Clientelism among Smallholders and Grain Traders in Ethiopia: Opportunity or Threat?

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Abstract: *Agricultural commodity markets in Africa are characterized by informal transactions in which social networks and personal acquaintances are widely recognized means of exchange. Clientelism is one form of informal transaction in which a buyer and a seller interact repeatedly over an extended period of time. This paper explores the empirical rationales behind clientelism, as well as potential problems that arise as a result of its widespread use. The empirical tests are based on estimation of reduced form of regression equations derived from a time-varying repeated structural game. The structural game has been formulated to replicate the setting of Ethiopian grain markets and used to predict the hypothesis that if participation in clientelism is driven by information access and screening cost, then repeated transaction will create trust among incumbents and restrict new market entrants. These predictions are tested using data from two markets in Ethiopia in 2009. Results support the view that clientelism has been driven by access to information and the costs of screening. Further, clientelism is seen to have positively impacted prices received by producers. This implies that establishing a degree of trust that results in receiving better prices, requires considerable investment that would make break up costly and market entry difficult. A policy implication is that steps to improve information access and reduce uncertainty will not only increase prices received by farmers but also enhance the long-term competitiveness of markets.*

JEL: O13; Q13; L14

Key words: Information uncertainty, clientelism, repeated transaction, market entry, Ethiopia

Introduction

Agricultural commodity markets in Africa have been described as flea markets in which transactions are small and numerous, and these transactions are primarily conducted on a cash-and carry basis (Fafchamps and Minten, 2001). In these markets, one observes no order placement, no invoicing or payment by check, little reliance on credit, and no warranty. Legal systems that underpin the existence and enforcement of exchange in developed economies are either missing or highly ineffective. As a result, these markets are characterized by high transaction costs, large price risks, information uncertainty and frequent government interference (Barrett and Mutambatsere, 2005).

Smallholder producers face information uncertainty between the times of land preparation and harvest and sale. Of particular importance is the information uncertainty in the market place where producers gamble not only with their 'ignorance' but also with the strategic reaction of the informed buyers. On one hand, producers hardly know the ongoing central market price for the quality and quantity of grain that they are supplying to the market. Most producers do have little information about the central market price of the day and the weight of their produce while they are packing for sale. Moreover, grain quality standard is very subjective. No one in the market perfectly grades grains except experienced buyers. In large urban markets, let alone small rural markets, quality standards are very rare. On the other hand, local traders who buy grain from producers know the market better than producers1. Knowing that producers often lack full information regarding the day's price and the weight and grades of their produce, buyers usually offer lower price than the on-going market price. If producers think that they have been cheated, there is no formal way of reclaiming or reinforcing

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[1] Producers, in some respect, have better information than traders. Particularly, producers know the cost of production and the harvest condition in rural areas better than traders. This may help to forecast the local market supply and price. However, this information has less relevance to predict the central market price which is determined by the interplay of the nation's aggregate supply and aggregate demand. Small producers have little information on these variables.

agreements. Thus, smallholders bear huge transaction cost either through receiving a value lower than

the market value (moral hazard problem) or through incurring substantial cost for searching the right

price.

   In order to reduce transaction costs, producers typically sell their products through a variety of

informal channels, relying on personal acquaintances, social networks and clientelism. Clientelism is one

form of exchange enforcement mechanism that prevails within the wider spectrum of exchange known

as a bazaar market (Gabre-Madhin, 2009). Geertz (1978) has defined clientelism as ''the tendency for

repetitive purchasers (sellers) of particular goods and services to establish continuing relationships with

particular purveyors (buyer) of them, rather than search widely through the market at each occasion of

need.''[2]   Clientelism helps to reduce costs related to information uncertainties and helps to secure

social services such as administrative, legal and credit services during crop failures, and storage service

for grains if the day's price is very low.

   Though clientelism possibly reduces information uncertainty and improves sellers' access to social

services, it may, unfortunately, jeopardize the long-term competitiveness of the market by restricting

the entrance of new traders into the market. If a seller or a buyer extends loyalty to a specific buyer or

supplier, it becomes difficult for new buyers or suppliers to enter. As a result, an incumbent buyer

behaves like a monopolist, generating potential deadweight losses. Intuitively, one might expect loyalty

to emerge when the cost of establishing new relationships is large. This motivates us to ask whether

observed levels of information uncertainty are sufficient to motivate producers to engage in clientelism

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[2] This is the economic definition of clientelism. In Political Science clientelism refers to a form of social organization characterized by "patron-client" relationships, where relatively powerful and rich "patrons" promise to provide relatively powerless and poor "clients" with jobs, protection, infrastructure, and other benefits in exchange for votes and other forms of loyalty including labor(Robinson, and Verdier, 2003). While this definition considers clientelism as an exploitation mechanism, in economics in general, in this paper in particular, clientelism is considered as economic mutualism whereby both parties can be benefited.

and whether the cost of establishing new relationships is large enough to encourage agents to remain loyal.

Our basic argument is that a lack of a well-established information system motivates producers to engage in clientelism if repeated client-based transactions provide the grounds to establish trust and trustworthiness among exchanging parties. Repeated transactions deter opportunistic breaches in contract because the costs of observing actions and searching for information are high (Banks, et al., 2002, Fafchamps, 2004, Hviid, 1998, Klein and Leffler, 1981). Experience in developed markets showed that repeated transaction establishes trust and reduces behavioral risks (Kanagaretnam, et al., 2009). Conceptual and empirical analysis within the African context indicated that personalized relationships that involve frequent transaction have improved contract enforcement (Fafchamps, 1996, Lyon, 2000). Establishing network social capital through repeated transaction among grain traders in Ethiopian central market has also improved the welfare of traders (Gabre-Madhin, 2001). However, evidences are lacking on village level transactions, where producers' prices are determined.

This paper measures the effects of information and screening costs on the emergence of clientelism in rural Ethiopian grain markets. It also evaluates the effect of participation in clientelism on farm gate prices. We observe exchanges between producers and traders to test whether 1) clientelism creates trust among producers and traders 2) the cost of establishing a relationship is large enough to restrict market entry. To do so, we formulate time-invariant structural games that replicate the settings of Ethiopian grain markets and derive reduced form of equations. The reduced equations are estimated using data from two rural markets. Our findings provide insights into how informal institutions evolve to fill the void of missing formal institution and this institution by itself is imperfect.

Rural Grain markets in Ethiopia

Rural grain markets in Ethiopia could be described as flea markets in which marketing is carried out on few days of the week, transactions are very small, market participants are many and very small and

sales are purely carried out on cash-and-carry basis. These markets hold two parallel bazaars[3] in the same day and at the same place. The first bazaar is auction-type market which is very informal and has no any connection to the central market. Buyers in this market are consumers and retailers who need premium quality. The size of this bazaar is very limited on those commodities that have significant quality differences. Price is determined through decentralized negotiation between a buyer and a seller at a time. The sellers are the ones who offer the prices that the buyers either accept or reject or offer alternative prices. In this case searching is carried out by the buyer. There is no weighing machine and hence the weight of grain is estimated through experience. Entry requires extensive experience on quality grading and quantity estimation or the   use of brokers who have experience of doing so.

The second bazaar is the derived market that obtains price from the central markets. In this bazaar, grain buying price is supposed to be determined by deducting miscellaneous costs and a net traders' profit margin from the prevailing wholesale price in Addis Ababa (Dessalegn, et al., 1998). However, because of the information gap between sellers and buyers regarding the price in Addis Ababa, the actual price received by the producers is determined through decentralized negotiation between traders and producers. In this negotiation the trader offers the price and the seller decides either to accept or reject. Traders use their own weighing machine which could be in most cases dysfunctional. Since traders take a seat in the same place along a line, farmers can accept the first offer or reject and go for the other negotiation. The major participants in this bazaar are producers and wholesalers.

Marketing cost in the derived market depends on the flow of information regarding the on-going central market price, the quality grade of the grain and the weight of packed grain. Producers have limited access to this information – far more limited than traders. More than one third of producers do not know either the current market price or the quality or quantity of the produce they are bagging for

[3] A bazaar is a merchandizing marketplace where goods and services are traded openly

sale. In the absence of product information, knowledge about the type of buyer has long been acknowledged as the best strategy of business interaction. Unfortunately, such knowledge is also very rare in rural areas. The presence of information gaps allows buyers to engage in opportunistic behaviors, for examples paying a price lower than the competitively-determined price. It also forces sellers to engage in relational transactions. For example, our survey in 2009 indicates that more than 65% of smallholder producers in a rural market in Ethiopia sell their grains through personal relationships. Even grain traders dealing in relatively small volumes sell to retailers and wholesalers through networks with brokers. These brokers handle almost 52 % of the nation's total marketed surplus (Gabre-Madhin, 2001). In the following section, we formulate a model that helps to conceptualize the theoretical links between information uncertainty and clientelism.

The Model

Individuals often make calculated decisions about joining clubs, performing favors and making and maintaining relationships with an eye toward the future benefits of so doing. Matching in grain markets is not random. Smallholder producers and local grain buyers face a similar social environment within which they develop certain aspects of trust that can be used for developing and furthering trade relationships. Therefore, sellers might be expected to sell to those they know best, with the assumption that the buyer has a social and business incentive not to cheat even if the seller does not know the market price or quantity and quality standards.

The role of repeated transaction in creating trust and subsequently reducing transaction cost and improving contract enforcement has been studied(Fafchamps, 2004). The model presented here differs from previous contributions in two important ways. First the model is applied to a specific market where on-the-spot information searching is costly. Second, it considers a time-varying cost of establishing clientelism -- what may be called an investment or screening cost. The purpose of developing this

theoretical model is to inform the components of a reduced-form equation to empirically test important implications of the model.

A repeated game involving trust is used to show how clientelism (repeated interaction) impacts the strategic behavior of sellers and buyers in an imperfect grain market. In a market where grain sellers accurately know the spot price for the quality and quantity of grain they have on offer, transactions can takes place with any trader without meaningful cheating or loss. Under such circumstances neither party generates any rent or loss. They obtain normal levels of surplus b_k (for the buyer) and s_h (for the seller). However, the situation changes in the presence of information asymmetries. Let us assume that the seller (S) imperfectly knows the market price, product standard and weight before entering into the transaction. We denote this stock of knowledge as $\omega_0 \in \ 0,1 \ $. If the seller has full information, $\omega_0 = 1$. If the seller has no information $\omega_0 = 0$. We posit that knowledge is a stock that appreciates as a result of negotiating (haggling) with many buyers. Thus, the new stock of knowledge ω_n becomes $\omega_n = \omega_0(1+\sigma)^n$ where n is the numbers of buyers, and σ represents the rate at which negotiating generates knowledge.[4]

Using the structure of the trust game outlined by Kreps (1990), the game between the seller (S) and the buyer (B) is expressed as follows. The game begins with a decision for B, who can offer any price, including a price that is lower, higher or equal to the price prevailing in the central market. Hereafter, this prevailing market price is referred to as the competitive price. . In response, S can choose either to accept (trust) or reject (not trust) the buyer's offer. If S chooses to reject then the game ends and the

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[4] $n \in \left[0, \dfrac{\ln(1/\omega_0)}{\ln(1+\sigma)} \right]$

seller moves in search of another buyer, carrying with him the knowledge gleaned from the failed transaction. As a result of the failed transaction B gains $b_0 = 0$ and S gains

$$s_0 = s_h - (1 - \omega_0 (1 + \sigma)^n) V^m - nc \qquad (1)$$

where V^m is the value of the seller's grain valued by the competitive price and c denotes information searching cost per negotiation. If, at the outset, B instead chooses to offer the competitive price and S chooses to sell, then both players' obtain competitive profits b_h and s_h. This is equivalent to a perfect market outcome. However, if B cheats by offering less than the competitive price and S chooses to accept, then S obtains $s_b = s_h - (V^m - V_b^b)$ (i.e. S gives away some profits) and B gains $b_b = b_h + (V^m - V_b^b)$, where V^b is value of the seller's grain valued by the subjective price of the buyer.

The solution depends on the number of interactions and the costs of transaction in each strategy. If B gets to move (i.e., if the seller chooses to sell) then B can receive either a payoff of b_h by honoring S' or a payoff of b_b by cheating S. Since b_b exceeds b_h, in a one-shot interaction in which the future relationship is not relevant, B will always prefer to cheat ($V^b < V^m$) if given the chance. Knowing this, S's initial choice is either to search for information from other buyers (incurring extra cost) or proceed with the transaction forgoing some profits. The decision whether to trust and sell to B or to search further depends on the difference between the payoff from selling when B cheats and the payoff from refusing the offer. Information searching is the seller's equilibrium if the seller's total cost under searching is lower than under cheating. That is

$$1 - \omega_0 (1 + \sigma)^n V^m + nc \leq (V^m - V^b) \qquad (2)$$

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Those who have higher levels of initial knowledge and lower search costs will have a higher probability of opting for information searching. In a one-shot interaction, cheating is sub-game perfect for the buyer. However, the possibility of searching alters the buyer's subjective valuation. Rearranging the seller's equilibrium condition (1) gives us the optimal subjective price of the buyer as

$$V_b^{b*} = \omega_0 (1+\sigma)^n) V^m - nc \tag{3}$$

Buyers generate a rent from information if the knowledge of the buyer is low, or the cost of searching for information is very high.

Instead of a one-shot interaction suppose that the seller and the buyer will transact repeatedly. In this case a previous outcome is observed by both players before the next exchange. The analysis of this repeated interaction differs dramatically from the one-shot interaction in that B's action today may affect S's expectation of B's actions tomorrow. S's expectation, then, affects S's action and B's payoff tomorrow. Therefore, the trigger strategy of S would be to keep on selling to the trader if he reveals the true value in the first period but to move to other traders forever if he cheats. Given this strategy the trader will be left either to cheat and get a onetime information rent or reveal the true value and generate the competitive profit for long period of time. Let the duration of interaction is unlimited and B's and S's discount rates are r and δ respectively, then the B's total payoff for infinite period interaction will be $B_r = \sum_{t=0}^{\infty} \frac{b_c}{(1+r)^t}$. B reveals the true value, that is $V^b = V^m$, if

$$\sum_{t=0}^{\infty} \frac{b_c}{(1+r)^t} \geq b_c + (V^m - V^b) \tag{4}$$

In areas where the credit market is imperfect, discount rates are individual specific. Thus, traders with high discount rates remain rent seeking because gains from establishing long- term partnerships are low.

Given that trustworthiness is valuable to B, S continues to transact if the gain from having the long-term relationship is greater than the gain from a one-shot interaction after searching for more information. That is

$$\sum_{t=0}^{\infty} \frac{s_h}{(1+\delta)^t} \geq \sum_{t=0}^{\infty} \frac{s_0}{(1+\delta)^t} \Leftrightarrow s_h \geq s_0 = [(1-\omega_0(1+\sigma)^n)V^m + nc] \geq 0 \qquad (5)$$

where $(1-\omega_0(1+\sigma)^n)V^m + nc$ represents the total transaction cost made up of losses due to cheating and searching. Equation (5) implies that so long as the transaction cost is high, sellers prefer to repeatedly transact with the same buyer provided that the buyer chooses to reveal the true market value as a result of long-term trading. A successful partnership emerges if both parties are better off from the relationship.

So far we have assumed that clientelism is established without investment cost, which implies that the current action has no effect on future gain or loss. But this assumption is not realistic, particularly if the relationship depends on reciprocity. Farmers must incur substantial screening cost through continuous interaction with the potential partner even if the potential partner is not complying. The screening cost represents the amount of income lost during the screening phase or the cost incurred to examine the reputability of the potential client. This cost however will be declining as the relationship between the two parties strengthens. Whenever the screening cost is substantial but declining over time, the seller's payoff will never be constant. The net payoff will be increasing as the duration of relationship goes by. This makes the decision to participate in repeated transaction conditional on time-varying variables.

Let the screening cost be the deviation of the actual market value and the buyer's subjective valuation that decreases over time. We further assume that this cost depends on the information about

the reputation[5] of the potential partner. If the seller's access to information about the reputation of the buyer is indexed by $\beta \in [0,1]$, where $\beta = 0$ if the seller has no any information and $\beta = 1$ if the seller has full information, then the screening cost will be

$$Sc_t = (1-\beta)(V^m - V_t^b) \tag{6}$$

In the presence of screening cost, the seller continues to trade with the same buyer if the discounted net gain is higher than the gain from every time searching. That is

$$\sum_{t=0}^{T} \frac{S_h - (1-\beta)(V^m - V_t^b)}{(1+\delta)^t} \geq \sum_{t=0}^{\infty} \frac{s_0}{(1+\delta)^t} \tag{7}$$

Unlike in (5), the discount factors in this case cannot be netted out due to the time variability V_t^b in equation(7). An important implication of a positive investment cost is that a new trader will have a very small chance of trading with already matched farmers. This may threaten the competitiveness of the market.

The above structural equations can be summarized by the following reduced form of implicit function

$$P[CL=1] = f(\omega_o, \sigma, c, \beta, \delta) \tag{8}$$

where P is the probability of an outcome. CL is a binary variable that takes 1 if the producer sell based on clientelism, zero otherwise. Using these functions, the following testable predictions can be made

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[5] Reputation refers to the probability that the trader is trustworthy. Traders tend to be trustworthy if they are better off from repeated interaction. Some buyers may be better off from cheating always even if they know that the sellers will not come back if cheated.

1. If $\dfrac{\partial f}{\partial \omega_0} < 0$ and $\dfrac{\partial f}{\partial c} > 0$, then market information is an important problem to producers. This means

   that clientelism helps to reduce transaction cost associated to lack of well-established market information and services. Therefore, clientelism establishes trust among trading parties and reduces the opportunistic behavior of buyers.

2. If $\dfrac{\partial f}{\partial \beta} > 0$ and $\dfrac{\partial f}{\partial \delta} < 0$, then establishing clientelism will be costly. This is because the discount rate

   and the seller's information about the reputation of the buyers become important determinant if and only if the screening cost is substantial. Therefore, clientelism restricts market entry.

Data and Method

The Data

The data for the empirical analysis is obtained from a household survey conducted in 2009 in Southern Ethiopia. The study areas were Arsi Negele and Gununu woredas. Arsi Negele is located within the Oromia region while Gununu is located within Wolayta zone of the Southern Nations, Nationalities and Peoples region. Arsi-negele represents grain surplus producing areas while Gununu represents food insecure and deficit areas of the country. Arsi Negele has very good access for roads and hence markets are well developed than Gununu. About 150 farm households were sampled for interviews. Data were collected regarding household access to information, recent grain marketing practices and household characteristics. Households were randomly chosen and asked when they had last sold grain. Specific data were then collected regarding this last transaction. This approach was used to get accurate information regarding to whom they sold, how they sold, the quantity they bagged, and the price they received.

Method

We postulate that sellers repeatedly transact with the same buyer to establish clientelism as a way of minimizing the costs of searching for information. Therefore, participation in clientelism is a function of searching costs and investment costs. Search costs push and investment costs pull sellers to establish clientelism. A search cost depends on knowledge about the market and product, the opportunity cost of labor, and the quantity of grain under transaction. However, as outlined in the previous section, establishing clientelism requires an investment cost. The importance of this investment cost depends on the discount rate (inverse of wealth) and the seller's information about the reputation of the buyers. The following alternative models are used to examine the correlates with the decision to transact repeatedly with the same buyer:

A. $$CL_i = \alpha_2 + \gamma_2 APPI_i + \theta_2 Sc_i + \varepsilon_{2i}$$

B. $$CL_i = \alpha_3 + \gamma_3 APPI_i + \theta_3 Sc_i + \pi_3 W_i + \varepsilon_{3i}$$

C. $$CL_i = \alpha_4 + \gamma_4 APPI_i + \theta_4 Sc_i + \pi_4 W_i + \beta_4 Kb_i + \varepsilon_{4i}$$

where APP_i is a vector of household- and community-specific characteristics that represent the household's access to price and product information ( ). Some of these variables include distance from markets, experience (age), access to telephones, the presence of close family member in the market, ownership of radio and other village and personal characteristics.   is a vector that includes variables

of representing per unit searching cost (c). These variables include the size of grain the farmer sells in a marketing day, the household's labor endowment and the opportunity cost of labor as measured by participation on off-farm activity.   is the knowledge of the farmer about the reputation of potential

buyers before engaging on partnership. It approximates the screening cost of participating in a network. Proxy variables for measuring seller's knowledge about the reputation of the buyer are distance of the seller's home to the market, the presence of close family member in the market, age (marketing

experience), land owned per unit of consumer and prior kinship between buyer and seller. Land per consumer unit explains total grain production as well as total marketed surplus. The one with higher size of marketed surplus is supposed to visit the market more frequently than others. This enhances the chance of the seller's access to buyers' action.   is the wealth of a producer to represent for discount rate of individual households. Many studies confirmed that personal discount rates are inversely related to wealth of the person. We measured wealth by the size of livestock or the type of house (whether iron roofed or grass roofed) and the number of houses owned.

Since the dependent variable   is a binary choice variable, all models were estimated as Probit regressions. In order to test the robustness of the Probit estimation and further investigate the extent of clientelism, we estimated a Tobit model that uses the duration of partnership as the dependent variable. The duration of partnership refers to the number of years in which a trader and producer remained clients. The value is zero for those who do not participate in clientelism.

Farmers receive different prices for the same commodity in the same market. Possible explanations are information access, discretionary incentive and quality standard of the commodity. Assuming that clientelism helps to reduce information access problem, the impact of clientelism on the producer price can be estimated using the regression:

D. $p_i = \beta_0 + \beta_1 X_i + \beta_2 CL_i + e_i$

where p_i is per kilogram price received by the tth producer in the most recent selling of a given crop. Since price varies over time, the period was limited within three weeks. CL_i is a binary variable that takes the value 1 if the producer participates in clientelism, and zero otherwise. X_i represents a vector of covariates that includes location, discretionary incentive and quality standard of the commodity. Discretionary incentive is represented by quantity of grain supplied because buyers provide bonus price

if the seller supply more grain (see chapter 4). Since we lack reliable information on quality standard, this may cause a self-selection problem in equation (12). To control for any possible self-selection, the following alternative model is estimated

E. $p_i = \beta_0 + \beta_1 X_i + \beta_2 \widehat{CL}_i + \varepsilon_i$

where $\widehat{CL}$ is the linear prediction of model (4).

Results and discussion

Preliminary observations

Less than half of the sample, who sold grains (wheat & maize) and vegetables (onion, potato and green paper) to local markets reported that they are uncertain about price and product information prior to selling (Table 1). When producers lack access to market information, they opt for on-spot information searching. More than 70% of grain producers negotiate with two or more traders in a single marketing day before selling their product. It is not uncommon to negotiate with seven traders for selling a bag of grain. Absence of grain quality grades and small size of supply make negotiation a viable option to search for the right prices. Searching, however, entails huge cost of loading and unloading while physically moving the product, time spent of searching and all other hassles in the process. As an alternative to the costly case-by-case negotiation, producers tend to transact through social networks, acquaintances, and personal relationships. Farmers sell their products to a buyer with whom either they have long term business partnership or they have blood and social kinship or they have prior acquaintances. More than 60% of producers sell based on acquaintances. Three out of ten producers sell to the same buyers every time. Two out of ten producers sell to their near kin. Whenever the formal institutions fail to support the marketing system, it seems very natural for people to adopt informal ways of dealing with transactional problems.

Table 2 presents descriptive statistics on major household specific variables. The value of each variable is categorized based on participation in clientelism.   Of all the sample households about 72%

have supplied grain in recent times. Obviously, the number of producers who supply grain to the market is larger in Negele than in Gununu. The number of sellers who sold for the same buyer is also higher in Negele than Gununu. Sample households supply an average size of 1800 kilograms in a single sale. This size seems very large. But the survey time was a period of settling all debts including fertilizer credits and taxes so that producers have to supply large quantity of grain per day unlike other times. Half of the sample households own radio and about 45% have access to private or public phone. The samples were as near as one kilometer and as far as 18 kilometers from the market place.

Probit and Tobit estimates

Table 3 presents the results of Probit and Tobit estimations for the different models specified above. The models' prediction power ranges from 70 to 76 percent. Most estimated parameter values are robust to alternative specifications. In terms of prediction power based on model selection criteria (*aic, bic*) and X^2 value, out of Probit specifications, model C performs better than others. Tobit estimation measures the extent of clientelism measured by years of duration. The Tobit estimates are comparable to Probit estimates except on few variables (market distance and having close relative in urban centers). Seven out of the twelve variables have statistically significant coefficients.

The result shows that information uncertainty adequately explains the establishment of clientelism. The presence of telephone –private or public, household head age, education and quantity sold have consistent and significant effect on participation in clientelism. These variables represent access to price and product information and hence farmers who have access to private or public phone have lower probability of establishing long term partnership. Access to telephone reduces the probability of engaging on clientelism as much as 40 percentage points. Those with telephone access would easily get price information of the day prior to selling so that they do not need to sell their grain to a known buyer. Both private and public phone access are being expanding in rural Ethiopia in recent periods. This expansion has shown undeniable effect on grain marketing practices.

Education and age of the household head inversely and significantly associated to participation in clientelism. Better education mainly augments the seller a better position of selling to anyone because he/she can read the scaling machine and able to calculate the total price. One of the sources of cheating in grain market is traders' miscalculation of the total price even if the producers know the exact quantity and per unit price of the grain at hand. Age of the household indicates marketing experience that provides knowledge about the size of packing bags and the standards of the grain quality. As a result those who have experience (aged people) and education can easily sell to anyone without being cheated.

The quantity of grain (denoted as ''bulk size'') that a producer carried for sale has positive and significant effect on the probability of establishing clientelism. Producers who supply higher amount of grain would likely have higher cost of searching because of the need to move all grains while searching. Moreover, for a trader, the cost of losing a big seller is higher than the cost of losing small seller so that the trader provides different incentives to hold on such sellers as clientele. Besides offering the actual price, discretionary incentive is most common way of attracting producers (see the next chapter).

The types of house, market distance and having close relatives in urban areas have significant effect on participation in clientelism. The type of house being corrugated roofed or not to a greater extent determines the household wealth status in a transition economy. Other wealth indicators such as total livestock unit and the number of houses are not significant at all.

Market distance may represent information access ether about price and product or about buyers' reputation. The distinction depends on its sign. If market distance represents price and product information, households far from the market are more likely participate in partnership than near households. The result, however, indicates inverse relation that would support the idea of representing market distance as indicator of information about buyer's reputation. Information about buyer's

reputation reduces the level of screening cost. Thus, a negative significance of market distance implies the decisiveness of screening cost on seller's decision to engage on long term partnership.

The presence of close relative in a town was included to test if repeated transaction is dictated by the availability of information with regard to the reputation of the buyer or the need for getting non-information services such as storing grains while the price is low, first keen, etc. If the sign of urban relative was negative, it indeed was meant for non-information benefits. However, the result revealed that the presence of close relative in urban areas is positively related to the probability of selling to the same buyer. This implies that the information access about the potential partner is a significant factor to establish clientelism.

Implication on trust and market entry

A strong association between information access and clientelism implies that despite widespread interventions by the Ethiopian government, farmers still face significant problem of market information. This problem leads to repeatedly transact with the same buyer with the hope that trust will emerge out of the relationship. Asymmetric information and monitoring problems expose sellers to behavioral risks. Clientelism is a response to minimize these risks. In the absence of verifiable agreement and enforcing formal institutions, clientelism helps to establish mutual trust among trading parties. However, clientelism may not necessarily make a buyer honest because it could be optimal for the buyer to generate a onetime rent than foreseeing the future benefits from mutual trust. Producers were asked whether they have been cheated by their buyer or not. Of all the sellers about 39% perceive that they have received a value lower than the actual price. This number becomes quite contrasting when sellers are grouped in to participants and non-participants in clientelism. While only 23% of the sellers are cheated when they sell to their client, well above 48% are cheated when they sell to anyone.

The effect of screening cost on participation is strong. The negative and significant effects of market distance and having close relative in urban areas on participation show the importance of screening cost

in establishing clientelism. As implied by the joint test, wealth has also a positive and statistically significant effect on selling grain through clientelism. Wealthy households are expected to have lower discount rate than poor households that makes the cost of establishing clientelism lower for rich than the poor. Besides the indication that poor people are selected out from such informal institution, the result reconfirms the importance of investment costs in establishing clientelism.

If screening cost is decisive to join clientelism, the long-term competitiveness of commodity markets will be jeopardized. As argued earlier, if establishment cost is substantially high break-up among matched trading partners becomes so difficult so that new traders will find very small space to engage in. It is very rational for a producer not to break the relationship on which he has invested much to establish. This private rationality will however generate losses in social welfare by creating village level monopsony in the long run.

The effect of clientelism on producer price

Farmers receive different prices for the same commodity in the same market within the same week. We estimated price functions (D and E, above) to examine whether this price difference is explained by participation in clientelism. In these functions we include only few variables because of lack of adequate information on other potential determinants. However, the functions explain close to half of the total variations (Table 4.). The result shows that clientelism has positively and significantly affected the amount of price a farmer can receive in a given transaction. Establishing clientelism increases producer price by more than 600 ETB per ton. This value becomes bigger than 1000ETB per ton when self selection is controlled. The marginal effect of clientelism on price appears to be very high. This could be because of not controlling other important determinants including specific date of sale and quality of grains. Those who supply quality grain may form clientelism and the buyer will like to maintain them by paying higher price premium. Even if quality difference of maize and wheat grains is not very big as of *teff,* it will have impact to a lesser extent. We collected the price data for sales made within three

weeks. Though the daily price variability is not very high, certainly price will vary within these three weeks. Despite these limitations, the result robustly supports the view that clientelism helps to reduce marketing malpractices that would have resulted in receiving reduced price. In a market where public information easily flows to every potential participant, price should be the same to all.

Concluding remarks and policy implication

Transaction in a rural commodity markets is carried out through a variety of informal social relationships such as personal acquaintances, social networks, clientelism and kinships. This paper assessed the rationale behind clientelism and its possible consequences on the performance of the market. The performance of the market is measured in terms of establishing trust, reducing marketing malpractices and limiting market entry. The result indicates that clientelism is highly motivated by such factors as price and product information uncertainties and excessive information searching costs. The result confirmed the hypotheses that clientelism establishes trust that is not enforced by legal institutions. We also observed that the pull factors such as discount rate and screening cost weakly determine the probability of participation in clientelism. Therefore, clientelism will possibly restrict market entry and jeopardize the competiveness of the market in the long run.

Informal institutions (example, clientelism) evolved when formal institutions are absent or weak and they help grain producers to reduce transaction cost and information access and receive better price. Unfortunately, they also jeopardize the long term competitiveness of the market. These results imply that informal institutions are not perfect substitute of formal institutions. Therefore, policy makers have to seek effective and efficient market institutions that would provide timely market information and enhance competitiveness as the same time. Along with the new commodity exchange market, a mechanism of price display and product standardization (both quality and quantity) in rural areas is needed to facilitate the process of smallholders' integration to markets as well as to protect the market from opportunistic behaviors. Establishing a warehouse receipt system in which producers could deliver

their produce and obtain a receipt that certifies the quality and quantity of their produce could be one possibility. Though it seems costly in the short-term, the welfare gain will outweigh the cost in the long term. This system has worked in some African countries (Coulter and Onumah, 2002) . The new commodity exchange market initiative in Ethiopia shall consider expanding such system. Woreda level market regulatory bodies have to be empowered to monitor the correctness of private traders' weighing machine. In the mean time, expanding telephone services would help smallholders' access up-to-date information. Currently, most rural villages have no connection at all.

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Table.1. Observations from grain marketing in southern Ethiopia

Particulars	Values
Percentage of sellers who have	
Price information prior to selling	76
Product information*	48
Both price and product information	41
Percentage of sellers who negotiate with	
More than one buyer before selling	71
More than two buyer before selling	40
More than three buyer before selling	16
Maximum number of negotiation	7
Transaction based on previous acquaintances	66
Clientelism (%)	
2006 survey	27
2009 survey	37
Mean duration of clientelism (years)	
2006 survey	5.02
2009 survey	3.6
Kinship with the buyer (%)	
2006 survey	23
2009 survey	13

* It includes information about the quality standard and the weight of the product

Table. 2. Descriptive statistics

Variables	Description	Non-clienteles	Clienteles	difference
Woreda	1=Negele, 0=Wolayta	0.55	0.67	0.12
age	Household head age in years	48.51	41.46	-7.05**
Education	Years of education	4.12	3.97	-0.15
Radio	1=Own radio, 0= not	0.47	0.56	0.09
Telephone	1=Have access to telephone either private or public , 0= no	0.51	0.33	-0.18**
Labor	Number of adult labor in the household	3.97	3.36	-0.61*
Bulk size	The quantity bagged in recent sale in 100 kilograms	1.54	2.19	0.65*
TLU	Total livestock unit based on economic value	5.15	5.41	0.26
House number	Number of houses the household owns	1.41	1.51	0.1
House type	1= household owned iron roofed house , 0= if grass roofed house	0.48	0.54	0.06
Market distance	Household's distance to the nearest market in kilometer	8.02	8.50	0.48
Town relative	1=if the household have kin in town of the market place, 0= not	0.43	0.59	0.16*
Maize-price	ETB per kg	2.7	3.2	0.5
Wheat price	ETB per kg	4.1	4.6	0.5

* Significant at 10%, ** significant at 5% and *** significant at 1%

Table.3. Participation in clientelism (marginal effects and Z-values)

Explanatory variables	Probit models			Tobit estimates
	A	B	C	
woreda (d)	0.207* (1.80)	0.274** (2.27)	0.399*** (2.80)	3.020*** (2.81)
radio (d)	0.106 (0.98)	0.091 (0.86)	0.048 (0.43)	0 .585 (1.01)
telephone (d)	-0.273*** (-2.919)	-0.306*** (-3.088)	-0.404*** (-3.771)	-2.852*** (-3.84)
education	-0.030* (-1.786)	-0.033* (-1.932)	-0.041** (-2.432)	-0.206** (-2.20)
age	-0.012*** (-3.031)	-0.014*** (-2.930)	-0.017*** (-3.323)	-0.103*** (-3.61)
labor endowment	-0.027 (-0.993)	-0.02 (-0.691)	-0.02 (-0.649)	-0.171 (-1.07)
Bulk size	0.057** (2.30)	0.068** (2.41)	0.066** (2.43)	0.451*** (3.04)
Total Livestock Unit		-0.014 (-0.943)	-0.008 (-0.539)	-0.109 (-1.48)
house type (d)		0.207* (1.75)	0.239** (2.20)	1.371*** (2.17)
house number		0.012 (0.20)	0.021 (0.33)	0.226 (0.65)
market distance			-0.026* (-1.785)	-0.092 (-1.30)
town relative (d)			0.151 (1.38)	0.921* (1.67)
N	105	105	105	105
aic	128.09	129.91	127.45	234.76
bic	149.32	159.10	161.96	271.91
Chi2	22.51***	20.87**	26.78***	49.47***
% correctly predicted*	74.29	75.24	76.19	

(d) Marginal for discrete change of dummy variable from 0 to 1, * $p<0.10$, ** $p<0.05$, *** p<0.0
*the prediction is both for the participant and non-participant

Table.4. the effect of clientelism on farm-gate price

Variables	Exogenous (D)		Endogenous (E)	
	Maize	Wheat	Maize	Wheat
Clientelism	0.623*	0.699*	1.427**	1.913***
	(0.37)	(0.36)	(0.63)	(0.67)
woreda	1.500***	3.513***	1.696***	3.706***
	(0.4)	(0.65)	(0.37)	(0.5)
Quantity supplied	0.141	0.153*	0.069	0.114
	(0.09)	(0.08)	(0.09)	(0.07)
_cons	1.356***	0.451	1.216***	-0.066
	(0.4)	(0.67)	(0.37)	(0.53)
r2	0.378	0.467	0.41	0.6
N	49	49	54	55

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This PhD thesis comprises five chapters including an introduction and four separate papers. The overall objective of the thesis is to evaluate the performance of agricultural commodity markets in Ethiopia. Economists have long acknowledged the role of a properly functioning market in increasing productivity and enhancing food security. However, how to make markets work for everybody remains the concern of researchers and policymakers. In an attempt to identify market improving strategies, four separate studies are conducted. The studies apply an optimal mix of theoretical and empirical methods to derive relevant policy implications. The first study evaluates the effect of food aid on local food prices using partial equilibrium model and seemingly unrelated regressions. This study confirms that incoming food aid in Ethiopia is depressing commodity prices both in food deficit and surplus areas. The depressing effect is, however, higher for tradable commodities than non-tradable. The effect is also higher when food aid is shipped during surplus periods rather than during true-deficit periods. The second study utilizes rational expectation theory and threshold-switching regression and evaluates the effect of speculation on price dynamics. The study indicates that commodity markets in Ethiopia are responsive to speculations. Speculative behaviors of traders and farmers appear to cause a structural break in the price formation process. However, the speculative arbitrage is reasonably optimal. The third paper applies principal-agent model and multinomial-switching regressions to examine the impact of interlinked contracts on smallholder's market integration. This study concludes that interlinked contract that applies discretionary pricing motivates smallholders better than interlinked contract that uses collective bargaining with uniform pricing. The fourth paper assess the role of information uncertainty in explaining smallholders' decision to engage in relational market transactions using repeated game model and binary estimation methods. The major conclusion drawn from this study is that lack of well-established market information system can explain the emergence of relational market transactions (e.g. clientelism). Though these transactions are payable in the short-term, they will jeopardize the competiveness of commodity markets in the long run.

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