooperative members' farm labor practices exert significant influence on their level of outside sales. Coffee growers that use more intensively cooperative labor networks known as *choba-choba*, as well as family household labor, engage in fewer outside sales and more sales through the cooperative as a proportion of their total harvest. These results suggest a linkage between the strength of coffee growing families and communities, and the robustness of agrarian marketing cooperatives.

Key words: Latin America, Peru, fair trade, coffee, cooperatives, farm labor, rural development.

Introduction

Global policies to create a level playing field for international trade are a long way off. The international corn market is a classic example of a tilted playing field: state-subsidized, genetically modified and input-intensive U.S. corn outcompetes unsubsidized, biodiverse, ecologically grown Mexican corn. While in the U.S., corn subsidies have been allowed to continue unchecked, in Mexico the result of “free trade” for traditional farmers has been massive rural unemployment and out-migration, while an ancient and well-developed agricultural system has suffered decline (Mann, 2005; Boyce, 1996). Coffee is another example: unequal access to capital, market connections, and branding resources has ensured that the majority of coffee farmers remain poor, while a few trading companies and branded roasters reap large profits. The world trading system is kept unequal by the power of large-scale transnational corporations (TNCs) based in the global North (Fridell, 2007).

The loose-knit group of product certification systems known together as “Fair Trade” have emerged as a form of non-state, market-driven governance to address social equity issues in international trade (Cashore, Auld and Newsome, 2004). The Fair Trade system includes the non-profit, non-governmental trade certification body known as the Fairtrade Labelling Organization (FLO), which focuses primarily on agricultural products, as well similar organizations such as the Fair Trade Federation (FTF), which focuses on crafts. These and other private certification agencies (e.g. Fair Trade USA, IMO Fair for Life) work to ensure minimum living standards for small farmers, artisans and some industrial workers in developing countries by setting minimum prices and trading standards in wage setting, worker safety and environmental protection. The certifications work through the issue of a printed label on products, guaranteeing compliance with trading standards and best practices. Fair trade certifications serve as examples of successful, though limited, attempts to create niches within global markets that reflect concerns of social equity, poverty alleviation and environmental protection.

Existing empirical studies indicate that participation in fair trade certification systems has had a positive net impact on the well-being of producers of coffee and other commodities by several important measures. For instance, farmers who participate in FLO-certified marketing arrangements have demonstrated, on average, more secure land tenure (Bacon, 2008), superior educational outcomes (Arnould, Plastina and Ball, 2009), superior

Participating farmers have also enjoyed increased purchasing power, improving household food security and nutritional diversity, though also increasing household dependence on purchased food (Jaffee, 2007).



output prices (Becchetti and Costantino, 2006; Weber, 2011; Méndez et al., 2010) and higher household incomes (Arnould, Plastina and Ball, 2009). Participating farmers have also enjoyed increased purchasing power, improving household food security and nutritional diversity, though also increasing household dependence on purchased food (Jaffee, 2007). Participation in the FLO system has improved the average level of participating farmers' technical skills and organizational capacity (Ronchi, 2006; Raynolds, 2002; Van-

Though the larger issues of poverty and underdevelopment cannot be fully addressed simply by higher output prices, there also exist some clear structural flaws in fair trade certification systems that limit its ability to maximize benefits to impoverished farmers and workers.



derhoff Boersma, 2002). Cooperatives' participation in FLO-certified supply chains has, according to some studies, led to spillover price effects on local or regional markets, pushing up conventional coffee prices and increasing all growers' incomes (Milford, 2004).

Despite these positive impacts, fair trade certification has proven insufficient to address larger questions of rural development in the global South. Though the larger issues of poverty and underdevelopment cannot be fully addressed simply by higher output prices, there also exist some clear structural flaws in fair trade certification systems that limit its ability to maximize benefits to impoverished farmers and workers. The majority of the issues raised so far by academics, activists and other observers have related to the largest fair trade certifier, FLO. These include FLO's limited bureaucratic capacity, which entails the rationing of producers' access to the certified market (Weber, 2005); the influence of large-scale purchasers over the formation and updating of the standards, leading to stagnant minimum prices that fail to keep up with cost-of-living increases (Jaffee, 2007; Bacon, 2008), and the limitations in consumer demand for certified products, leading over half (55%) of certified coffee to be sold on the conventional market as of 2012 (Dragusanu, Giovannucci and Nunn, 2014).

This paper focuses on an additional, and often overlooked, flaw in the fair trade certification system that strongly influences the financial stability of cooperatives: members selling outside of the cooperative and the certification system. The price premiums offered to coffee cooperatives by fair trade certification are, in many cases, insufficient to ensure a reliable supply of coffee beans from the cooperatives' membership. Cooperative members frequently market their products to private intermediaries working for investor-owned firms operating in the non-certified market, often to meet immediate cash needs. Outside sales weaken cooperatives by reducing net revenues and increasing the risk of signing marketing contracts in advance of the harvest.

The study presented in this paper is the first examination of the relationship between farm labor and outside sales to cooperatives. The results of a 2007 survey conducted at the Oro Verde cooperative of Lamas, Peru, indicate that coffee households' reliance on non-market forms of labor, including a labor exchange practice called *choba-choba*, is associated with increased marketing through the cooperative, and fewer outside sales.¹

The problem of outside sales has been given scant attention in economic studies of cooperatives until recently. Wollni and Fischer (2014) examine the relationship between members' landholdings and outside sales in Costa Rican coffee cooperatives. They find that the relationship follows an inverted U-shape: the smallest- and largest-scale growers engage in the fewest outside sales, and the growers of intermediate scale engage in the most. However, their study does not include a variable describing the coffee growing household's farm labor practices. Vorlaufer et al. (2012) examine the determinants of free-riding in a cross-sectional sample of 120 Kenyan coffee cooperatives, using outside selling as one of three indicators of free riding.² They find that larger and more socially heterogeneous cooperatives are more likely to experience high levels of free riding.

This paper will proceed as follows. The next (second) section introduces the agricultural marketing cooperative as an economic institution, and summarizes the recent literature on the benefits and drawbacks of cooperatives as rural development organizations. The third section introduces the Oro Verde coffee cooperative of Lamas, Peru, and summarizes qualitative data on the incidence of and reasons for outside selling by cooperative members. The fourth section presents the results of my econometric study on the determinants of outside selling by members of the Oro Verde cooperative. The fifth section concludes briefly.

Coffee Cooperatives and Farmer Welfare

Agricultural marketing cooperatives (hereafter referred to as “cooperatives”) are democratically governed, membership-based organizations that provide inputs, technical assistance, post-harvest processing, storage, quality control and marketing services to a number of small, independent agricultural producers. Successful cooperatives can improve producers' welfare by providing higher farm gate prices, access to credit, technical assistance, market information and other important services. Fair trade, organic and other certifications pay price premiums at the level of the cooperative, which disburses the premiums to members after taking deductions for expenses. Studies of the relationship between fair trade certification and cooperatives have found a significant positive effect of participation in fair trade on cooperatives' organizational performance (Ronchi, 2006; Raynolds, 2002).

1 Marketing coffee through a cooperative is called *patronizing* the cooperative; the product marketed through the cooperative is referred to as *patronage*.

2 The other two indicators of free riding are: selling to cooperatives the grower does not belong to; and re-selling inputs provided at discount by the cooperative on secondary markets.

In serving a large number of members with a broad range of services, cooperatives exploit both economies of scale and economies of scope (Schroeder, 1992; Molinas Vega, 1997). Input provision, technical assistance, storage and warehousing, marketing and communications all exhibit economies of scale. Economies of scope exist due to complementarity among the cooperative's services: the provision of technical assistance to farmers ensures continuous improvement in output quality, which complements the quality control function of the enterprise and ensures higher prices.

Despite their benefits, cooperatives also possess disadvantages with respect to investor-owned firms. Participation in cooperatives incurs high transaction and governance costs, measurable in terms of coffee growers' scarce time that must be spent participating in, and traveling to and from, meetings. These costs often rise as membership increases and governance becomes more complicated. Cooperatives may thus fail to exploit economies of scale in production, processing and marketing that can only be attained at higher levels of membership (Mosheim, 2002); the organizations often remain too small to affect local or regional development outcomes significantly. When cooperatives do grow to large scale, they may suffer from underinvestment, as a decentralized and diffuse membership of small farmers may prioritize their own incomes above building up the organization's capital assets (Porter and Scully, 1987). Cooperatives in poor communities may also suffer from scope creep: addressing competing social and environmental objectives such as health care and clean water may reduce a cooperative's capacity to provide core services of marketing and technical assistance (Lele, 1981). Finally, cooperatives' governance structures may be captured by small groups of elite producers through either outright vote-buying (Mude, 2006) or superior access to funds for elections (Banerjee et al., 2001).

In this context, outside selling by members represents a significant vulnerability to cooperative organizations. Cooperatives depend on deductions from members' sales to finance operations; members benefit from those operations in the form of improved access to output markets, technical assistance, quality control, and other important services. Yet, selling to outside intermediaries may be in members' short-term individual interests for a variety of reasons, including timeliness of payments (Fischer and Qaim, 2011), temporarily high price offers from intermediaries and lack of minimum quality standards by intermediaries or the firms for whom they work. Members may thus engage in outside selling and free-ride on others' contributions to the cooperative (Vorlaufer, Wollni and Mithofer 2012), undermining the organization's financial stability and ability to provide reliable marketing and extension services. The next section examines these issues in the context of the Oro Verde coffee cooperative.

The Oro Verde coffee cooperative

The Oro Verde coffee cooperative of Lamas, Peru, was formed in 1999 with the support of the Alternative Development program of the United Nations Office on Drugs and Crime (UNODC), as Peru sought an alternative agricultural strategy in areas of the Upper Amazon that had been ravaged by the cocaine trade. Oro Verde achieved organic certification through Bio Latina in 2001, and gained admission to the FLO registry in 2003. From a small initial group of 56 members, the cooperative blossomed to 450 active members (*socios hábiles*) and 1.000 total members, including provisional members (*socios en acercamiento*), when the author first visited in January 2007. The organization now consists of 1.024 total members, who cultivate a total of 20.000 quintals (qq) of raw green coffee on 2.100 hectares and 5.000 sacks (60 kg) of cacao on 900 hectares, for a total of S/ 15.077.658 *nuevos soles* (\$5.472.834 USD) in gross sales (Aquino, 2012). From its origins in coffee, it has diversified into cacao, honey, organic sugar (called *panela*), a tropical nut called *sacha inchi* and a line of products for the domestic market that includes roast and ground coffee, chocolate in bar and powder form, *sacha inchi* oil, *panela* and honey; it owns and operates a retail outlet, lodge and conference center in Lamas. The cooperative has cultivated a broad and deep network of relationships with organic and fair trade certified coffee and chocolate buyers and roasters, as well as international development agencies including USAID; it exports to ten countries in Europe and North America.

Oro Verde was founded in the town of Lamas, population 16.871, the center of a Quechua-speaking region near the city of Tarapoto in the Mayo river watershed. From its beginnings, Oro Verde has worked closely with indigenous *Lamista* communities, establishing long-term relationships with their members and working closely with their leaders to integrate high-quality organic coffee production into the life of the communities. As of 2007, residents of *Lamista* communities represented 25% of the cooperative; 40% of cooperative members speak Quechua as a native language. While coffee has been cultivated in the Lamas region since the early 20th century, its importance to the region increased sharply in the aftermath of the cocaine boom of the 1980s, which brought about rapid deforestation, water pollution and a range of social ills including alcoholism, prostitution and violence. Coffee grows at roughly the same altitudes as coca, and has thus become a principal alternative crop for the region through the work of Oro Verde and its partners.

Oro Verde, like many coffee cooperatives, has suffered from problems of outside sales. In 2006, according to research done in 2007, 46% of all coffee grown by members was sold to private intermediaries, despite the fact that the average price premium, not including end-of-year dividend, offered by the cooperative was 37 Nuevos Soles/qq (\$0,25/kg in 2006 USD).³ Taking into account the end-of-year dividend offered by the cooperative, the

3 S/ refers to Peruvian New Soles; qq refers to the measurement unit *quintal*, defined as 46 kg of washed, dried green coffee beans. The average price premium only includes the coffee cooperative members who actually sold coffee to intermediaries.

average total price advantage offered by the cooperative was 86 Nuevos Soles/qq (\$0,57/kg in 2006 USD). In 2007, the cooperative management expressed concern that outside sales would increase, since world coffee prices had risen from the previous year and as a result, local private intermediary traders were increasing the prices they offered to farmers. Managers were concerned that the resulting reduction in patronage would jeopardize the coop-

The cooperative has cultivated a broad and deep network of relationships with organic and fair trade certified coffee and chocolate buyers and roasters, as well as international development agencies including USAID.



erative's ability to fulfill contracts with buyers that it had signed in advance of the harvest. These problems were discussed frequently in cooperative meetings, with managers and agronomists engaging in vigorous persuasion to induce member patronage and dissuade members from engaging in outside sales.

Informal discussions and semi-structured interviews with growers in 2007 revealed that the growers' need for short-term cash was a major factor behind their decisions to sell to outside intermediaries rather than the cooperative. As in many agrarian regions, private intermediaries in Lamas tend to pay growers more promptly than the cooperative (Bacon, 2008; Fischer and Qaim, 2011). Wage labor constitutes the largest single harvest season expense for most coffee farmers, and is thus the primary reason for grower's immediate cash needs. Growers reported average total hired field labor cost of 9.262 Nuevos Soles/ during 2006 (\$2.832 in 2006 USD); average total income from coffee was reported as 16.861 Nuevos Soles/ during that year (\$5.156 in 2006 USD). Wage labor thus absorbed an average of 55% of coffee growers' gross household income during 2006.

Family-based household labor is common among coffee growers in the Lamas region, providing one stream of non-market labor that reduces growers' cash needs. However, family labor is not the only form of non-market labor available to coffee growing households. A large number of growers in the Lamas region practice an in-kind, non-monetary labor exchange called *choba-choba*. The practice of *choba-choba* consists of labor rotations among a pair or a group of households, lasting a day to a week in length, during times of peak labor demand, such as the harvest. Labor exchanges of this kind are traditional, ancestral practices that predate Spanish colonization and are common throughout the Andean and Amazonian regions (Mayer, 2001).

Table 1 presents a typology and breakdown of Oro Verde coffee growers' total annual labor from 2006, based on a survey from a cross-sectional random sample of 150 coffee growers taken in 2007. The sample was stratified across the sixteen village and towns in the region that contained cooperative members who grew coffee as of 2006. The survey includ-

ed questions about the amount of land under cultivation, the volume of coffee produced, the proportions sold through the cooperative and intermediaries, and the prices received; demographic information about the growers' household, including the number of working members by age and gender, and the number of members attending school. The survey also included questions asking the grower about the number of total person-days of hired wage labor during the previous season, and the number of total person-days of *choba-choba*.⁴ The anonymity of the survey was assured and an agreement to use the data anonymously was signed by all growers.

Table 1 indicates that 59% of Oro Verde members use some amount of *choba-choba* in their fields. On average, coffee growing households in 2006 made use of *choba-choba* for a total of 101 person-days, a total of 5,9% of all labor used by the household. Family-based household labor and hired wage labor are more common than *choba-choba*. In 2006 the average coffee growing household made use of family labor for 877 person-days (51% of all labor days) and wage labor for an average of 731 person-days (43% of all labor days). Though the use of *choba-choba* is widespread, it is not used intensively by most growers.

Table 1.
Typology and Breakdown of Oro Verde Coffee Growers' Annual Labor (2006)

Labor Type	Person-days / year			% total labor	% households participating
	Mean	Median	Standard Deviation		
Family (Within household)	877,3	715,0	457,4	51,3%	100,0%
Hired Wage Labor	731,4	705,0	603,3	42,8%	88,0%
Choba-choba (exchange labor)	100,6	36,5	145,1	5,9%	59,3%

Source: Enelow (2012).

The principal hypothesis of this study is that coffee growers who use proportionally more *choba-choba* on their fields will market a larger proportion of their product through the cooperative. The central claim underlying my hypothesis is that growers engaging in more frequent *choba-choba* are able to access a more reliable flow of labor than coffee growers engaging in less frequent *choba-choba*. This reliable flow of labor facilitates the cultivation, harvest, and primary processing of coffee beans that meet cooperatives' minimum requirements for bean quality and moisture content.

Non-market, in-kind exchange labor such as *choba-choba* ensures a more reliable flow of field labor for a coffee growing household due to local wage labor and credit market imperfections. There are three major reasons why *choba-choba* can compensate for market imperfections. First, as stated above, growers with available *choba-choba* require less cash on a short-term basis to finance ongoing cultivation and harvest operations. For growers

⁴ The number of family household labor days was imputed from the number of working members.

engaging in *choba-choba*, momentary shortfalls in the availability of cash will not translate into interruptions in field labor. Under conditions of perfect credit markets, such shortfalls would never occur; *choba-choba*, as a form of labor without a cash payment, thus substitutes for a missing or imperfect credit market. Second, *choba-choba* can meet temporary spikes in labor demand for growers holding coffee plots at varying altitudes. Due to the variability of plot altitudes within a community, the peak harvest, and hence peak labor demand, occurs at different times throughout the season. Due to regional labor market imperfections in Lamas, wage labor is not always available in sufficient quantity during times of peak demand; during the alternating slack periods, the members of coffee growing households do not always find employment. Exchanging labor with fellow community members thus represents an efficient use of scarce household labor.⁵ Third, given the presence of involuntary local unemployment, *choba-choba*, as labor repaid in kind, is economically cheaper than hired wage labor in terms of opportunity cost. Suppose the probability of finding a job on the labor market, given that one is actively looking, is p (< 1) and the local wage is w . The opportunity cost of family household labor or *choba-choba* is pw , which is less than the market wage. A day of *choba-choba* thus obtains a lower implicit wage than a day of hired labor.

The 2007 survey contained a module asking growers to explain their marketing behaviour. Growers were asked to report the quantities of coffee they had sold to the cooperative and up to three separate intermediary traders, and the prices received from each. Growers that had undertaken any outside selling were asked to state their reasons for doing so.⁶ Growers were allowed to give more than one reason for outside selling and were, in general, quite vocal about the motivations behind their marketing decisions. I grouped the 127 total responses to this question into three categories: quality, financial and organizational problems.

Response themes and categories are indicated in Table 2. The top two responses were “Coffee of poor quality” and “Need for quick money,” each with 38 total responses. We cannot tell from these responses the underlying causal factors responsible for the low quality of the coffee. Possible causes include: growers’ inexperience or lack of skill in cultivation; growers’ negligence (a form of free-riding); or a shortage of labor in the field. The third response, “Did not meet cooperative’s moisture requirements,” suggests that the growers had not properly supervised the drying of the coffee beans once they were picked. This issue, too, could be caused by either a lack of skill, negligence, labor shortage, or some combination of the three. Notably, in only four cases did a grower cite the intermediary’s superior price offer as a stated reason for outside selling.

5 A more detailed exposition of this argument can be found in Enelow (2012).

6 The exact wording of the question was: “Why didn’t you sell all your production to the cooperative last year?” (In Spanish, it was: “¿Por qué no vendió toda su producción a la cooperativa el año pasado?”)

Table 2.
Cooperative Members' Stated Reasons for Outside Selling

Response	# of Responses	Response Category
Coffee of poor quality	38	Quality
Need for quick money	38	Financial
Did not meet cooperative's moisture requirements	14	Quality
Badly timed collection process (<i>acopio</i>)	14	Organization
Cooperative failed to disburse funds	9	Financial
Intermediary offered superior price	4	Financial
Insufficient time / lack of desire to select beans	2	Quality
Lack of organic certification	2	Quality
Other organizational problems	6	Organization
Total Quality	56	
Total Financial	51	
Total Organization	20	

Source: Enelow (2012).

Determinants of Cooperative Patronage

The previous section argued that access to non-market labor brought about a more reliable supply of field labor for coffee growers. The qualitative results presented in Table 2 above suggest that labor availability may play a role in determining member patronage. This section links together the argument by testing econometrically the proposition that higher use of non-market farm labor practices is associated with increased patronage. To test this proposition, I use an instrumental variables (IV) probit model. The probit model was developed to analyze probabilities associated with binary outcomes; however, it can also be used to analyze fractional outcomes such as market shares, vote shares, or participation rates (Gardeazabal, 2010). The dependent variable of the model is the percentage of coffee marketed through the cooperative. The key independent variable of interest is the share of farm labor that takes the form of *choba-choba*. By using instrumental variables, I address the question of reverse causality from patronage to *choba-choba*. If participation in *choba-choba* does facilitate cooperative patronage and allows growers to realize higher output prices, then participation in a cooperative creates a positive incentive to engage in *choba-choba*. If this incentive exists, past patronage would lead to higher current *choba-choba* usage. This line of reasoning implies that growers with longer tenure in the cooperative will practice *choba-choba* at a higher rate, holding other factors constant.

If participation in *choba-choba* does facilitate cooperative patronage and allows growers to realize higher output prices, then participation in a cooperative creates a positive incentive to engage in *choba-choba*.



The second-stage regression uses six control variables. The *family_labor* variable refers to the share of total farm labor that is performed by members of the grower's household.⁷ *price_premium* refers to the size of the per-quintal price premium offered by the cooperative, which does not include the end-of-year, per-quintal dividend paid out by the cooperative to the members out of net revenues. By excluding the dividend, I measure only the effect of the immediate price incentive offered by the cooperative relative to the intermediary. *hectares_cultivated* refers to the size of the grower's landholding in hectares. *years_education* is a variable measuring the total number of years of education attained by the most educated member of the grower's household. *household_char* is a dummy variable for higher-quality dwelling characteristics including cement or wooden floors, brick or wooden walls, or tiled roofs; it is a proxy for household wealth. *received_credit* is a dummy variable that takes the value of 1 if the grower received credit from any financial institution, including the cooperative, during the past harvest season. Pairwise correlation between the *years_education* variable and the *choba_choba* variable is statistically significant at the 1% level; no other independent variables from the second-stage regression are statistically significantly pairwise correlated with *choba_choba*.

The first-stage regression models participation in *choba-choba* using three instruments across two different models, labeled A and B in Table 3 below. *native_community* is a dummy variable that takes the value of 1 if the grower resides in a native Lamista community: since *choba-choba* is a native custom, native community residence exerts a causal influence on participation in it, even though many non-native families have adopted the practice as well. This variable is included as an instrument in both specifications. *years_coop_tenure* is a variable measuring the number of years that the grower has been a member of the cooperative; it measures the endogeneity of *choba-choba* to cooperative participation. Over time, if *choba-choba* leads to better grower outcomes with respect to the cooperative, then cooperative members would increase their engagement in *choba-choba*, the longer they remain cooperative members. Finally, the *leadership_status* variable is a dummy variable that takes the value of one if the grower has served in a position of cooperative leadership in the present or any time in the past. This variable tests the hypothesis that cooperative leaders may be prone to engaging in more *choba-choba* due to higher levels of household social capital.

⁷ I cannot also include the share of farm labor performed by hired wage workers, since the three labor shares sum to one. Including wage labor would thus create problems of collinearity in my regression.

Notably, *leadership_status* is statistically significantly pairwise correlated with *choba_choba* ($p < 10\%$). Since *years_coop_tenure* and *leadership_status* are statistically significantly pairwise correlated with each other ($p < 5\%$), each are included separate specifications. *years_education* and *leadership_status* are also statistically significantly pairwise correlated ($p < 1\%$); the education variable is thus dropped from the second-stage regression in specification B, in which the leadership variable is included as a first-stage regressor.

The results are presented below in Table 3. Briefly, these results indicate that a higher share of farm labor as *choba-choba* is associated with a higher share of cooperative member patronage and a lower share of outside sales.⁸ The coefficient on *choba_choba* in the second-stage regression is positive and statistically significant at the 1% level or below in both models. *choba-choba* is positively associated with patronage when it is instrumented by native community residency, and either cooperative tenure as in Model A, or leadership status as in Model B. Importantly, in both models the first-stage variables are statistically significant and exogenous instruments for *choba-choba*. The *native_community* variable is statistically significant at or below the 1% level in both models. The *years_coop_tenure* variable is statistically significant at or below the 5% level in Model A, and the *leadership_status* variable is statistically significant at or below the 10% level in Model B. A Wald test for instrument exogeneity indicates that the first-stage instruments are statistically significantly exogenous at or below the 5% level in Model A, and the 10% level in Model B.

The coefficient on *family_labor* is positive and statistically significant at or below the 5% level in both models, suggesting that increased use of family labor is also associated with increased patronage, which confirms the central hypothesis regarding the beneficial impacts of non-market labor. The coefficient on *price_premium* is also positive and statistically significant at or below the 5% level in both models: higher price premiums paid by the cooperative are correlated with higher patronage. Size of landholdings, household characteristics, and households' receipt of credit play no statistically significant role in determining patronage. The *years_education* variable is negative and statistically significant at or below the 5% level in Model A. Additional years of education by cooperative members are negatively correlated with patronage, perhaps due to superior market opportunities outside the cooperative for more educated cooperative members. The Wald test for joint significance of the coefficients returns a chi-squared variable with seven degrees of freedom; it is significant at or below the 1% level in both models.

8 In a probit model, the marginal effects of each independent variable are non-constant and depend on the values of the other coefficients. This essay does not report these marginal effects but limits itself to reporting qualitative results for reasons of space and complexity.

Table 3.
Results: Determinants of Cooperative Patronage

Variable	Model	
	A	B
<i>Choba_choba</i>	6,12***	5,64***
<i>Family_labor</i>	0,79**	0,80**
<i>Price_premium</i>	0,006**	0,006**
<i>Hectares_cultivated</i>	0,035	0,019
<i>Years_education</i>	-0,086**	
<i>Household_char</i>	0,016	0,016
<i>Received_credit</i>	-0,01	-0,002
CONSTANT	-0,26	-0,74***
Instruments from First Stage Regression		
<i>Native_community</i>	0,087***	0,086***
<i>Years_coop_tenure</i>	0,008**	
<i>Leadership_status</i>		0,03*
Log pseudo-likelihood	56,36	49,36
Wald (joint significance)	44,88***	40,95***
Wald (instrument exogeneity)	4,9**	2,93*
*≤10%; **≤5%; ***≤1%		

Source: Enelow (2012).

Conclusions

The results of this study indicate that non-market labor practices, including both *choba-choba* and family household labor, play a supportive role in fostering agrarian marketing cooperatives' stability and financial viability. Growers that rely to a greater extent on non-market labor engage in fewer outside sales and more cooperative patronage per volume of product. These results suggest a strong role for non-market labor practices in the process of building cooperative, democratic institutions in agrarian regions of the developing world. Fair trade relationships, through the price premiums they offer, provide a bulwark of support for this process. The process of forming cooperative-based market relationships and institutions may be more successful in communities with strong pre-existing local structures of cooperation and reciprocity. The results suggests that agricultural communities which are heavily dependent on wage labor contracted through labor markets may find cooperative structures more difficult to set up and maintain.

These results also indicate that patterns of non-market exchange are capable of influencing market outcomes. In the context of a cooperative-based market system, coffee growing households that work together outside the labor market attain more favorable market outcomes, in the form of higher output prices, than households that do not. Further work in economic theory can thus examine the social dimension of market transactions as an important determinant of outcomes. Echoes of this argument can be found in contemporary accounts of community-based enterprises in the Andes (Peredo, 2012), in which communities act as collective entrepreneurs. The finding also harkens back to earlier accounts of Andean production relations that emphasize what Guillet (1977) calls “associative production strategies” employed by village communities in the pursuit of economic security and well-being.

The fair trade system stands as an experiment in constructing a different market (Vanderhoff Boersma, 2009) that bases its core trading relationships on reciprocity and enlightened self-interest rather than profit-maximization and greed. While the system has had an undeniable positive impact, its reach has been limited by unequal power relations and persistent poverty in rural regions of the developing world. This study suggests that local forms of cooperation such as *choba-choba*, as well as strong family household labor practices, stand as important building blocks in this “different market”, by underpinning the success of formally structured cooperative organizations. Support for non-market labor practices within coffee growing communities can thus play a potentially important role in deepening the impact of the fair trade system.

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