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# Impacts of Trademarking on Export and Producer Prices in Ethiopian Coffee

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*Like some developing countries, Ethiopia, with the help of Oxfam public campaign, managed to obtain trademark protection of many western countries for three of its fine coffees: Yirgacheffe, Harar and Sidama coffee types. The main goal of the trademarking initiative was to help smallholder producers capture price premia for their fine coffee. This paper examines the effects of the trademark protection on FOB and producer prices of trademarked coffee by comparing with non-trademarked Ethiopian coffee. We found that trademark protection has improved both the level and trend of FOB prices relative to the non-trademarked Ethiopian coffee. But producer farmers capture only small portion of this price premia. In addition, we also found the trademark protection is not compatible with the exclusive impersonalized and non-traceable transactions system introduced by Ethiopian Commodity Exchange.*

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### **Abstract**

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### **Introduction**

Neoclassical economic theory claims that the pricing mechanism in the long run incentivizes firms to supply reasonably reliable information. On the contrary, institutional economics argue that information asymmetry is an inherent failures of the pricing mechanism that limits the development of the market itself. They thus call for institutional interventions to correct market failures. Owing to potential adverse effects of ‘short-run’ information asymmetries in the agrifood sector on public health and the environment, this provide strong argument. They thus suggest the introduction of institutions that define and enforce quality standards as important requirement for the development of the agrifood market itself. As a result, such institutions have become an important components of the agrifood markets (Bramley et al. 2009).

The increasing demand for food offered by the globalized trade incentivized firms to use intensive technologies not only to increase yield but also process and preserve food products. Potential adverse impacts of such production and processing technologies on health and the environment has become an increasing public concern. As a result, organic and traditional production systems has become one indicator of quality in the agrifood sector. But such quality attributes are not easily evident from the final product. The unobservable nature of most quality attributes especially in the food sector has led society to use such indicators of quality geographic

origin. Beside the economic argument associated with information problem, protection of Geographic Indication (GI) is considered as a development intervention to support producers. Especially this last argument attracted developing countries to demand legal protection for their agricultural products.

Despite the fact that Ethiopian coffee had long been reputable in the international markets as evidenced by the prices, no attempt was made to protect the various brands in the world market. It was the Starbucks' move to own the name 'Sidamo' (one of the Ethiopian fine coffees) that provided the impetus for the Ethiopian government to initiate the trademarking project and other pressure groups to support the initiative. Like Blue Mountain coffee of Jamaica (Schroede 2009) and Kona coffee of Hawaii (Giovannucci and Smit 2009), Ethiopia, with the help of Oxfam, applied for trademark protection for its fine coffee. As a result, in 2008 many European countries, United States, Japan and other western countries sign the agreement to register three of Ethiopian coffee namely: Harar, Yirgachefe and Sidama coffee (Teuber 2010). The source of the initiative and the important events that led to the trademarking initiative is extensively described in Arslan and Reicher (2010).

The ultimate goal of the trademarking initiative was to improve the magnitude and the stability of coffee prices at producer level and to improve the export earning of the country. The idea is that providing legal protections to the already recognized unique qualities of Ethiopian fine coffee in the world market will not only reduce information problem for foreign buyers but more importantly it improves prices of Ethiopian coffee in the world market.

GI protection can be effective through what Belletti (1999) called "institutionalization of reputation". Such institutionalization of reputation can be effective when the whole value chain is governed by one organization. But it is not clear how the GI-protection impacts producer price when the market is operated by various independent actors: importers, exporters, local traders and farmers. It is more unclear when the GI protection is a common property for all these actors. Given price brand mixing is less evident, opportunistic action from the various actors can erode the price premia in the long run. As a result, GI-protected product can eventually become generic as in the case of Yemen's Mocha coffee (Giovannucci 2005), the potential short term price gains in the export market may not reach farmers.

Many studies in the EU and US markets found that consumers are willing pay price premia for GI-protected products including coffee (e.g. WTO 2004; Teuber 2010; Barjolle et al. 2007; Loureiro and McCluskey 2000). But, the price premia that consumers pay may not reach farmers if the markets at different levels are not efficient. The concern is thus how much of the price gains reaches producers which are located at the bottom of the value chain. Given the primary goal of GI-protection, especially in the case of developing countries, is to benefit farmers, there is increased interest to analyze the impacts of GI-protection specifically on producers (Arslan and Reicher 2010; Bramley et al. 2009; Teuber 2010).

The idea that GI protection benefit producers is based on the assumption that the market is efficient to distribute the price gain according to their marginal contributions in the process of GI-related value additions. One of the concern here is that there is increased instances of exploitation and misappropriation especially in the export markets (Bramley et al. 2009) as upstream actors have better access to the channels and the different modes of exploitation of the reputation of the product (Belletti 1999). In addition various market distortions and market failures at each level along the market chain could also erode the producers' share of the price premium.

Using internet auction data, Teuber (2010) found GI-protected Ethiopian coffee enjoy some price premia in the world market compared to the non-trademarked Ethiopian coffee. In addition, Arslan and Reicher (2010), using FOB price data of Ethiopian coffee for the periods between November 2005 and February 2009, analyzed the impacts of Oxfam campaign for trademarking of Ethiopian coffee on export prices. They found positive impacts of the campaign on FOB prices. But it is not clear from their study whether farmers benefited from the price gains.

Moreover, two years after the introduction of the trademarking, Ethiopian Commodity Exchange (ECX) took a step that potentially curb the claimed positive impacts of trademarking on export prices. The problem was that ECX introduced an auction system that treat all coffee brands to be sold as commodity coffee by ruling out the special transaction system that had been designed for the trademarked coffee. According to Arslan and Reicher (2010) the new auction system eroded the traceability of coffee which is crucial for incentivizing reputation (Ubilava & Foster 2009). In effect, traders may have the incentive to mix products of less reputable origin with reputable ones. It is argued that the action of ECX will negatively affect price premium of coffee of reputable origins. Leung (2014) estimated the negative impacts of this erosion of traceability on

export prices of Ethiopian coffee. In addition to assessing the effect of the trademarking, especially on producer prices, the paper also examine the interaction of the institutional intervention through trademark protection with the introduction of ECX.

Unlike previous studies, we are interested on the long term impacts of the GI-protection (through trademark protection) on both export and producer prices. By using disaggregated time series data of FOB prices and local market producer price data from January 2002 to June 2014, the paper analyzed the impacts trademark protection both on the level and trends of export (FOB) and producer prices of trademarked coffee in comparison with non-trademarked Ethiopian coffee. One of the limitation of past studies in the areas of coffee use prices of coffee beans as producer price. However, farmers in the local market sell either dried or wet coffee cherries, not coffee beans. Since quality are less evident for coffee cherries than coffee beans, we conjecture that selling coffee cherry involve additional transaction costs. Thus, farmers may not capture the benefit of trademarking fully. This study therefore use price of dried and wet coffee cherries to capture the costs that may arise in the transaction between farmers and local traders. Finally, the study also compare the volatility and price divergence between the trademarked and non-trademarked coffee.

### **The economics of GI-protection**

The economic arguments around the Geographic Indication (GI) scheme is founded on the economic theories of information and reputation. Distinctive quality traits of food products are generally not observable. Thus verifying the genuine origin of a product before purchase is very difficult. Nor they become evident in a single consumption. Verifying quality of a product thus involves what Nelson (1970) called ‘experience’ costs. In order to minimize this costs, consumers, after a repeated consumptions, develop some quality attributes (Carriquiry and Babcock 2004). However these attributes are imperfect, and sometimes wrong indicator of quality, consumers valuations will still depend on those attributes. In effect, geographic origin has become one of the most important attribute especially in the agrifood sector.

GI and trademarking is the protection of goodwill against free-riding and to reduce search costs associated with information problems consumers face. Trademarks is used to differentiate the product and it does not necessarily indicate quality. GI-protection can be viewed as a process whereby reputation is institutionalized to reduce information asymmetry and to discourage

potential free riding on reputation (Bramley et al. 2009). It provides protections both consumers and producers; consumers by reducing information asymmetry and producers by protecting reputation as an asset (OECD 2000).

The importance of geographic indication even in the domestic markets can be evidenced by the fact that cereals and livestock products are virtually differentiated by their geographic origins. Empirical evidence on the link between *terroir* and quality is mixed (Deconinck and Swinnen 2014). Under natural circumstance, there is logical reason to believe that the agro-ecological milieu will have a lot of bearing on quality of the product such as the nutritional content, flavor, color, texture, etc. But production processes also distort such natural relationships. A combination of agroecological and production process indicators are used to approximate quality. For example, after using in-depth surveys and research, Cenicafé has successfully identified 36 out of 1,050 chemical components that enable buyers to identify origin of coffee in Colombia (Giovannucci and Samper 2009). Consumers these use reputable origins (or origins that approximate them) as an important indicator. Thus information about the geographic origin of the product adds value for consumers.

The problem is how to incentivize firms to provide a reasonably reliable information about true origins. The market fail to incentivize firms to provide reliable information. However failure of the market to guarantee supply of reliable information can call for institutional interventions to correct information asymmetry, this alone does not justify GI protection. Like the information asymmetry in any other markets, the institutional interventions through combination of labelling, standardization and the like would suffice to correct information problem. The goal of institutional interventions through Geographic Indications (GI) protection seems to be more than correcting information asymmetries.

Moreover, just like market failures, GI-protection system also suffer from institutional failures. First, knowledge of the designer about consumers' valuations of geographic origins is limited. Second, the political process involves many interest groups (Deconinck and Swinnen 2014) and its design could be distorted. This occur especially when the GI-protection is used create lucrative market for producers than to correct information asymmetry for consumers. Third, reputation reward commitment only with lag, it work only imperfectly (Shapiro 1982). While there are visible potential benefits both for consumers and producers, GI-protections proved controversial

(Bramley et al. 2009) as evidenced by the divisive debate in trade negotiations which Josling (2006) called a ‘war on *terroir*’.

The effectiveness of GI-protection depend on the strength of what Belletti (1999) called the “institutionalization of reputation”. This require a governance structure that control the whole value chain. When the value of quality signaling is influence by various actors in a supply chain, an agent that creates the signal (such as brand) designs the governance of transactions in order to assure the credibility of the signal (Raynaud et al 2002). But in some cases the GI system may have to work in a market-oriented governance structure. In such condition, Barcala et al (2007) and Chappuis and Sans (2000) suggest the need to introduce continuous coordination and control mechanisms for the success of origin labelled products. When the transactions is organized along a vertically integrated value chain, it not only make enforcement of standards easier, but it will also match commitment with incentive. But when chain of diverse independent actors trade a product whose origin are costly to verify, not only enforcement will be difficult, the GI-protection may not align incentives with commitment.

It is not clear how the GI-protection impacts producer price when the market is operated by various independent actors: importers, exporters, local traders and farmers. The idea that trademarking improves producers’ price implicitly assumes that the domestic market is efficient enough to transmit the gains in the export markets to local traders and then to producers. Particularly the concern in the case of developing countries is the lack of strong local institutions that incentivize collective reputation all along the value chain (Bramley, 2011). When the “institutionalization of reputation” is weak, the GI-protected product will finally become generic as in the case of Yemen’s Mocha coffee (Giovannucci 2005).

In an environment where there are no institutions that protect the use of trademarks by others, other traders will have the incentive to cash in on the names of origins reputable for quality in specific product attributes (Josling 2006). In effect consumers cannot take full advantage of origin as indicator for quality. In the long run the information asymmetry will drive prices of reputable origins to the prices of marginal quality. It can even drive reputable origins out of markets if the production costs in the reputable origin is higher as in the case of Akerlof’s (1970) used car markets. This may require strong legal protection from the public. But the costs of doing these activities tends to be prohibitively high when the market environment is such that many



traders buy from millions of smallholder farmers that are widely scattered village markets. It might be due to this reason, many indigenous variety of crops and livestock breeds that have unique quality attributes were entirely replaced by modern hybrid varieties.

The other concern on GI-protection is that it can limit competition (e.g. Hassan et al. 2011) and can be a non-transparent trade barrier. Hassan et al. (2001) found the undesirable effects of PGO cheese on competition. The controversies on GI arise due to range of cases that arise due to information problem on the precise relationship between geographic location and quality and the diverse unintended outcomes of alternative public interventions (Josling 2006).

### **Conceptual framework: A case of small-holder farmers**

To simplify our analysis, let us take the export market as a starting point. Since GI-protected coffee face the same transaction and markets imperfections related costs as the rest of other coffee types in the country, we can attribute any price premia of trademarked coffee in comparison with non-trademarked coffee to the trademark-protection.

Theoretically, an exporter choosing between trademarked (GI-protected) coffee and non-trademarked coffee will pay premium for the trademarked coffee equal to the FOB price premium to the marginal costs of buying trademarked coffee (relative to non-trademarked coffee). Since transaction at the central market is made in open outcry auction system, we can assume the transaction is perfectly competitive. The additional costs of buying trademarked coffee relative to non-trademarked coffee must equal the premium price traders pay for the trademarked coffee. The implicit assumption here is the transaction costs of trading differentiated products are equal. This holds if there are no additional transaction-related costs that are specific to the trademarked coffee. All the domestic marketing costs (transportation, handling, and other marketing costs) for the trademarked and non-trademarked coffee are equal as they depend on volume of coffee, not on its monetary value. This is plausible as there are no insurance and other value-related costs in the domestic markets. By taking FOB prices, we omitted those freight, insurance, import tariff and the like costs that depend on value.

Since there are no administrative costs related to trademark labelling, positive transaction costs for the trademarked coffee arise only if there are transaction risks related with information and enforcement problems. ECX eliminated or reduce it to negligible level the transaction risks related to payment and delivery problems that existed in the past. But even if some risks still

exist, we can safely assume the differences between trademarked and non-trademarked coffee are small to be ignored. But other transaction costs that are specific to trademarked coffee may still arise if there are information problem in relation to origin labelling. For instance, the origin-labelling may not be credible if there are brand mixing. Zhang (2015) provides an interesting discussions how some firms take opportunity of name of renown countries to disguise the true origin of their products while others invest on quality. Such opportunistic action may not pose a transaction risk in the short term if brand mixing is not easily evident for the buyers (importers) of trademarked coffee. But it may damage the potential gains from trademark-protection in the long run as importers learn the problem.

The transaction in the export market is such that exporters buy coffee after they entered forward sales contracts with importers. Thus, they know the FOB price and can decide what price to pay for trademarked or non-trademarked coffee. As long as trademarked coffee involves no more transaction costs than non-trademarked coffee, an exporter will pay for GI-protected coffee until its price premia in the central market equals its FOB price premia. But the central market price premia can be less than the FOB price premia when transaction of trademarked coffee involves some transaction risks related with brand mixing. In addition to the brand mixing problem, the level of competition is limited in the local and village markets (Gelaw et al. 2015). The price premia in the local market can be further lower than the central market if the brand mixing and other market failures are more pronounced in those geographic regions where trademarked coffee are produced.

The dominant supply chain is that traders collect ungraded and unlabeled coffee from the local and village markets that are scattered in a wide geographic territory. Each trader buy from thousands of farmers each of whom selling often not more than one quintal of coffee. Traders then transport the coffee assembled from many farmers to ECX warehouses for grading and labelling. The graded and origin-labelled coffee is sold to exporters at the central market in open-outcry auction system. One of the problem of the transaction system is that the trademarked and non-trademarked coffee are sold in the same impersonalized manner and any brand mixing and other quality problems are not traceable.

To what extent traders sell a reputable product at the auction market depend on the credibility of origin labelling and grading. Since origin labelling is made simply based on where the coffee

came from, any brand-mixing cannot be traced as the transaction is impersonalized. The credibility of the origin thus solely depends on the absence of cross-border trade between the different origins. That is, there must be no coffee trades between the various *terroirs*. In principle, traders are supposed to buy coffee only from the locations they are licensed to buy. But the fluidness of the borders, it is difficult to control the flows of coffee across the regions. In effect, traders can buy coffee from those neighboring areas whose coffee are not trademarked. They can thus cash in by mixing coffee from less reputable origin with the reputable one. Since all coffee that came from those areas are assumed as originated from areas designated for the trademarked coffee, they can cash in by mixing coffee of less reputable origin. The impersonalized and non-traceable nature of the transaction system in the central auction market make easier for traders to take such opportunistic action. Thus the credibility of origin labelling at the auction market fully depends on the effectiveness of the cross-border trade control.

If the cross-border trade is less effective and the origin labelling is less reliable, the opportunistic actions of traders can drive the product to become 'generic' and exporters will have no incentive to pay origin-related price premia. Since the geographical designations are protected by trademarks and there is no origin-certification, the trademarks is a common property for exporters and importers. As a result, exporters can mix coffee of reputable origin with less reputable ones even if the origin labelling is credible at the auction market. Thus free-riding can be a potential problem even at the export market. But this only drive the price premia for trademarked coffee down. Some traders may refrain from taking such opportunistic actions when the long term benefits building reputation is high (Shapiro 1982). Thus, some exporters may export genuine origin in order to build their reputation. When such commitment arise, it will be to build reputation of the firm, not the geographic origin. This is because the trademark is a common property for all exporters. The investment is to build reputation of the exporting company, not the coffee origin. Part of the premia must therefore go to compensate the exporter's commitments. Unfortunately, reputation will not always be an effective strategy at all stage and detecting brand-mixing is never easy both transaction *ex ante* and *ex post*.

Even if brand mixing is traceable transaction *ex ante* in the export market, brand purity is less evident transaction *ex ante*. It is the dynamic interaction of a seller's commitment to quality and consumers' learning of that commitment that determine the level of equilibrium reputation (Shapiro 1983). Thus commitments for reputation will be rewarded only partially. But this only

reduces the price premia exporters receive from importers. We thus expect that exporters captured only portion of the price premia in the world markets. From this realized premia, part of it will be used to reward exporter's commitment. Thus, only part of the price premia will trickle down to traders that supply to the auction market.

The next question is what portion of the price premia realized by traders will be transferred to farmers? In addition to the transaction risks associated with brand mixing, the efficiency of the local markets also matters here. The situation in the ground is that true origin of coffee are less evident transaction *ex ante* and less traceable *ex post* as an exporter collect coffee from thousands of farmers. Farmers and assemblers can buy cheaper coffee from less reputable neighboring areas to sell it by mixing it with the coffee of reputable origin. Controlling coffee flow across the *terroirs* is achieved only partially. Farmers and assemblers can sell mixed coffee. Especially brand mixing is less detectable when coffee is sold in cherry (dried or wet) forms than in bean form (Gelaw, et al. 2015). Thus traders themselves also can buy coffee from less reputable origin to sell it by mixing it with the reputable origin. Since transaction at the central market is untraceable, the situation provide traders even more incentive to mix brands. A study found Ethiopian traders less trustworthy on origin of coffee and other quality attributes that are not easily verifiable (Thomas and Minet, 2015).

Thus, exporters that buy coffee from auction market face the risk of brand-mixing from two sources: brand-mixing made by producers and local assembler-farmers, and the same risk caused by traders themselves. Exporters will then have to take this risk premium in their buying decision if the problem is detectible at higher level markets. Thus in addition to the portion of the price premia required to reward exporters' reputation, the exporter will also have to use part of the price premia to cover the above risk premium. Thus only portion of the export premia goes to traders. The brand-mixing by the farmers coupled with other market failures in the local markets further erode price premia that potentially trickle down to producers. We therefore hypothesis that farmers only portion of the price premia realized by exporters.

## **The data**

The study used panel data of prices obtained from two sources. The first one use FOB price data obtained from Ethiopian Custom Authority. This data contain FOB prices, volume of export, geographic origin of coffee, destination country, grade level and exporting company. Discarding

observations of unknown coffee origin and unknown grade level, the study used 39637 observations of running from November 2004 to June 2014. The other type of data was producer data. This data was obtained from Ethiopian Central Statistical Agency (ECSA). ECSA undertakes monthly producer price survey in 463 selected Peasant Administrations (PAs) located across the country. This data contain farm-gate prices of two forms of coffee: coffee whole (coffee cherries) and coffee beans. Since farmers usually sell coffee cherries, not coffee beans, the price of coffee cherries reflect the actual price farmers receive. But for comparison, we also use farm-gate prices of coffee beans. Following the geographic locations of the sample PAs, we categorize each PA under the five geographic coffee origins. Accordingly, each coffee origin contain different prices of PAs located within each coffee origin. Discarding price data collected outside the five geographic origins, we obtain a panel data containing monthly prices of 14503 observations for coffee cherries and 4983 observations for coffee beans for the time periods ranging from January 2002 to June 2014.

### **Method of analysis on the impacts of Geographic Indications and ECX interventions**

Studies estimate price premia from consumers' survey using hedonic pricing, conjoint analysis, multinomial logit (Bramley et al. 2009). But this can also be estimated from market data if there was a perfectly substitute commodity. As we have no consumer-based data, we estimate price premia based in comparison with non-trademarked coffee. The specific context permits us to do so. We take the price premia offered by importers as a starting point. However this may not show the full story of the GI-scheme, it serves our purpose.

We followed the methodology used by Arslan and Reicher (2010). But our analysis differ from them in a number of ways. First, the purpose of their analysis is to analyze the impacts of publicity for trademarking. They attributed the permanent change in price to the publicity. We argue that such price changes can persist due to the trademark-protection, not just a one-time publicity for trademarking. In addition, we simply assume as the GI-protection was applied on all the five coffee origin for two reasons. First only few countries (USA, Japan and EU countries) agreed to provide GI-protection. In addition, destination countries may differ in the mode and timing of implementations. Second we don't know whether they were actually exported as GI-labelled or not even in those countries. We thus multiply all origins by trademarking dummy ( $D_L = 1$  for the time period after 2008 and zero before that) and trademarking time ( $D_T = t-2008$  for the

period after 2008 and zero before that). We therefore multiply each origin by the three category of destination countries (West, Middle East and the rest of the world).

To separate the effect of trademarking, we control the following variables. One of the changes that, can support or counteract the effects of trademarking is the introduction of ECX. We therefore multiply each geographic origins by dummy ECX. First, the different types of coffee origin differ in their distribution of grade levels. We assign five for first grade, four for second grade, three for third grade, two for fourth grade, one for fifth grade and zero for under-grade. We then multiply each coffee origin by the respective grade level. To capture the transaction costs we take the inverse ratio of volume of each export transaction. In addition, we weight each origin by their export share (the ratio of volume of each origin to monthly total export). We finally include origin and month interactions to capture any origin specific seasonality. Given thus, if the GI-protection has positive impacts, it has to improve the relative prices of trademarked coffees compared to non-trademarked coffees (Jimma and Wellega).

Moreover, to capture the effect of trademarking on the long term trend of the various coffee origins, we include interaction of trademarking as a continuous time with the various coffee origins. This will help us to see how prices after the introduction of GI-protection

$$\Delta \ln P_t = \alpha + \beta_1 C * ECX + \beta_1 C * TM_l + \beta_2 C * TM_t + \beta_3 C * Gr + \beta_3 C * Ms + \beta_3 C * West + \gamma_1 C * West + \gamma_2 C * ME + \gamma_2 C * RoW + \vartheta_2 C * Month + \theta w_{it} + \varepsilon_t \quad (1)$$

A similar regression was also run on monthly rural producer data set collected across the various locations of the country. The only difference here is some of the above variables cannot be included due absence of data. Grade level, market share and inverse of volume are not included in the producer and retail price data. The regression was made on two types of producer data: price data on coffee whole and coffee bean.

$$\Delta \ln P_t = \alpha + \delta C + \beta_1 C * TM_l + \beta_2 C * TM_t + \vartheta_2 C * Month + \varepsilon_t \quad (2)$$

The next stable is to assess the stability of the relative price of trademarked coffee relative to non-trademarked one. ADF-type of equation can help to test the presence of price convergence/divergence. Taking difference of prices of various trademarked coffee from a reference price (non-trademarked coffee), it is possible to test the stationarity of the price differentials as

$$\Delta x_t = \alpha + \delta x_{t-1} + \sum_{i=1}^p \delta_i \Delta x_{t-i} + \varepsilon_t \quad (3)$$

where  $x_t$  is price differential between price of a given trademarked brand ( $P_{TM(t)}$ ) with reference price ( $P_{NTM(t)}$ ) in logs

$$x_t = \ln P_{TM(t)} - \ln P_{NTM(t)} \quad (4)$$

If the null hypothesis  $\delta = 0$  in (eq. 3) is rejected, the price differential is non-stationary, meaning that there is no convergence between the various trademarked and non-trademarked Ethiopian coffee.

## Results and discussions

### *Export prices*

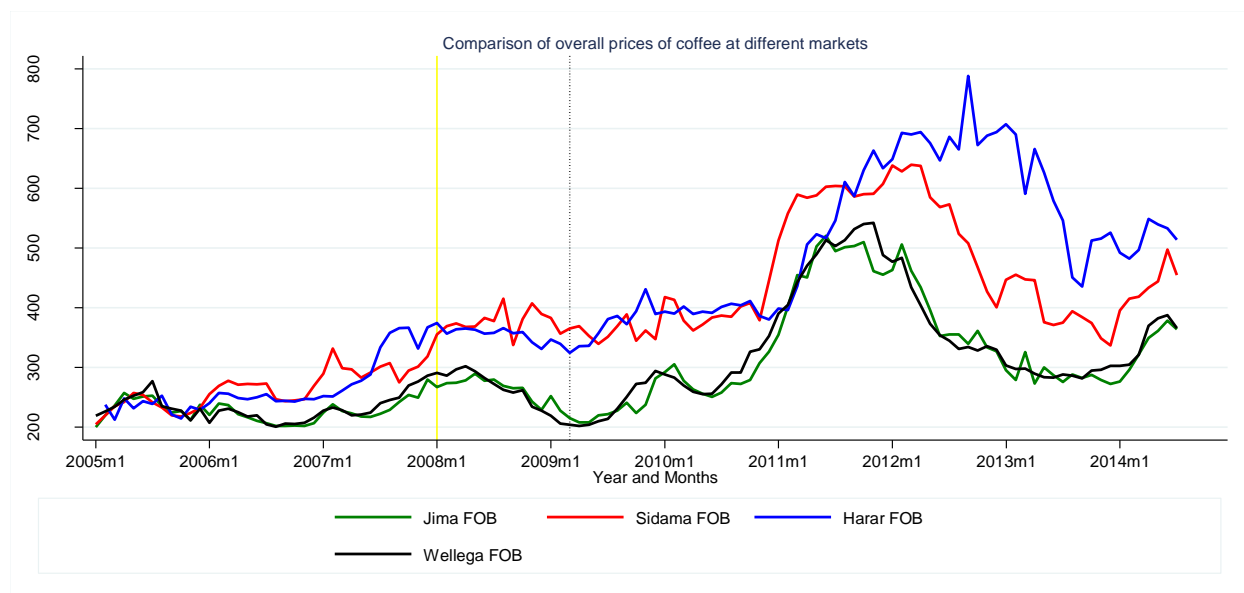


Figure 1 provides shows the overall price trends of Ethiopian coffee of different geographic origins.

Export data disaggregated by geographic origin covers only the period starting from November 2004. However the applications of Ethiopian government for trademarking the three coffee started in March 2005, the registration in many countries was implemented since 2008. We took, January 2008 as a starting point. We can see that there were price differences between the various geographic origins even before the trademarking.

Table 1 show the fixed and random effect regression on FOB prices of the five origin of Ethiopian coffee.<sup>1</sup> Controlling the effects of (grade level, destination region, market share, effect of trademarking on relative price level and trend and origin specific seasonality), the first four row show the average prices of the different coffee origin in reference to Jimma coffee (the baseline). Controlling other factors, prices of Wellega, Yirgachefe and Sidama coffee were found to be significantly lower by 13.6, 25.8 and 15.5 per cent than Jimma coffee. Harar coffee was dropped due to collinearity.

The other important variable was introduction of ECX in the coffee market. Since ECX change the previously traceable and somehow personalized transactions (Gelaw et al. 2015), it is expected to affect the relative prices between the various coffee origins. It was found to have significant negative impacts on Harar and Yirgachefe coffee. No significant effect was observed on Sidama and Wellega coffee. Prices of Harar and Yirgachefe were found 23.4 and 17.2 percent lower in comparison with Jimma coffee after the introduction of ECX.

The other variables interest was the impacts of trademarking on relative average prices. We found that the trademarking initiative significantly increased the average prices of trademarked Ethiopian coffees relative to Jimma coffee. The result shows that the average prices of Harar, Sidama and Yirgachefe coffee was found to be 5.6, 12.1 and 32.6 percent higher than Jimma coffee after the trademarking. As expected, no change was observed on the average relative price of Wellega coffee after the trademarking.

In addition to the effects of trademarking on the relative average prices of the four coffee origins, we also analyzed its effect on the price trends. While the price of Harar, Yirgachefe and Wellega coffee were found have average monthly growth rate 0.7, 0.4 and 0.05 per cent in reference to Jimma coffee, respectively. No difference on the relative average growth rate of prices of Sidama coffee was observed after the trademarking. The results should be interpreted in relations with Jimma coffee.

Since the distribution of grade levels differ between the different coffee origins, we controlled the effects of origin specific grade levels. The result on grade show that improvement of grade by one level obviously increased the average prices of all coffee origins. Moving from one grade

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<sup>1</sup> For the sake of convenience, we present part of the regression results on coffee specific seasonality separately in Table --- of Appendix A.



level to the next higher grade level significantly increased average prices of Harar, Sidama, Yirgacheffe, Wellega and Jimma coffee by 9.0, 9.9, 3.3, 7.6 and 11.5, per cents, respectively. The return on grade improvement is low for Yirgacheffe coffee. The reason is that Yirgacheffe coffee already attained the highest grade level as 83% of Yirgacheffe coffee were of first and second grades. On the contrary, those coffee origins whose average grade levels were below that were found to have higher return, in terms of percentage increase in price, for improvements in grade by one level. Whether this return is attractive for sellers or not depend on the cost of improving the grade level. Given the marginal costs of improving grade, the return could also increase as the efficiency of the market in rewarding quality improves.

With regard to the effect of market share on prices, the price elasticity of market share was found to be negative for all coffee types except Jimma coffee where its price elasticity of market share was found to be positive. The percentage change in prices for a percentage change in market share of Harar, Sidama, Yirgacheffe and Wellega were found to be -8.5, -6.2, -10.8 and -8.9 per cents, respectively. No significant effect of market share on prices was found for Jimma coffee.

While the prices of the four types of coffee received price premia when they are exported to the western countries compared to Jimma coffee. While Yirgacheffe coffee was found to receive the highest price premia of 18.1% higher in reference to Jimma coffee, Harar and Sidama were found to receive price premia of 6.3 and 3.2 per cent, respectively. But the non-trademarked Wellega coffee was also found to receive price premia of 4.5 per cent in comparison with Jimma coffee. The result is slightly different for the coffee exported to the rest of the world. While Yirgacheffe and Wellega receive negative price premia 10.3 and 3.3 per cents in comparison with Jimma coffee, only Harar coffee was to receive positive price premium. No evidence of premium price was found for Sidama coffee exported to countries outside western countries.

The result indicate that in the markets where the trademarking obtained institutional protections (Western markets), the relative price premia are more or less conform with the theoretical expectations. This is not the case when the destination country is a non-western country. The market outside western countries seems to discriminate Ethiopian coffee differently and in contrary with the reputation of geographic indications. In general, the result indicate that exporters that have access to western markets enjoy higher relative price premia, compared to

coffee destined to countries outside western countries. Except Harar coffee, it is also desirable for other types of coffee to be exported to western countries.

The result also show that there was considerable origin specific seasonality for all coffee origins. Finally, the inverse of lot size of individual export was found to have a strong positive effect on the percentage change in price of Ethiopian coffee. This coefficient can be interpreted as a negative relationship between average fixed cost and percentage change in prices Arslan and Reicher (2010).

Table 1 Fixed and Random Effect regression results of export data (2004-2014)

|                           | Fixed Effect (N=41259) |        | Random Effect (N=41259) |        |
|---------------------------|------------------------|--------|-------------------------|--------|
|                           | b                      | t      | b                       | t      |
| Cons                      | 0.93***                | 91.50  | 0.89***                 | 51.84  |
| Inverse of volume         | 29.16***               | 24.97  | 29.19***                | 24.93  |
| Harar                     | -0.15***               | -6.35  | -0.15***                | -6.58  |
| Sidama                    | -0.30***               | -7.44  | -0.30***                | -7.58  |
| Yirgachefe                | -0.17***               | -7.57  | -0.05                   | -1.64  |
| Wellega                   | -                      | -      | -                       | -      |
| Harar*ECX                 | -0.27***               | -21.94 | -0.26***                | -21.65 |
| Sidama*ECX                | -0.01                  | -1.59  | -0.01                   | -1.23  |
| Yirgachefe*ECX            | -0.19***               | -16.07 | -0.19***                | -15.78 |
| Wellega*ECX               | 0.00                   | -0.20  | 0.00                    | 0.11   |
| Harar*D <sub>L</sub>      | 0.06***                | 4.05   | 0.06***                 | 4.33   |
| Sidama*D <sub>L</sub>     | 0.11***                | 8.35   | 0.12***                 | 8.70   |
| Yirgachefe*D <sub>L</sub> | 0.28***                | 11.65  | 0.29***                 | 11.83  |
| Wellega*D <sub>L</sub>    | 0.01                   | 0.98   | 0.02                    | 1.30   |
| Harar*D <sub>T</sub>      | 0.01***                | 24.65  | 0.01***                 | 24.59  |
| Sidama*D <sub>T</sub>     | 0.00                   | 1.12   | 0.00                    | 1.06   |
| Yirgachefe*D <sub>T</sub> | 0.00***                | 15.15  | 0.00***                 | 15.08  |
| Wellega*D <sub>T</sub>    | 0.00**                 | 2.33   | 0.00**                  | 2.30   |
| Harar*Grade               | 0.09***                | 17.17  | 0.09***                 | 17.13  |
| Sidama*Grade              | 0.09***                | 80.88  | 0.09***                 | 80.63  |
| Yirgachefe*Grade          | 0.03***                | 15.00  | 0.03***                 | 14.96  |
| Wellega*Grade             | 0.07***                | 17.65  | 0.07***                 | 17.61  |
| Jimma*Grade               | 0.11***                | 102.11 | 0.11***                 | 101.79 |
| Harar*Market share        | -0.09***               | -10.34 | -0.09***                | -10.29 |
| Sidama*Market share       | -0.06***               | -9.71  | -0.06***                | -9.65  |
| Yirgachefe*Market share   | -0.11***               | -15.13 | -0.11***                | -15.08 |
| Wellega*Market share      | -0.09***               | -14.82 | -0.09***                | -14.76 |

|                               |          |       |          |       |
|-------------------------------|----------|-------|----------|-------|
| Jimma*Market share            | 0.01     | 0.92  | 0.01     | 0.99  |
| Harar*Western                 | 0.06***  | 4.67  | 0.06***  | 4.64  |
| Sidama*Western                | 0.03***  | 2.81  | 0.03***  | 2.85  |
| Yirgachefe*Western            | 0.17***  | 7.81  | 0.17***  | 7.82  |
| Wellega*Western               | 0.04***  | 3.86  | 0.04***  | 3.84  |
| Harar*Rest of the world       | 0.00     | 0.41  | 0.00     | 0.36  |
| Sidama* Rest of the world     | -0.11*** | -4.77 | -0.11*** | -4.79 |
| Yirgachefe* Rest of the world | 0.05***  | 3.19  | 0.05***  | 3.19  |
| Wellega* Rest of the world    | -0.03*** | -2.81 | -0.03*** | -2.79 |

### ***Producer prices***

Two types of producer price data were used in the analysis. Producers in the major coffee producing areas sell dried or red coffee cherries to local traders. Local traders then undertake dry processing or hulling of dried coffee cherries or wet processing of red coffee cherries. To see the actual effects of any interventions on coffee prices, producer prices of coffee *cherries* is the most appropriate one as it reflects the price coffee farmers actually received. Most studies use price of coffee beans as producer price data. To our knowledge, no study used price of coffee cherries as producer price. Our analysis focus on producer prices of coffee cherries (called coffee whole) but we also make a similar analysis on producer prices of coffee *beans* for comparison purpose.

The result shows that while Harar, Yirgachefe and Wellega coffee receive higher average prices, Sidama coffee receive lower average prices than the baseline Jimma coffee. Given these, the effect of the trademarking on average relative prices Harar coffee was found to be positive and significant. But no evidence was found on the effect of trademarking on the average prices of Sidama and Yirgachefe coffee. Instead, the relative average prices of Wellega (non-trademarked) coffee was found to be positive. After the trademarking, the average prices of Harar and Wellega coffee was found to be 11.2 and 16.2 per cent higher than Jimma coffee. In addition to the above effect of the trademarking on the level, we also analyzed the effect of the trademarking on the price trends of each coffee relative to Jimma coffee. We found that prices of Harar and Sidama coffee grew a monthly average rate of 0.31 and 0.09 per cent above the growth rate of Jimma coffee. On the contrary, the price of Wellega coffee grew at an average monthly rate 0.16 per cent below Jimma coffee. No effect on the relative growth rate of Yirgachefe coffee was observed after the trademarking.

The effects of the trademarking on the relative average level and trend of producer prices of coffee bean was slightly different from coffee cherries. The effect of trademarking on relative average price levels of coffee beans was higher than its corresponding effect on producer prices of coffee cherries. After the trademarking, the relative average prices of Harar, Sidama, Yirgachefe and Wellega coffee was found to be 14.0, 23.5, 58.6 and 37.0 per cent higher than average prices of Jimma coffee, respectively. On the other hand, the average price trends of Sidama, Yirgachefe and Wellega were found to grow at average monthly rate of 0.3, 0.7 and 0.3 per cent below Jimma coffee. No significant difference was observed on the monthly growth rate of prices of Harar coffee beans.

These two set of results show that the trademarking was found to have higher positive effect on the relative average producer prices of coffee beans than on coffee cherries. But these higher rise in relative average prices of coffee beans above Jimma coffee beans were offset by relative growth rate far below the growth rate of prices of Jimma coffee beans than the corresponding relative growth rates of coffee cherries. This could be due to that both the effects of trademarking both on the relative average price levels and trends could be transmitted first to export prices then on producer prices of coffee beans and finally to coffee cherries.

Table 2 Fixed and Random Effect regression results of producer prices (2002-2014)

|                           | Producer price of coffee cherries<br>(N=14503) |        |          |        | Producer price of coffee beans<br>(N=4983) |       |          |       |
|---------------------------|--|--------|----------|--------|--|-------|----------|-------|
|                           | FE   |        | RE       |        | FE   |       | RE       |       |
|                           | b  | t      | b        | t      | b  | t     | b        | t     |
| Harar                     | 0.33***  | 3.15   | 0.33***  | 3.09   | 0.49***                                    | 9.01  | 0.47***  | 8.8   |
| Sidama                    | -0.14***                                       | -3.38  | -0.55*** | -14.7  | 0.04                                       | 0.58  | 0.01     | 0.17  |
| Yirgachefe                | 0.57***  | 4.45   | 0.39***  | 3.05   | -0.12                                      | -0.63 | 0.11     | 0.58  |
| Wellega                   | 0.20***  | 6.1    | 0.19***  | 5.64   | 0.18***                                    | 3.12  | 0.16***  | 2.81  |
| Harar*D <sub>L</sub>      | 0.11*  | 1.96   | 0.12**   | 2.13   | 0.13***                                    | 3.93  | 0.15***  | 4.47  |
| Sidama*D <sub>L</sub>     | 0.02   | 0.94   | 0.04     | 1.52   | 0.21***                                    | 4.92  | 0.23***  | 5.32  |
| Yirgachefe*D <sub>L</sub> | -  | .      | -        | .      | 0.46***                                    | 4.42  | 0.48***  | 4.55  |
| Wellega*D <sub>L</sub>    | 0.15***  | 6.1    | 0.16***  | 6.6    | 0.31***                                    | 8.49  | 0.33***  | 8.96  |
| Harar*D <sub>T</sub>      | 0.00***  | 2.7    | 0.00***  | 2.76   | 0.00                                       | 0.05  | 0.00     | 0.94  |
| Sidama*D <sub>T</sub>     | 0.00*  | 1.85   | 0.00*    | 1.88   | -0.00***                                   | -3.76 | -0.00*** | -3.03 |
| Yirgachefe*D <sub>T</sub> | -  | .      | -        | .      | -0.01***                                   | -3.87 | -0.01*** | -3.5  |
| Wellega*D <sub>T</sub>    | -0.00***                                       | -3.49  | -0.00*** | -3.27  | -0.00***                                   | -4.36 | -0.00*** | -3.48 |
| Cons.                     | -0.37***                                       | -72.84 | -0.34*** | -10.86 | 0.29***                                    | 42.2  | 0.29***  | 9.91  |

## Prices convergence

Table 3 compares the dynamics in relative price of trademarked coffee in relation to non-trademarked coffee before and after the trademarking.

Table 3 results of ADF test for convergence between trademarked and non-trademarked coffee

|                | FOB          |                     |                    | Producer prices |                     |                    |
|----------------|--------------|---------------------|--------------------|-----------------|---------------------|--------------------|
|                | Whole period | Before trademarking | After trademarking | Whole period    | Before trademarking | After trademarking |
| Harar_Jimma    | -2.08        | -0.45               | -1.95              | -3.26**         | -1.88               | -2.77*             |
| Harar_Wellega  | -1.91        | -0.69               | -1.88              | -3.80***        | -2.79*              | -2.55              |
| Sidama_Jimma   | -2.52        | -0.30               | -2.88**            | -5.62***        | -3.26**             | -4.45***           |
| Sidama_Wellega | -2.87**      | -0.96               | -2.80*             | -7.25***        | -4.76***            | -5.16***           |

Before the trademarking, the FOB price of trademarked coffee relative to non-trademarked coffee was found to be stable without showing any tendency of convergence or divergence for all combinations of prices. But contrary to our expectation, relative price of Sidama coffee in reference to both Wellega and Jimma coffee shows converge after the trademarking. However there was no evidence of divergence on the relative FOB price of trademarked coffee, there was also no evidence of convergence. But the situation is different when it comes to producer prices. The relative producer prices of trademarked coffee (Harar and Sidama) in reference to non-trademarked coffee (Jimma and Wellega) showed evidence of convergence both before and after the trademarking. The result shows relative producer prices of trademarked coffee are more convergent than FOB prices. It suggests that the trademarking was more effective in keeping relative FOB price of trademarked coffee stationary.

## Discussion of key findings

The results of Fixed Effect regression revealed a positive effects of the trademarking on the level and trends of relative FOB prices of trademarked Ethiopian coffee. One of the interesting result of the study is the effects of ECX on the relative prices of the different geographically designated coffee. The result is consistent with the findings of Leung (2014). This may be due to the impersonalized and non-traceable nature of the transaction introduced by ECX. The implication is that for GI-protection to meet its goal, it requires a traceable transaction system, however it may not need to be personalized. It provided an important evidence that the mode of transaction introduced by ECX is not compatible with the trademark-protection. Consideration need to be

made on the relative gains from a non-traceable transaction system vis-à-vis the trademark-protection. After the trademarking, the average FOB prices of trademarked and other non-trademarked coffee in comparison with the numeraire (Jimma coffee) was substantially and significantly higher. Trends of relative FOB price of trademarked coffee was different. Theoretically trademarking initiative initially can increase price by promoting the product. For this rise in price premia to continue to rise depend on the efficiency of the trademark-protection to provide the institutions of reputation. If the institution of reputation is strong, the relative demand for trademarked products are expected to shift to the right as more buyers learn the quality differences and tend to become more inelastic as consumers develop special preference for the products. But demand cannot only fall when buyers fail to find quality differences, demand can even become more elastic as consumers view the product as commodity. Thus, long term effects on the relative prices depend on the ability of the market in maintaining the reputability of the products.

The result on the price elasticity of market share can suggest the structure of market Ethiopian coffee face in the world market. If all Ethiopian coffee equally compete in the world market as other commodity coffee, price elasticity of market share would be near zero. If all Ethiopian coffee equally compete in the world market as other commodity coffee, price elasticity of market share would be near zero, given the negligible share of Ethiopian coffee in the world markets. But price elasticity of market share should be higher if Ethiopian coffee (individually or collectively) has its own segment in the world market. The higher price elasticity of market share suggest that Ethiopian coffee has its narrow segment in the world market.

## **Conclusion**

Using large number of observation of export transactions recorded over 11 years and producer price data collected over wide range of areas of the country, we analyzed the impacts of trademarking on producer and export prices using Fixed Effect model. We found that generally, the trademark protection significantly and considerably increased the levels and growth rate of export prices. However, this gain was counterbalanced by the introduction of non-traceable and impersonalized trade by ECX. Given the institutional context of the country, the introduction of impersonalized transaction in the coffee market can have far-reaching effect in improving the performance of the coffee market. But the commoditization also undermine the potential price

gains from product differentiation through trademark protections Ethiopian fine coffee. This may require institutional arrangement that provide alternative channel for both trademarked coffee and commodity coffee.

The study also estimated the percentage price gains that can be achieved by improving the grade-level of the different coffee. For most of the coffee origins, there is substantial price gain from improving the grade level. We also found that Ethiopian exporters can benefit more by exporting to western countries than the rest of the world.

The effect of trademarking was found to be substantial on export prices, unfortunately its effect on producer prices was small in terms of level and growth rate. However the primary goal of the trademark initiative was to benefit small-holder coffee producers, only small portion of the export price premia goes to producers. It indicates that getting the market work for farmers requires much more than improving the gains from the world market. A lot need to be done to improve the competitiveness of the domestic markets. Particularly, local markets are constrained by diverse institutional and infrastructural constraints. Moreover, given the overall the overall context, the trademarking seems to a suitable instrument as it undermines the role of producers in adding value through product differentiations. Alternative ways of GI-protection that increase the roles of farmers such as through certification can work better both in improving the confidence of foreign buyers and in increasing the bargaining power of farmers.

## REFERENCES

- Akerlof, G. A. 1970. The market for lemons: quality uncertainty and the market mechanism. *The Quarterly Journal of Economics* 84(3): 488-500.
- Barcala, M. F., M. Gonzalez-Diaz and E. Raynaud. 2007. The governance of quality: The case of the agrifood brand names. 3rd International Conference on Economics and Management Networks, Rotterdam School of Management, Erasmus University, June 28-30, 2007.
- Barjolle, D., M. Paus and A. Perret, 2009. Impacts of Geographical Indications: Review of methods and empirical evidences. Contributed Paper prepared for presentation at the International Association of Agricultural Economists Conference, Beijing, China, August 16-22, 2009
- Belletti, G., 1999. Origin labelled products, reputation and heterogeneity of firms', in B. Sylvander, D. Barjolle and F. Arfini (eds.), 2000. *The Socio-Economics of Origin Labelled Products in Agro-Food Supply Chains: Spatial, Institutional and Co-Ordination Aspects*. Series Actes et Communications, 17, INRA, Paris, 1999.
- Berhe, Y. 2010. The legal regime regulating the coffee trade in Ethiopia. Addis Ababa University, School of Graduate Studies, Unpublished Thesis.
- Bramley C., E. biénabe and J. Kirsten. 2009. The economics of geographical indications: towards a conceptual framework for geographical indication research in developing countries. In *The economics of intellectual property: Suggestions for further research in developing countries and countries with economies in transition*. World Intellectual Property Organization.
- Bramley, C. 2011. A review of the socio-economic impact of geographical indications: Considerations for the developing world. Paper prepared for presentation at the WIPO Worldwide Symposium on Geographical Indications, June 22 – 24, 2011, Lima, Peru.
- Carriquiry, M. and B. A. Babcock 2004. Reputation, quality observability, and the choice of quality assurance systems. Center for Agricultural and Rural Development (CARD). Working Paper 04-WP 373.
- Deconinck, K. & J. Swinnen 2014. The political economy of Geographical Indications. American Association of Wine Economists, AAWE. Working Paper No. 174.



- Gelaw F., S. Speelman & G. V. Huylenbroeck. 2015. Local coffee markets and quality improvement: Evidence from a choice experiment among coffee producers in Ethiopia. A contributed paper for International Conference of Agricultural Economists, August-9-14, 2015, Milan, Italy.
- Giovanucci, D. and L. F. Samper. 2009. The case of Café Nariño, Colombia. In ITC (International Trade Centre). 2009. Guide to geographical indications: Linking products and their origins. Geneva: ITC, xix, 207 p.
- Giovanucci, D. and V. E. Smit. 2009. The case of Kona coffee, Hawaii. In ITC (International Trade Centre). 2009. Guide to geographical indications: Linking products and their origins. Geneva: ITC, xix, 207 p.
- Hassan, D., S. Monier-Dilhan & V. Orozco. 2011. Measuring consumers' attachment to Geographical Indications: Implications for competition policy, TSE Working Paper, n. 11-225.
- Josling, T. 2006. The war on *terroir*: Geographic Indications as transatlantic trade conflict. *Journal of Agricultural Economics* 57(3): 337-63.
- Leung, L. 2014. Eroded Coffee Traceability and Its Impact on Export Coffee Prices for Ethiopia. Development Discussion Paper 2014-04.
- Loureiro, M. L. & J. J. McCluskey. 2000. Assessing consumer response to protected Geographical Identification labeling. *Agribusiness* 16(3): 309–320.
- Nelson, P. 1970. Information and consumer behaviour. *Journal of Political Economy* 78(2): 311-329.
- Oberthur, T., Laderach, P., Posada, H. Fisher, MJ. Samper, LF. Illera, J. Collet, L., Moreno, E., Alarcon, R., Villegas, A., Usma, H., Perez, C. and Jarvis, A. 2011. Regional relationships between inherent coffee quality and growing environment for denomination of origin labels in Narino and Cauca, Colombia. *Food Policy* 36(6): 783-794.
- OECD (Organization for Economic Co-operation and Development). 2000. Appellations of origin and Geographical Indications in OECD member countries: Economic and legal implications. Working Party on Agricultural Policies and Markets of the Committee for Agriculture, Joint Working Party of the Committee for Agriculture and the Trade Committee, COM/AGR/APM/TD/WP15/FINAL, Paris, 2000.

- Schroede, K. 2009. The case of Blue Mountain coffee, Jamaica. In ITC (International Trade Centre). 2009. Guide to geographical indications: Linking products and their origins. Geneva: ITC, xix, 207 p.
- Teuber, R. 2010. Geographical indicators of origin as a tool for product differentiation: The case of coffee. *Journal of International Food and Agribusiness Marketing* 22: 277-98.
- Thomas, W. A. & B. Minet. 2015. Can agricultural traders be trusted? Evidence from urban coffee markets in Ethiopia. International Food Policy Research Institute (IFPRI) & Ethiopian Development Research Institute (EDRI). ESSP WP 72.
- Ubilava, D. & K. Foster. 2009. Quality certification vs. product traceability: Consumer preferences for informational attributes of pork in Georgia. *Food Policy* 34: 305–310.
- WTO (World Trade Organization). 2004. World Trade Report 2004. Geneva: WTO.
- Zhang, K. 2015. Breaking Free of a Stereotype: Should a Domestic Brand Pretend to Be a Foreign One? *Marketing Science* 34(4): 539–554.

## Appendix A

Table 1A Coffee brand specific seasonal effects of the fixed and random effect regressions of FOB prices (*continued from Table 1*)

|                 | Fixed Effect (N=41259) |       | Random Effect (N=41259) |       |
|-----------------|------------------------|-------|-------------------------|-------|
|                 | b                      | t     | b                       | t     |
| Harar*Jan.      | 0.00                   | 0.07  | 0.04**                  | 2.24  |
| Sidama*Jan.     | 0.07***                | 5.16  | -0.10***                | -4.91 |
| Yirgachefe*Jan. | 0.14***                | 6.38  | 0.14***                 | 6.33  |
| Wellega*Jan.    | 0.06***                | 4.03  | 0.06***                 | 3.99  |
| Harar*Feb.      | -0.01                  | -0.56 | 0.03                    | 1.53  |
| Sidama*Feb.     | 0.09***                | 7.31  | -0.08***                | -4.19 |
| Yirgachefe*Feb. | 0.15***                | 7.32  | 0.15***                 | 7.31  |
| Wellega*Feb.    | -                      | -     | -                       | -     |
| Harar*Mar.      | -0.05*                 | -1.87 | -0.01                   | -0.58 |
| Sidama*Mar.     | 0.08***                | 6.87  | -0.09***                | -4.84 |
| Yirgachefe*Mar. | 0.15***                | 7.61  | 0.15***                 | 7.62  |
| Wellega*Mar.    | 0.02*                  | 1.81  | 0.02*                   | 1.83  |
| Harar*Apr.      | -0.04                  | -1.56 | 0.00                    | -0.15 |
| Sidama*Apr.     | 0.07***                | 5.87  | -0.10***                | -5.14 |
| Yirgachefe*Apr. | 0.16***                | 7.6   | 0.16***                 | 7.6   |
| Wellega*Apr.    | 0.03**                 | 2.00  | 0.03**                  | 1.99  |
| Harar*May       | -0.06**                | -2.00 | -0.02                   | -1.01 |
| Sidama*May      | 0.11***                | 9.19  | -0.06***                | -3.19 |
| Yirgachefe*May  | 0.15***                | 7.41  | 0.15***                 | 7.4   |
| Wellega*May     | 0.02*                  | 1.76  | 0.02*                   | 1.73  |
| Harar*Jun.      | -0.06**                | -2.00 | -0.02                   | -1.03 |
| Sidama*Jun.     | 0.12***                | 9.55  | -0.06***                | -3.01 |
| Yirgachefe*Jun. | 0.18***                | 9.27  | 0.18***                 | 9.25  |
| Wellega*Jun.    | 0.01                   | 1.21  | 0.01                    | 1.18  |
| Harar*Jul.      | -0.03                  | -1.09 | 0.01                    | 0.59  |
| Sidama*Jul.     | 0.11***                | 8.80  | -0.06***                | -3.05 |
| Yirgachefe*Jul. | 0.21***                | 10.18 | 0.21***                 | 10.18 |
| Wellega*Jul.    | 0.02                   | 1.23  | 0.02                    | 1.24  |
| Harar*Aug.      | -0.01                  | -0.42 | 0.03                    | 1.63  |
| Sidama*Aug.     | 0.11***                | 9.00  | -0.06***                | -3.04 |
| Yirgachefe*Aug. | 0.22***                | 10.46 | 0.22***                 | 10.46 |
| Wellega*Aug.    | 0.03**                 | 2.13  | 0.03**                  | 2.13  |
| Harar*Sep.      | -0.04                  | -1.42 | 0.00                    | 0.01  |
| Sidama*Sep.     | 0.08***                | 5.89  | -0.09***                | -4.38 |

|                 |         |       |          |       |
|-----------------|---------|-------|----------|-------|
| Yirgachefe*Sep. | 0.14*** | 6.26  | 0.14***  | 6.26  |
| Wellega*Sep.    | 0.05*** | 3.22  | 0.05***  | 3.21  |
| Harar*Oct.      | 0.00    | -0.18 | 0.04*    | 1.93  |
| Sidama*Oct.     | 0.08*** | 5.96  | -0.09*** | -4.53 |
| Yirgachefe*Oct. | 0.13*** | 6.13  | 0.13***  | 6.14  |
| Wellega*Oct.    | 0.05*** | 3.81  | 0.05***  | 3.82  |
| Harar*Nov.      | -0.04   | -1.46 | -        | -     |
| Sidama*Nov.     | 0.04*** | 2.98  | -0.13*** | -6.21 |
| Yirgachefe*Nov. | -       | -     | -        | -     |
| Wellega*Nov.    | 0.06*** | 4.17  | 0.06***  | 4.14  |
| Harar*Dec.      | -0.04   | -1.51 | 0        | 0.1   |
| Sidama*Dec.     | -       | -     | -0.17*** | -7.84 |
| Yirgachefe*Dec. | -0.01   | -0.31 | -0.01    | -0.33 |
| Wellega*Dec.    | 0.07*** | 4.92  | 0.07***  | 4.92  |

Table 2A Coffee origin – Month interaction of producer prices of coffee beans and coffee cherries (*continued from Table 2*)

|                 | Producer price of coffee cherries<br>(N=14503) |       |          |       | Producer price of coffee beans<br>(N=4983) |       |         |       |
|-----------------|--|-------|----------|-------|--|-------|---------|-------|
|                 | FE   |       | RE       |       | FE   |       | RE      |       |
|                 | b  | t     | b        | t     | b  | t     | b       | t     |
| Harar*Jan.      | -0.12  | -1.1  | -0.13    | -1.15 | 0.09                                       | 1.54  | 0.08    | 1.37  |
| Sidama*Jan.     | 0.05   | 1.22  | 0.45***  | 10.9  | 0.03                                       | 0.35  | 0.02    | 0.29  |
| Wellega*Jan.    | -0.20***                                       | -5.04 | -0.19*** | -4.98 | -0.01                                      | -0.16 | -0.02   | -0.33 |
| Yirgachefe*Jan. | -0.41***                                       | -2.94 | -0.24*   | -1.7  | 0.22                                       | 1.21  | -0.04   | -0.21 |
| Harar*Feb.      | -0.15  | -1.33 | -0.15    | -1.37 | 0.07                                       | 1.12  | 0.06    | 0.96  |
| Sidama*Feb.     | 0.07*  | 1.66  | 0.47***  | 11.3  | 0.05                                       | 0.73  | 0.05    | 0.69  |
| Wellega*Feb.    | -0.19***                                       | -5.03 | -0.19*** | -4.95 | -0.02                                      | -0.33 | -0.03   | -0.5  |
| Yirgachefe*Feb. | -0.41***                                       | -2.99 | -0.23*   | -1.7  | 0.21                                       | 1.17  | -0.05   | -0.27 |
| Harar*Mar.      | -0.22*   | -1.93 | -0.23*   | -1.95 | 0.02                                       | 0.39  | 0.01    | 0.14  |
| Sidama*Mar.     | 0.09**   | 2.06  | 0.49***  | 11.68 | 0.11                                       | 1.56  | 0.1     | 1.44  |
| Wellega*Mar.    | -0.22***                                       | -5.94 | -0.22*** | -5.82 | 0.06                                       | 1.03  | 0.05    | 0.79  |
| Yirgachefe*Mar. | -0.40***                                       | -2.91 | -0.22    | -1.59 | 0.30*                                      | 1.68  | 0.05    | 0.25  |
| Harar*Apr.      | -0.19  | -1.64 | -0.20*   | -1.67 | 0.18***                                    | 2.97  | 0.16*** | 2.65  |
| Sidama*Apr.     | 0.07   | 1.51  | 0.47***  | 10.74 | 0.15**                                     | 2.06  | 0.14*   | 1.87  |
| Wellega*Apr.    | -0.19***                                       | -5.03 | -0.19*** | -4.92 | 0.1  | 1.56  | 0.08    | 1.25  |
| Yirgachefe*Apr. | -0.42***                                       | -3.04 | -0.24*   | -1.73 | 0.27                                       | 1.51  | 0.01    | 0.04  |
| Harar*May.      | -0.15  | -1.25 | -0.15    | -1.27 | 0.08                                       | 1.32  | 0.07    | 1.12  |
| Sidama*May.     | 0.11**   | 2.34  | 0.52***  | 11.32 | 0.07                                       | 0.8   | 0.06    | 0.74  |

|                 |          |       |          |       |       |       |        |       |
|-----------------|----------|-------|----------|-------|-------|-------|--------|-------|
| Wellega*May.    | -0.22*** | -5.45 | -0.21*** | -5.3  | -0.03 | -0.51 | -0.05  | -0.7  |
| Yirgachefe*May. | -0.49*** | -3.52 | -0.31**  | -2.2  | 0.16  | 0.83  | -0.1   | -0.51 |
| Harar*Jun.      | -0.19    | -1.53 | -0.19    | -1.52 | 0.01  | 0.22  | 0      | 0.07  |
| Sidama*Jun.     | -0.04    | -0.76 | 0.37***  | 7.96  | 0     | .     | -0.06  | -0.92 |
| Wellega*Jun.    | -0.23*** | -5.69 | -0.22*** | -5.5  | -0.05 | -0.78 |        |       |
| Yirgachefe*Jun. | -0.48*** | -3.46 | -0.29**  | -2.11 | 0.1   | 0.47  | -0.15  | -0.67 |
| Harar*Jul.      | -0.19    | -1.59 | -0.19    | -1.58 | -0.11 | -1.59 | -0.11* | -1.67 |
| Sidama*Jul.     | -0.14*** | -2.87 | 0.26***  | 5.4   | 0.08  | 0.93  | 0.08   | 0.97  |
| Wellega*Jul.    | -0.31*** | -7.36 | -0.30*** | -7.17 | -0.02 | -0.26 | -0.02  | -0.31 |
| Yirgachefe*Jul. | -0.70*** | -5.1  | -0.52*** | -3.74 | 0.19  | 0.85  | -0.05  | -0.22 |
| Harar*Aug.      | 0.05     | 0.35  | 0.05     | 0.35  | 0     | .     |        |       |
| Sidama*Aug.     | 0        | .     | 0.41***  | 7.69  | -0.1  | -0.92 | -0.1   | -0.86 |
| Wellega*Aug.    | -0.25*** | -5.45 | -0.24*** | -5.23 | 0     | .     |        |       |
| Yirgachefe*Aug. | -0.57*** | -3.9  | -0.38*** | -2.6  | 0     | .     | -0.24  | -1.05 |
| Harar*Sep.      | 0        | .     |          |       | -0.01 | -0.17 | -0.02  | -0.31 |
| Sidama*Sep.     | -0.41*** | -7.69 |          |       | -0.11 | -1.25 | -0.11  | -1.28 |
| Wellega*Sep.    | -0.20*** | -4.36 | -0.19*** | -4.13 | -0.05 | -0.68 | -0.06  | -0.76 |
| Yirgachefe*Sep. | -0.54*** | -3.27 | -0.35**  | -2.12 | 0     | .     |        |       |
| Harar*Oct.      | -0.32**  | -2.49 | -0.33**  | -2.54 | 0.11* | 1.7   | 0.1    | 1.62  |
| Sidama*Oct.     | -0.42*** | -8.41 | -0.02    | -0.43 | 0.01  | 0.19  | 0.02   | 0.22  |
| Wellega*Oct.    | -0.06    | -1.27 | -0.05    | -1.2  | 0.08  | 1.05  | 0.08   | 1.01  |
| Yirgachefe*Oct. | -0.18    | -0.99 |          |       | 0.25  | 1.09  |        |       |
| Harar*Nov.      | -0.34*** | -2.74 | -0.34*** | -2.8  | 0     | -0.08 | -0.01  | -0.23 |
| Sidama*Nov.     | -0.25*** | -5.18 | 0.15***  | 3.26  | -0.02 | -0.22 | -0.02  | -0.24 |
| Wellega*Nov.    | 0        | .     |          |       | 0.08  | 1.21  | 0.07   | 1.08  |
| Yirgachefe*Nov. | 0        | .     | 0.16     | 0.89  | 0.24  | 1.15  | -0.02  | -0.08 |
| Harar*Dec.      | -0.33*** | -2.82 | -0.33*** | -2.87 | 0     | -0.06 | -0.01  | -0.15 |
| Sidama*Dec.     | -0.09*   | -1.92 | 0.31***  | 7.06  | -0.01 | -0.13 | -0.01  | -0.11 |
| Wellega*Dec.    | -0.11**  | -2.57 | -0.11*** | -2.6  | 0     | 0.05  | 0      | -0.04 |
| Yirgachefe*Dec. | -0.25    | -1.36 | -0.08    | -0.44 | 0.36* | 1.79  | 0.11   | 0.54  |