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Can agricultural traders be trusted? Evidence from Ethiopia

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ABSTRACT

Traditional food marketing systems in developing countries are presumed to suffer from a number of deficiencies. Policy makers therefore often try to regulate them and modern private market arrangements are increasingly emerging to help deal with some of the deficiencies. However, it is unclear if and to what extent regulation and modernization affects governance of these markets. We look in this paper at the case of coffee in urban markets in Ethiopia. We find no significant cheating with weights but there is illegal trade, with significant non-allowed trade of export quality coffee in local markets, and a consistent pattern of mis-representation of not easily verifiable quality characteristics. We further find that modernizing marketing formats, including modern retail, and branded and packaged products, deliver higher quality (at a high price) but they are not more trustworthy than traditional ones along these three dimensions.

Keywords; coffee, traders, trust, modern marketing, traditional marketing, government regulation.

1. Introduction

There is a long-standing debate on the appropriate role of the state and regulations of markets. This debate is especially vehement in developing countries where market institutions are often weak and markets are perceived to not fulfill the role that they are expected to play (Sahn et al., 1999; McMillan, 2003). This is a critical issue for policy making in agricultural and food markets in most developing countries given the important role that these markets play for livelihoods of poor farmers and the large share of food products in consumption baskets. As the functioning of food markets in most developing countries is often mistrusted, governments see an important role for regulation and intervention, as noted in the set-up of marketing boards and parastatals in a number of these countries (Rashid et al., 2007; Kherallah et al., 2000; Tschirley and Jayne, 2010; Jayne et al., 2006). The arguments mentioned for market interventions are, among others, related to high food price volatility (e.g. Rashid et al., 2007; Timmer, 1999), adulteration (e.g. Jia et al., 2012; Unnevehr, 2000; Maxwell and Slater, 2003), and uncompetitive behavior of traders (e.g. Masters, 2008; Osborne, 2005). [1]

However, few researchers have empirically studied to what extent these markets are competitive and margins reflect real costs and if traders in these traditional agricultural and food markets in developing countries can actually be trusted. Fafchamps and Minten (2001) find that markets are characterized by small transactions with often high transaction costs. Others find large transaction and marketing costs in these traditional markets (e.g. Ahmed and Rustagi, 1987; Gollin and Rogerson, 2010; World Bank, 2008). On the other hand, Sitko and Jayne (2014) illustrate in the case of 4 African countries a high share of maize farmers in final retail prices and Minten et al. (2013) find that margins in cereal markets are small and have improved over time because of better access to transportation and communication infrastructure.

Moreover, modern retail and other modern marketing practices, such as branding and standardized packaging, are emerging in these markets often driven by demands of richer consumers in these developing countries (Reardon et al., 2012; Reardon and Timmer, 2007). While consumers are attracted to the convenience of modern retail, the emergence of these

[1] However, some authors find that market interventions might make matters worse and that the role of the state should often be to only assure a conducive environment for private traders to function (Sitko and Jayne, 2014; Kherallah et al., 2000).

modern outlets goes often hand in hand with the development of brands where quality and quantity can supposedly be better trusted and for which consumers are often willing to pay significantly higher prices (Anholt, 2005). However, few people have actually tested the contribution of such modern marketing practices to improved market governance in these settings of food markets of developing countries.

The purpose of this study is to look at these issues in the case of coffee marketing in Ethiopia. Coffee markets in Ethiopia are an interesting case study as there are a number of government controls in this area and there is also high quality - with a number of easily and not easily observable characteristics - and price differentiation. There is also an emerging presence of modern retail and modern marketing practices such as branding and packaging in these markets. More in particular, we address two research questions in this paper. First, we analyze if private traditional traders can be trusted and we test if they cheat with weights or quality. We further also test if they are engaged in illegal trade. The Ethiopian government strongly regulates coffee markets and by law, all marketed coffee is divided in export and local quality. Only coffee that is of lower quality is supposed to stay in the country. We test to what extent this control is effective and if traditional traders circumvent this law. Second, modern marketing practices (packaging, branding and modern retail) are presumed to be more trust-worthy as they usually put in place more reliable supply chains (Reardon and Timmer, 2007). We test to what extent such modern marketing practices in coffee markets in Ethiopia lead to different market behavior. It is to be noted that there is currently no FDI in retail in Ethiopia and all modern market practices are implemented by an emerging domestic modern sector.

We find that traditional traders can be relatively trusted with weights and with easily observable quality indicators (such as impurities and washing of coffee), but not so with not easily observable quality characteristics (such as the origin of coffee). We also find that these traders trade in an important way in illegal (better export quality) coffee. Moreover, we find that modern marketing practices (modern retail, packing, branding) deliver higher quality (at a higher price) but we do not observe that they lead to significant improvements in governance and trustworthy behavior as they are characterized by similar practices as the traditional sector.

The findings lead to a number of implications. First, given the difficulty of controlling markets in these settings, one might re-consider the usefulness of using scarce resources spent on

controlling them. However, if these controls are deemed important, better mechanisms are seemingly needed. Second, it seems that consumer protection and improved market institutions might be needed especially in those cases where quality or safety of food and agricultural products are not easily observable to consumers. Third, modern retail practices lead in general to more trustworthy food supply chain. It is possible that modern retail in its current form does not assure quality and quantity yet because of the large informality of the coffee market, because of the early stage of supermarket rollout, as has been noted in other studies (Woldu et al., 2013; Ramaswami et al., 2009), or because of the low premiums that consumers are willing to pay for these assurance. Reducing informality of the coffee trade and allowing FDI in modern retail might likely solve some of these issues.

The structure of the paper is as follows. In section 2, we give some background on the urban coffee distribution in Ethiopia. Section 3 describes the data collection methodology and some descriptive statistics. In Section 4, we test to what extent traditional traders cheat with weights and quality and to what extent they engage in illegal trade. In Section 5, we present a typology of modernized marketing practices in this settings and try to understand if they are characterized by different behavior. We finish with the conclusions in Section 6.

2. Background urban coffee distribution

In contrast with most coffee exporting countries, Ethiopia is itself a major consumer of coffee and it plays an important role in social gatherings. In principle, all marketed coffee in Ethiopia has to go through one of the quality assessment laboratories of the Ethiopian Commodity Exchange (ECX) to determine the quality standard of the coffee. If the quality of coffee is judged to be of export quality, then it must be exported and cannot be sold locally. This makes the local market a residual market, where prices are in theory detached from international ones. Given the government's need of foreign currency to finance its ambitious development agenda, it may be the case that this export requirement has become increasingly stringent over time and there has been less coffee supplied to local markets. This pattern is possibly confirmed in Figure 1 where we compare the retail prices for coffee in Addis Ababa markets, as collected by the Central Statistical Agency, with export prices for coffee. We plot monthly differences as well as 12-

month moving averages of that difference to more accurately discern the trend.[2] While the retail prices for coffee beans in Addis Ababa was 20 cents lower per pound than export prices in the years 2002 and 2003, this difference was reversed in 2011 and 2012 when local prices in Addis Ababa were 20 cents or higher per pound than export prices. More recently, the price difference has readjusted so that the prices are now considerably closer, possibly because of the development of a black market (Fikade, 2014). Such informal markets are incentivized to develop given the possible rewards obtained from channeling export quality coffee to domestic markets.

FIGURE 1—DIFFERENCE BETWEEN ADDIS ABABA RETAIL COFFEE PRICE AND THE ETHIOPIA COFFEE EXPORT PRICE, 2002 TO 2013 BY MONTH

Key informants interviews with different key stakeholders in September 2013 allows us to present a taxonomy of urban coffee distribution systems in Addis. First, it is estimated that there are about 20 to 25 urban coffee collectors in Addis. They usually buy from the ECX market if coffee is to be used for grounding or they buy directly from rural collectors in the case of the marketing of coffee beans. Note that in principle, no such direct linkages with rural collectors are legally allowed. The main clients of these urban collectors are urban distributors or small-scale roasters.

Second, the large-scale urban distributors, which number about 20, buy from ECX for the lower quality or they also purchase the better qualities from the urban collectors. These urban distributors possess or rent warehouses, often located within the city and not for far from the wholesale market and they usually buy up large quantities of coffee (often measured in truck loads). Total sales by these distributors combined range typically from 3 to 8 trucks per day. They are seemingly the most capital intensive traders in the urban coffee value chain.

Third, about 240 semi-wholesalers operate on the "coffee street" on the *Merkato* market, one of the largest open-air markets in Africa, covering several square miles.[3] These semi-wholesalers usually buy from urban distributors and sell raw beans to retailers (traditional or modern ones), cafés or coffeehouses, roasters, or to a lesser extent to consumers. Respective percentages of

[2] Unfortunately, we cannot control for changes in coffee quality over time, but it seems safe to assume that these do not explain these trends.

[3] We use the name 'semi-wholesale' throughout the text as these traders do sell directly to consumers as well, which distinguishes them from pure wholesalers.

shares of total sales were evaluated by key informants at 60%, 20%, 10% and 10% respectively. Semi-wholesalers are usually exclusively dealing in coffee. A typical semi-wholesaler will have 10 to 15 bags on display in their stall.

Fourth, roasters roast and/or grind the coffee. They buy from urban collectors or from semi-wholesalers. These roasters use mostly rejected (for export purposes) coffee from ECX. They possess or rent traditional manual roasters or electric ones. They usually sell to cafés (that use machines), coffee shops, mobile coffee sellers, or retailers. It is estimated that three-quarters or more of the roasted coffee would be sold to cafés or coffee houses, present all over Addis.

Fifth, coffee retailers from traditional or modern formats often buy from semi-wholesalers on the *Merkato* market and then resell to consumers. Some of the smaller retail outlets might also purchase their produce on one of the open markets in the city that might be located closer to their sales outlet and then re-sell from there. The number of these open markets in Addis is however limited and might in total not exceed 25.[4]

3. Data collection and descriptive statistics

3.1 Data

A survey of coffee semi-wholesalers and retailers was conducted in Addis Ababa in October 2013. The survey was set up as follows. First, all semi-wholesale trade of coffee is centralized and conducted on the *Merkato* market. A census of all the semi-wholesalers on this market was conducted prior to the survey. A total of 240 semi-wholesalers was identified and 100 of them were subsequently selected randomly to be included in the survey. Information was collected on all the types of coffee sold and prices asked for the coffee. Coffee was also purchased from all the surveyed semi-wholesalers and quantity and quality of the purchased coffee was then assessed afterwards.

Second, to select a representative sample of coffee retailers, a more complicated set-up was required given their spatial spread in the city. Based on the map of the city, we created five geographical strata with two neighboring similar sub-cities in each stratum. We then randomly selected one sub-city from each stratum, giving us in total five sub-cities to work with. Next, we

[4] Such markets are called open as traders often trade in open air. However, in some of the markets, shops have been established over time.

collected information from the city's Trade and Industry Office which provided us complete lists of coffee retail outlets (i.e. regular shops, minimarkets and supermarkets) in each sub-city. In each selected sub-city, four *kebeles* were selected randomly. [5] The following sampling scheme was set up. At the *sub-city* level, all coffee traders in all open markets (104) and all supermarkets (53) and mini-markets (97) in the selected 5 sub-cities were surveyed. At the *kebele* level, 10 regular shops from each *kebele* were randomly selected and interviewed and almost 200 such shops were visited. Detailed information was collected on, among others, socio-economic characteristics of the retailer, turnover, price at the time of survey, and the stated quality of coffee. Coffee was bought from about half of the retailers, chosen in a randomized fashion (Table 1). In total, we surveyed 543 coffee traders (wholesalers and retailers). Table 1 gives an overview of the sampling set-up.

To objectively analyze quality and quantity that these traders sold, a sample of one kg was bought from all wholesalers and almost half of the retailers, for a total of 262 samples (Table 1). In the case of retailers, the most frequently sold variety was bought, i.e. the variety for which most bags were displayed. For semi-wholesalers, we focused on the three main coffee types (Sidama, Jimma, and Wollega) and washed and unwashed coffee was purchased for each of these varieties.[6] One type was purchased in a predetermined sequence from each semi-wholesaler. To evaluate exact weights, samples were measured using two electronic scales and averages of these two measures are used in our further analysis. Subsequently to the quantity assessment, the 262 samples were packed in standardized bags and brought for quality evaluation to the Coffee Liquoring Unit Center (CLU), the agency that is assigned to assess coffee quality of each coffee lot before it is allowed to be exported.

Table 1: Sample set-up

[5] *Kebeles* are the second administrative level for the city under a given sub-city (recently *kebeles* have been re-organized to *woredas* with slight changes in geographical coverage).

[6] The quality of coffee can be increased by washing, i.e. processing red cherries immediately after harvest in wet mills, instead of sun-drying the cherries. Washed coffee preserves the intrinsic quality of the bean better than unwashed beans, and the process leads to homogenous coffee with fewer defective beans. The washing process is carried out in washing stations where cherries are pulped immediately after harvesting, fermented in tanks, and washed in clean water to remove the mucilage. The wet parchment coffee is then dried in the sun. For unwashed coffee, cherries are dried on mats or concrete floors. After drying, the outer layer of the cherries is removed by hulling in coffee processing plants.

The analysis of coffee quality by the CLU is based on two measures, the raw and physical inspection, and the cup inspection. The raw and physical inspection contributes for 40 percent to the final quality grade, while the cup inspection contributes for 60 percent. However, moisture and screen analysis are the two requisites before grading any coffee. The moisture content should be less than 11.5 percent, while the size of the bean should be above screen size 14 for 85 percent of the bean sample. In the case of unwashed coffee, raw quality is determined based on defect count of the beans and on odor. In the case of washed coffee, the raw quality is based on an assessment of shape and make, color, and odor. Cup quality is assessed along four criteria, including cup cleanliness, acidity, body, and flavor. Each characteristic counts for 15 percent of the 60 percent of the cup quality value. The washed coffee export standards vary between grade 1 and 2, as well as under-grade (UG) while unwashed coffee is graded 3, 4, 5, or under-grade. Within the under-grade category, a further distinction is made for under-grade type 'inferior, but exportable' coffee, while the worst under-grade coffee is 'not exportable' and is destined for domestic consumption.

3.2 Descriptive statistics

Table 2 presents some basic descriptives of the coffee retailers in Addis. As stated in the sample set-up, the majority of the interviewed retailers managed regular shops who sell a number of other consumer goods on top of coffee. "Modern retail" outlets make up 34% of our sample (Table 2). It is to be noted that Ethiopia does not allow Foreign Direct Investment (FDI) in food retail and there is therefore no presence of multinational supermarkets that are commonly found in a large number of other African cities. The domestically owned supermarkets and mini-markets that are found in the city do often not resemble the ones that might be found in these other settings. In our analysis, we apply as a definition of modern outlet a shop where there is self-service or at least one cash register. Supermarkets were defined as those where both conditions are fulfilled. The others were classified as mini-markets. Using these definitions, 12% of the surveyed outlets were classified as supermarkets and 22% as mini-markets (Table 2).

We asked all coffee retailers to assess the importance of coffee in their total retail trade. For the majority of these retailers, coffee trade is minor in their total retail turnover. 39% of the retailers estimated that coffee makes up 1% of less of their trade; 28% estimates the share between 1 and

25% (Table 2). However, some retailers almost exclusively depend on coffee for their income. Such retailers often operate in open markets. We also asked retailers to assess quantities sold and type of buyers they sold to. The most traded type of coffee is beans, which is traded by 88% of the retailers while branded coffee is traded by 39%. The approximate daily number of consumers is 2 in the case of raw beans. The majority of the coffee that is sold by these retailers is directly marketed to consumers. Other coffee retailers or 'others' (often coffee shops) are relatively less important as buyers.

Table 2: Descriptive statistics coffee retailers

Table 3 below presents descriptive statistics of prices and quality characteristics of the coffee on sale at the retail and wholesale level. A kilogram of coffee was sold, on average, at 69 Birr (3.5 USD) in the wholesale market over the period of the survey. This compares to an average price in the retail market during the same period of 93 Birr (4.6 USD) per kg, implying a 26% margin for these retailers. It is to be noted that almost all of the retailers obtain their coffee supplies from the wholesale market. The open market retailers often have similar characteristics as the semi-wholesalers: their main clients are more often other retailers than consumers; they sell a wider range of coffee types than other retailers; and their prices are often also slightly below those of the other retailers.

An average semi-wholesaler sells 4 different types of coffee while a retailer sells on average only 2. Traders' knowledge about the origin of the coffee they sell diminishes significantly between semi-wholesale and retail level. The origins of coffee in Ethiopia is strongly related to taste, that is often also reflected in prices, especially so in export markets (Minten et al., 2014). Kufa (2012) associates tastes and regions as follows: spicy for Sidama, fruity for Wollega (Nekempt), floral for Yirgacheffe, winy for Limu and Jimma, and mocha for Harar. While only 3% of the wholesale market traders reported that they did not know the origin of coffee they sold, this figure stood at 46% for the retailers. Wollega/Nekemt, Djimma and Sidama are the most available types of coffee in the local market, as found in the export market (Minten et al., 2014). Most of the coffee sold in these markets is unwashed. While this characteristic is more easily observable than origins of coffee, a number of retailers (40%) were also not aware of the type of initial processing that the coffee bean had gone through. The Table also shows that processed coffee products - grounded and roasted coffee - are not available on the wholesale market but

they are important in the sample of the coffee on sale in retail markets. 35% and 2% of the coffee types for sale in retail markets where grounded and roasted respectively. We also note different practices in containers that coffee is sold in. While all coffee is sold loose at the wholesale level, this is only the case for 42% of coffee sales at the retail level. Packed and sealed coffee with a transparent or non-transparent plastic make up 24% and 33% respectively of coffee on sale.

Table 3: Descriptive statistics coffee on sale

4. Traditional markets

In this section, we study to what extent traditional market formats can be trusted along the three dimensions discussed earlier. We define these traditional market formats where products are sold in loose formats as well as those outlets where there is no option of self-service or where there are no cash registers. We first test to what extent there is cheating with weights. Table 4 shows the results of the tests for semi-wholesalers, regular shops, and open markets. We note that the prevalence of cheating with weights in these traditional markets is relatively low. The mean of semi-wholesalers is 0.8% lower than the presumed one kilogram while it is even 0.4% and 0.3% higher for regular shop and open market traders respectively. In the case of semi-wholesalers, 75% of them sold a weight that was lower than 1 kg and the difference of the average quantity sold was significantly different from 1 kg as measured with a t-test. On the other hand, in the case of traditional retailers, 64% and 57% of regular shops and open market retailers respectively sold more than the agreed 1 kg. The difference of the average quantity sold was significantly higher than 1 kg as measured with a t-test in the case of regular shops. Similar findings were reported by Minten et al. (2010) in India's traditional markets. When we look only at any coffee sold in loose form across different formats (modern and traditional), we do not find any significant difference with the agreed upon quantity.

Table 4: Weighing assessments in traditional markets

In a second assessment, we analyze the extent of cheating with quality. As stated in the methodology session, samples were bought from a number of traders and we then got it tested at the quality assessment laboratory of the Coffee Liquoring Unit (CLU). We find that the coffee that is sold at the semi-wholesale and retail level is mostly export quality coffee. Only 3%, 9%,

and 16% of the coffee samples bought with semi-wholesalers, regular shops, and open market retailers respectively were assessed by the CLU to be unfit for export (Table 5). While the coffee grades that are found on traditional markets would fit export criteria, the coffee sold is however mostly of lower quality. 41% of the coffee sold by semi-wholesalers is rejected for grades, but would be higher than under-grade, while 33% falls in the under-grade level. Better export quality is however also present on these local markets. 16% of the samples that were taken from semi-wholesalers would make it fit for grade 2 export level coffee, one of the best coffees exported from the country (grade 1 coffee is of minor importance in exports). However, these levels are significantly lower in traditional markets, indicating that the better quality coffee sold by semi-wholesalers likely goes to modern outlets, as well as coffeehouses, cafés, and some hotels (as stated by key informants).

While there is transgression on laws, this does not imply cheating in quality sold to the customers. We look next at this issue. Coffee origins are major determinants of coffee prices in export markets and on the ECX trading platforms with prices for Harar, Sidama and Yirgacheffe the highest while those of Wollega and Jimma the lowest (Minten et al., 2014). In the case that traditional traders were able to report the origins of the coffee, it was analyzed if the stated origins were of a higher value than the actual origin. Interestingly, in few cases did the stated origin match the actual one. This was only the case in 13% of the samples of semi-wholesalers. In 66% of the cases, semi-wholesalers reported an origin that had a higher value while in only 21% it was reported to be from an origin of a lower value. This provides relatively strong evidence of cheating by traditional traders in this area. While a large number of retailers did not report to know the origin of the coffee, when they knew, overstatements of origins were even more prevalent in the case of traditional retailers than for semi-wholesalers.

The same exercise was done in the case of washing of coffee, a more easily observable characteristic. In this case, 91% of the statements of the semi-wholesalers matched the actual status of the sample. In the case that there was a mismatch, the likelihood of overstating (6%) quality was higher than that of understating (3%). Similar patterns are found in the traditional retail markets. When we look at loose non-packed products, we find overstatements in origins to be very prevalent but we find large levels of matching in the case of washing.

Table 5: Quality assessments in traditional markets

We find overall that the current controls to avoid the marketing of export quality coffee in the country to be in-effective. As origins of coffees are more difficult to assess by consumers than weights and washing of coffee, our results further suggest that there is more cheating of these traditional traders with unobservable characteristics of a product than with observables. Our findings echo results from India where it was found that information about unobservable attributes was not credibly transmitted between buyers and sellers seemingly because they did not trust each other (Fafchamps et al., 2008). As a result, information about these attributes does not circulate through the value chain. This finding further raises questions on where the cheating of these un-observables in the system happens and on how it could be prevented. As most of the wholesalers deal almost exclusively in coffee, it would be hard to argue that they were cheated in the purchased coffee. It seems more likely that these traders might exploit ignorance of customers once that there is the possibility, as was possibly the case of enumerators that showed up at their shop in a one-off situation.[7]

[7] It should also be noted that this is likely to be perceived to be an artificial situation as there are presumably more cases of repeated transactions as well as perceived informed buyers. This might then possibly lead to lower incidences of cheating at such levels.

5. Modern marketing practices

5.1 Typology of modern marketing practices

With growing economies and richer consumers who demand more services and convenience, and food safety and quality, food systems in developing countries often adjust with a number of modern marketing practices (Reardon and Timmer, 2007). Two modern practices are emerging in these food markets in general, and in coffee markets in Ethiopia in particular. First, modern retail has entered in an important way food and agricultural markets in developing countries (Reardon et al., 2003). Such modern retail outlets generally offer more choice of food products, emphasize the availability of parking space that is convenient for shopping by cars, allow consumers to benefit from one-stop shopping, and often put more emphasis on food quality and safety requirements in the value chain. Despite the prohibition of Foreign Direct Investment (FDI) in food retail in Ethiopia, a domestic modern private retail sector is quickly emerging.[8]

Second, packaging of products is often done differently in modern systems. In traditional food markets, products are mostly sold loose. In modern food markets, standardized packaging and branding of products usually takes off (e.g. Pingali, 2007; Reardon and Timmer, 2007). Unbranded and unpacked products are indistinguishable from competitors, but branded products add 'brand value' to a product and allow consumers to reduce search costs for guaranteed quantity, quality, and food safety (e.g. Anholt, 2005). In the case of coffee markets in Addis, four types of packed and branded products can be found. We distinguish branded bags and non-branded bags which can both be transparent or non-transparent. Transparency of bags is often presumed important in these markets where trust in the value chain and branding practices are often in their infancy.

Table 6 shows the type of packing and form of coffee products on sale in traditional, modern, and wholesale markets. Wholesale markets are shown to focus mostly on loose beans and processing and packing is seemingly happening at later stages. As expected, we find a strong link between the type of retail market outlet and the packing and form of coffee being sold. Traditional retail markets focus mostly on the sales of loose coffee. 60% and 74% of the coffee

[8] Woldu et al. (2013) show that its share is still very small and, in contrast to roll-outs of modern retail in other countries, it has not yet entered in an important way in the cereal sector, which remains in the hands of local flour mills, cereal shops, and cooperative retail outlets.

on sale by open market traders and regular shops were in loose form. Branded coffee makes up 17% of all the coffee in regular shops but is much less important at the open market level (5%). For the latter retailers, if bags are used, they are mostly non-branded transparent ones (35% of the coffee on sale). The sales of branded coffee is much more important in supermarkets and mini-markets. Table 6 illustrates that 85% of all the coffee sold by supermarkets is branded. This compares with 55% in mini-markets. Loose coffee is relatively important in mini-markets (28%) while it is almost non-existent for supermarkets (2%). Non-branded bags make up 13% and 17% of coffee on sale in supermarkets and mini-markets respectively.

Table 6 also shows large differences in the form of coffee sold between traditional and modern outlets. 95% and 83% of the coffee sold in traditional market outlets, i.e. regular shops and open markets respectively, are sold in the form of raw beans. This share drops to 46% and 20% in the case of mini-markets and supermarkets respectively. The majority of the sales of coffee in modern retail is in the form of grounded coffee, i.e. 72% and 52% for supermarkets and mini-markets respectively. Roasted coffee makes up 8% of the coffee on sale in supermarkets.

Table 6: Market outlets and type of coffee products sold

In early stages of the roll-out of modern marketing practices, prices for food products have been found to be higher but they decline significantly when these market operations reach scale (Minten and Reardon, 2008). We test to what extent these modern marketing practices lead to higher prices in the coffee sector of Ethiopia. We first plot a density function of prices that were offered in modern retail as well as for branded products compared to traditional markets. Figure 2 reflects the significant rightward shift for the distribution of the modern market prices, illustrating the premium for these practices. However, this price difference might be linked to other explanatory variables as well. We explore this below through the use of multivariate regression analysis and a hedonic pricing methodology.

Figure 2: Quality premiums for modern market practices in coffee

We run a regression where we use as a dependent variable the logarithm of the price of coffee expressed in Birr per kg and use as explanatory variables factors that measure quality and convenience, i.e. the type of shop, stated origin, washing, stated grades, form of the coffee, packaging and branding, and purity of coffee (as measured by the number of black beans in the lot), as well as variables that measure timing of the survey and location of the trader. We use two specifications in the case of stated qualities, i.e. a pooled specification and fixed effect model at the level of the market outlet, as well as one specification with the measured quality indicators. For all specifications of these regressions, robust standard errors were estimated.

The results of these regressions are presented in Table 7. They show overall that modern marketing practices lead to significantly higher prices than traditional ones. First, when we look at the pooled regression with the stated qualities, we see that supermarkets and mini-markets charge significantly higher prices for coffee than those found in regular shops, ceteris paribus. Prices are 33% and 9% higher in supermarkets and mini-markets respectively. We also find that, as expected, open market traders and wholesalers charge significantly lower prices, i.e. 5% lower than in regular shops.

Second, packing and branding lead also to higher prices in these markets. Branded products are significantly more expensive than non-branded ones as well as loose products. Branded bags with raw coffee beans are sold at a premium of 23%, compared to loose un-pure beans.[9] Differences are smaller when we compare to more pure loose beans, i.e. 7% and 13% difference with pure and slightly un-pure loose beans. We also find that non-branded bags are significantly more expensive than the loose un-pure coffee. Prices of coffee in unbranded bags are similar to the loose pure coffee. Grounded coffee is only sold in branded bags and they are sold at a premium of 34% compared to loose un-pure coffee. To control for effects of the outlet, we also run a fixed effect model. Results of this specification are consistent with the pooled specification.

The results of the stated quality specification regressions further show that stated origins of coffee have little influence on coffee prices. It is only in the case where there is no clear indication of origin such as rejected coffee of ECX that a significantly lower price for coffee is found. As expected, washed coffee is higher valued than unwashed coffee with a premiums

[9] We define un-pure as more than 5 black beans per handful of loose coffee. “Pure” implies no black beans while “slightly impure” involves between 1 and 5 black beans in a handful. These assessments were done by the enumerators.

between 11% and 13%. These differences in rewards are much lower than in export markets where rewards for washing typically hover around 20%). The lower the stated grade of the coffee the lower the price, and the more un-pure the coffee the lower the price. The results therefore indicate that there are significant rewards to the easily observable quality measures of coffee, such as the washing and the purity of coffee, but there are few rewards to not easily observable quality characteristics, i.e. the origin of coffee.

Table 7: Hedonic pricing of coffee in Addis wholesale and retail markets

Similar hedonic regressions were also run with the actual quality indicators as measured by the CLU on data from the purchased sample. This reduces the number of observation significantly (i.e. to about one quarter). Findings are in line with the overall sample. The measured origin has little impact on the price while observable characteristics matter significantly. However, it is interesting to find that while stated grades matter for prices charged, measured grades do not. The only measured grades that really push prices significantly downwards are the low quality grades ("rejected for grades" 7% lower; "fit at the under-grade level" 9% lower; and "unfit for export" 13% lower). It is possible that these low grades are more easily observable and therefore explain their low price.[10]

These results seem to indicate that there is a monetary pay-off for reporting good grades, even if they do not match measured grades in practice. In Table 8, we present a two-way table of the association between local stated and measured grades. While the local customs in coffee marketing have seemingly led to a different grading system than the one used by the CLU, we do find only a slight correlation between the local grades and measured grades, i.e. while 28% of the best local grade 1 fits in the highest measured grade by CLU (grade 2), there is however also a large proportion of the best quality that fits into the lowest measured grades (i.e. the category that is rejected for a grade and the one that is fit for under-grade). A similar pattern is observed for the local grade 2 but there are less observations in the highest categories.

Table 8: Association of stated local grades versus measured grades

[10] The grades given by the local traders mostly rely on easily observable quality indicators such as the number of black beans, share of broken beans, size of the beans, etc. Hence, local grading seemingly relies only on easily observable elements of the coffee while the CLU grading takes cup quality into account (counting for 60% of its assigned grade), which is not easily observable.

5.2 Are modern marketing practices more trustworthy than traditional ones?

We find that modern marketing practices lead to significantly higher prices in these markets. In this section, we test to what extent these modern marketing practices (modern retail, packing and branding) deliver better quality and to what extent they cheat with quantity and quality of coffee. First, Table 9 shows the results of our tests on weights. In all cases, we find that the average measured weights are lower than the presumed one kilogram and that the differences are significant at the 5% level, as measured with a t-test, in 3 out of 4 cases. We further also note that a much larger part of the samples are underweight, ranging from 85% of the branded products to 63% of coffee sold in mini-markets. However, as in the case of traditional marketing systems, cheating in weights is rather small: the differences range from 1.1% underweight in supermarkets, to 1.0% for packed products, to 0.6% in mini-markets.

Table 9: Weight assessments in modern marketing formats

Second, we look at quality delivery by these modern marketing formats and test to what extent there is over-or under-reporting of quality by them. A similar procedure is followed as in the analysis of traditional markets. Table 10 shows that measured coffee quality is significantly higher in these modern marketing formats than in traditional ones. The share of grade 2 coffee is as high as 50%, 15%, 46%, and 28% for supermarkets, mini-markets, branded, and non-branded packed products respectively. On the other side of the spectrum, percentages of unfit coffee is significantly lower than in traditional retail markets, except for mini-markets where the share of coffee that is unfit for export reaches 10%. The results also indicate that modern market formats engage as well in an important way in the illegal trade of export quality coffee.

In the case of reporting of quality, we find similar patterns as in traditional markets. There is significant overstatement in the origins of the coffees while the statements of washing is mostly a match. However, we do find that branded coffee is in this respect more trustworthy than other modern market formats. 100% is a match in the case of washing and the share of under- and overstatements with respect to origins are at equal levels.

Table 10: Quality assessments in modern marketing formats

We find that modern market formats do deliver higher coffee quality but also at a significantly higher price, even if we control for quality. We further find that modern market formats engage in illegal trade and there is no evidence of less cheating with these formats compared to the traditional marketing sector and they are therefore seemingly not more trust-worthy than traditional ones.

6. Conclusions

The functioning of traditional food markets in developing countries is often mis-trusted and public and private initiatives are put in place to improve its performance. However, it is often not well understood to what extent these interventions are effective. Based on unique primary data from wholesale and retail markets, we present empirical evidence from the coffee sector in Addis Ababa on this issue. This is an interesting sector to study given government regulations on the marketing of export quality coffee and the presence of emerging modern marketing arrangements. We look more in particular at misrepresentations of different measures of quality as well as quantity by traditional markets and contrast it with modern market formats, including modern retail, packed, and branded products. We also look at the effectiveness of regulations and the illegal presence of export quality coffee in local markets.

There are three main findings from our research. First, traditional traders seem to cheat with unobservable quality characteristics but there is less cheating with easily observable characteristics. In fact, the often presumed cheating with weights was not found and traders actually tend to give the customer more quantity than agreed. Second, by law only lower (non-export) quality coffee should be traded in the country. However, there is a flourishing trade in export quality coffee seemingly driven by high local willingness and capability to pay for better quality coffee in local markets. Third, modern marketing arrangements (modern retail and branding) do seemingly not lead to better performance. While they deliver significantly better quality coffee, they also charge significantly higher prices, ceteris paribus, and they are shown to cheat as much (and sometimes more) as traditional markets in quantities and qualities.

Our findings lead to a number of policy implications. First, while observable quality characteristics are rewarded in these value chains, unobservable ones are not. This is important given that information on food safety (e.g. the presence of aflatoxins in coffee) and on taste,

which are not easily observable, do not travel through the value chain and consumers are therefore not assured of these characteristics in the food that they purchase. More adapted market institutions that assure consumer protection, with e.g. credible certification mechanisms, might be needed in these cases. Second, there is a flourishing illegal market in coffee in Addis. The current system might be organized inefficiently given that a significant amount of resources are committed to assure that export quality coffee is exported and delivers the needed foreign exchange for the country. It can be argued that a liberalized system would lead to more integrated domestic and international markets (with no barriers for the trade of quality coffee and therefore presumably more closely aligned prices), would save on these control budgets, and would also make coffee more accessible to urban consumers. Third, while modern markets are presumed to be able to put in place more efficient supply chains than traditional marketing systems, there seems however to be strong heterogeneity in these modern marketing mechanisms. In the case of these local modernized marketing systems that are in an early stage of development, we find that they are able to deliver high quality products but that they have however no better track record in market governance than traditional markets. It is possible that this is explained by the special case of coffee that is seemingly mostly an informal and illegal market in urban settings of Ethiopia or by the early stage of development of these modern marketing practices. It might be that liberalization of the market and the retail sector might foster entry by large experienced processors and supermarket chains which in all likelihood set up dedicated sourcing arrangements with modern wholesalers, commercial farmers, and farmer cooperatives, if they would be allowed.

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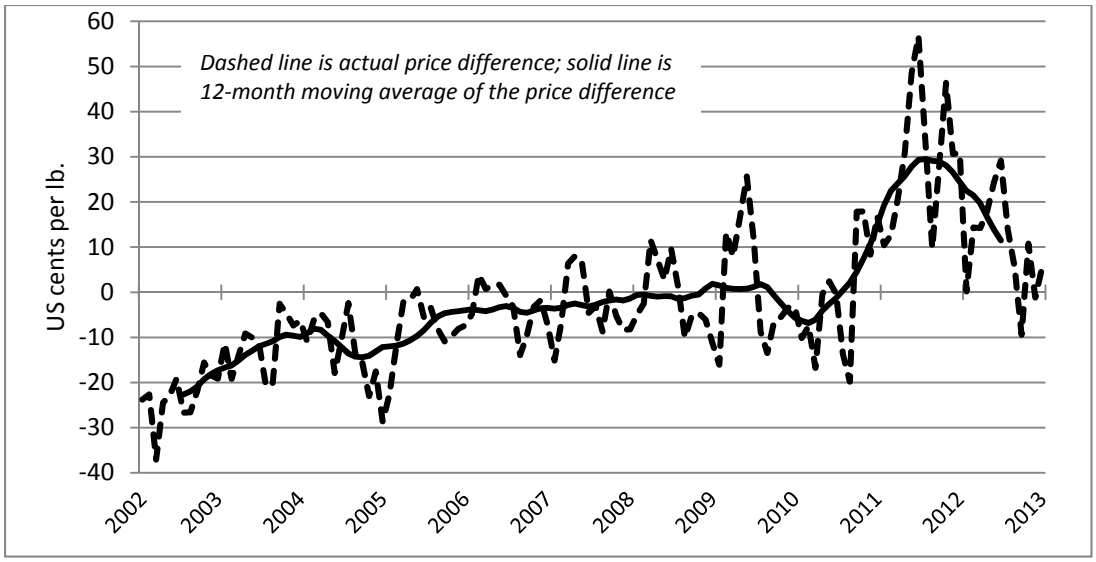
FIGURE 1—DIFFERENCE BETWEEN ADDIS ABABA RETAIL COFFEE PRICE AND THE ETHIOPIA COFFEE EXPORT PRICE, 2002 TO 2013 BY MONTH



Source: Authors' calculations based on data from the Ministry of Trade and CSA

Figure 2: Quality premiums for modern market practices in coffee

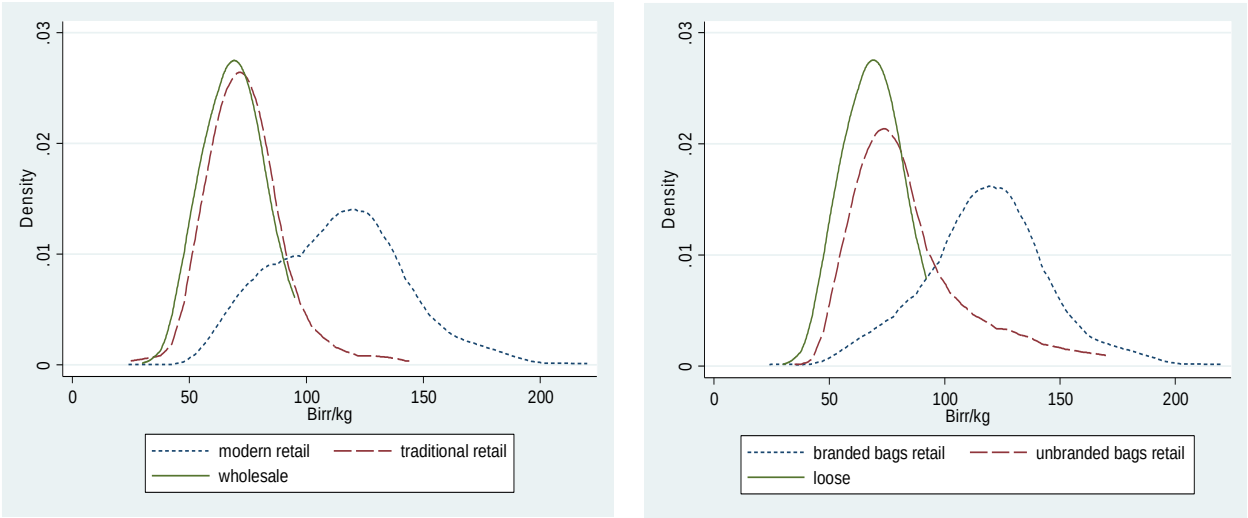


Table 1: Sample set-up

Type of traders	Type of outlet	Size sample interview	Sample set-up interview	Size sample purchase	Sample set-up purchase coffee
Wholesalers	Semi-wholesalers	100	From a census of 240 semi-wholesalers	100	100% [All]
Retailers	Open market traders	104	All in the 5 selected sub cities	51	50%
	Supermarkets	53		26	[from every other shop]
	Minimarkets	97		41	
	Regular shops	189	10 from each of the 4 selected kebeles	44	25% [from 1 out of 4 shops]
Total		543		262	

Table 2: Descriptives coffee retailers

	Unit	Descriptives	
Type of retail shop			
Supermarket	%	12	
Minimarket	%	22	
Regular shop	%	43	
Open market trader	%	23	
Share of coffee in total trade			
Refusal	%	2	
Don't know	%	16	
>75%-100%	%	3	
>50%-75%	%	0	
>25%-50%	%	11	
>1%-25	%	28	
1% or less	%	39	
		Raw beans	Branded coffee
Share of coffee retailers selling this type	%	88	39
Quantity sold last 30 months	kg	14.9	5.6
Approximate daily customers	Number	2.3	1.2
Type of clients			
Consumers	%	95.5	81.8
Coffee retailers	%	0.5	1.6
Others	%	4.1	16.7
Number of observations		443	443

Table 3: Descriptives sales of coffee

		Wholesalers		Retailers	
	Unit	Mean	Standard Deviation	Mean	Standard Deviation
Number of choices per trader	Number	4.3	1.2	2.3	1.8
Sale prices (Birr/kg)	Birr/kg	69.1	9.7	92.8	29.8
Region of origin (default=Sidama)					
Do not know	%	3		46	
Not applicable	%	0		28	
Wollega/Nekempt	%	32		6	
Djimma	%	36		13	
Sidama	%	15		4	
Harar	%	1		1	
Yirgacheffe	%	2		0	
Reject ECX	%	4		0	
Other	%	7		2	
Washing					
Do not know	%	1		10	
Not applicable	%	0		30	
Washed	%	23		13	
Unwashed	%	77		46	
Form					
Raw	%	100		62	
Roasted	%	0		2	
Grounded	%	0		35	
Packaging					
Packed/sealed with transparent plastic	%	0		24	
Packed/sealed with non-transparent plastic	%	0		33	
Loose	%	99		42	
Branding					
Branded coffee	%	0		40	
Number of observations		426		1015	
Number of samples taken		100		162	

Table 4: Weight assessments in traditional markets

	Unit	Semi-wholesalers	Traditional retail markets			Loose products
			Regular shop	Open market	Total	
Number of observations		100	44	51	95	202
Mean	grams	992.6	1004.2	1002.8	1,003.4	998.2
Median	grams	991.5	1004.8	1001.5	1,002.5	996.5
Min	grams	951.5	976.5	977.5	976.5	951.5
Max	grams	1,033.5	1,037.5	1,034.5	1,037.5	1,062.5
Underweight	%	75	36	43	40	57
Overweight	%	25	64	57	60	43
T-test if weight is	t-value*	-5.42	2.09	1.48	2.51	-1.69
diff. than 1 kg	Pr(|T| > |t|)	**0.00**	**0.04**	0.15	**0.01**	0.09

* t-values in bold are significant at the 5 percent level

Table 5: Quality assessments in traditional markets

		Semi-wholesalers	Traditional retail markets			Loose products
			Regular shop	Open market	Total	
Overall quality assessment						
Fit for grade 2	%	16	0	4	2	9
Fit for grade 3	%	1	2	0	1	1
Fit for grade 4	%	0	2	2	2	1
Fit for grade 5	%	4	2	8	5	4
Fit for Peaberry coffee	%	2	0	0	0	1
Rejected for grades (but > under-grade)	%	41	52	39	45	42
Fit at under-grade level	%	33	32	31	32	33
Unfit for export	%	3	9	16	13	8
Total	%	100	100	100	100	100
Statements origin						
Understated	%	21	24	15	20	14
Match	%	13	5	10	7	8
Overstated	%	66	71	75	73	78
Total	%	100	100	100	100	100
Washing						
Understated	%	3	2	6	4	3
Match	%	91	89	90	90	89
Overstated	%	6	9	4	6	8
Total	%	100	100	100	100	100
Number of observations		100	44	51	95	202

Table 6: Market outlets and type of coffee products sold

	Modern retail				Traditional markets				Wholesale		Total	
	Supermarket		Mini-market		Regular shop		Open market					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Packing												
Loose	6	2	63	28	209	74	152	60	423	100	853	59
Branded pack/transparent	56	22	11	5	3	1	0	0	0	0	70	5
Branded pack/non-transparent	158	63	115	50	45	16	12	5	0	0	330	23
Non branded pack/transparent	28	11	37	16	25	9	88	35	1	0	179	12
Non branded pack/non-transparent	4	2	3	1	0	0	0	0	2	0	9	1
Total	252	100	229	100	282	100	252	100	426	100	1441	100
Form												
Raw beans	50	20	106	46	234	83	238	95	425	100	1053	73
Roasted	20	8	3	1	0	0	1	0	0	0	24	2
Grounded	182	72	120	52	48	17	10	4	0	0	360	25
Genfel (coffee beans with cover)	0	0	0	0	0	0	2	1	1	0	3	0
Total	252	100	229	100	282	100	251	100	426	100	1440	100

Table 7: Hedonic pricing (with dependent variable expressed in log of Birr per kg)

		Stated quality				Measured quality	
		Pooled sample		Fixed effects			
	Unit	coeff.	t-value*	coeff.	t-value*	coeff.	t-value*
Type of shop (default=regular shop)							
Supermarket	yes=1	0.33	**9.41**			0.36	**6.14**
Minimarket	yes=1	0.09	**5.41**			0.08	**2.77**
Open market trader	yes=1	-0.05	**-3.00**			-0.07	**-3.42**
Wholesaler	yes=1	-0.05	**-3.00**			-0.09	**-3.25**
Region of origin (default=Sidama; actual origin for samples bought)							
Wollega/Nekempt	yes=1	0.01	0.64	0.01	0.55	0.02	0.94
Djimma	yes=1	0.00	-0.39	-0.02	-1.50	-0.04	-1.21
Harar	yes=1	0.02	0.49	0.00	-0.04	-0.03	-0.44
Yirgacheffe	yes=1	0.02	0.72	-0.01	-0.27	0.02	0.41
Reject ECX	yes=1	-0.13	**-4.04**	-0.12	**-3.17**		
Other	yes=1	-0.01	-0.60	-0.06	**-2.54**	0.00	-0.15
Washing (default=Washed; actual washing for samples bought)							
Unwashed	yes=1	-0.13	**-8.21**	-0.11	**-6.16**	-0.11	**-3.43**
Missing	yes=1	-0.08	**-2.43**	0.08	0.85		
Stated grade (grade 1=default)							
Grade 2	yes=1	-0.03	**-3.24**	-0.04	**-3.65**		
Grade 3	yes=1	-0.04	**-3.12**	-0.07	**-4.44**		
Grade 4	yes=1	-0.11	**-2.20**	-0.10	**-3.39**		
Grade 5	yes=1	-0.25	**-2.60**	-0.19	**-10.15**		
No grade	yes=1	-0.05	**-4.77**	-0.10	**-2.99**		
Form (Raw beans=default)							
Roasted	yes=1	0.14	0.65	-0.02	-0.16		
Packaging and quality (default=loose/raw beans/unpure)							
Loose - beans - pure	yes=1	0.16	**8.79**	0.15	**8.40**	0.15	**5.01**
Loose - beans - slighly unpure	yes=1	0.10	**7.92**	0.09	**8.04**	0.08	**3.45**
Branded - beans	yes=1	0.23	**4.93**	0.24	**2.85**	0.08	1.30
Branded - grounded coffee	yes=1	0.34	**6.81**	0.31	**3.82**		
Unbranded - packed - beans	yes=1	0.16	**7.93**	0.14	**6.37**	0.12	**3.75**
Measured grade by CLU (default=Fit for grade 2)							
Fit for grade 3	yes=1					-0.06	-1.03
Fit for grade 4	yes=1					0.06	0.98
Fit for grade 5	yes=1					-0.03	-0.80
Fit for Peaberry coffee type	yes=1					-0.07	**-2.04**
Rejected for grades (but >UG)	yes=1					-0.07	**-2.68**
Fit at under-grade Level	yes=1					-0.09	**-2.88**
Unfit	yes=1					-0.13	**-2.34**
Outlet dummy inlcuded		no		yes		no	
Daily time dummy included		yes		yes		yes	
Subcity dummy included		yes		yes		yes	
Intercept		4.31	**128.73**	4.37	**185.84**	4.41	**75.67**
Number of observations		1040		1040		260	
Number of groups				470			
R2		0.72		0.48		0.79	

* robust standard errors; t-values in bold are significant at the 5 percent level

Table 8: Association of stated local grades versus measured grades

	Local grade									
	Grade 1		Grade 2		Grade 3/4		No grade		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Measured grade										
Fit for grade 2	20	28	3	6	0	0	13	12	37	15
Fit for grade 3	1	1	0	0	0	0	2	2	3	1
Fit for grade 4	1	1	2	4	0	0	2	2	6	2
Fit for grade 5	6	8	2	4	0	0	4	4	12	5
Fit at Peaberry coffee	1	1	1	2	0	0	0	0	2	1
Rejected for grade	26	36	18	38	8	44	41	37	99	40
Fit at under-grade	16	22	14	30	7	39	41	37	83	34
Unfit for export	1	1	7	15	3	17	7	6	20	8
Total	72	100	47	100	18	100	110	100	247	100

Table 9: Weight assessments in modern marketing formats

		Modern retail			Packed*		
	Unit	Supermarkets	Mini-markets	Total	Branded	Non-branded	Total
Number of observations		26	41	67	13	47	60
Mean	grams	989.1	994.2	992.2	990.9	990.4	990.5
Median	grams	994.5	997.5	995.5	993.5	996.5	995.5
Min	grams	827.5	930.5	827.5	959.5	827.5	827.5
Max	grams	1062.5	1027.5	1062.5	1016.5	1013.5	1016.5
Underweight	%	73	63	67	85	66	70
Overweight	%	27	37	33	15	34	30
T-test if weight is	t-value**	-1.48	-2.02	-2.33	-2.35	-2.24	-2.75
diff. than 1 kg	Pr(|T| > |t|)	0.15	**0.05**	**0.02**	**0.04**	**0.03**	**0.01**

* in modern retail as well as traditional shops

** t-values in bold are significant at the 5 percent level

Table 10: Quality assessments in modern marketing formats

		Modern retail			Packed*		
		Supermarkets	Mini-markets	Total	Branded	Non-branded	Total
Overall quality assessment							
Fit for grade 2	%	50	15	28	46	28	32
Fit for grade 3	%	0	2	1	0	0	0
Fit for grade 4	%	0	10	6	0	6	5
Fit for grade 5	%	8	2	4	0	6	5
Fit for Peaberry coffee	%	0	0	0	0	0	0
Rejected for grades (but >UG)	%	23	22	22	38	21	25
Fit at under-grade level	%	15	39	30	15	32	28
Unfit for export	%	4	10	7	0	6	5
Total	%	100	100	100	100	100	100
Statements origin							
Understated	%	20	13	15	50	11	14
Match	%	0	0	0	0	0	0
Overstated	%	80	87	85	50	89	86
Total	%	100	100	100	100	100	100
Washing							
Understated	%	6	0	2	0	3	2
Match	%	89	91	91	100	95	96
Overstated	%	6	9	7	0	2	2
Total	%	100	100	100	100	100	100
Number of observations		26	41	67	13	47	60

* in modern retail as well as traditional shops