

**Zentrum für internationale Entwicklungs- und Umweltforschung
der Justus-Liebig-Universität Gießen**

**Geographical Indications of Origin as a Tool of
Product Differentiation – The Case of Coffee**

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No. 33

Giessen, May 2007

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PREFACE

An increasing interest in geographical indications of origin (GIs) as a tool of product differentiation can be observed in the so-called specialty coffee sector. Similar to the approach for wine in France and Italy, more and more coffee-producing countries try to establish appellations systems for coffee. Whereas some countries and regions such as Colombia or Jamaica have already legally protected GIs for coffee, most coffee GIs are still informal meaning that no legal protection has been obtained so far. But the recent acceptance of the term Café de Colombia as a Protected Geographical Indication (PGI) in the EU and the Ethiopian Trademark Initiative document the increasing engagement of coffee-producing countries to achieve an appropriate legal protection for their GIs. From an economic point of view, data from US online retail stores indicate that single-origin coffees receive significant higher retail prices, with 100% Kona coffee from Hawaii and Jamaican Blue Mountain coffee being the most expensive ones. Furthermore, results from a hedonic pricing model based on internet auction data for single-origin coffees show that the country and the region of origin is already an important determinant of prices paid by importers and roasters.

KEYWORDS: Geographical Indications of Origin, coffee, legal regulatory systems, price premium, hedonic pricing analysis

“Coffee is now where wine was ten years ago”¹

1. INTRODUCTION

For quite a long time the coffee market was considered to be a market with nearly no product differentiation at all. This picture has been changing since product and process quality are becoming more important to consumers. Especially the product origin as a proxy for product and process quality is gaining in importance in consumers' buying decisions. As a reaction to this rising consumer demand for diversification, an increasing product differentiation based on geographical origin can also be observed in the coffee market, particularly in the so-called specialty coffee market (Kaplinsky and Fitter 2004; Lewin et al. 2004).

Specialty coffees are not precisely defined but cover a wide range of somehow differentiated coffees, such as organic, fair trade and bird-friendly coffee. Besides these kinds of coffee another type of specialty coffee called single-origin coffee or coffee with a geographical indication of origin (GI) has been emerging in recent years (Daviron and Ponte 2005; Lewin et al. 2004). While the bulk of coffee is sold to consumers as blend, meaning that coffees from different mostly unidentified origins are mixed, single-origin coffees are the total opposite of blends. Like the term specialty coffee the term single-origin is not precisely defined so that single-origin coffees can originate in one country, one region or even one estate or farm (Knox and Sheldon Huffaker 1996).

Product differentiation based on geographical origin is not a new development. It has got a rather long history, especially in southern European countries. “Parmigiano Reggiano” is a well-known example of a Protected Designations of Origin (PDO) under Council Regulation (EC) No. 510/2006 with having ancient origins in the 13th century. But what is new in recent years is the growing number of products labelled with GIs at the European as well as at the international level. Since the EC No.510/2006² came into force in 1993 the number of applications per year has steadily increased and today over 700 products are registered either as PDO or as Protected Geographical Indication (PGI).

¹ Statement by the chief buyer of the major UK retailer of coffee (Kaplinski and Fitter 2004:7).

² Council Regulation (EEC) No. 2081/92 on the protection of geographical indications and designations of origin for agricultural products was replaced by Council Regulation (EC) No. 510/2006 in March 2006 as a response to a WTO-Panel ruling criticising two main components of the former regulation (EC 2006).

Moreover, geographical indications are a current topic at the international level. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), which became effective in 1995, is considered the first multilateral agreement giving an explicit definition of the term “geographical indication”. According to the TRIPs definition “geographical indications” are “indications, which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristics of the good is essentially attributable to its geographical origin” (TRIPs Article 22.1). Furthermore, TRIPs requires from every signatory to establish minimum standards for the protection of GIs through their national law. Developed countries had to implement the TRIPs requirements by 1996, developing and transition countries by 2000 and for the least developed countries the final date for the implementation was extended to the year 2006 (Calboli, 2006:183; Liebig 2000:9).

All these recent developments document the rising interest in GIs. While in the past GIs have been mainly a product differentiation tool in European markets and for European producers, recently more and more developing countries discover this marketing instrument for their products. But whereas quite some studies dealing with European GIs exist, studies dealing with GIs in developing countries are seldom. Thus, the overall objective of this paper is to provide insight into recent developments of the world coffee market and to explore them with a particular focus on GIs. To achieve this broad objective, the legal framework of GIs in the coffee market shall be explored first in order to find answers to the following research questions:

- Which GIs do already exist in the coffee market?
- How are these GIs protected and by which legal means?
- In which markets are these GIs protected?

Second, the economic impact of GIs, especially the price effect, shall be examined. Questions arising in this context are:

- Which price premium can be achieved by GIs?
- Do price premia differ across countries and regions due to the geographical indication?

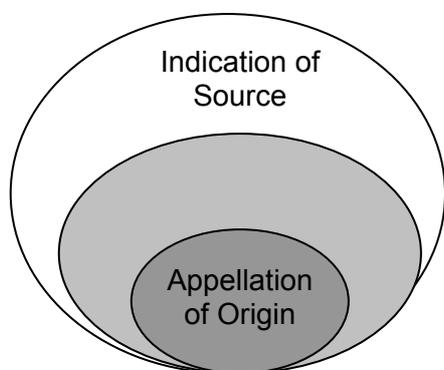
The paper is structured as follows. Section 2 will give an overview about the legal situation of GIs in the coffee market. Section 3 will explore the economic aspects of coffees with GIs. This is done in two parts. First, an overview is given about available coffees labelled with GIs and their retail prices in the US market. Second, data from several internet auctions in which single-origin coffees are directly bought by importers or roasters are used to estimate a hedonic pricing model. This econometric tool shall give some first hints how the country or region of origin influences the price for high-

quality coffee controlling for other relevant product attributes such as coffee variety, sensory quality and certifications like organic or fair trade.

2. LEGAL ASPECTS – MAIN ACTORS AND RECENT DEVELOPMENTS

While TRIPs is considered the first multilateral agreement giving an explicit definition of the term “geographical indication”, it is not the first multilateral agreement dealing with this kind of intellectual property right at all. Other multilateral agreements in this context are the Paris Convention for the Protection of Industrial Property from 1883, the Madrid Agreement Concerning the International Registration of Marks from 1891 and the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration from 1958. All these agreements do not explicitly deal with the term geographical indication but with “indication of source” or “appellation of origin” (APO). How these three concepts differ can be seen in the following figure.

Figure 1: Relationship between Indication of Source, Geographical Indication and Appellation of Origin



Source: Own presentation based on WIPO (2002).

Indication of source is the broadest concept. It only requires that the product originates in a certain geographical area. Thus, no link to quality or reputation is implied. This point distinguishes the definition of indication of source from the other two concepts. A product labelled with a geographical indication or appellation of origin must have quality characteristics that are essentially due to its geographical origin. Since in some aspects the concept of appellation of origin is even narrower than the GI concept, it can be concluded that all appellations of origin are geographical indications and all geographical indications are indications of source. But not all indications of origin are

geographical indications resp. appellations of origin (WIPO 2002). The situation becomes even more complex when the European regulation is considered. The EC Regulation No. 510/2006 distinguishes Protected Designations of Origin (PDOs) and Protected Geographical Indications (PGIs). The requirements on a product to become a PDO are higher than to become a PGI, since in the former case *all* stages of production must take place in the defined geographical area, whereas in the latter case at least *one* stage of the production must be located in the specified area (European Commission 2004).

Following from these points it can be stated that not only one single definition of geographical indications and one way to protect GIs exist. Moreover, a plurality of different regulatory systems under which GIs are protected can be observed across different countries (Thevenod-Mottet 2006:26; WTO 2004:75). GIs may be protected through special means of protection (e.g. PDO/PGI), as trademark (e.g. USA) or through other already existing laws such as laws on the repression of unfair competition or the protection of consumers (*ibidem*). Whereas the majority of developed countries have got quite well-developed regulatory systems, this is often not the case in developing countries. Here the establishment of regulatory systems to protect intellectual property in general and geographical indications in particular is often in its early stages (van Caenegem 2004:170; Josling 2006:343). Many important coffee-producing countries belong to this group of countries.

So far no international register for GIs does exist. Therefore, an overview of already protected and registered GIs in the coffee market will be provided by surveying the literature and using data from trademark bases as well as from governments and grower associations. In this context it is necessary to distinguish between the domestic and the foreign market. Since coffee consumption in producing countries is still at a low level with the exception of Brazil, the export markets are more important in terms of income than the domestic market (Lewin et al. 2004:59). Thus, a look at registered GIs in the main export markets is indispensable. The main export markets for single-origin coffees are Japan, the United States and Europe. Therefore, after looking at the protection of GIs in the domestic market an overview about protected coffee GIs in these foreign jurisdictions will be given.

As can be seen from Table 1 all coffee-producing countries under consideration have already implemented laws to protect intellectual property in general or laws for the protection of geographical indications in particular. In most countries these laws were established quite recently, reflecting the deadline for implementation of the TRIPs requirements. Furthermore, Table 1 supports the statement that no single definition of geographical indication and no single regulatory framework for its protection exist.

Table 1: Intellectual Property Systems in Selected Coffee-Producing Countries

Country	Legal Regulation	Registered GIs for Coffee	Current Projects
Bolivia	Decision 486 of the Andean Community, 2000: <i>IOC and DO</i>	None so far	
Brazil	Brazil Industrial Property Law No. 9.279 (1996): <i>IOC and DO</i>	None so far	
Costa Rica	Law on Marks and other Distinctive Signs, 2000: <i>GI and DO</i>	None so far	ICAFF ¹ has established the project "7 Regions, 7 Coffees".
Colombia	Decision 486 of the Andean Community, 2000: <i>IOC and DO</i>	Café de Colombia	Project "Los Cafés Especiales Colombianos"
Ethiopia	Law on Intellectual Property	n/a	Ethiopian Fine Coffee Trademarking and Licensing Initiative:
Guatemala	Law on Intellectual Property, Decree 57-2000: <i>GI and DO</i>	Genuine Antigua ²	Coffee Atlas 2006/2007 : 7 regional coffees are defined; Pilot Project Antigua: Establishment of Guatemala's first DO under the name "Antigua Coffee"
Honduras	Law on Intellectual Property, Decree 12-99: <i>GI and DO</i>	None so far	
Indonesia	Trademark Act of 2001	None so far	Pilot project to study the possible application of GI protection in the Kintamani region of Bali
Jamaica	The Protection of Geographical Indications Act, 2004	n/a	
Kenya	Industrial Property Act, 2001	None so far	
Mexico	Law on Intellectual Property, 1994: <i>DO</i>	Café Chiapas ³ Café Veracruz	

Legend: DO = Denomination of Origin; GI = Geographical Indication; IOC = Indication of Source; n/a: could not be specified

Notes: ¹Costa Rican Coffee Institute (ICAFF); ² Not protected by legal means but certified since 2003 by Société General de Surveillance, a private food inspection company. ³ Both terms are protected as Appellations of Origin under the Lisbon Agreement.

Sources: Own presentation based on EIPO (2006); Garcia Muñoz-Nájar (2001); Gerz and Avelino (2006); Mawardi (2005); WIPO (2004); <http://www.sice.oas.org> and <http://www.antiguacoffee.org>.

Countries belonging to the Andean Community such as Bolivia and Colombia distinguish indications of source and denomination of origin³ as two legal concepts in the category of geographical indications. Other countries such as Costa Rica, Guatemala, Honduras and Mexico deal with the terms geographical indication and denomination of origin and Indonesia protects geographical indications under its trademark laws. This approach is similar to the US approach. In the United States geographical indications are not recognised as a separate class of intellectual property. However, geographical indications can be protected under the existing US trademark law (Josling 2006: 347).

What is really striking is the fact that to date only three geographical indications for coffee are registered and protected in their domestic market or under a multilateral agreement, respectively. The term Café de Colombia is a protected denomination of origin for green coffee beans in Colombia, whereas the Mexican coffees Café Chiapas and Café Veracruz are registered and protected in Mexico under national law and additionally as appellations of origin under the Lisbon Agreement.⁴ Café Veracruz was registered by Mexico in 2001 as an appellation of origin for “green or roasted coffee”. In 2004, the registration for “Café Chiapas” followed. The registration for Café Chiapas goes beyond the one for Café Veracruz in that way that the registration covers “green or roasted/ground coffee of the *Coffea Arabica* species” and “the appellation of origin may be used, subject to authorisation for this purpose by the Mexican Institute of Industrial Property (IMPI), by any individual or legal entity directly involved in extraction, production or elaboration of Café Chiapas, in the territory designated in the general declaration of protection, and in compliance with the corresponding official law” (WIPO 2007). This difference between the two APOs stresses one important point that has to be kept in mind in the context of geographical indications, the scope of protection. In the case of Café Chiapas the scope of protection could be interpreted in that way that only coffee processed or even ground in the region of Chiapas can be sold as Café Chiapas (Schulte 2005). Some law experts argue that instead of supporting the local coffee growers and contributing to rural development such a wide scope could even harm the coffee growers, as traders may not bear the risk of buying coffee that is already roasted or even ground in the country of origin (Schulte 2005).

³ In most cases appellation of origin and denomination of origin are interchangeable and just reflect a different translation. In Spanish versions of legal texts often the term “Denominacion de Origen” is found. In the English versions this term is either translated as “Denomination of Origin” or “Appellation of Origin”.

⁴ Today the Lisbon Agreement has got 26 member states. For a complete list see <http://www.wipo.int/treaties/en/registration/lisbon/>

To date the GI “Genuine Antigua” is not protected by national law. In 2000 the Genuine Antigua Coffee Growers Association (APCA) was founded and since 2003 the Swiss food inspection company Société Generale de Surveillance (SGS) certifies coffee grown in the Antigua region meeting certain requirements regarding altitude, soil and processing methods. This certified coffee is labelled as Genuine Antigua (APCA Homepage).

Additionally, Table1 contains information about recent projects in the context of coffee and GIs. Costa Rica, Colombia, Guatemala, Indonesia and Ethiopia can all be regarded as leading actors in the coffee sector with respect to the establishment of GIs. While Colombia has already established a national GI, recent efforts are under way to establish regional and estate coffees besides other specialty coffees such as organic or relationship coffees (FNC Website). For this purpose 86 distinct “designated micro-climates” based on a set of variables, including location, rainfall, altitude and processing methods were recently defined (Germain 2005). A regional approach is also followed by Costa Rica and Guatemala. Both countries have already identified seven different growing regions, every region with an individual profile (ICAFE Homepage; ANACAFE 2006). To date all these growing regions are still informal, but in all countries efforts are under way to formalize these regions through legal means (ibidem).

Guatemala and Costa Rica take also part in the GEOCafé project, which has been developed by funding from the USAID⁵ Quality Coffee Program. Farms, cooperatives, and mills in participating countries are precisely mapped with GPS devices, and data are collected for each of these entities, ranging from geographic and climatic farm conditions, socio-economic data, harvesting periods, certification issues, type of protective trees and methods of coffee processing. By using these data interactive online coffee maps are created making virtual visits to coffee farms and coffee regions possible. These maps shall also form the basis for the establishment of appellation systems for coffee (GeoCafé Homepage).

The comparison between fine wines and single-origin coffees is often made in the literature (Lewin et al. 2004; Kaplinki and Fitter 2004; Daviron and Ponte 2005). The introductory statement “coffee is now where wine was 10 years ago” illustrates this. The establishment of appellation systems for coffee similar to the appellation systems for wine in France and in Italy is regarded as a possible way for coffee producing countries to embed value at the production level (Daviron and Ponte 2005:230; Neilson 2005:203). The findings from above point out that many coffee-producing countries agree to this view.

⁵ United States Agency for International Development

In a next step data to protected GIs in the main export markets was collected. Since unfortunately no data could be obtained for the Japanese market, only the US and the European markets are considered.

Following from Table 2, Colombia, Ethiopia, Jamaica, Hawaii and Mexico have already protected and registered coffee GIs in the US and the European market. While Colombia and Jamaica had started to rely on trademark protection in the 1980s, all other registrations were made in the last few years. Under the Ethiopian Fine Coffee Trademarking and Licensing Initiative the government of Ethiopia has filled trademark applications in over 30 countries, including the US and the EU, for Harrar, Sidamo and Yirgacheffe, three different coffee-growing regions (EIPO 2006). This initiative has caused a dispute between the Ethiopian Intellectual Property Office (EIPO) on the one side and the Specialty Coffee Association of America (SCAA)⁶ on the other side about the correct way to protect geographical indications in the coffee sector. The WTO recommends using certification marks for the protection of geographical indications and this is also the position of the SCAA (SCAA 2006). But the Ethiopian government considers trademarks as the better way of protecting its coffee GIs. Whereas both concepts rely on the same principal economic rationales, the protection of goodwill against free-riding by third-parties and the reduction of consumer search costs, there are substantial differences between these two concepts (Josling 2006; WIPO 2003). First, trademarks identify the manufacturer of a product and can be sold and licensed. Second, no reputation or quality-link is necessary. In contrast, certification marks are a collective right and inform the consumer that the goods possess certain characteristics, e.g. a specific origin. Furthermore, the owner of the right is not allowed to produce but can promote the certification mark. Thus, owners of certification marks are often governmental bodies. Contrary to trademarks, certification marks can not be sold or licensed (Josling 2006:348). While a detailed analysis of the advantages and disadvantages of both concepts lies outside the scope of this paper one important point can be derived from this dispute. GIs and their protection are not without controversies and even in the coffee sector itself the opinions about how to protect and enforce this intellectual property differ widely. This is also stressed by the point that in Europe Harrar is already registered as a common trademark, whereas in the United States no final decision about the registration of Harrar as a word mark is made so far.

⁶ SCAA was founded 1982 as a reaction to the decline in coffee quality offered by mainstream roasters. Today it is the world's largest coffee trade association with over 3,000 member companies (SCAA 2007).

Table 2: Protected GIs for Coffee in Europe and the United States, January 2007

Name	Type of Protection	Year of Registration	Owner
Europe			
Café de Colombia	CTM - Figurative	2001	FNC ¹
100 % Café de Colombia	CTM – Figurative	2004	FNC
Juan Valdez 100 % Café de Colombia	CTM – Figurative	2005	FNC
Café de Colombia Denominacion de Origen	CTM – Figurative	2006	FNC
Café de Colombia	PGI	2006	FNC
Jamaica Blue Mountain Coffee	CTM – Figurative	2004	Coffee Marks Ltd.
Jamaica High Mountain Supreme	CTM – Word	2003	Coffee Marks Ltd.
Harrar	CTM – Word	2006	Government of Ethiopia
Sidamo	CTM – Word	- ¹	Government of Ethiopia
Yirgacheffe	CTM – Word	2006	Government of Ethiopia
USA			
Colombian	CM	1981	Republic of Colombia
Juan Valdez	TM	1969/2005	FNC
100% Kona Coffee	CM	2000	Department of Agriculture of the State of Hawaii
Jamaica Blue Mountain Coffee	CM	1986	Coffee Marks Ltd.
Jamaica High Mountain Supreme	TM	2003	Coffee Marks Ltd.
Harrar	TM	- ¹	Government of Ethiopia
Sidamo	TM	- ¹	Government of Ethiopia
Yirgacheffe	TM	2006	Government of Ethiopia
Café Veracruz	CM	2005	Consejo Regulador del Cafe-Veracruz

Legend: CM= Certification Mark; CTM= Community Trade Mark; FNC = Federación Nacional de Cafeteros de Colombia; PGI = Protected Geographical Indication; TM= Trademark. ¹ In these cases no final determination as to the registrability of the mark has been made.

Source: Own presentation based on CTM-Online (2007), Official Journal of the European Union (2006), Schulte (2005) and TESS (2007).

As can be seen from Table 2, both legal means, i.e. trademarks and certification marks, are used for protecting coffee GIs in the US market. While trademark protection can be found both in Europe and in the United States, the protection of PGIs resp. PDOs is only possible in the EU. In 2005, the National Federation of Coffee Growers of Colombia (FNC) applied for the registration of “Café de Colombia” as a PDO. This was the first application of a non-EU country and the first application for coffee under

Regulation 510/2006. Just recently, in December 2006, the summary application was published in the Official Journal of the EU. If no statement of objection will be received within six months the name will be registered as a PGI (EU Commission 2004; Official Journal of the European Union 2006). The published summary application contains the specification of the product, including the definition of the geographical area and the methods of production. While harvesting, wet processing and hulling are defined and all three processing stages must take place in the specified geographical area, this is not the case for the roasting process. This could explain why the term Café de Colombia will become a PGI and not a PDO, for which the FNC initially applied for. Moreover, the application informs about the factors that are responsible for the link between the quality of the product and the geographical origin. According to the summary application, the essential characteristics of Café de Colombia among others are the soil quality, the typical climate of the country, specifically the mountainous areas of the tropics, the altitude and the selective hand-picking of the coffee bean by bean (Official Journal of the European Union 2006).

3. ECONOMIC IMPLICATIONS OF GEOGRAPHICAL INDICATIONS OF ORIGIN FOR COFFEE

3.1 Data and Methodology

While quite a number of studies deal with geographical indications from a legal point of view, economic analyses, especially empirical price or cost-benefit analyses of the impacts of geographical indications are rather scarce (Josling 2006:340; WTO 2004:87). This is especially true for non-European countries and coffee. The coffee market in general is very well documented but data and analyses regarding the single-origin market are very limited (Lewin et al. 2004:117).

To explore the economic effects of GIs for coffee, in a first step a survey of US internet retail stores selling single-origin coffees was conducted. The US market was chosen, because in this market the availability of single-origin coffees is rather high compared to the European market, where this type of coffee is just emerging (Lewin et al. 2004: 112). Basis of the search for online retail stores was a listing of current SCAA Wholesale Roaster members, from which roasters having an online store and selling directly to consumers were selected. Price data for different single-origin coffees from 100 online retail shops were obtained. All prices are retail prices in US-\$ per pound for roasted coffee covering the period August to December 2006. The prices include tax but exclude shipping costs. Considering the number of online retailers offering a certain type of coffee as a proxy for popularity the most “popular” single-origin coffees together with their retail price were identified. These data were used to compare retail prices for

single-origin coffees to the general average retail price. Additionally, available data regarding the volume of single-origin coffees sold to the various export markets were collected. Sources are individual country reports for Colombia and Indonesia, and statistics from the Genuine Antigua Coffee Growers Association.

Furthermore, by using data from several internet auctions for single-origin coffee a hedonic pricing model was estimated. This econometric tool is used to determine the implicit value of the region- resp. country-of-origin for high-quality coffee controlling for other relevant product attributes such as variety, sensory quality or certifications. The hedonic approach is quite common to explore the value of different wine growing regions and some studies applied this approach to European GIs such as olive oil or cheese (Santos and Ribeiro 2005; Schamel 2006; Schamel and Anderson 2003). One study can be found that used internet auction data for specialty coffee to estimate the effect of sensory and reputation quality attributes on specialty coffee prices (Donnet and Weatherspoon 2006). We follow a similar approach but our data set is more comprehensive.

The first internet auction for specialty coffee took place in Brazil in 1999. Following from this the Cup of Excellence (COE)⁷ competition and internet auctions were established in seven Latin-American countries⁷. The procedure is as follows. Farmers submit a sample without a fee to the organization committee. These coffee samples are cupped by a national and international jury and each coffee receives a score for its taste profile ranking from 0 to 100. This approach is very alike to the one in the wine industry, where expert quality wine ratings are widely used (Schamel and Anderson 2003:359). Only coffees with a score higher than 84 points are awarded the Cup of Excellence and are sold to the highest bidder during an internet auction (COE Homepage). Contrarily to the price data from the online retail shops these prices are prices at the importer or roaster level. All data regarding the awarded farms are available on the COE Homepage. These include the received score, the price paid by the bidder and several characteristics of the farm such as altitude, annual rainfall, farm size and soil type. Often details to certifications, e.g. organic or fair trade are also available. Besides these COE auctions other internet auctions for high-quality coffees were established, in Ethiopia the Ecafé Gold, in Costa Rica the Crop of Gold and in Guatemala the Exceptional Cup auction.

Data from the COE auctions covering the period 2003-2006 were collected to estimate a hedonic pricing model to investigate the country-of-origin effect on the auction price. Additionally, data from the Ethiopian and the Colombian auctions for the years 2005 and 2006 were used to investigate the value of the individual region controlling for

⁷ Bolivia, Brazil, Colombia, El Salvador, Guatemala, Honduras, Nicaragua

other variables like score, variety, altitude and quantity sold in pound. An overview about the data sets including descriptive statistics is shown in Annex 1. Ethiopia and Colombia were chosen because of two reasons. First, for these two countries more or less comprehensive data sets were available. Second, both approaches to establish a GI for coffee, a national or a regional one, are covered in this data set. While Colombia has pursued a national GI strategy in the past, it has started to define regional coffees just recently. Contrarily, in Ethiopia the differentiation of coffees based on their regional origin is used by exporters and roasters for over 100 years (SCAA 2006). Therefore, we suppose a significant regional price differentiation in Ethiopia. No significant regional price differentiation is expected in Colombia, since the establishment of coffee regions is in its infancy.

The estimated hedonic price function is

Coffee price = f (score, rank, lot size, origin, coffee variety, coffee-growing area, altitude, competition year).

Thus, the characteristics of the coffee included in the analysis are: the achieved score and the ranking in the cupping competition, the size of the coffee lot expressed in kg, the country- or region-of-origin, the botanical coffee variety, the size of the coffee-growing area in ha, the altitude in metres, the competition year and the ICO composite indicator price. The ICO composite price is included to control if price changes on the world market influence the prices paid in the internet auction or if the prices are totally decoupled from general price trends. Score, lot size, altitude and coffee-growing area are metric variables, whereas rank, origin, variety and competition year are dummies.

What distinguishes this hedonic pricing model from others is the fact that the price under consideration is not a retail price in the final market but a price paid by the importer or roaster to the farmer. Therefore, we assume that the demand at the importer or roaster level is a derived demand proportional to the consumer level.

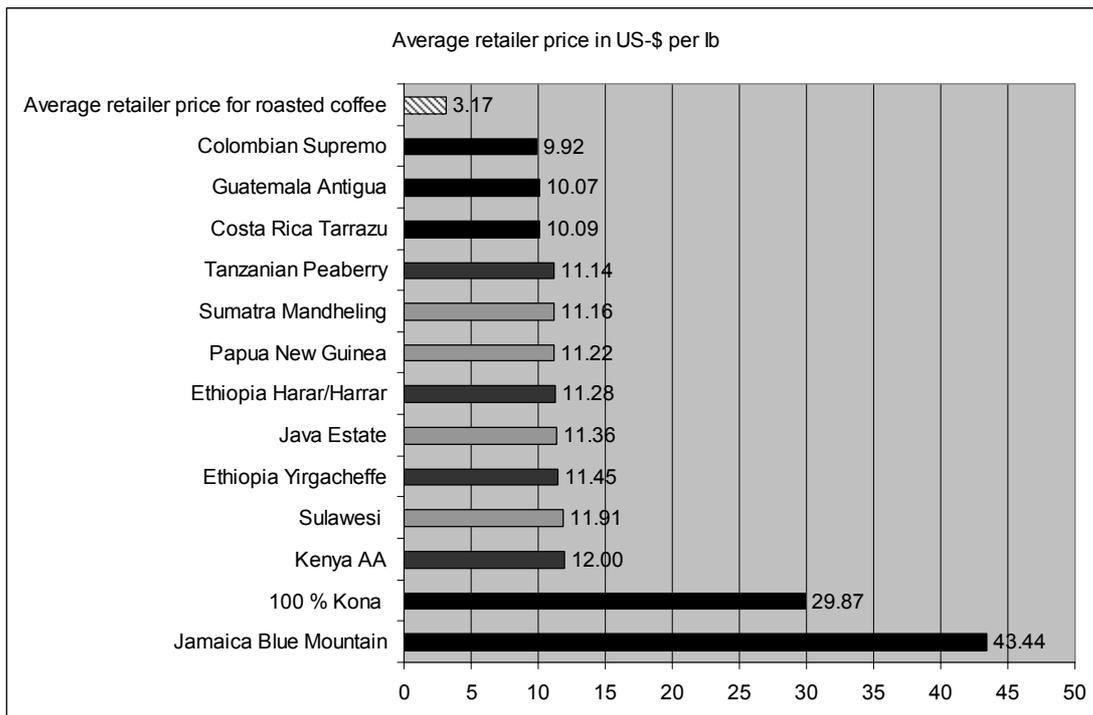
3.2 Results

3.2.1 Prices and Quantities

Although just few coffee GIs are legally protected, quite a large variety of single-origin coffees is available in the US specialty coffee market. Taken the number of retail stores offering this kind of coffee as a proxy for popularity the most popular single-origin coffees can be divided into three main groups: the Latin American Coffees, the East African Coffees and the Island Coffees, including Indonesia, Jamaica and Hawaii. In the Latin American group Colombia Supremo was offered by 52 online shops, followed by Costa Rica Tarrazu (38) and Guatemala Antigua (33). This is consistent with the

depicted picture of leading actors in chapter 2. The most popular East African coffees are coffees from Kenya (77), Tanzania (41) and the Ethiopian coffees Harrar (39) and Yirgacheffe (33). The group of Island coffees comprises Sumatra Mandheling (67), Sulawesi⁸ (40), Java Estate (31), 100% Kona (41), Jamaica Blue Mountain (28) and Papua New Guinea (27). The average retail prices for these different single-origin coffees are presented in Figure 2.

Figure 2: Average Retail Price in US-\$ per pound, August - December 2006



Source: Own presentation.

All these coffees sell for at least three times the average US retail price for roasted coffee. The Latin American coffees range between 9 and 10 US-\$ per pound. The East African and Indonesian coffees are slightly more expensive, the average retail price lying between 11 and 12 US-\$/lb. The most expensive coffees are the Hawaiian 100 % Kona and the Jamaican Blue Mountain with an average retail price of 29.87 resp. 43.44 US-\$/lb. If standard deviations and coefficients of variation are calculated for all coffee prices under consideration, the two most expensive coffees are also the coffees with the highest variation in price.

⁸ This includes all coffees either labelled as Sulawesi, Celebes Kalossi or Celebes Kalossi Toraja.

Table 3: Export Volume of Selected Coffees with GIs, 2002

Country	Export quantity (in metric tonnes)	Share in total coffee exports (in percent)	Main export markets
Colombia <i>Regional GIs</i>	8,100	1.40	Japan
Guatemala <i>Genuine Antigua</i>	2,940	1.42	US and Japan
Indonesia <i>Toraja, Kalosi, Mandheling</i>	3,644	1.13	US and Japan

Source: Own presentation based on FAOStat; Giovannucci et al. (2002); Neilson, J. (2005).

Information about sold quantities of single-origin coffees is even scarcer than for price data. But some information could be collected from the sources mentioned above. Following from Table 3, the annual coffee bean production and export quantity of Genuine Antigua is around 3,000 metric tonnes (mt). Without appropriate legal protection systems and their enforcement the incentive for free-riding is quite high. This is often cited for Genuine Antigua Coffee, with different sources stating that the annual volume of coffee sold as Genuine Antigua amounts to 23,000 mt, seven times the amount of actual production (Raknekar 2004; EU Commission 2003).

In Indonesia, 3,600 mt of Arabica coffee were exported with geographical indications related to Sulawesi, constituting less than 2 % of the total Indonesian coffee export volume. Besides Sulawesi, North Sumatra and East Java are the main origins for high-quality Indonesian Arabica coffees. The data in Table 3 just covers coffee exports from Sulawesi. This coffee is not labelled uniformly but either as Sulawesi, Toraja, Kalosi, Toraja Kalosi or Mandheling depending on the export destination. In the Japanese market, the most important export market for the Indonesian high-quality coffee, the term 'Toraja' is preferred; while in Europe the same kind of coffee is labelled as "Kalosi". Sometimes even the term Mandheling is used to label coffee originating from Sulawesi. This is fraudulent, because Mandheling is a coffee growing region in North Sumatra (Neilson 2005).

For all three listed single-origin coffees the Japanese export market is the most important one. This is especially true for Jamaica Blue Mountain, for which no reliable data on export volumes could be obtained. But it is estimated that about 85 % of all Jamaica Blue Mountain coffee is sold to Japan (Lu 2006).

3.2.2 Hedonic Pricing Model

A linear and a log-linear model were estimated by using ordinary least squares. For both model specifications a Reset F-Test was conducted and the results indicated to prefer the log-linear specification. The results are presented in the following table.

Table 4: Regression Results for the COE Auction Data Set

Dependent Variable	Comprehensive Model		Reduced Model ¹	
	Log(price)		Log(price)	
Score	0.077***	(10.06)	0.081***	(11.22)
1st Rank	0.814**	(7.36)	0.799***	(7.52)
2nd Rank	0.262**	(3.12)	0.250**	(3.21)
3rd Rank	0.288**	(2.93)	0.244**	(2.62)
Lot Size in kg	-1.63·10 ⁻⁴ ***	(-8.02)	-1.56·10 ⁻⁴ ***	(-8.10)
Coffee-growing area	2.84·10 ⁻⁴	(1.40)	-	
Coffee Variety <i>Reference: Bourbon</i>				
Catuai	-0.014	(-0.30)	-0.087** ¹	(-2.88)
Caturra	0.079*	(2.19)		
Colombia	0.225	(1.59)		
Pacama	0.031	(0.27)		
Typica	0.177	(1.83)		
Others	0.007	(0.11)		
Country of Origin <i>Reference: Honduras</i>				
Bolivia	0.491***	(7.63)	0.574***	(10.43)
Brazil	0.453***	(8.21)	0.415***	(9.27)
Colombia	0.272***	(4.31)	0.362***	(7.29)
El Salvador	0.287***	(4.07)	0.274***	(4.93)
Guatemala	0.603***	(7.94)	0.666***	(10.59)
Nicaragua	0.187**	(3.22)	0.238***	(5.15)
Year Dummies <i>Reference: 2003</i>				
2004	0.144**	(2.98)	0.133**	(2.96)
2005	0.115**	(2.60)	0.085*	(2.02)
2006	0.269***	(6.25)	0.248***	(5.98)
Adjusted R squared	0.64		0.63	
F-Statistic	49.82		74.14	
Number of observations	589		637	

Note: ***, **, * indicates significance at the 0.1%, 1% and 5% level, respectively; t-values are presented in parentheses; ¹ For the reduced model a new variety variable was constructed: The reference case is that the offered lot consists of just one single variety. All other lots consisting of more than just one variety are summarized to one group for which the regression coefficient is presented.

Source: Own computations.

First, a comprehensive model was estimated including all available variables. Altitude was excluded as this variable was lacking for Brazil. Moreover, data to processing methods and certifications were also excluded; because they were either too fragmentary or no significant variance was given. Therefore, the score, the rank, the lot size, the coffee-growing area of the farm, the botanical coffee variety, the country-of-origin and year dummies were included. Rather high correlations could be observed between the year dummies and the ICO coffee indicator price, since the coffee price increased constantly over this period. Therefore, just the year dummies were included in the model. No serious multicollinearity could be detected among the remaining explanatory variables.

The overall goodness of fit is satisfying with an adjusted R squared of 0.64. While the score, the ranking, the lot size, the country-of-origin and the year dummies are highly significant, this is not true for the size of the coffee-growing area and the different coffee varieties. Therefore, in a next step a reduced model was estimated. The results indicate that the score as well as the ranking have got a significant positive influence on the price, with the 1st rank being the most important determinant of the price. This is plausible because receiving the 1st place in the COE competition is a very good marketing tool for the final market. The lot size has got a significant but marginal negative influence on the price. Compared to the base year 2003 the prices paid in the following auction years increased. If instead of the year dummies the ICO indicator price is included, the same positive influence on the price can be observed. This indicates that the increasing auction prices over time can be mainly due to increasing world market prices for coffee in general. Since no significant results could be obtained for individual coffee varieties, a new dummy variable was constructed testing the hypothesis that lots consisting of only one coffee variety receive a higher price compared to lots consisting of several coffee varieties. The results confirm this hypothesis as the variable "more than one variety is grown" has got a negative influence on the price. This influence is significant on the 1% level, but compared to the other variables the influence is rather low.

All country-of-origin dummies are highly significant leading to the result that a coffee of the same quality in terms of score and achieved rank coming from Honduras is sold at a price discount compared to all other included countries of origin. The ranking of countries in the hedonic pricing model confirms the picture given in chapter 2 and found in the literature (Knox and Sheldon 1996:49pp.). Guatemala is seen as the leading supplier of high-quality coffee, whereas Honduras still has to establish an image of a high-quality producer. Besides Guatemalan coffees, which receive a price

premium of around 95 %⁹ compared to Honduran coffees, coffees from Bolivia receive a price-premium of 77 %. Colombian and Brazil coffees are higher priced as Honduran coffees but ranked under coffees coming from Guatemala or Bolivia. One shortcoming in this context is the fact that prices do not include transportation costs. Of course, this fact could lead to a biased preference scheme between supplier countries because of differing transportation costs. Therefore, as a first approximation the difference between the CIF-prices for coffee in the US-, the German and the Japanese market reported by the UN Comtrade database and the producer prices reported by the FAO and the International Coffee Organization for the years 2002 and 2003 were calculated. The results indicate that transportation costs calculated as the difference between CIF prices and producer prices range between 15 and 45 US-Cent per pound, depending on the country of origin and the destination. This level is reported by other studies, too (Daviron and Ponte 2005:210). Since the important point for our analysis was not the absolute value of transportation costs but the relation between coffee-producing countries, the countries were ranked according to their amount of transportation costs. If transportation costs were an important component in the decision of the bidder, we assumed that countries receiving a price discount were countries with high transportation costs and vice versa. This could not be proved by the data (see Annex 2). Moreover, the results indicate that countries receiving a price premium, e.g. Guatemala and Bolivia are also countries with high transportation costs. Thus, we suppose that in the mass coffee market transportation costs are an important determinant considering producer prices of 0.50 US-\$ for green coffee and retail prices of around 3.25 US-\$ per pound for roasted coffee. But considering auction prices for specialty coffees with a mean of 3.84 US-\$ per pound and retail prices ranging from 15.00 US-\$ to over 50 US-\$ for a pound of roasted coffee, transportation costs can be seen as a more or less negligible determinant of the auction price.

The results regarding the implicit value of the region-of-origin are presented in Table 5. The variety variable was not included, because of missing data (Ethiopia) or a missing variance (Colombia). The influence of the variables score and rank as well as lot size is similar to the one presented above. One difference can be observed for the variable rank in the Ethiopian model. None of the three variables has got a significant influence on the price. In contrast to this, almost all regional dummies are significant with a quite high impact compared to the other included variables. This is especially true for Ethiopia. Coffees from the region Yirgacheffe receive a substantial price premium compared to Sidamo or other Ethiopian coffee regions. The discount for other growing regions is almost one third compared to coffees from Yirgacheffe, other things equal.

⁹ Since the dependent variable appears in logarithmic form, the percentage interpretation of the dummy variable has to be calculated as $100 \cdot (\exp(\beta) - 1)$ (Wooldridge 2003:226).

Contrary to our hypothesis the results from Colombia indicate that in the specialty coffee segment buyers already differentiate between Colombian coffee regions. Compared to the reference region Huila all other growing regions sell at discounts between 15 % (Nariño) and 25 % (Cauca).

Table 5: Regression Results for Colombia and Ethiopia

Dependent Variable	Colombia		Ethiopia	
	Log(Price)		Log(Price)	
Score	0.066***	(3.95)	0.115***	(3.82)
1 st Rank	0.789***	(3.61)	0.086	(0.46)
2 nd Rank	0.229*	(2.29)	-0.065	(-0.36)
3 rd Rank	0.332	(1.12)	0.015	(0.06)
Lot Size in kg	-1.17·10 ⁻⁴ **	(-2.07)	-3.26·10 ⁻⁴ **	(-3.39)
Regional Dummies				
Reference:	<i>Huila/</i>			
<i>Yirgacheffe</i>	-0.285**	(-2.98)	-0.227*	(-2.20)
Cauca / Sidamo	-0.158**	(-2.71)		
Nariño	-0.278***	(-3.89)		
Tolima	0.040	(0.54)	-0.384**	(-3.06)
Other				
Adjusted R squared	0.54		0.54	
F- Statistic	15.48		9.68	
Number of observations	111		53	

Note: ***, **, * indicates significance at the 0.1%, 1% and 5% level, respectively; t-values are presented in parentheses.

Source: Own computations.

4. FINAL REMARKS

As data on exported quantities document, the single-origin coffee market is still a niche market. But growth rates in this market seem to be quite high. Many coffee-producing countries have already decided to invest in the establishment of appellation systems of coffee and are trying to formalize these regions by legal means to address the rising consumer demand for diversification and quality. While today the main actors in this field are Colombia, Costa Rica, Guatemala and Ethiopia, this trend can be observed in almost every coffee-producing country.

The main export markets for single-origin coffees are the United States and Japan. In Europe these coffees are just emerging. This picture is stated by the internet auction results for single-origin coffee. In all cases half or even more than half of the coffees were bought by Japanese importers or roasters. Additionally, the results from the hedonic pricing model show that in the specialty coffee sector coffees from individual

coffee-growing regions receive price premia due to their reputation. These findings are very similar to findings in the wine market. But whereas wine is a finished product when it is sold by the winemaker, this is not true for coffee. In the case of coffee the coffee producers sell a semi-finished product. This point is very important with regard to the scope of protection a GI receives. Protecting the whole process from harvesting to roasting would definitely alter the whole supply chain and trade patterns. To some extent this change in the supply chain governance can already be observed. Ethiopia is licensing the use of the terms Harrar, Sidamo and Yirgacheffe and there is the tendency that specialty roaster get in direct touch with the producer to make sure that the coffee they purchase has got the desired origin and quality (Ponte 2002:17).

Single-origin coffees are coffees telling a story. This can be observed particularly in the COE internet auctions. In the first years just few information about the individual coffee awarded the COE was provided. Nowadays a whole story about the coffee including agronomic data as well as personal data about the farmer and pictures of the farm are available and can be used as marketing tool for the final market.

However, the identification and establishment of growing regions and especially the enforcement of the legal protection in foreign markets is not a costless action. The results from the US market point to the fact that single-origin coffees achieve high price premia. But how much of this value added will flow into producing countries and if benefits outweigh the costs coupled to the establishment and enforcement of the geographical indication needs further exploration.

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ANNEX

Annex 1: Descriptive Statistics of the Data Sets

	Country		
	COE Data 2003-2006	Colombia	Ethiopia
Price (in US-\$/lb)			
Weighted Mean	3.84	4.31	2.94
Min	1.20	1.85	1.50
Max	49.75	19.10	10.65
Score			
Weighted Mean	86.61	86.81	87.94
Min	80.25 ¹	84.05	85.03
Max	95.85	93.72	92.50
Lot Size in kg			
Mean	1,429	1,202	1,286
Min	620	980	480
Max	8,417	5,253	2,220
Number of observations			
	638	111	53
Number of coffees bought by			
Japanese companies	312	67	28
US companies	152	15	18
European companies	138	23	5
Others	23	5	1
N/A	13	-	1

Notes: ¹In Nicaragua in the COE competition 2003 the threshold was a score of 80 instead of 84. This was changed in 2004.

Source: Own computations.

Annex 2: Transportation Costs

	Difference between the US CIF- price and the Producer Price in US-\$ per pound, 2002	Difference between the US CIF- price and the Producer Price in US-\$ per pound, 2003
Bolivia	0.297	0.361
Brazil	0.223	0.317
Colombia	0.272	0.393
El Salvador	0.329	0.379
Guatemala	0.415	0.382
Honduras	0.149	0.107
Nicaragua	0.152	0.183

Source: Own computations based on FAOSTAT, ICO Database and UN Comtrade.

Acknowledgements

Thanks are due to the **H. Wilhelm Schaumann Stiftung** for funding participation and travelling costs.

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