

# **Governance of global value chain and firms' capability in African floriculture**

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## **Abstract**

This paper provides empirical evidence on the impact of increasing standards and delivery requirements associated with rising power of supermarkets in EU floriculture market on African suppliers by analyzing the difference in attributes of firms involved in the two distinctive marketing channels (auction versus direct sales). It relies on recently (2008) collected census survey data on the emerging Ethiopian floriculture industry. The estimation results show that firms supplying through direct sales to supermarkets and other retailers (in contrast to that in auction) produce and export large varieties and higher quality of flowers, have own propagation facility and are larger in size. They tend to use more foreign experts, have higher proportion of marketing staff and more likely to use IT systems (website). They are also more likely to arrange flexible and reliable transportation systems for their exports. These results suggest that engaging in direct markets channel (modular governance) require higher capability in production, marketing and logistics than the firms in auction (spot-market). Our finding reinforces the notion that successfully competing in the global buyers dominating markets necessitates higher capability at the supply base to insure a consistent, diversified and quality product that complies with regulatory requirements.

## **1. Introduction**

Several sub-Saharan Africa countries depend heavily on exporting agricultural products. Many of them often rely largely on a single agriculture commodity (such as, coffee, cocoa, cotton) for their merchandize export revenue. For example, in 1997-99 coffee accounts for about 75%, 62% and 54% of total merchandize export of Burundi, Ethiopia, and Uganda respectively (FAO, 2002; see Table A1 for details). Most of these traditional agricultural exports, however, have experienced sluggish world demand and downward trend in real price. Between 1970 and 2000, prices for some of the main agricultural exports of developing countries, such as sugar, cotton, cocoa and coffee, fell by 30 to 60 percent (constant dollars) (EU, 2004).

As a reaction, diversification of agriculture exports into higher-value, non-traditional products have been advocated as an alternative export promotion strategy for sub-Saharan Africa. Recently, some sub-Saharan Africa countries, such as, Kenya, South Africa, Uganda, Cote d'Ivoire, Ethiopia, Ghana, and Zambia have made some progress diversifying their exports into non-traditional horticulture (such as, cut flowers and plants, fresh and processed fruits and vegetables) product exports (UNCTAD, 2008).

The EU market is one of the largest markets for fresh horticulture products in the world. In 2003, the EU-15 represented a 51 million tons market for fresh vegetables and a 39 million ton market for fruits. Although import outside the EU takes small share of the market (2% of vegetable and 19% of fruits) it is the major destination for African exports. For example in 2001, Africa was the first largest non-EU exporter of vegetables, accounting 38% of the total 991 million tons non-EU imports. It also shares 22.6% of the total 1741 million tons non-EU imports of fresh fruits to the EU market (World Bank, 2005). The European Union (EU-25) is also the major market for floriculture accounting about 70% of the world flower market and the main destination of African cut-flower exporters. Africa is the largest non-EU cut-flower supplier to the EU market with Kenya taking the lions share (e.g. 32% in 2003). Out of the top ten supplier countries five were from Africa in the same year (see Table A2).

However, the EU market for fresh horticulture is increasingly complex to suppliers from Africa. This is mainly due to the increasing share (power) of supermarkets in the chain and a more critical attitude of consumers towards perceived values. Supermarkets share in fresh-food products (vegetables, fruits, meat etc) market in developed countries grew substantially in the last two decades and reached about 60% or higher. Such patterns have also taken place in the floriculture market. The Dutch auction has been historically the most important channel. In recent years, however, the share of supermarkets have shown increasing trend in the EU floriculture market, although this may differ by country (Wijnands, 2005).<sup>1</sup>

The increasing power of supermarkets and critical attitude of consumers surfaced two challenges to developing country suppliers. The first development is increasing standards. The standards cover a wide range of issues from safety or quality of the products to social (labor condition) and environmental impacts. Suppliers that do not comply with these standards are banned from the chain and these can be considered as a “license” to produce and deliver. The second feature of increasing power of global buyers is that risks are increasingly moved toward the producers. Supermarkets require large range of varieties, consistency in volume, quality and timing. The requirement on timing is related with exclusion of storage risks and costs; products should be delivered at the right time to the right location, referred to as “just-in-time delivery” (World Bank, 2005).

What are the consequences of these developments for suppliers to African growers? What is the effect on organization and capability of firms and the industry at large? To our survey so far, there is not much empirical analysis on the effect of the recent shift of governance of global value chain in horticulture in Africa. Schmitz (2004) provides a number of case studies examining the effect of increasing power of global buyers and standards on local firms in developing countries. This book particularly addresses the issue; whether increasing global standards marginalize or help firms in developing countries to upgrade? However, all the case studies are on manufacturing sectors and none of them covers Africa.

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<sup>1</sup> For example in 2004, supermarkets’ in cut flowers market was found to be England 64%, Denmark 46%, and Netherlands 25% (Wijnands, 2005).

The Governance of Global Value Chain (GGVC, hereafter) approach developed by Gereffi, Humphrey and Sturgeon (2005) provides some insights on the impact of increasing role of global buyers on firm organization and industry structure. The recent trend of increasing power of supermarkets in the horticulture sector in UK (and EU at large for that matter) is one of the cases Gereffi et al. (2005) describes with this framework. They argue the changing nature of fresh vegetable trade between Kenya and the UK can be considered as a shift from the traditional market based global value chain (the arms-length) to more explicit coordination (modularity). Dolan and Humphrey (2002) have also examined the effect of increasing power of supermarkets in the UK on fresh vegetables exporters in Kenya and Zimbabwe.

The aim of this paper is to provide empirical evidence on the impact of increasing power of buyers (i.e. shift in governance) in Africa floriculture. The EU cut-flower market can be categorized into two; auction and direct sales to supermarkets and other retailers. The auction market is characterized by loose, market-based trading relationships corresponds with the arms-length market. However, the direct sales market which is controlled by supermarkets, involves strict compliant to specific standards (product, process, delivery, social, and environmental) and can be characterized as modular (Riisgard and Hammer, 2008). The increasing share of supermarkets in the flower value chain means a shift of governance from market-based to modular type of governance. This pattern is similar to the fresh vegetables discussed above. The similarity of the flower chain to the fresh vegetables and fruits value means a wider range of literature is applicable to the flower value chain.

We use recently collected primary data on Ethiopian floriculture industry. The survey was a census covering all operational flower farms and took place in 2008. Ethiopia starts to export cut-flower in the early 2000s. This means, at the time of market entry by Ethiopia, the European market was much more demand driven and the new standards and requirements to enter into the market, particularly the direct sales market were already in place. Our approach is, therefore, to distinguish what attributes of firms explain their involvement in either marketing channels, i.e. auction (spot-market) versus direct sales (modular). In other words, we examine the impact of increasing power of buyers in Europe on the organization and capability of firms in Africa through identifying

the difference in attributes of new entrants with different target of marketing channels. By doing so, we indicate the challenges faced African countries on their export drive and development course at large. This is because the changing structure predicts not only the fortune and structure of firms but also how and why countries advance – or fail to advance – in the global economy (Gereffi et al. 2005).

The rest of the paper is organized as follows. The next section gives some background. Section three sets the framework and section four gives some descriptive analysis. Section five presents and discusses the empirical result and the last section concludes.

## **2. Background and data**

A modern, export oriented and private sector based floriculture industry began to emerge in Ethiopia in the late 1990s. The pioneer, Golden Rose, was established in 1999 and started exporting in 2000. Between 2000 and 2001, other two farms (Summit Agro industry and Enyi Ethio Rose) followed the suit. Until 2003 only five farms were involved in exporting (see, Table 1). The flower industry took-off in 2005 and continues to grow rapidly. By 2007, the number of firms involved in flower production and exporting reached 67. The total sum of hectares of land held by floriculture investors reached almost 2000 of which about 700 hectares covered under greenhouse. The sector created above 50,000 employment (permanent and temporary), and has become among the five top foreign exchange earning commodities with above 120 million USD in 2007. In no more than 7 years Ethiopia became the second largest flower exporter in Africa (next to Kenya) to the EU market (see Table A2 for details).

This remarkable growth was partly due to initiatives taken by the government to promote the sector which has met with the interest of the private sector. Towards the end of 2002, the government became aware of the big opportunity to replicate and scale-up production of flower and earn sizeable amount of foreign exchange from exports. At the end of 2002, area covered under greenhouse was some 15 hectares while total area of land held by investors did not exceed 150 hectares. Since then the government decided to get engaged in promoting the sector. Targets were set to put 1000 hectares under flower

production by the end of five years, looking at Kenya's output and export earning. To scale-up, government came in with a multi-faceted support starting from 2003, focusing on: access to land, access to long-term credit, infrastructure, and air transport coordination. Some of the investment incentives are; five-year tax holiday, duty-free machinery imports, easy access to bank loan and up to 70% bank funding, cheap and easy acquisition of leased government land.

To document this spectacular growth the Ethiopian Development Research Institute (EDRI) and the Japanese National Graduate Institute for Policy Studies (GRIPS) conducted a census survey between January and March 2008 on all operational farms, i.e. start exporting flower. Data was collected from 64 flower farms out of the 67 exporting farms. This means the response rate was about 96%. Our analysis in this study is, therefore, based on this data set.

Table 2 gives the distribution of the firms by location, ownership type, and type of activity. We categorized the farms into seven common area names (clusters) plus eighth category 'others', which constitute dispersedly located farms. The majority of the farms are located in about 50 km radius of the capital city, Addis Ababa. The largest cluster Holeta accounts for 31.3% of the total number of farms. The second and third biggest clusters are Sebeta and Debre Zeit accounting for 15.6% and 10.9% flower farms respectively. The range of location in terms of altitude is between 1000 and 2650 meters above sea level, while the mean is around 2081m. Most of the flower farms are located at altitude above 2000 meters above sea level. This includes cluster areas such as, Sebeta, Sendafa, Holeta and Menagesha. Such a higher altitude enables to produce high quality roses (long stem and large buds), that command higher prices in the world market.

According to this survey, 26 farms (40%) are fully foreign owned, 15 (23%) a joint venture and 23 (36%) are fully domestic owned. All but one of the joint ventures have 50% and above foreign share. Holland, India and Israel takes the lead with about 34%, 22%, and 12% of the total number of foreign owned farms (fully or joint venture). Fifty one out of the 64 flower farms (80%) are mainly producing rose flowers. Eight farms are mainly engaged in summer flower production and 5 in cuttings. Most of the cuttings are located in the lower altitude areas such as, Ziway and Koka.

### 3. The effects of increasing standards and risks on suppliers: the framework

Gereffi (1994) highlighted the growing importance of global buyers, (mainly retailers and brand-names companies) in the trade of labor-intensive manufactured products. He distinguished between two basic types of commodity chains namely “producer-driven” and “buyer-driven” and highlighted the explicit coordination role of global buyers without direct ownership in the later case. One example of such relation is the trade of garments between East Asia and the US (Gereffi, 1999). Schmitz and Knorringa (2000) in China footwear reinforced the notion that the increasing role of global buyers in coordinating spatially dispersed value chains without owning the production. A number of case studies addressing similar issues in the manufacturing sector have also appeared in Schmitz (2004).

The increasing coordination of global buyers has been also shown to be the case in horticulture trade between Africa and EU. One clear example is the way in which UK supermarkets exercise control over their fresh vegetables and fruits supply chains from Africa (Dolan and Humphrey, 2000 and Gereffi et al., 2005). Another example is the trade in floriculture between Africa and the EU. The African-European cut-flower value chain entails two distinctive strands. Cut flowers sold via auction to wholesalers and direct sales to supermarkets and other retailers. The Dutch auction has historically been the most important channel. However, in recent years the supermarkets (direct sales) are increasing their share and power in the flower value chain (Wijnands, 2005).

The increasing power of retailers imposes two challenges on African growers; increasing standards and shift of risks to supplier. The first development is increasing safety, environmental concerns, and labor standards. Through the dominant position of supermarkets and the vulnerable nature of the products, supermarket chains formulated their own rules and regulations. Some of the regulations and standards applied in the floriculture market are: MPS, EUREP-GAP, ICC, and FLP.<sup>2</sup> Trade unions and

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<sup>2</sup> EUREP-GAP (Euro-Retailers-producer working group) is a regulation that applies to all agricultural sectors to guarantee chain control and food safety (Wijnands, 2005). The Flower Label Programme (FLP) was created in 1996 as business-to-business code between German importers association BGI and the Association of Flower Producers and Exporters of Ecuador (EXPOFLORES). The International Code of Conduct for the Production of Cut Flowers (ICC) is based on ILO standards and its implementation is

environmentalists (NGOs) has also been able to include their demands in the standards using their lobbying power. The recently developed Fair Trade in Flower and Plants (FFP) scheme which is based on the ICC and coordinated by the largest global flower industry body, Union Fleurs, involves representatives from environmental NGOs and national trade unions as well as an auditor at all audits. These actors have to agree that the farm deserves certification, thus effectively governing the trade unions a veto on certification (Riisgaard and Hammer, 2008).

One of the widely applied standards in the floriculture is the Dutch milieu programma sierteelt (MPS; Floriculture Environmental Project). This has been running since 1995, however, due to increasing number of supermarkets that demand EUREP-GAP and a social code, MPS developed additional standards like ISO 9001, social codes or trade certifications. The social code covers health, safety and terms of employment (Wijnands, 2005). The level of demand for social and environmental standards differs significantly between the direct sales and the Dutch auction sales. The MPS rules are compulsory for those engaged in direct sales but not in the auction. Although both are shaped by the concerns of European consumers, including social and environmental issues, the different governance structure and characteristics of the two value chain strands create different pressure (Riisgaard and Hammer, 2008). Some exporters interviewed from the Ethiopian floriculture confirmed that the MPS certificate is important in both channels but only compulsory in the direct marketing channel. This is because supermarkets have more leverage to enforce the standards than in the weak link between buyers and sellers in the auction market.

The second feature of increasing power of global buyers is that risks are increasingly moved toward the producers. In the traditional market (auction) there is guarantee that your entire product, if it meets the minimum quality standards, will be sold. The auction system also enables growers to specialize, i.e. producers can grow monocultures and gain advantage of economies of scale (Wijnands, 2005). In contrast the supermarkets (direct sales) require large range of varieties. They also require consistency in volume, quality and timing of supply. The requirement on timing is related with

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meant to include meaningful participation of workers, local organizations and unions (Riisgaard and Hammer, 2008).

exclusion of storage risks and costs; products should be delivered at the right time to the right location, referred to as “just-in-time delivery” (World Bank, 2005).

What are the consequences of the increasing power of supermarkets in the floriculture market on African growers? In other words, what are the effect of the increasing standards and regulations and shift of risks to suppliers on organization and capability of flower suppliers? The GGVC approach gives insights on the nature of the increasing power of global buyers. It distinguishes five existing typologies in the governance of global value chain; markets, modular, relational, captive and hierarchy. According to Gereffi et al. (2005) there are three key factors that determine the governance of the value chain patterns. These are complexity of transactions, codifiability of information, and capability of suppliers. The fresh vegetable chain between Kenya and the UK is one of the cases Gereffi et al. described with this conceptual framework. They argue the changing nature of fresh vegetables trade between Kenya and UK highlights a shift from market-based global value chain governance to more explicit coordination in the direction of modularity.

The relevant governance types for the floriculture market are also the first two typologies; market and modular. Based on the above perspective the auction system can be characterized as spot-market and the direct sales as modular. In the auction market transaction is less complex, market information is easily accessible, prices are transparent, and costs are easily obtainable. Codified quality standards monitoring needs fewer efforts and auctions have well-trained inspectors (Theon, Jaffee, Doland and Waithaka, 1999). However, in the direct sales, supermarkets require a large variety of flowers in small volumes (due to their differentiation strategy) and strictly apply different standards (safety, environment, labor) that make more complex the transaction and codifiability of information.

The increasing share of direct sales in flower market could, therefore, be considered similarly as a move from spot-market governance to modular governance. According to the previous review such a move can be expected to have a broad implication in the organization and capability of suppliers in Africa. Doland and Humphrey (2000) observed at least two major impacts on Kenya and Zimbabwe fresh-vegetable exporting sector; increasing dominance of few large exporters at the expense smallholders and

increasing competency and capacity of the of those large firms, for example vertical integration. However, this is not yet empirically established. The aim of this paper is to provide empirical evidence using a recently collected data on flower sector in Ethiopia. Below we formulate our empirical framework and forward testable hypotheses based on the GGVC literature discussed above. Our approach is to distinguish the defining characteristics of firms entered into the floriculture production/export business with different target of marketing channels, i.e. auction (arm-length market) versus direct sales (modular).

**Differentiation:** One of the major reasons why global buyers try to involve in coordination other than arms-length market is the increasing use of product differentiation strategies in developed country markets. The retailers derive competitive advantage from selling non-standard products that are not generally available in the market, competing not only on price, but also on factors such as reliability, product variety, product quality and speed of innovation (Dolan and Humphrey, 2000). In the floriculture sector product differentiation is determined mainly by the number of varieties (Wijnands, van der Lans and Hoobbs, 2006). Hence, supermarkets and other retailers in the direct sales chain demand larger varieties of flowers. The auction market, however, can handle a large volume of one variety. The implication of this market strategy is that suppliers on the direct sales are more likely to grow a large number of varieties.

*Hypothesis 1: suppliers involved in direct marketing channels are more likely to produce and export a large range of varieties than that supply mainly to auction*

**Size:** Producing large number of varieties has a consequence to the size of the farm. Producing large number of varieties require larger size of land. The increasing number of requirement in the chain has also effect on size of firms because it is too difficult for many small firms to meet them. In their study on the impact of increasing power of UK supermarkets on Kenyan and Zimbabwe fresh vegetables export, Dolan and Humphrey (2000) found the concentration of the export trade in the few large firms, and the

exclusion of small and medium-sized exporters, and small growers from the supermarket chain. This supports the next hypothesis.

*Hypothesis 2: Growers supplying to the direct sales are more likely to be larger in size than those in auction.*

**Vertical integration and innovation:** Involvement in direct sales market requires improved production capability and innovation. Increased competition in the supply chain through differentiation (for example, increasing number of varieties) and reliability of supply necessitates own capacity for propagation of varieties. Doland and Humphrey (2000) has found a tendency of vertical integration within the chain as several exporters that had bought most or all their products have began to acquire to own their growing capacity. In the Ethiopian flower industry all the exporters are at the same time producers and all export their own produce. Vertical integration, however, is more likely to take the form of establishing own propagation, other than buying from other propagators.

*Hypothesis 3: Growers supplying to direct sales are more likely to have their own propagation facility.*

**Knowledge and expertise:** governance requirement increases when developing country producers have difficulty in meeting the requirement for developed country market. This might be due to the fact that producers from developing countries have the characteristics of ‘latecomer’ firm (i.e. technologically behind) and the exported products frequently do not (yet) apply to their domestic markets (Humphrey and Schmitz, 2004; Kessing and Lall, 1992). In fact, the domestic market for cut-flower in the country case in this study (Ethiopia) is almost non-existent, about 97% is sold abroad. The implication is that there is gap between the existing and required knowledge and capabilities for supplying the export market. This is pronounced in the direct sales chain given that the standards and product diversification and delivery requirements are higher in the direct markets chain than the auction chain. This means more technical knowledge and staff is required in farms engaged in direct sales than those in auction.

*Hypothesis 4: growers supplying to direct sales are more likely to employ high skilled experts*

**Marketing capability:** According to Wijnands et al. (2006) direct marketing requires more marketing personnel (resources) than the auction channel. This is because unlike to direct sales the auction accepts each volume of flowers and the price is determined by the clock thus fewer marketing personnel are required in comparison to direct sales which involves promotion and frequent interaction with each client. However, exporters in auction might need to hire marketing agents at the auction place.

*Hypothesis 5: growers supplying to direct sales are more likely to have larger marketing staff than those mainly in auction channel*

**Marketing information and IT:** In the auction market information is easily accessible, prices and quality requirements are transparent. However, the direct sales market involves dealing with a number of actual and potential suppliers. Gathering update marketing information is more vital for competency and survival, thus, firms in the direct sales market have to develop own source of information and use information technology systems. The supermarkets coordination on logistics; such as, track ordering and sales, identify their customer base, and organize storage, delivery and transport also has implication on development of IT systems at the supply base. In Kenya and Zimbabwe, exporters who have adopted electronic integration have experienced significant cost savings over those who still rely on faxes or telephone communication (Dolan and Humphrey 200). It follows that;

*Hypothesis 6: growers supplying to direct sales are more likely to;*

- *rely on own source as source of information and*
- *use better IT system in their business*

**Logistic:** Supermarkets require not only large range of varieties but also consistency in volume, quality and timing – just-in-time delivery. They demand both flexibility and reliability in supply. These requirements imply higher post-harvest activities, for example, the use of flexible and reliable transportation facilities between production site and international markets. Almost 100% of the flower exports from Ethiopia are shipped by air, of which about 87% are transported by the national carrier, the Ethiopian Airlines. However, in order to meet the supermarkets demands the exporters should secure cargo space and make flexible arrangement.

*Hypothesis 7: growers supplying to direct sales are more likely to use chartered air cargo to export their products in addition to the normal airfreight*

Flexible and reliable transportation from farm to airport is also important. Owning track gives more flexibility than renting. It follows that;

*Hypothesis 8: growers supplying to direct sales are more likely to transport their exports to the airport using their own track other than renting*

Before we formally test these hypotheses, in the next section we provide some descriptive evidence on characteristics of firms by marketing channel.

### **3. Marketing channels and attributes of farms some descriptive evidences**

**Marketing channels:** In Ethiopia, the main market of flower production is export. Table 3 gives flower sales by marketing channel and year. Export accounts for about 97% of total sales revenue of the sector in 2007. The domestic market is more or less residual market for the exporters. For example, in 2007 only 11 firms sold no more than 10% of their products in domestic market, with the exception of one cutting farm that sold 100% of its product in the domestic market.

Export sales are usually made in two ways; direct sales and auction (mainly through Dutch auction). The major outlet for the Ethiopian flower exporters is Dutch auction. In

2007 for example, 35 out of 64 (54.7%) firms export above 70% of their product through the Dutch auction. The percentage of firms that mainly export through the Dutch auction remains almost the same in the last three years. There are few cases of channeling through other auctions such as, Japan and Germany. For example, in 2007 there are four firms that exported through Japan auction but with no more than 20% of their exports. One firm has also exported 100% through Germany auction.

The second largest channel for Ethiopian flower exporters is direct sales to supermarkets and other retailers. Forty one farms reported that they have involved in direct sales channel in 2007. Of these, 25 enterprises sold 70% and above of their flower through direct sales. This means 39% the flower exporters sold 70% and above of their exports through direct sales. We use the threshold 70% and above export through direct sales to classify the exporters into two exclusive groups. Henceforth, firms that export 70% and above through direct sales are labeled as firms mainly engaged in direct sales while the rest in auction.

**Production orientation and size by marketing channel:** In this section we examine the size and production orientation of farms by marketing channel based on 2007 data. Size of flower farms can be measured in terms land (preferably number hectares covered by flower), and employment. Table 4 reports the size comparison among the marketing channels. The farms that are involved mainly in direct sales are larger than those farms exported mainly through auction. On average firms with direct sales have 388.6 employees, while the average employment in auction firms is about 311.6. The average size of land covered with flower is also higher (11.52 ha) in direct sales than auction firms (10.8 ha).

The number of varieties produced and exported in those farms with direct marketing channel is also five times higher than those in auction. Consequently, the average number of companies to which royalties is paid higher in the direct sales. The firms in different channels also differ significantly in terms of having own propagation facility. About 48% of firms in direct sales have own propagation but only 18% in the auction channel have own propagation. These are consistent with the differentiation strategy pursued by supermarkets and required capacity from local suppliers.

**Technical and marketing staff by marketing channel:** Table 4 also gives some summary on the human capacity on both marketing and production. On average the firms have about 13.7 Ethiopian supervisors and managers and there looks no much difference between the marketing channels. However, with regard to the use of foreign experts the two marketing channels differ. In 2007 average farm in the direct sales market hired 27.3, man-month, of foreign experts whereas that in auction hired only 12.6, man-month, foreign experts. The average number of marketing workers is only slightly higher (1.6) in the direct sales channel than those in auction (1.4). However, the firms in auction are more likely to hire market agent abroad around the auction location. About 42% of the auction based exporters reported that they have hired marketing agent, while only 28% of those in direct sales have hired marketing agent.

**Costs orientation by marketing channel:** Table 5 presents some summary statistics of different types of costs by market channel. These costs include; plant material cost, chemical and fertilizer, packaging, transport (both air and road costs), technical advice fee, and marketing commission and agents fee. On average the cost of plant materials, and chemicals and fertilizers account for about 6%, and 7.6% of total sales respectively. Packaging cost, transport cost (sum of both road and air) account for about 2% and 21.6% of total sales respectively. Technical advice fee accounts for less than one percent, while marketing cost measured by commissions and agents fee accounts for about 4.8%.

When comparing the costs share across the two marketing channels we find no difference with regard to planting material, packaging, transports cost and advice fees. There are some differences in chemicals and fertilizers cost share and marketing commission fee. The share of cost of chemicals and fertilizers is a bit higher (9.7%) in the direct sales channel farms than those in the auction (6.4%). On the other hand, marketing commissions and agents fee is higher in auction market than direct sales, 7% and 3% of total export revenue respectively. This is consistent to previous studies for example Wijnands et al. (2006).

The descriptive results can be summarized as follows. The required number of varieties to engage in direct sales is higher than auction. The average number of varieties exported by the group of direct sales is almost five times higher than those use auction

market. The average number of companies to which royalties is paid also higher in the direct sales. Size of firms measured in terms of size of land covered by flower, employment, and total exports, is also higher in the direct sale group than the auction users.

In terms of cost orientation, we found important difference between the two channels. The ratio of marketing commission fee to total sales is higher in auction market (7%) than the direct sales market (3%). On the other hand, firms in the direct sales group spend slightly higher percentage on chemicals and fertilizer than auction. We have also found important difference between the two channels in terms of human capital on marketing and production. Firms in the direct sales use more foreign experts and have higher number of marketing workers than those in auction. On the other hand, the firms in auction are more likely to hire market agent abroad around the auction location. There are also differences between the two channels in terms of use of website for business purpose, in favor the direct markets.

In the next section we use econometric analysis in determining the defining attributes of the firms in the two marketing channels. In other words, we test the hypotheses forwarded in section 3.

## **5. Estimation and results**

We treat the market choices as exclusive although some firms might mix their export through both channels. The majority of the firms export 90% or above of their products through one of the marketing channels, thus, there is no broad category of firms that mix both channels. For example, in 2007 83% of the farms export 90% or above of their products either through auction (48.4%) or through direct sales (34%). When we use 70% and above direct sales as minimum a firm to be categorize as mainly involved in direct sales channel then we can differentiate the population of firms into two exclusive groups (see, Table 2). According to this classification, for example in 2007, 39% of firms exported through direct sales while the rest (61%) through auctions. Thus, our dependent variable is a dummy that takes value one if a firm exports mainly through direct sales (70% and above) and zero otherwise.

Based on the hypotheses (in section 3) we include a number of explanatory variables which are mainly related to the grower production and marketing capabilities. These are; size of land, number of varieties, possession of own plant propagation, location altitude, % of marketing staff, transport capacity, main source of marketing information, website possession, and number of experts. Apart to this we have also included other variables such as, age and ownership of the firm and control variables such as, location (cluster) and year.

We applied the logistic estimation method to test the defining characteristics of growers that use the direct sales channel as hypothesized in the previous section. The advantage of the logit estimation over other estimation techniques of binary models is that it requires no assumptions regarding the distribution of the explanatory variables. It is relatively robust, flexible and easily used, and it lends itself to a meaningful interpretation. Logistic regression is preferred when data are not normal in distribution or group sizes are very unequal (Pohar, Blas, and Turk, 2004).

The data we have covers 64 farms out of the total 67 producing and exporting floriculture in the country. It was collected in the early 2008, but consist information at least for three consecutive years 2005 to 2007. The use of the panel aspect of the data gives more observation and allows more variation in our estimation. However, there are only few firms that transform from mainly auction to mainly direct sales, thus, there is not much variation across years in the dependent variable. This could result in serial correlation in the residual and a downward bias in standard errors. To control for this effect we use robust variance estimates that adjusts for within-firm correlation where the observations within cluster (firm) may not be treated as independent, but the clusters themselves are independent. Thus, the reported standard errors are robust and corrected for autocorrelation that could arise from repeated observations of the same firm.

The results are reported in Table 6. In the first column we include the main variables. In column two size of land is excluded, while in columns three firm age and foreign ownership are controlled. Qualitatively there is no much difference between these specifications except some change in the level of significance of size measured by land and foreign expert. We discuss below the results in detail.

The coefficients of number of varieties are positive and significant in all models. This means growers involved in direct sales are more likely to produce large number of varieties. This is consistent with the hypothesis that the strategy of product differentiation of supermarkets means their suppliers should also diversify the varieties of flowers they supply. Size measured by land covered by flower is also positive but the significance level changes when in the third column. Our data shows some evidence that size matters to enter the direct sales marketing channel.

Another interesting result is that the coefficient of having own propagation is positive and highly significant. This means suppliers to the direct sale are more likely to have own propagation facility than those involved in the auction market. This is related with the fact that suppliers to the supermarkets should grow a large number of varieties. Growing large number of varieties requires in-house capacity for propagation. This supports the previous finding that supermarkets requirement of reliable and consistent supply necessitates vertical integration, i.e. it is more efficient for growers to produce seedlings in their facility other than buying them from other farms.

As indicated in the previous section the standards and delivery requirements from supermarkets have broad implication on the competency of the suppliers. In the data we have the number of experts employed in each farm by nationality. In order to take control for the quality of experts we classify the number of experts into two; number of Ethiopian and foreign experts. Obviously, we assume foreign experts are more competent than the domestic one. First, the industry is new to Ethiopia and there is little supply of experienced floriculture experts in the domestic market. Second, firms can not be expected to pay large sum of money to foreign experts if domestic experts are better than foreign. In the estimation the coefficients of the Ethiopian expert and foreign expert give opposite signs, i.e. foreign experts positive and Ethiopian experts negative, although both are significant. This means, suppliers in the direct sales tend to have more foreign experts but fewer Ethiopian experts in contrast to those mainly involved in auction market. This means involving in direct sales requires more technical knowledge thus higher number of skilled and experienced experts. Firms engaged in the supermarkets chain are, therefore, more likely to use foreign experts at this early stage of the industry in the face of lack of sufficient experts in domestic market.

Marketing workers ratio is also positive and significant supporting the notion that direct sales requires more marketing personnel. This is because the direct sales market involves promotion and frequent interactions with each client thus require more marketing personnel. In the auction market, however, each volume of flowers and the price is determined by the clock thus fewer marketing personnel are required. As we have shown in the descriptive section hiring marketing agent at the auction place looks sufficient for those in auction market channel. The source of information dummy, i.e. own agent and Mother Company as a main source is positive and significant. This shows suppliers in the direct sales tend to use own agent or mother company as the main source of marketing information. In the direct sales market gathering update marketing information and dealing with a number of actual and potential suppliers is necessary. In contrast, the suppliers to auction market can easily access information.

Suppliers in these two channels can also be differentiated in the extent of their use of modern Information Technology systems. The dummy that represents if the firms uses website for business is positive and highly significant, suggesting that suppliers in the direct sale are more likely to use website for their business. This is consistent with the observation that the supermarkets' emphasis on logistics capability also places a premium on up-to-date market information within the supply chain. The IT systems help track ordering and sales, identify their customer base, and organize storage, delivery and transport (Dolan and Humphrey, 2000). Suppliers should match these developments by introducing IT communications, for example introducing website into their business.

In the model we included two logistic related dummy variables. The first one is a dummy that take one if the supplier have own track (in contrast to those use rented trucks) for transporting flower from farm to the airport. The second one is if the farm ever used chartered air cargo for export in addition to their normal airfreight. Interestingly, both are positive and highly significant. This means growers in the direct sales are more likely to use own track and use chartered air cargo in addition to the normal arrangements. Such an arrangement might result of the just-in-time delivery requirement of supermarkets of greater flexibility and reliability of supply; hence, suppliers in the direct sales should fulfill this obligation in order to stay in the business.

We have also found positive and very strong relation between involvement in direct sales and altitude of the farm. Higher altitude enables to produce high quality roses (long stem and large buds), that command higher prices. The implication is that supermarkets are more likely to demand higher quality flowers and pay higher prices as part of their differentiation strategy and access to niche markets. In the model we have also included foreign ownership dummy and age of the firm, but neither of them is significant.

## **6. Conclusions**

This paper provides empirical evidence on the impact of increasing power of global buyers and increasing standards on African flower exports. The EU floriculture market has two distinctive strands; the auction (mainly Dutch) and direct sales to supermarkets. According to the governance of global value chain perspective, the auction market is characterized by loose, market-based trading relationships and can be characterized as spot-market. The direct sales, on the other hand, is coordinated by supermarkets and involves strict compliant to specific standards can be characterized as modular governance. By analyzing the difference in attributes of firms involved in these distinctive marketing channels this paper sheds light how the growing requirement and standards of the supermarkets impact the organization and capability of suppliers in Africa.

The estimation results show that firms supplying to direct sales (in contrast to that in auction) produce and export large varieties and higher quality of flowers, have own propagation facility and are larger in size. They tend to use more foreign experts, have higher proportion of marketing staff and more likely to use IT systems (website). They are also more likely to arrange flexible and reliable transportation systems for their exports. This shows that firms in direct markets channel (modular governance) have higher capability in production, marketing and logistics than the firms in auction (spot-market). Our finding reinforces the notion that successfully competing in the global buyers dominating markets necessitates higher capability at the supply base to insure a consistent, diversified and quality product that complies with regulatory requirements.

These findings have broad implications for the export promotion activities of many developing countries. The involvement in a buyer-driven global value chain is a daunting challenge for developing countries suppliers. Global buyers set parameters governing a range of business activities such as, what to be produced (product and design specification), how to produce (technology to be used, quality systems, labor and environment standards), and how much and when to produce (production scheduling and logistics) (Humphrey and Schmitz, 2004). The pattern of increasing power of global buyers and standards in developed countries markets looks irreversible at least in the near future. In fact, it can be expected to get more sophisticated and extend to other products or market segments with the increasing involvement of NGOs and trade unions in setting standards. The way forward for developing countries with their export drive is to improve the capabilities of local firms on a continuous basis to cope with these developments. Policies aimed at promoting the non-traditional products should focus on innovation and building local capabilities, not only production but also marketing and logistic capabilities.

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**Table 1 number of firms, employment, land and export by year**

Year	Number of farms in production	Number of permanent workers	Total land owned by the farms (ha)	flower covered land (ha)	Exported stems (millions)	Export revenue (millions USD)
2000	1	115	40	7	0.174	0.05
2002	2					
2003	5					
2004	10					
2005	30	10244	1081.5	319.2	243.62	57.04
2006	51	16604	1635.9	586.5	488.32	100.77
2007	64	21785	1804.4	648.5	915.0	168.04

Note that export revenue was converted from the national currency Birr to USD based on mid-year weighted rate found from NBE, i.e. (7, for 2000, 8.1 for 2005, 8.5 for 2006, and 9.03 for 2007)

**Table 2 Location, ownership type, altitude and specialization type of flower farms**

Common cluster name	Number of farms by ownership type				Altitude (meters above sea level) Mean	number of flower farms specialized on		
	domestic	foreign	Joint venture	All		Rose flower	Summer flowers	Cuttings
Debre Zeit	1	3	3	7	1870	6	1	
Ziway	2	4		6	1644	5		1
Sebeta/Alemgena	3	3	4	10	2082	8	1	1
Koka	1	1	1	3	1617	1		2
Sendafa/Slulta	2	1	2	5	2228	2	3	
Holeta/Addis Alem	10	8	2	20	2289	19	1	
Menagesha	1	3	1	5	2570	5		
Others	3	3	2	8	1847	5	2	1
All	23	26	15	64	2081	51	8	5

**Table 3 Sales by marketing channel (2005-2007)**

% sold by each channel	Number of firms exported through Holland auction						Number of firms exported through Direct sales						Domestic market (%)	
	2005		2006		2007		2005		2006		2007		2007	
	freq.	%	freq.	%	freq.	%	freq.	%	freq.	%	freq.	%	freq.	%
0 %	11	36.7	18	36	22	34.4	12	40	20	40	27	42.2	52	81.3
(0, 20] %	2	6.7	3	6.0	4	6.3	3	10.0	7	14.0	8	12.5	11	17.2
(20, 35] %	0	0.0	0	0.0	1	1.6	3	10.0	4	8.0	4	6.3	0	0.0
65 %	0	0.0	0	0.0	2	3.1	1	3.3	1	2.0	0	0.0	0	0.0
[70, 89] %	3	10	5	10	4	6.3	2	6.7	1	2.0	3	4.7	0	0.0
>=90%	14	46.7	24	48	31	48.4	9	30	17	34.0	22	34.4	1	1.6
All	30		50		64		30		50		64			

**Table 4 Size, number of varieties, personnel and logistics by market channel in 2007**

	Over marketing channel		
	statistic	Auction	Direct sales
employment total	Mean	311.58	388.6
	Std. Err.	29.7	55.45
land size ha	Mean	10.81	11.52
	Std. Err.	1.46	1.38
<b>Number of varieties</b>	<b>Mean</b>	<b>6.8</b>	<b>33.8</b>
	<b>Std. Err.</b>	<b>0.706</b>	
Number of companies to which royalty is paid	Mean	3.057	3.682
	Std. Err.	0.348	0.71
Share of farms with own propagation facility	ratio	18	48
<b>Number of Ethiopian supervisors and managers</b>	<b>mean</b>	<b>13.73</b>	<b>13.739</b>
	<b>std err.</b>	<b>1.317</b>	<b>1.964</b>
Use of foreign experts (man-months)	mean	12.622	27.26
	std err.	3.246	7.654
<b>Number of marketing workers</b>	<b>mean</b>	<b>1.421</b>	<b>1.609</b>
	<b>std err.</b>	<b>0.279</b>	<b>0.452</b>
Have market agent abroad	ratio	0.42	0.28
<b>Use website for business</b>	<b>ratio</b>	<b>0.16</b>	<b>0.32</b>
Have own track	ratio	0.71	0.84
Ever used chartered air cargo	ratio	0.08	0.32

**Table 5 share of costs in total sales by marketing channel in 2007**

Costs ratio in total sales	statistics	Over marketing channel		
		auction	direct sales	All
plant material cost	mean	0.063	0.056	0.059
	std err.	0.021	0.029	0.017
chemical and fertilizer cost	mean	0.064	0.097	0.076
	std err.	0.009	0.031	0.013
packaging cost	mean	0.026	0.021	0.022
	std err.	0.006	0.007	0.004
transport cost	mean	0.217	0.218	0.217
	std err.	0.031	0.037	0.021
technical advise	mean	0.004	0.008	0.006
	std err.	0.001	0.004	0.002
marketing commission & agents fee	mean	0.063	0.026	0.048
	std err.	0.011	0.009	0.008

**Table 6 Logit estimation on attributes of direct sales participants**

Dependent variable dummy for direct sales $\geq 70\%$	(1)	(2)	(3)
Land size (ha)	1.382 (0.791)*		1.471 (0.903)
number of varieties exported	0.228 (0.112)**	0.292 (0.118)**	0.209 (0.105)**
# of Ethiopian experts	-0.002 (0.001)***	-0.002 (0.001)***	-0.002 (0.001)**
Foreign experts (man-month)	0.430 (0.246)*	0.614 (0.231)***	0.396 (0.236)*
Marketing workers ratio	229.163 (115.4)**	202.158 (107.884)*	237.942 (123.275)*
have own track for transporting flower (dummy)	6.714 (2.408)***	6.564 (2.380)***	6.953 (2.563)***
ever used charter airplane for export (dummy)	6.238 (2.548)**	5.386 (2.409)**	6.482 (2.655)**
source of information own agent/mother company (dummy)	6.489 (2.318)***	6.429 (2.210)***	6.680 (2.536)***
the farm uses website for business (dummy)	4.714 (1.862)**	4.391 (1.686)***	4.751 (1.948)**
have own propagation (dummy)	4.940 (1.613)***	4.569 (1.373)***	5.141 (1.686)***
location altitude kilo-meters above sea level (i.e. divided by 1000)	10.525 (2.847)***	10.428 (2.754)***	10.718 (2.770)***
foreign owned (dummy)			0.488 (0.988)
Age of firm			0.101 (0.646)
Constant	-37.995 (9.761)***	-34.905 (8.667)***	-39.354 (10.31)***
Year	controlled	controlled	controlled
Location (six clusters)	controlled	controlled	controlled
Observations	127	132	127

Robust standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

## Appendix

**Table A1: African Countries' Dependence on Single-Commodity Exports 1997-99**

Country	Commodity	Instability index of commodity price (1986-99)	Percent share of		
			Gross national income	Total merchandise exports	Total agricultural exports
Malawi	Tobacco leaves		23.8	59	74
Sao Tome & Principe	Cocoa beans	17.7	16.9	69	97
Burundi	Coffee, green	25.5	7.2	75	83
Kenya	Tea	9.6	6.5	26	42
Guinea-Bissau	Cashew nuts		6.3	48	91
Chad	Cotton	15.9	5.7	37	71
Ethiopia	Coffee, green	25.5	5.4	62	69
Burkina Faso	Cotton	15.9	4.9	39	77
Uganda	Coffee, green	25.5	4	54	69
Cote d'Ivoire	Cocoa beans	17.7	14.4	36	58

Source FAO, 2002, instability index is measured as an average of the annual percentage deviations from the linear trend value.

**Table A2 Top 10 cut-flower exporters into the EU market 2001-2007**

2001			2003			2007		
share in			share in			share in		
EU			EU			EU		
country	market	Rank	country	market	Rank	country	market	Rank
Kenya	25.90	1	Kenya	31.71	1	Kenya	39	1
Israel	18.35	2	Colombia	15.15	2	Colombia	14.17	2
Colombia	15.40	3	Israel	14.08	3	Ecuador	13.6	3
Ecuador	12.10	4	Ecuador	11.15	4	Israel	8.94	4
Zimbabwe	10.04	5	Zimbabwe	8.69	5	<b>Ethiopia</b>	<b>5.05</b>	<b>5</b>
Thailand	2.84	6	Thailand	2.71	6	Zimbabwe	2.82	6
Zambia	2.67	7	Uganda	2.66	7	Uganda	2.56	7
Uganda	1.87	8	Zambia	2.61	8	Thailand	2.52	8
South Africa	1.60	9	South Africa	2.24	9	Zambia	1.96	9
Tanzania	1.45	10	Turkey	1.67	10	South Africa	1.62	10
<b>Ethiopia</b>	<b>0.14</b>	<b>24</b>	<b>Ethiopia</b>	<b>0.50</b>	<b>15</b>			

Source: UN-Comtrade, own calculation