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Analysis of price incentives for haricot beans in Ethiopia for the time period 2005 -2012

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Monitoring and Analysing Food and Agricultural Policies (MAFAP)

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CONTENTS

SUMMARY OF THE NOTE

Product: Haricot Bean
Period analyzed: 2005-2012
Trade status: Exported in all years

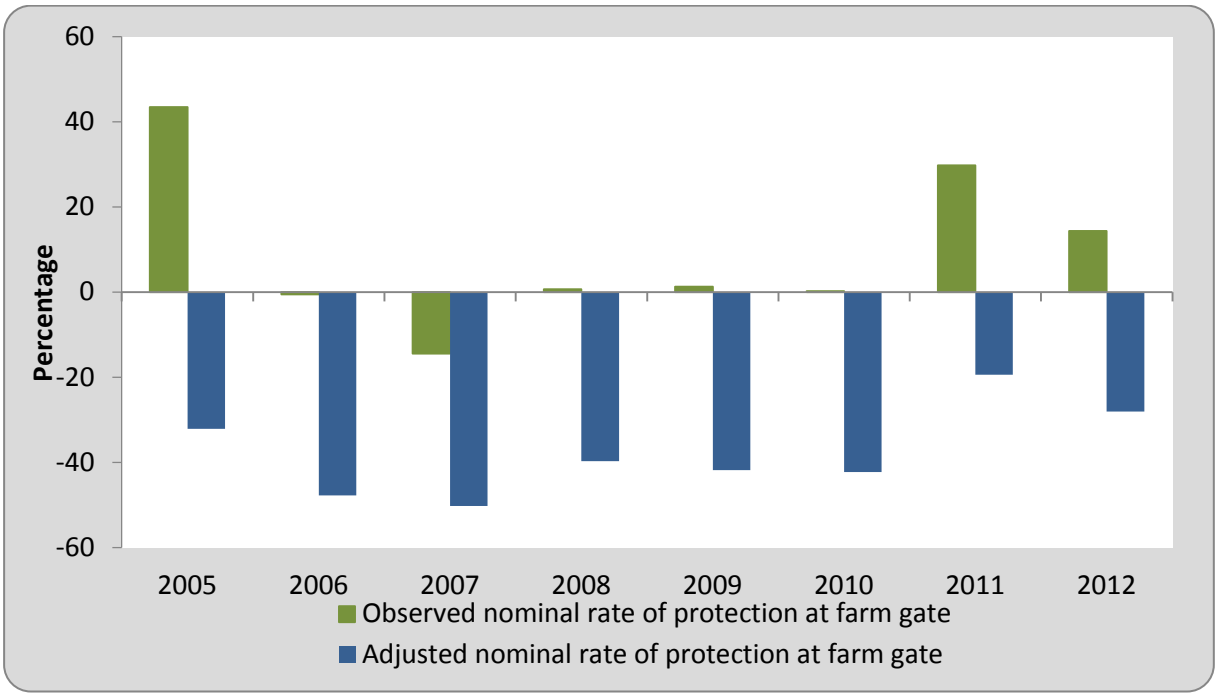
COMMODITY CONTEXT

- Haricot beans are among the most important grain legumes produced by small-scale farmers for both subsistence and cash, mainly in the lowlands and in the rift valley areas of Ethiopia. They are high in starch, protein, and dietary fibre, and are an excellent source of minerals and vitamins.

- Virtually all bean production is carried out by smallholder farmers, which were estimated to be about 3.1 million in 2012 (CSA, 2012). Due to high demand in the international and domestic markets, Ethiopian haricot bean production has increased more than twofold from 138 to 463 thousand tonnes between 2005 and 2012.

- Haricot bean exports account for about 41 percent of pulse production and exports from 2005 to 2012. Its contribution to national export earnings was 95.3 million USD in 2012. The value chain however, remains underdeveloped and producers and traders earn a low share of the FOB price.

Observed and Adjusted Nominal Rate of Protection at Farm Gate for Haricot Beans in Ethiopia, 2005-2012



Source: MAFAP, 2014

The observed Nominal Rate of Protection (NRP, green bars) in the graph above measures the effect of policy distortions and overall market performance on price incentives for producers. The adjusted NRP (blue bars) captures the same elements as the observed NRP, in addition to any market distortions resulting from inefficiencies in the commodity's value chain and exchange rate

misalignment. The difference between the two bars reflects the estimated cost that value chain inefficiencies and exchange rate misalignment represent to producers.

DRIVING FACTORS

The results of our analysis show that the driving factors accounting for this high level of inefficiency or disincentives in the adjusted domain arose from:

- Overvalued exchange rate;
- Taxes and fees (turn over tax, municipality fee, brokers' fee, checkpoint fee);
- High transport costs and impurity losses resulting from lack of quality standards when exporters buy from the wholesale market;
- Excessive margins from traders over producers – the average producer share of FOB price for haricot bean was 44.5 percent between 2001 and 2011, which is notoriously low, even in comparison with other export commodities;
- Regardless of these high disincentives, haricot bean production and export has increased in recent years, likely owing to increasing local and export demand, improved access to seeds, fertilizers and technical assistance from agricultural offices.

RECOMMENDATIONS

Policy measures in order to reduce disincentives could include:

- Discontinue the over-valuation of the exchange rate, as it prevents actors in the value chain from benefiting from higher prices, and thus acts as a disincentive to production. Although exchange rate over-valuation has various impacts to be considered, it is particularly important not to over-value it if the government wants to stimulate haricot bean exports.
- Limit excess market power of traders. It appears that from 2005 to 2010, haricot bean traders have had excessive market power over producers, exacting high margins. The government has already tried to address this concern by putting in place the ECX system; however, it has yet to be seen if the trade-off (i.e. higher access costs due to bureaucratic processes) has not brought about more negative than positive effects.
- Improve processing in the value chain, especially between wholesale and border, as impurity losses represent the main market inefficiency for wholesalers, and an important one for producers.
- Improve transport infrastructure to lower costs, which are especially high between Gonder and Djibouti through Addis-Ababa.
- Improve the input side of haricot bean production. The government could, for instance, provide more technical assistance and develop infrastructure to boost haricot bean production and trade in the country.
- Improve producers' share of reference price through an institutional arrangement that enables producers to bargain. Improving the market information system and quality of haricot beans are also the most important actions to raise producer gain.

1. PURPOSE OF THE NOTE

This technical note is an attempt to measure, analyse and interpret price incentives for haricot beans in Ethiopia over the period 2005 – 2012.

For this purpose, yearly averages of domestic farm gate and wholesale prices are compared with reference prices calculated on the basis of the price of the commodity in the international market. The price gaps between reference prices and domestic prices along the commodity's value chain indicate the extent to which incentives (positive gaps) or disincentives (negative gaps) were present at the farm gate and wholesale level. The price gaps are expressed in relative terms as a percentage of the reference price, referred to as the Nominal Rate of Protection (NRP). These key indicators are used by MAFAP to assess the effects of policy and market performance on prices.

This technical note begins with a review of the commodity's production, consumption/utilization, marketing and trade, value chain and policy context (Chapter 2). It also provides a detailed description of how key data elements were obtained and indicators were calculated (Chapter 3). The indicators were then interpreted in light of existing policies and market characteristics (Chapter 4), and key policy recommendations were formulated on the basis of this interpretation (Chapter 5). Finally, the note concludes with a few main messages, limitations of the analysis and areas identified for further research to improve the analysis (Chapter 6).

The results and recommendations presented in this analysis of price incentives can be used by stakeholders involved in policy-making for the food and agriculture sector. They can also serve as input for evidence-based policy dialogue at the national, regional or international level.

This technical note should not be interpreted as an in-depth value chain analysis or detailed description of the commodity's production, consumption/utilization, marketing and trade or policy context. All information related to these areas is presented merely to provide background on the commodity under review, help understand major trends and facilitate the interpretation of the indicators.

All information in this technical note is subject to review and validation.

2. COMMODITY CONTEXT

Haricot beans, originating in Peru, were introduced in Africa by Spanish and Portuguese traders during the 15th century. The bean is widely grown throughout the continent, particularly in medium and high elevation areas. Cultivation of haricot beans is gaining importance in countries, such as Cameroon, Guinea and Senegal in Central and West Africa. Its short maturity period (less than three months), high nutritional value, relatively long shelf life and low input requirements justify its importance even for poorer farmers to produce and consume.

Due to its critical role for increasing food security, export earnings and employment creation for the national economy, the bean sector has received increasing policy attention from successive governments in Ethiopia. Over the last two decades, the current government has made tremendous efforts to improve production and productivity, marketing and export. Towards this end, the government improved agricultural extension services, issued high yielding seeds, established agricultural marketing institutions, like the Ethiopian Commodity Exchange, initiated agricultural marketing centres and information exchange systems at the national level. These efforts resulted in a considerable improvement in the haricot bean production, productivity, and export volume and value, which will be discussed in the following sections.

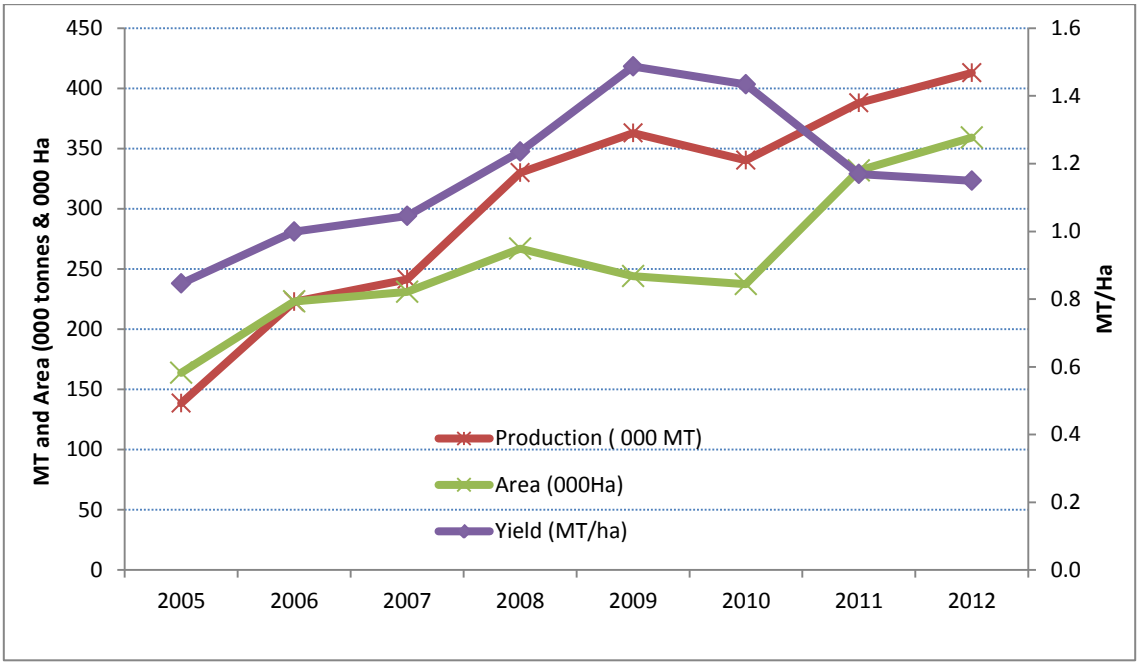
PRODUCTION

Haricot beans are among the most important grain legumes produced by small-scale farmers, both for subsistence and cash. They are usually intercropped with complementary crops such as maize, sorghum, and *enset* owing to increasing population pressure on agricultural land and paired nutrient needs in the soil. On average, haricot beans account for 16.3 percent of pulse production in Ethiopia (2005-2012), and are mainly produced in the lowlands and in the Rift Valley areas, where they are a source of income, employment and food. Virtually all bean production is carried out by about 3.1 million smallholder farmers, on small plots with minimal inputs (CSA, 2012). Despite growth in bean production and marketing, there is little evidence of large-scale bean farming in Ethiopia.

There are two main types of beans, red and white. Smallholder farmers typically grow the red bean types for household consumption, while white haricot beans are produced almost exclusively for the export market (Ferris and Kaganzi, 2008). Even if our analysis is focused on exportable haricot beans (white), data on haricot beans (aggregated with red and white beans) will be used as proxies, since no specific data for white beans is available.

National haricot bean production increased approximately twofold between 2005 and 2012/13, from 138 thousand tonnes to 413 thousand tonnes. Haricot's share of total pulse production grew from 11 percent in 2005 to 16.3 percent in 2012 (CSA, 2012).

Table 1: Haricot Bean Production (Tonnes), Area (Ha) and Yield (Tonnes/ha), 2005-2012



Source: Central Statistical Agency (CSA, 2012/13)

Over the period (2005-2012/13), area cultivated with haricot beans increased from 164 to 359 hectares, a 120 percent growth. On the other hand, the average national yield per hectare on the other hand, is low over the same period, with an average of 1.2 tonnes/hectare (CSA, 2012). This situation can be explained by supply side constraints, including low adoption of improved seeds, limited knowledge of smallholders on production practices and the benefits of diversification, and by market-led demand constraints, particularly the price instability in 2008 that led to diminished trust in the pulse sector for small producers after declining market returns. Additionally, there is insufficient seed in the country owing to an increasing demand from export markets, and there are particular problems in accessing new white bean varieties (Alemu et al., 2010).

However, despite being low, yields improved between 2005 and 2012, with a 68.2 percent increase. The government has increased extension efforts and prices have risen steadily since 2009. Research institutes have also marketed several improved seeds; the Ethiopia Institute of Agricultural Research (EIAR) introduced white haricot beans (Awash 1, Mexican 142) in 2005, red haricot beans in 2006 (Dimtu, Nasir) and speckled high yielding varieties were introduced in 2007, these ones having some success in the major producing areas. Within the red bean types, the most favored include Red Melka, a mottled medium sized red, Red Wolayta, a medium sized pure light red and Naser, a small pure dark red variety. Within the white types, there are a number of commercially accepted varieties, such as Awash 1, Awash Melka and Mexican 142.

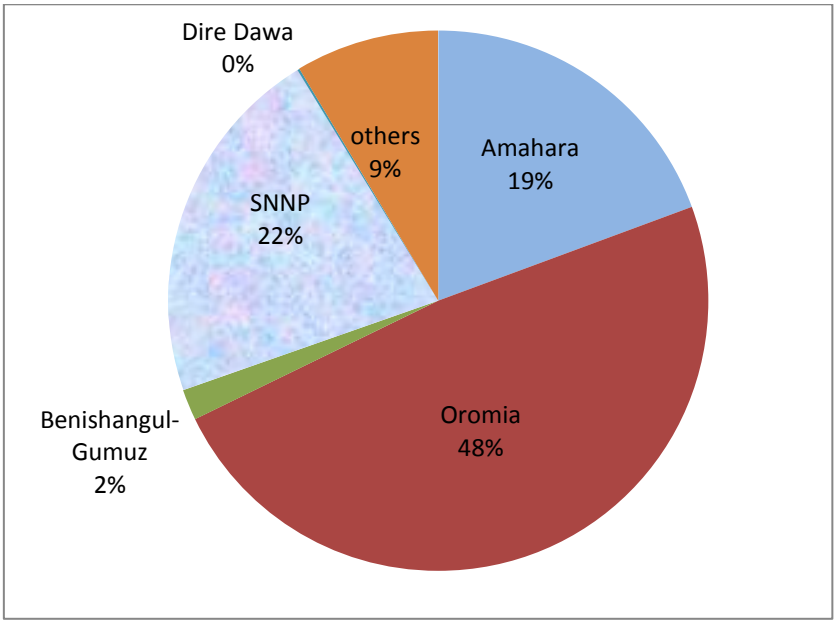
Farmers use little fertilizer, especially for red haricot bean production, because of rising input prices coupled with production risks related to weather variability and the large number of smallholders. There is a higher input application for white haricot beans, which are mainly a commercial product.

For commercial bean production, smallholders focus their efforts on the main production season *(meher)* owing to rainfall uncertainty in the shorter rainy season *(belg)*. Owing to the positive contribution of beans to soil fertility, fields under haricot beans in the *belg* season are often used for

growing wheat, teff and other cereals in the main production season. As some anecdotal evidence indicates, there is a significant yield difference between short and long planting seasons. Average yield per hectare for *belg* ranges from 0.6-0.9 tonnes, while it ranges from 2.4-3.2 tonnes per hectare for the longer planting period. This variation in yields may account for both the variation in rainfall situation and input application (Alemu et al., 2010).

In terms of geographical distribution of production, the Oromia region accounted for 48 percent during 2005-2012, with SNNPR and Amhara representing 22 and 19 percent, on average, of the production (CSA). Together with Benishangul-Gumuz, these regions contributed 91 percent of the national haricot production between 2005 and 2012.

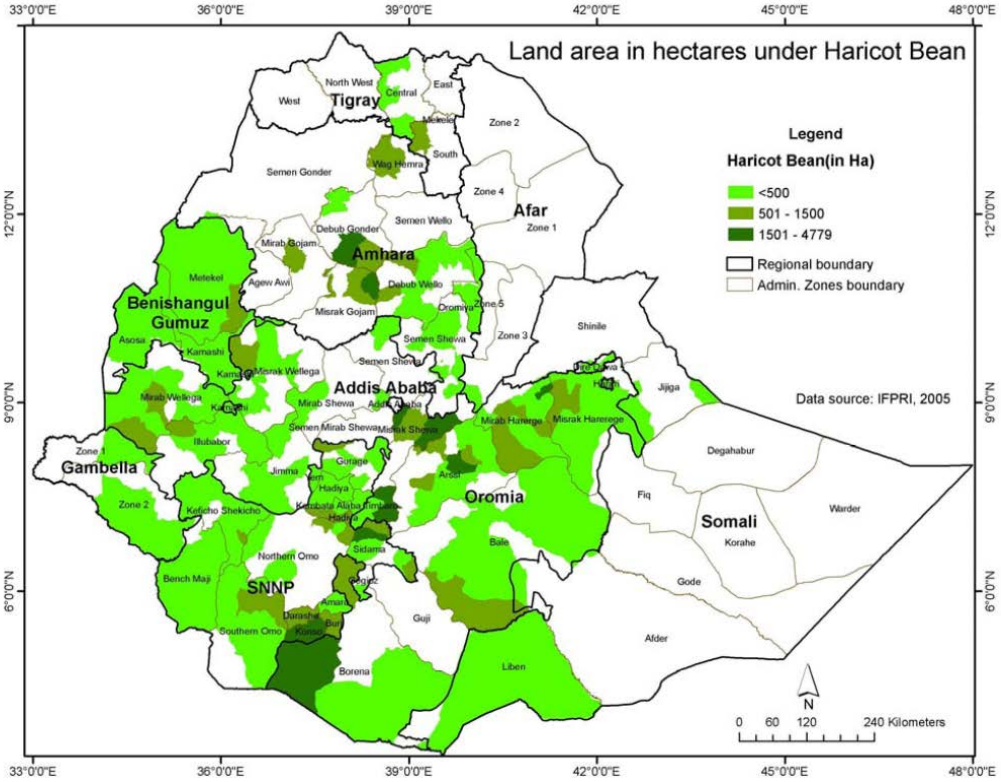
Figure 1: Regional Share of Total Production of Haricot Beans in Ethiopia for 2005-2012, in %



Source: CSA, 2012

As depicted in Figure 2, most major bean production zones in the country lie inside rift valley areas.

Figure 2: Haricot Bean Producing Areas in Ethiopia

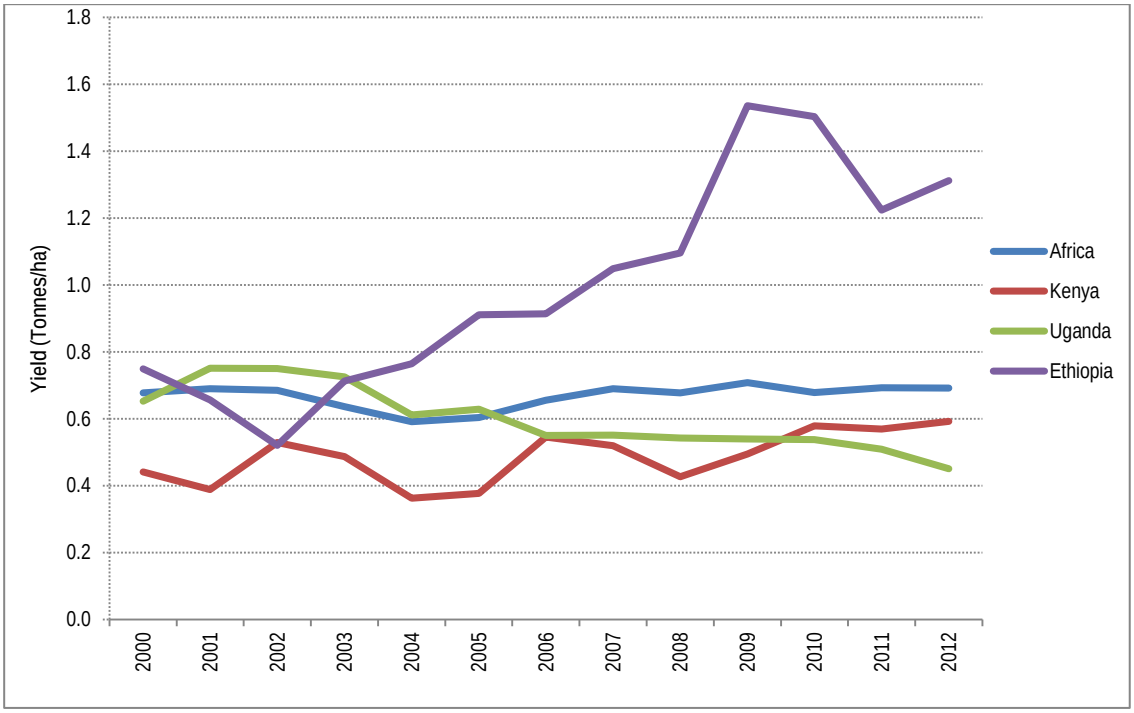


Source: Alemu et al., 2009

For the most part, bean production zones are clearly defined with white beans being produced north of Lake Ziway and red beans being produced south of the lake. There are some pockets of white bean production in the southern Sidama area, but this is mainly for local consumption (Ferris and Kaganzi, 2008).

Figure 3 compares haricot bean productivity of Ethiopia with Kenya, Uganda and the average for all of Africa over 2000-2012, using production data from FAOSTAT (2012). As depicted in the figure, productivity remained stagnant or showed minor change in Africa for Kenya and Uganda. Ethiopia performed relatively better compared to others, though yield also decelerated in the later periods. This implies that Ethiopia has considerable potential to improve production and productivity by improving existing production and input use practices.

Figure 3: Haricot Bean Productivity in the Main Producer Countries in Africa (Tonne/ha), 2000-2012



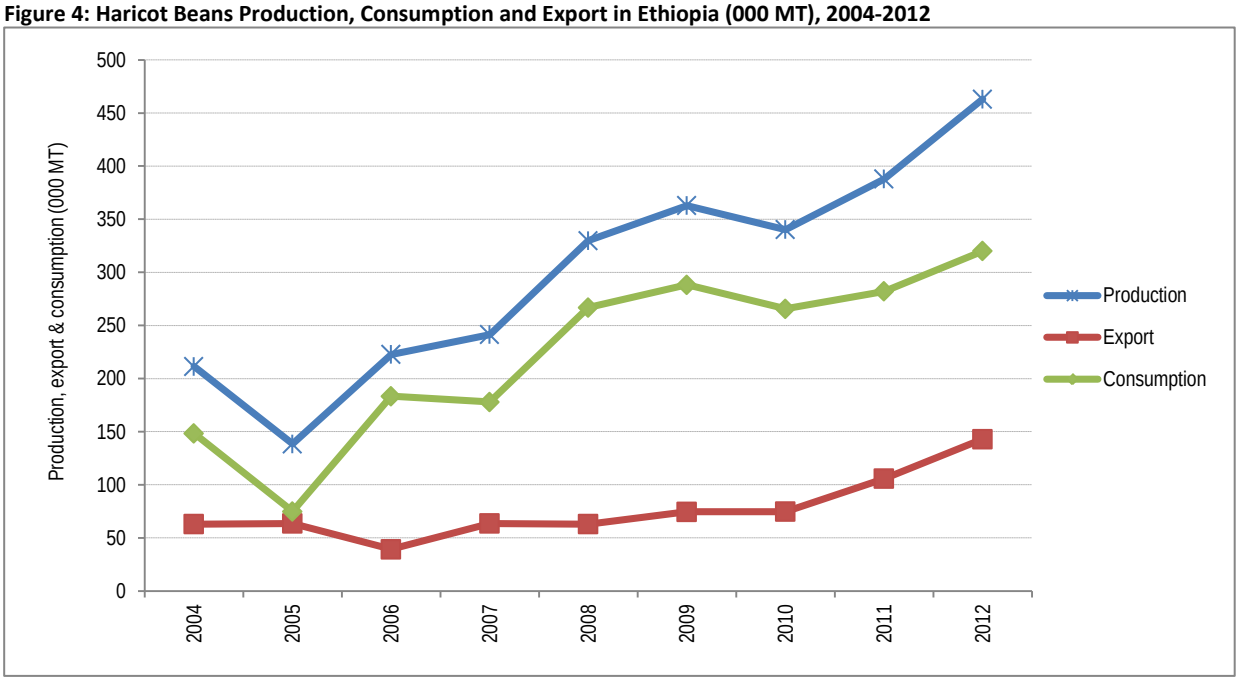
Source: FAOSTAT, 2012

CONSUMPTION/UTILIZATION

Haricot beans have a high nutritional value, are rich in calcium, phosphorus and iron, and are thus considered a key crop for improving food security. Beans in Ethiopia are traditionally seen as a ''poor man's food'' by the medium to high income urban and rural consumers, and thus urban demand is low. For instance, pulse retail in many major town centres do not want to keep haricot beans or others pulses (i.e. chickpeas, lentils, split peas, fava beans), implying that their customers were less interested in these low value products. Consumption of haricot beans are common for the rural poor in the major producing areas, however, with the food price spike and increasing awareness about its nutritional value, the perception of haricot beans is changing rapidly in urban centres.

Haricot bean consumption, calculated as the difference between production and export, registered an annual average growth of 20.3 percent from 148 to 320 thousand tonnes between 2004 and 2012, while production and export grew by 13 and 14 percent, respectively. The bulk of haricot beans (69 percent) are consumed on-farm, with marketable surplus of only 17.6 percent (ECEA, 2009). The small share of marketable surplus is partly explained by high transportation and transaction costs incurred in haricot bean aggregation and trading, reinforcing the subsistence orientation of the smallholder farmers. However, between 2008 and 2012, on-farm consumption as a share of total production dropped from 82 to 69 percent in 2012. The driving force behind the increasing share of exports and decreasing share of local consumption may be the lucrative international prices for haricot beans in recent years. The FOB price for haricot bean exports has grown from USD 281 per tonne to USD 667 per tonne from 2005 to 2012 (ERCA, 2011).

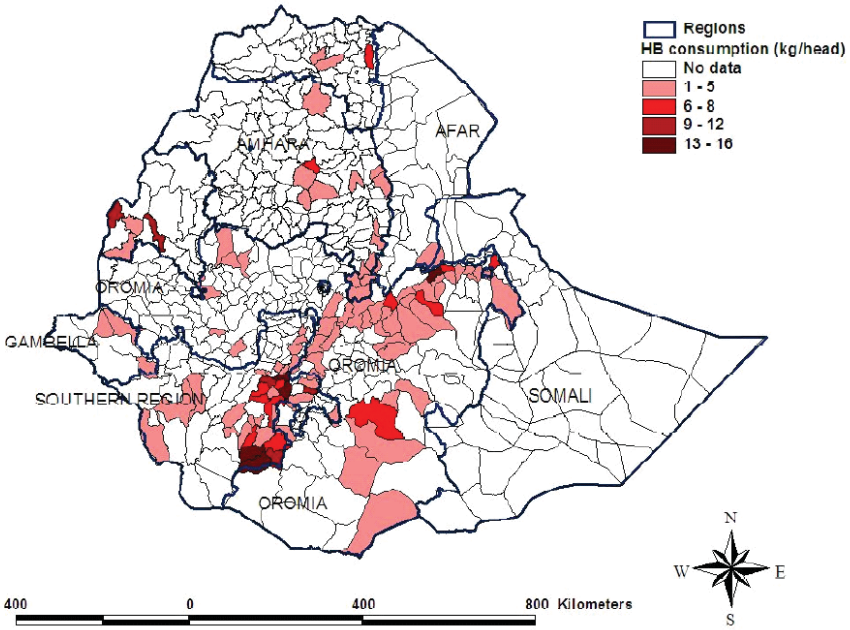
Figure 4: Haricot Beans Production, Consumption and Export in Ethiopia (000 MT), 2004-2012



Source: CSA and Customs Authority, 2013

Per capita consumption ranges from 1 kg to 16 kg per capita in the main production areas, reflecting the importance of self-consumption (see Figure 4). For instance, per capita consumption of haricot beans for SNNPR is estimated to be 9–16 kg/annum (Figure 5). This is comparable to Uganda, which has consumption levels of 15–17 kg/annum (Ferris et al., 2008).

Figure 5: Per Capita Haricot Bean Consumption in Ethiopia, 2008



Source: Ferris Shaun and Kaganzi Elly, 2008

MARKETING AND TRADE

The supply market for haricot beans is fragmented as a result of the low volumes supplied by smallholders and handled by small traders at different levels. The flow of haricot bean grains in the domestic market can be viewed as a stream. Small amounts of haricot beans are produced by millions of smallholders over a wide area. The beans are collected at dispersed primary market centers by licensed or unlicensed village traders or small traders in the urban centers. Then, they are delivered to district level wholesalers (suppliers) or to their agents, where these small lots are bulked and transported to wholesale markets in Nazreth. Since 2010, white haricot beans have been purely dedicated to export, and are required by law to be traded at the Ethiopian Commodity Exchange (ECX) center.[1] White haricot bean wholesalers from SNNPR deliver to Nazreth warehouses, while wholesalers from Oromia supply either Nazreth or Addis Ababa warehouses. Wholesalers from Amhara supply the Dessie warehouses.

Exporters eventually purchase white haricot beans at ECX trading floor from the wholesalers. Exporters then transport the beans to their own warehouses, reprocess to export standards, get quality certification, clean customs requirements and then export them to overseas markets whiletrading through ECX is not mandatory for red haricot beans; exporters of red haricot beans buy through brokers from wholesale suppliers. When a need arises either to buy or sale, each informs their broker in Nazreth, specifying the amount and type they want to buy or sell. Accordingly, the broker uses his/her communication list and communicates to wholesaler or exporter.

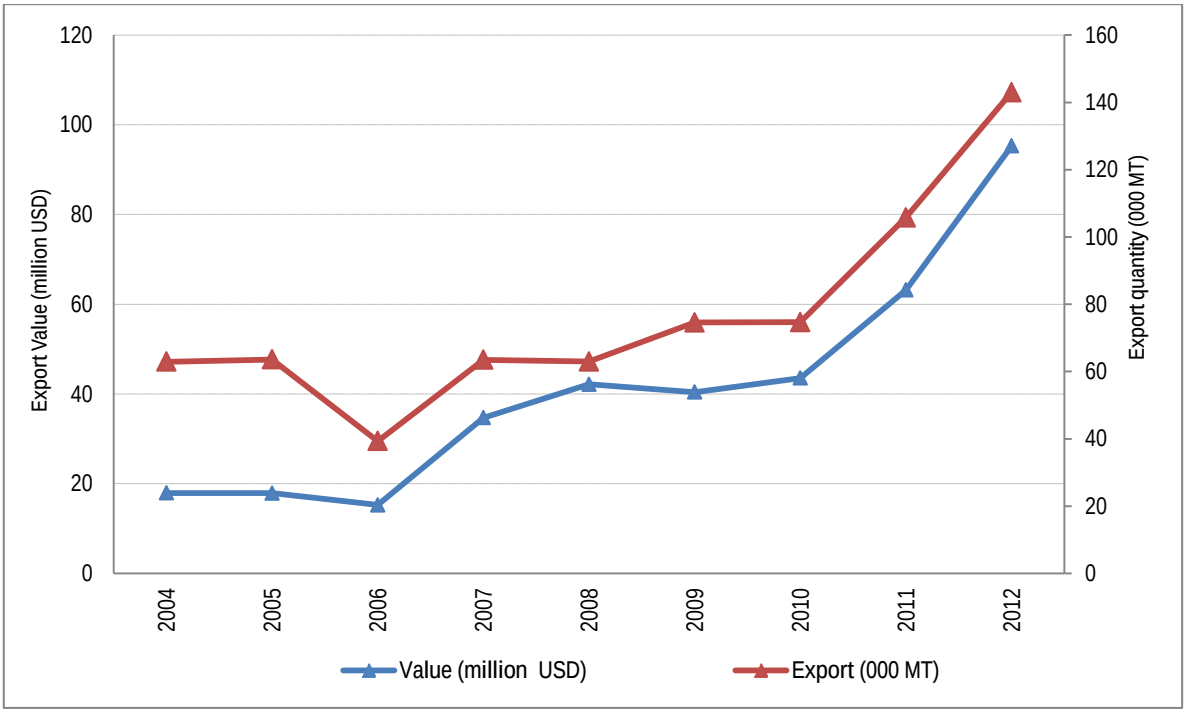
Pulses in general, including white haricot beans, are one of the high value agricultural exports that have the potential to replace traditional exports, such as coffee and hides, in the long run. Haricot bean exports[2] increased in total value from 19 million USD in 2005 to 95.3 million USD in 2012, exhibiting a growth of more than threefold.

Figure 4 depicts trends of value and volume of haricot bean exports over the 2004-2012 period. During this period, on average, the value of exports grew 29 percent per annum, while quantity of exports increased by only 15 percent. This indicates that the current drastic increase in export value owes to lucrative international prices.

[1] The ECX is a one-stop national market place for several export commodities in Ethiopia, launched in 2008 and jointly governed by a private-public Board of Directors. Exporters and suppliers of coffee, sesame, white haricot beans, maize and wheat are required by law to trade through ECX.

[2] Data on white haricot beans trade only do not exist, as customs count together white and red haricot beans. The share of red haricot bean is roughly estimated to be around half of total exports. Indeed although it is more of a consumption bean than the white one, its production and hence trade volume is much larger.

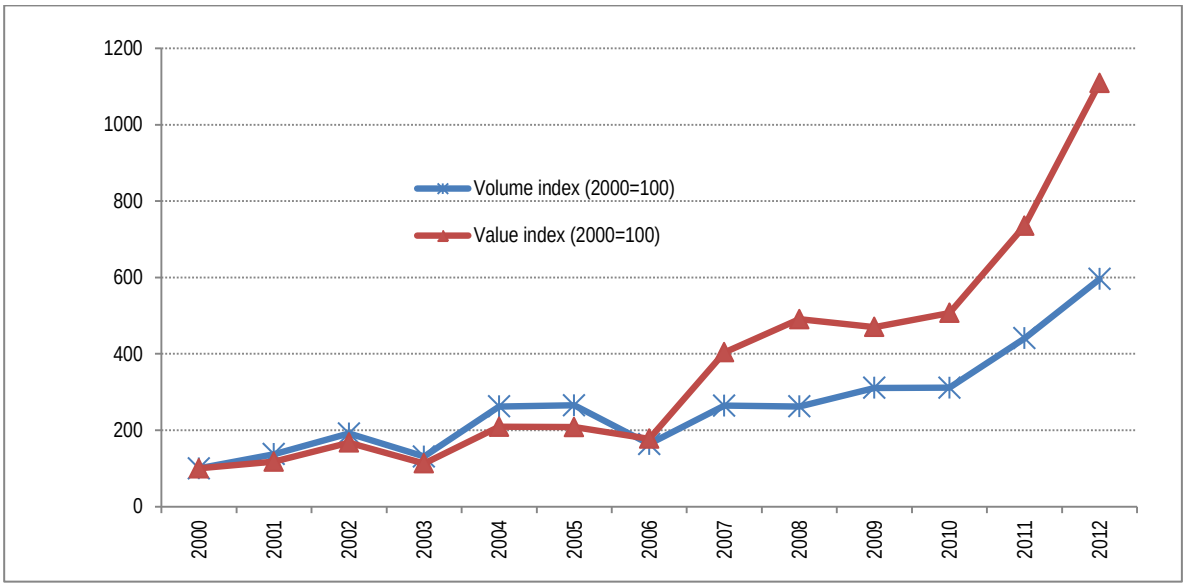
Figure 6: Value (million USD) and Quantity (000 MT) of Haricot Bean Exports in Ethiopia, 2004-2012



Source: Ethiopia Revenue and Customs Authority, 2013

Figure 6 shows haricot bean export values (FOB) and volume index for the period 2000 to 2012. Such indexes allow us to assess the drivers of change in value and volume of exports, and to determine whether a global price increase or an increase in export supply is accountable for major changes. From 2000 to 2004, the increasing volume of supply was the determinant of exports, but since 2006, high prices and increasing demand for Ethiopian haricot beans have clearly become the main drivers of haricot beans' export performance in the country (Figure 7).

Figure 7: Value and Volume Index for Haricot Bean Exports (2000=100)



Source: Ethiopia Customs Authority, 2013

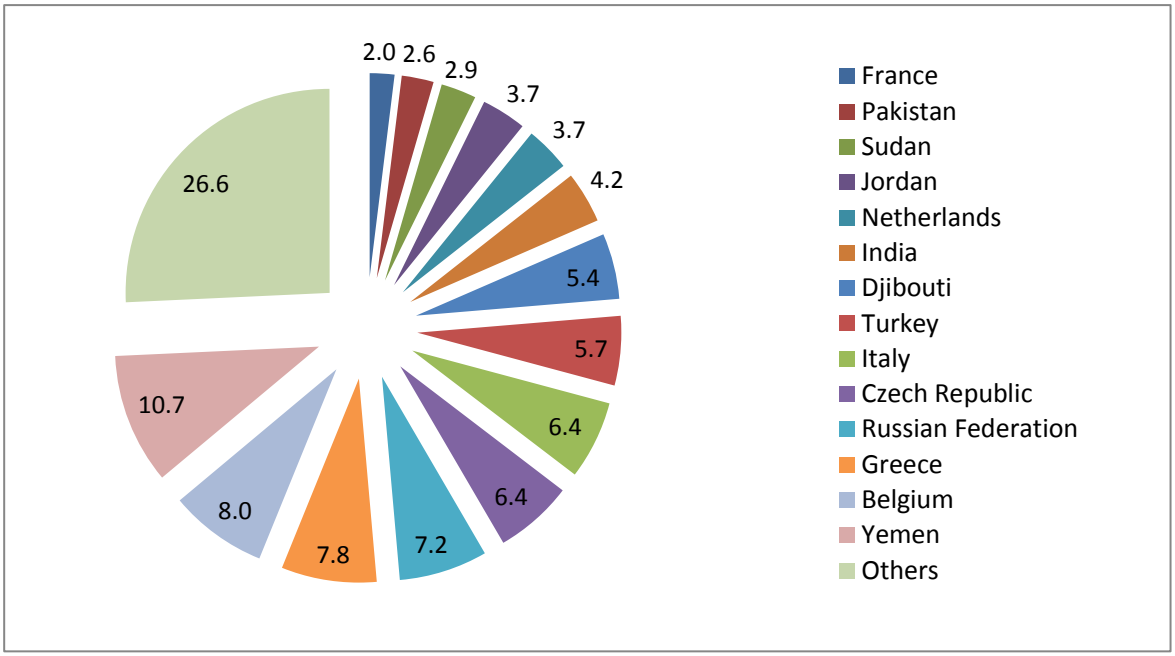
Regarding the destination of pulse exports, Ethiopia exports pulses within Africa, the Middle East, Europe, Asia and America. In fact, haricot bean exports from Ethiopia go to more than 30 countries.

The main destinations in terms of earnings over the 2005-2011 period were Yemen (11 percent), The United Kingdom (8.5 percent), The United Arab Emirates (8 percent), Pakistan (6.6 percent), India (6.5 percent), Belgium (6.4 percent), South Africa and Kenya (5.5 percent), the Netherlands (4.4percent) and Italy and Sudan (3.8 percent) (see Figure 7). The top seven importers account for more than 58 percent of total export earnings. However, 56 percent of the total importing countries imported less than 2 percent, implying that Ethiopia has opportunities to increase its export quantities to these countries.

As indicated by Rashid et al (2010), the demand for Ethiopian haricot beans grew steadily in Yemen, India, Italy, Netherlands, Belgium and Romania, while demand from Sudan, UAE, Pakistan, Morocco and Saudi Arabia was found to be erratic (Figure 8). The fresh pods and green leaves are eaten as a vegetable in some countries. White beans are popular in industrialized nations, such as the USA and The United Kingdom, as they are used to prepare pre-cooked canned 'baked beans.' The baked bean market is growing in many parts of the world, as it is a low cost and nutritious snack food that is quick and easy to prepare.

Demand for Ethiopian pulses is highly dependent on their quality, competitive prices and timely delivery, which represents a constant challenge for the Ethiopian pulse sector. If such criteria are met, pulses and white haricot beans present a highly attractive value chain for the years to come. Ethiopia has a geographic comparative advantage over other competitive countries. It takes nine weeks for sea shipments of beans from China to reach EU markets, whereas it only takes three weeks from Ethiopia (Ferris et al., 2008).

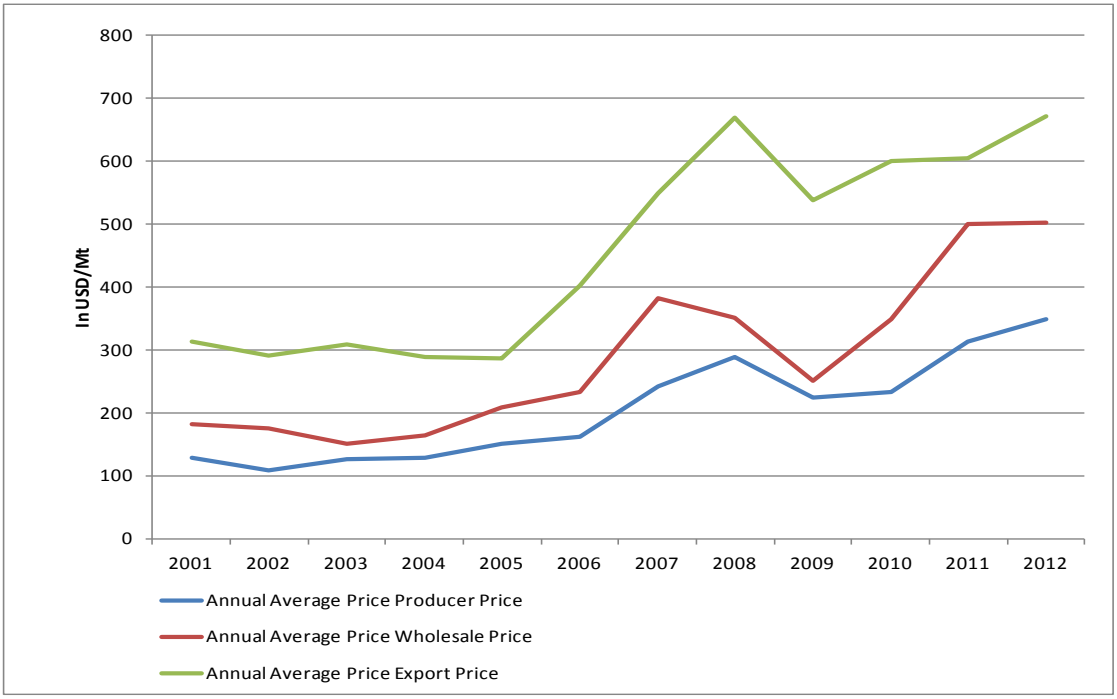
Figure 8: Earnings from Haricot Bean Exports in Ethiopia, by destination, 2005-2012, in %



Source: Customs Authority, 2013

High prices (see Figure 9) and demand for haricot beans over the last five years have created a shift in the perception of the bean, which is more and more seen by producers and traders as a commodity that can be marketed and not just as a subsistence crop.

Figure 9: Producers, Wholesalers and Exporters Price for Haricot Beans in Ethiopia, 2001-2012, in USD/tonne



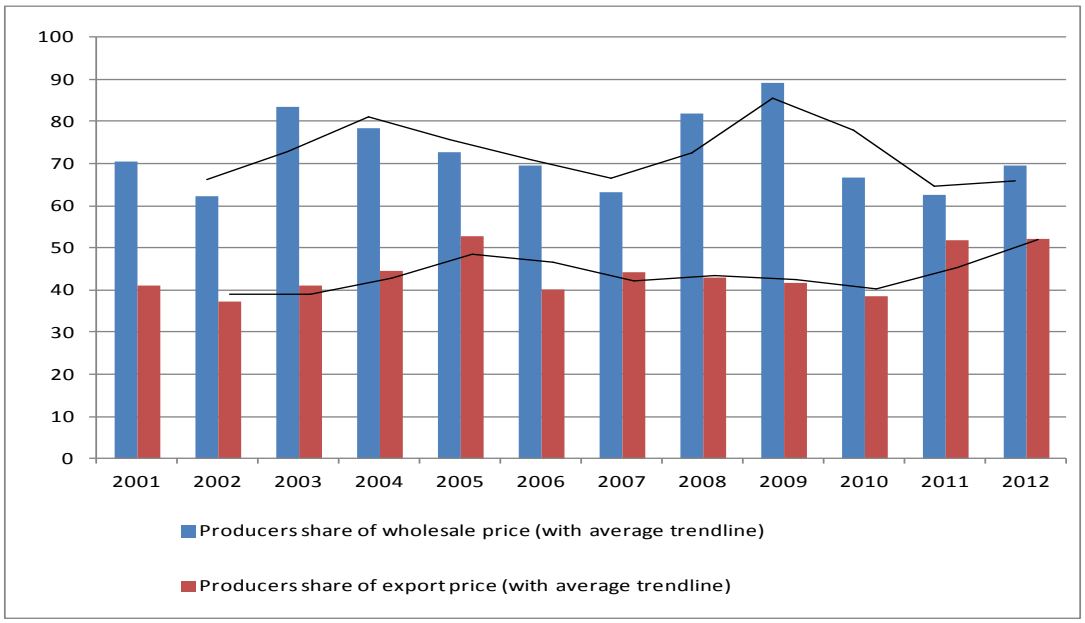
Source: CSA, EGTE and Customs Authority,[3] 2013

However, despite a higher price received by farmers, the average producers' share of FOB price for haricot beans was very low, on average 44.5 percent between 2001 and 2012. This is considerably low, even when compared with the notoriously weak producers' share of FOB price for coffee, which was about 58 percent (Worako, 2008). As stated above, bean producers are amongst the poorest in Ethiopia and their share of export price has historically been very low (Figure 10).

The main explanation behind the low share of FOB price for producers lies in high transaction costs, leading to lower prices for producers, higher prices for urban consumers and limited export competitiveness. There are thousands of farmers, traders/assemblers, retailers, wholesalers, farmers' cooperative unions, processors and exporters engaged in the haricot bean value chain. Furthermore, the weak structure of the process owes to roles that are not clearly defined along the value chain. On top of this, production comes from small-scale farms spread over remote areas. Finally, high price volatility between monthly average prices emphasizes risks related to market predictability.

[3] Three prices were obtained from different sources. Producer price from CSA, wholesale price from EGTE and export price from customs Authority

Figure 10: Producers Share of Wholesale and Export Price for Haricot Beans in Ethiopia (%), 2001-2012



Source: CSA, EGTE and ERCA,[4] 2013

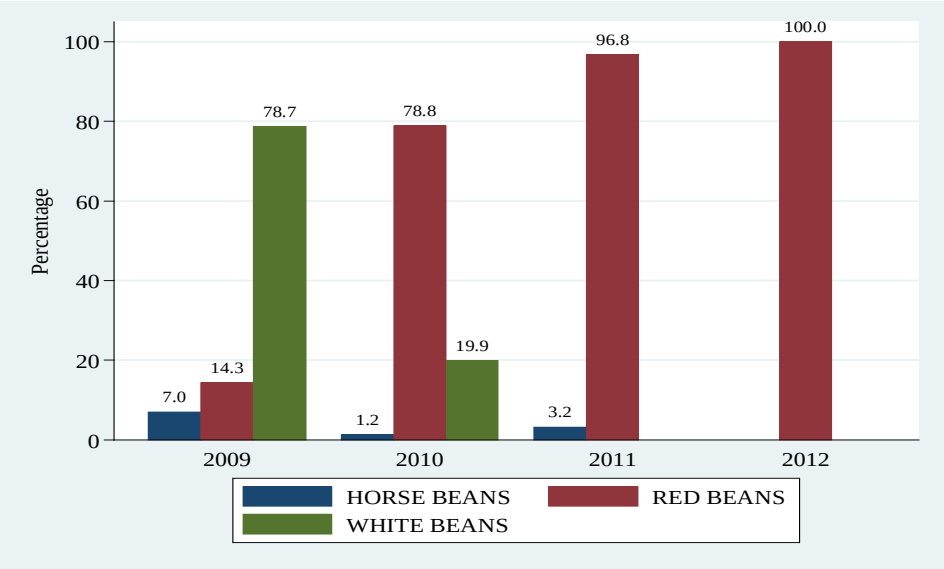
Despite being low, producers' share of export price has increased over the last three years (see Figure 10) owing to the introduction of compulsory white haricot bean trade through ECX, and a drastic improvement in price information and road infrastructure. However, their share of wholesale prices has diminished, meaning that wholesalers under the ECX system are the ones gaining increasing market power, as illustrated by the surge in wholesale prices between 2010 and 2012 (Figure 9). It has to be noted that although producers, wholesalers and exporters of white haricot beans have been enjoying higher prices since 2010, their production costs have also risen. The ECX system creates more transaction and transport costs than the traditional broker systems.

Furthermore, the ECX system has restricted the trade channels in Ethiopia by forcing all agents, including smallholders, to trade through ECX. Under the ECX system, the government also introduced floor and ceiling prices to control price volatility and general abnormal price movements. However, this approach could have a negative effect on the competiveness of export trade because of the rigidity in domestic price alignment with the international market.

As a consequence, the ECX system created a shift in domestic market signals, from white beans to red beans. Domestic traders are increasingly focusing on red beans, which incur less transaction costs than the export-prone white ones. This phenomenon is illustrated by the change in World Food Program local procurements for food aid between 2009 and 2012 (see Figure 11). White beans had the largest share of total WFP procurement as of 2009, but declined in 2010, probably because of the government policies that turned white beans into an ECX export product.

[4] Three prices were obtained from different sources. Producer price from CSA, wholesale price from EGTE and export price from customs Authority

Figure 11: Share of Red Beans as Share of Total Procurement by WFP Ethiopia



Source: WFP, Ethiopia office, 2013

To sum up, there are positive trends in terms of production, export quantity and prices over the last decade. There is a growing domestic, regional and international demand for both white and red beans. Therefore, there is potential to expand to new export markets, as richer consumer segments in industrialized countries are increasingly adopting vegetarian diets (Alemu et al., 2010). The recent policy shift towards higher levels of local procurement by WFP also means that more food aid will be sourced from East Africa, hence the demand is likely to grow. However, in order to seize such opportunities, the Ethiopian government will need to make strong efforts towards creating incentives to produce and trade haricot beans. Such efforts include ensuring that prices are fully transmitted to producers, but also technological innovation to boost production and institutional strength to coordinate all actors engaged in the sector.

DESCRIPTION OF THE VALUE CHAIN

There are various actors involved in bean production, trading/marketing and exporting, but the major ones are farmers/producers, input suppliers, traders/retailers, processors and exporters. In addition, there are enabling institutions, such as extension service providers and credit institutions and research and development centers, which play pivotal roles in the production, marketing and export system. These functions jointly improve the performance of the sector.

Smallholder farmers are the key contributors to bean production, and the sector's performance as a whole. They are widely disbursed throughout production areas, often difficult to access. Smallholders use traditional varieties of beans that reap relatively low yields. In collaboration with various NGOs, the government has recently started to supply improved seeds. The Ethiopian Institute of Agricultural Research is developing improved haricot bean varieties, mainly in the Melkassa and Hawassa Agricultural Research Center.

There is a growing awareness about the importance of using modern inputs. Farmers increasingly prefer to use improved haricot bean seeds owing to their high impact on yields. However, there are several constraints preventing farmers from using improved inputs, such as availability, affordability, quality and timeliness of supply (Ferris and Kaganzi, 2008). On the output side, price volatility,

extreme weather shocks, lack of market information, infrastructure and institutions are core areas of concern.

Extension services – Improving productivity per unit of area and labour remains one of the core challenges to develop haricot bean production. To promote knowledge of new varieties, the government implements training programs and farmer field days, while Farmers Training Centers (FTCs) are used to demonstrate efficient agricultural practices. Extension workers/development agents provide technical support on planting, harvesting, threshing, storing and marketing related issues. However, the government is currently focusing extension efforts on ''model farmers,[5]'' creating some tension between producers, as the dominant share of production still comes from many ''non-model'' smallholders.

Input suppliers – The Ministry of Agriculture supplies fertilizers and seeds through its affiliate institutions – the Ethiopian Agricultural Input Supply Enterprise (AISE) and the Ethiopian Seed Enterprise (ESE). The majority of white bean producers, who are more market-oriented, use both improved seeds and fertilizers. On the other hand, red bean producers, who produce mainly for local consumption, use minimal level of fertilizers and traditional seeds. Still, improved red bean seeds are provided to some extent by NGOs (IPMS and CARE in Sidama).

According to Rashid et al. (2008), the pulse research program in Ethiopia has released 36 improved varieties of haricot beans. If these varieties are used with the recommended input packages, they have the potential to increase bean yields two or threefold. Yet despite the release of this large number of improved pulse varieties that are adapted to a wide range of rainfall, soil and altitude regimes, the use of certified improved seeds by farmers is very low. A combination of factors explain this, including supply side constraints, such as extension, limited smallholder knowledge on production practices and benefits of diversification, and a set of market-led demand constraints, particularly price instability and weather induced risks.

Traders –Product aggregation at primary, secondary and tertiary markets is among the most important activities in the value chain. Actors are distinct, depending on the markets:

- Primary markets are rural spot markets where most of smallholder farmers sell their produce to assemblers and rural consumers. The sale of produce to primary cooperatives can also be considered a primary market.

- Secondary markets are woreda[6] level markets, where assemblers and brokers sell to other wholesalers or suppliers in the terminal or at the ECX trading floor.

- The actors in tertiary markets include urban wholesalers, grain exporters, processors, small retailers and supermarkets, located in larger cities such as Dessie, Addis Ababa and Adama (Nazreth).

Brokers - They are intermediaries between sellers and buyers, with some level of information about each actor. Since 2010 and the policy decision to make white bean trade through ECX compulsory, brokers can no longer officially connect wholesalers and exporters. However, they remain dominant

[5] . Model farmers are better performing or progressive farmers selected as exemplary for other farmers.
[6] Woredas are the small administrative districts gathered into a region in Ethiopia.

actors for red bean trade. The broker marketing system has remained the same over centuries. Wholesalers aggregate red beans from secondary (woreda) markets from major producing zones, and then inform brokers *(delala)* when they are ready to supply. The relation between brokers and wholesalers from secondary markets is based on friendship, ethnic and family ties. The wholesalers' supply is sent by truck to the tertiary market. Upon arrival of the truck, brokers draw a sample and meet with potential buyers. Interested buyers (exporters or retailers) check the sample, and once they have agreed to buy, the broker communicates with the wholesaler/supplier at the secondary market level to get his consent on the price. Once he receives the consent, the broker proceeds with the transaction and transfers the money to the wholesaler/supplier through banks, while deducting his own commission of Birr 10 per 100 kg sales (in 2012).

ECX warehouse and trading floor -The introduction of white haricot bean trade at the ECX, from October 2010 onwards, has made a significant difference in the value chain. Although this note concentrates on the 2005-2012 period, it is worth describing the new system. Through the ECX system, traders of white haricot beans buy and aggregate in the designated primary markets, and deliver to ECX warehouses at Dessie, Addis Ababa or Adama (Nazreth), depending on their proximity, for quality inspection and grading. Delivery is made directly by the trader or through his agent at the ECX quality inspection centre. Upon arrival, samples are drawn by quality inspectors who, based on visual inspection, grade the product and issue a printed copy of Goods Received Note (GRN) for wholesalers. An electronic copy of the GRN is sent to the ECX trading floor at Addis Ababa. Wholesalers then unload their product at the Regional ECX warehouse and move to the ECX trading floor at Addis Ababa, where they meet with exporters. The wholesaler participates directly if he owns a seat on the ECX trading floor, otherwise, they exchange through agents.[7] Exporters who agree to buy from suppliers are expected to sign an agreement, and then the ECX transfers money from the exporter to the wholesaler's account within two days. The exporter will then ship the beans from the ECX warehouse to their own warehouse. Brokers have no role in this new system. However, local traders officially assign agents on their behalf to execute exchanges and transfer money to their account.

Bean exporters express dissatisfaction with the new system owing to the additional transportation costs they must bear to transport the commodity from a regional ECX warehouse to their own warehouse. Before 2010, wholesalers directly supplied to exporter warehouses without additional transportation costs.

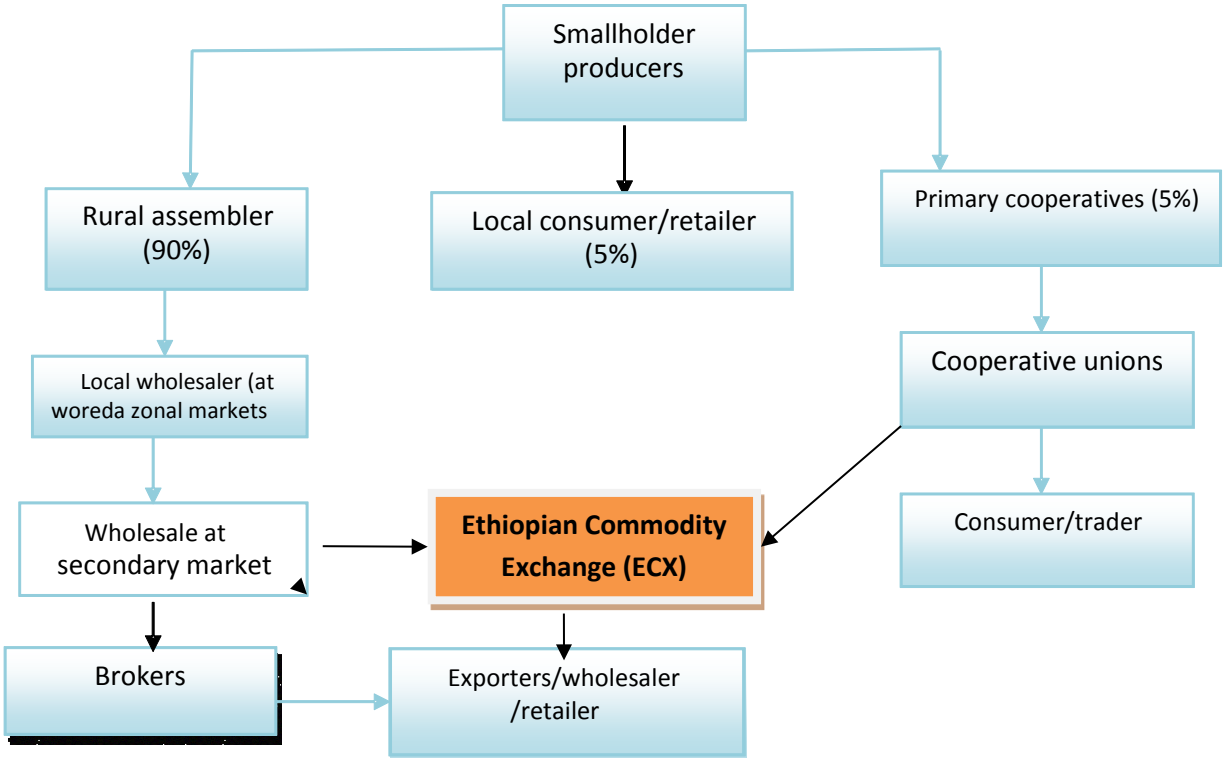
According to exporters, the quality level was also higher before because they had more room to inspect the products' consistencies from samples provided before delivery, and complain for any disparity on the spot before making any payment. This is not possible anymore under the ECX system because exporters must pick products by quality and grade in the ECX warehouses, with the name of the supplier kept anonymous. ECX agents carry out the grading and quality inspection step, and therefore exporters feel frustrated not to be involved in the process.

Almost all of the major national trading and warehouses for haricot beans are located in Adama/Nazreth, and is therefore the reference market for price information, processing and export. Almost all bean exporters (large, medium and small) are located in Nazreth, which is the major

[7] The price for ECX seats started at 50 000 birrs in 2009.

market town en-route to Djibouti. Cleaning, grading, re-bagging and transporting service providers or their branches are also located in this town.

Figure 12: Bean Trade Flow in Ethiopia, 2014



Source: Authors, based on discussion with value chain actors

Despite the already mentioned constraints in the value chain, there are strong opportunities for actors engaged in the sector. These opportunities include: conducive agro-ecological conditions, availability of improved seed varieties, increasing local and export demand, favorable policy environment (attention from regional and federal government) for haricot bean production, marketing and export support from development partners (i.e. IPMS, Research Center, MFIs, Unions, etc.), improvement of road infrastructure linking major production areas with wholesales and trade markets, and better price information owing to extension in mobile phone services.

POLICY DECISIONS AND MEASURES

The Agricultural Development Led Industrialization (ADLI) and all subsequent development policies and strategies in Ethiopia place strong emphasis on grain and cash crop production (including white haricot beans) in overall economic development. The Growth and Transformation Plan (2010-2015) also pays due attention to producing enough food for domestic supply and high value crops for export. Towards the realization of the above mentioned objectives, several policies and strategies have been designed and implemented, including the scaling up of good practices of model farmers, technology multiplication and distribution, promotion of modern input supply, improving infrastructure for agricultural marketing, increasing the dissemination of market information, expanding rural road and transport networks and the creation of product storage facilities (PASDEP, 2005; GTP, 2010).

The Ethiopian Government, as part of market institution building, established the Ethiopian Commodity Exchange (ECX), which started its trading operation in April 2008. So far, ECX functions

are limited to few commodities, mainly coffee, sesame and white haricot beans.[8] The purpose of establishing the ECX was to create an efficient, transparent and orderly marketing system that serves the needs of buyers, sellers and intermediaries, and promotes increased market participation of Ethiopian small-scale producers. The creation of a centralized trading floor for buyers and sellers was also envisaged. The new system was expected to develop a secure and reliable scheme for handling, grading, storing services, bids for commodity transactions, risk-free payments and a good delivery system to settle transactions (Alemu and Meijerink, 2010). Building trust and transparency with market information dissemination to all actors through clearly defined rules of trading, warehousing and internal dispute settlements offers new areas of services expected to be delivered by ECX (Pro. 550/2007).

Since its foundation, ECX has invested both in physical and human resources, established warehouses in the major coffee, sesame and white haricot bean marketing centres, including Awassa, Dilla, Soddo, Bonga, Jimma, Gimbi and Bedele for coffee, and Adama, Shashemene, Humera, Metema and Bure for sesame and haricot beans. These centres provide quality inspection, grading and warehouse services.

Additionally, it established about eighty price boards in the major production centres in order to disseminate daily price information categorized by quality level and product type. Text message services with minimal service charges have been set for interested price information seekers. ECX also broadcasts daily price information via radio and television.

These institutional changes have improved access to price information for market actors at all levels. Compared to five years ago, producers are more informed today, and thus more sensitive, about prices in Ethiopia. Price differences between markets for a specific commodity are getting smaller and smaller. Supply of different cash crops for local and export markets has grown considerably. There are a large number of traders engaged in aggregating, transporting, processing and exporting grains from local and cheaper places to more expensive centres, which results in more competition in the domestic market. With this background information in mind, we shall estimate how much these changes would benefit producers engaged in the production and marketing of haricot beans.

[8] Maize and wheat are also expected to be traded through ECX, though they are not effective so far.

3. METHODOLOGY

MAFAP methodology seeks to measure price incentives for producers and other marketing agents in key agricultural value chains. The analysis is based on the comparison between observed domestic prices and constructed reference prices. Reference prices are calculated from the international price of the product at the country's border, where the product enters the country (if imported) or exits the country (if exported). This price is considered the benchmark price free of influence from domestic policies and markets. MAFAP estimates two types of reference prices – observed and adjusted. *Observed reference prices* are those that producers and other marketing agents could receive if the effects of distortions from domestic market and trade policies, as well as overall market performance, were removed. *Adjusted reference prices* are the same as observed reference prices, but also exclude the effects of any additional distortions from domestic exchange rate policies, structural inefficiencies in the commodity's value chain, and imperfect functioning and non-competitive pricing in international markets.

MAFAP's price incentives analysis is based on the law of one price, which is the economic theory that there is only one prevailing price for each product in a perfectly competitive market. This law only applies in the case of homogeneous goods, if information is correct and free, and if transaction costs are zero. Thus, this analysis was conducted for goods that are either perfectly homogeneous or perfect substitutes in the local market in terms of quality, or, failing that, are simply comparable goods. Indicators calculated from reference and domestic prices will, therefore, reveal whether domestic prices represent support (incentives) or a tax (disincentives) to various agents in the value chain.

Domestic prices are compared to reference prices at two specific locations along commodity value chains – the farm gate (usually the main production area for the product) and the point of competition (usually the main wholesale market where the domestic product competes with the internationally traded product). The approach for comparing prices at each location is summarized below, using an imported commodity as an example. In this situation, the country is importing a commodity that arrives in the port at the benchmark price (usually the unit value CIF price at the port of entry). In the domestic market, we observe the price of the same commodity at the point of competition, which is in this case the wholesale market, and at the farm gate. We also have information on observed access costs, which are all the costs associated with bringing the commodity to market, such as costs for processing, storage, handling, transport and the different margins applied by marketing agents in the value chain. These include access costs between the border and wholesale, as well as between the farm gate and wholesale.

The benchmark price is made comparable to the domestic price at wholesale by adding the access costs between the border and wholesale, resulting in the observed reference price at wholesale. This takes into account all the costs incurred by importers and other agents to bring the commodity to market, which in effect, raises the price of the commodity. The reference price at wholesale is further made comparable to the domestic price at the farm gate by deducting the access costs between the farm gate and wholesale, resulting in the observed reference price at farm gate. This takes into account all the costs incurred by farmers and other agents to bring the commodity from the farm to the wholesale market. Mathematically, the equations for calculating the observed reference prices at wholesale(RP_{owh}) and farm gate $\left(RP_{ofg}\right)$for an imported commodity are as follows:

$$RP_{owh} = P_b + AC_{owh}$$

$$RP_{ofg} = RP_{owh} - AC_{ofg}$$

whereAC_{owh} are the observed access costs from the border to wholesale, including handling costs at the border, transport costs from the border to the wholesale market, profit margins and all observed taxes and levies, except tariffs, and P_b is the benchmark price. AC_{ofg} are the observed access costs from the farm gate to wholesale, including handling costs at the farm, transport costs from farm to wholesale market, processing, profit margins and all observed taxes and levies.

The same steps described above can be taken a second time using benchmark prices and access costs that have been adjusted to eliminate market distortions due to exchange rate misalignments, structural inefficiencies in the commodity's value chain[9] and imperfect functioning and non-competitive pricing in international markets, where possible and relevant. The adjusted benchmark prices and access costs are then used to generate a second set of *adjusted* reference prices, in addition to the first set of *observed* reference prices calculated.

For exported commodities, a slightly different approach is used. In this case, the border is generally considered the point of competition (wholesale), and the unit value FOB price for the commodity is normally taken as the benchmark price. Furthermore, observed and adjusted reference prices at wholesale are obtained by subtracting, rather than adding, the access costs between the border and wholesale. Mathematically, the equations for calculating the observed reference prices at wholesale(RP_{owh}) and farm gate $\left(RP_{ofg}\right)$for an exported commodity are as follows:

$$RP_{owh} = P_b - AC_{owh}$$

$$RP_{ofg} = RP_{owh} - AC_{ofg}$$

After observed and adjusted reference prices are calculated for the commodity, they are subtracted from the domestic prices at each point in the value chain to obtain the observed and adjusted price gaps at wholesale and farm gate. *Observed price gaps* capture the effect of distortions from trade and market policies directly influencing the price of the commodity in domestic markets (e.g. price ceilings and tariffs), as well as overall market performance. *Adjusted price gaps* capture the same as the observed, in addition to the effect of any distortions from domestic exchange rate policies, structural inefficiencies in the commodity's value chain, and imperfect functioning and non-competitive pricing in international markets. Mathematically, the equations for calculating the observed price gaps at wholesale(PG_{owh}) and farm gate $\left(PG_{ofg}\right)$are as follows:

$$PG_{owh} = P_{wh} - RP_{owh}$$

$$PG_{ofg} = P_{fg} - RP_{ofg}$$

where P_{fg} is the domestic price at farm gate, RP_{ofg} is the observed reference price at farm gate, P_{wh} is the domestic price at wholesale, and RP_{owh} is the observed reference price at wholesale.

[9] Structural inefficiencies in commodity value chains may include government taxes and fees (excluding fees for services), high transportation and processing costs, high profit margins captured by various marketing agents, bribes and other non-tariff barriers.

A positive price gap, resulting when the domestic price exceeds the reference price, means that the policy environment and market functioning as a whole generate incentives (support) to producers or wholesalers. For an imported commodity this could be due to distortions such as the existence of an import tariff. On the other hand, if the reference price exceeds the domestic price, resulting in a negative price gap, this means that the policy environment and market functioning as a whole generate disincentives (taxes) to producers or wholesalers. For an imported commodity this could be due to distortions such as a price ceiling established by the government to keep domestic prices low.

In general, price gaps provide an absolute measure of the market price incentives (or disincentives) that producers and wholesalers face. Therefore, price gaps at wholesale and farm gate are divided by their corresponding reference price and expressed as a ratio, referred to as the ***Nominal Rate of Protection (NRP)***, which can be compared between years, commodities, and countries.

The *Observed Nominal Rates of Protection* at the farm gate (NRP_{ofg}) and wholesale (NRP_{owh}) are defined by the following equations:

$$NRP_{ofg} = \frac{PG_{ofg}}{RP_{ofg}} \; ; NRP_{owh} = \frac{PG_{owh}}{RP_{owh}}$$

Where $PG_{ofg}$is the observed price gap at farm gate, $RP_{ofg}$is the observed reference price at the farm gate,$PG_{owh}$is the observed price gap at wholesale and RP_{owh} is the observed reference price at wholesale.

Similarly, the *Adjusted Nominal Rates of Protection* at the farm gate (NRP_{afg}) and wholesale (NRP_{awh}) are defined by the following equations:

$$NRP_{afg} = \frac{PG_{afg}}{RP_{afg}} \; ; NRP_{awh} = \frac{PG_{awh}}{RP_{awh}}$$

Where $PG_{afg}$is the adjusted price gap at farm gate, $RP_{afg}$is the adjusted reference price at the farm gate,$PG_{awh}$is the adjusted price gap at wholesale and RP_{awh} is the adjusted reference price at wholesale.

If public expenditure allocated to the commodity is added to the price gap at farm gate when calculating the ratios, the ***Nominal Rate of Assistance (NRA)*** is generated. This indicator summarizes the incentives (or disincentives) due to policies, market performance and public expenditure.[10] Mathematically, the Nominal Rate of Assistance is defined by the following equation:

$$NRA = \frac{PG_{afg} + PE_{csp}}{RF_{afg}}$$

Where PE_{csp} is commodity-specific public expenditure that has been identified and measured as monetary units per tonne.

[10] The NRA indicator was not calculated for any of the commodities analyzed because of insufficient data on public expenditure. However, it will be developed in the forthcoming reports, as the public expenditure analysis is improved and better data are made available.

Finally, MAFAP methodology estimates the ***Market Development Gap (MDG),*** which is the portion of the price gap that can be attributed to "excessive" or inefficient access costs within a given value chain, exchange rate misalignments, and imperfect functioning of international markets. "Excessive" access costs may result from factors such as poor infrastructure, high processing costs due to obsolete technology, government taxes and fees (excluding fees for services), high profit margins captured by various marketing agents, bribes and other non-tariff barriers. Therefore, the total MDG at farm gate is comprised of three components – gaps due to "excessive" access costs, the exchange rate policy gap and the international market gap. When added together, these components are equivalent to the difference between the observed and adjusted price gaps at farm gate.

Similar to the price gaps calculated, the MDG is an absolute measure, which is also expressed as a ratio to allow for comparison between years, commodities, and countries. This relative indicator of the total MDG affecting farmers is derived by calculating the ratio between the total MDG at farm gate and the adjusted reference price at farm gate as follows:

$$MDG_{fg} = \frac{(ACG_{wh}+ACG_{fg}+EXPG+IMG)}{RP_{afg}}$$

Where ACG_{wh} is the access cost gap at wholesale defined as the difference between observed and adjusted access costs at wholesale, ACG_{fg} is the access cost gap at farm gate defined as the difference between observed and adjusted access costs at the farm gate, ERPG is the exchange rate policy gap, and IMG is the international market gap.

A more detailed description of the methodology applied in this analysis is available on MAFAP's website at**www.fao.org/in-action/mafap**.

4. DATA REQUIREMENTS AND CALCULATION OF INDICATORS

To calculate MAFAP's price incentive indicators, several types of data are needed. This section presents the data that was obtained and methodological decisions that were taken in this analysis.

TRADE STATUS OF THE PRODUCT

Haricot beans are among the major export commodities of Ethiopia and hold a substantial share of overall pulse exports in both value and volume. The average share of Haricot beans for 2005-2012 in the total pulses was 42 and 47 percent of value and volume, respectively (Table 2).

Table 2: Haricot Bean Exports as Share of Pulses in Ethiopia, 2005-2012, in %,

Share of haricot bean from pulses	2005	2006	2007	2008	2009	2010	2011	2012	Average
% share in value	59	40	42	38	38	34	45	45	42
% share in quantity	74	45	39	39	41	36	51	49	47

Source: Central Statistical Agency, 2010

As said above (see MARKETING AND TRADE section), haricot bean trade data disaggregated by type has not been used in this analysis because red and white beans are reported together by Ethiopia Revenue and Customs Authority (ERCA). Therefore, we used the data on *Dried Beans, shelled* (HS code 07133100). Since ERCA does not provide import data on the haricot bean, import data from FAOSTAT and export data from ERCA have been used. Overall, imported quantities of dry beans are negligible, which suggests that white haricot bean imports are almost non-existent in the country.

Table 3: Dry Beans Trade Status in Ethiopia, 2005-2012, in %

X-M (MT)	2005	2006	2007	2008	2009	2010	2011	2012	Average
Dry beans imports	471	4987	8	1271	3455	6349	501	7	2131
Dry beans exports	11,658	13,191	71,194	74,389	77,682	80,703	105,796	143,010	72,203
Trade status	x	X	x	x	x	x	x	x	Net exporter

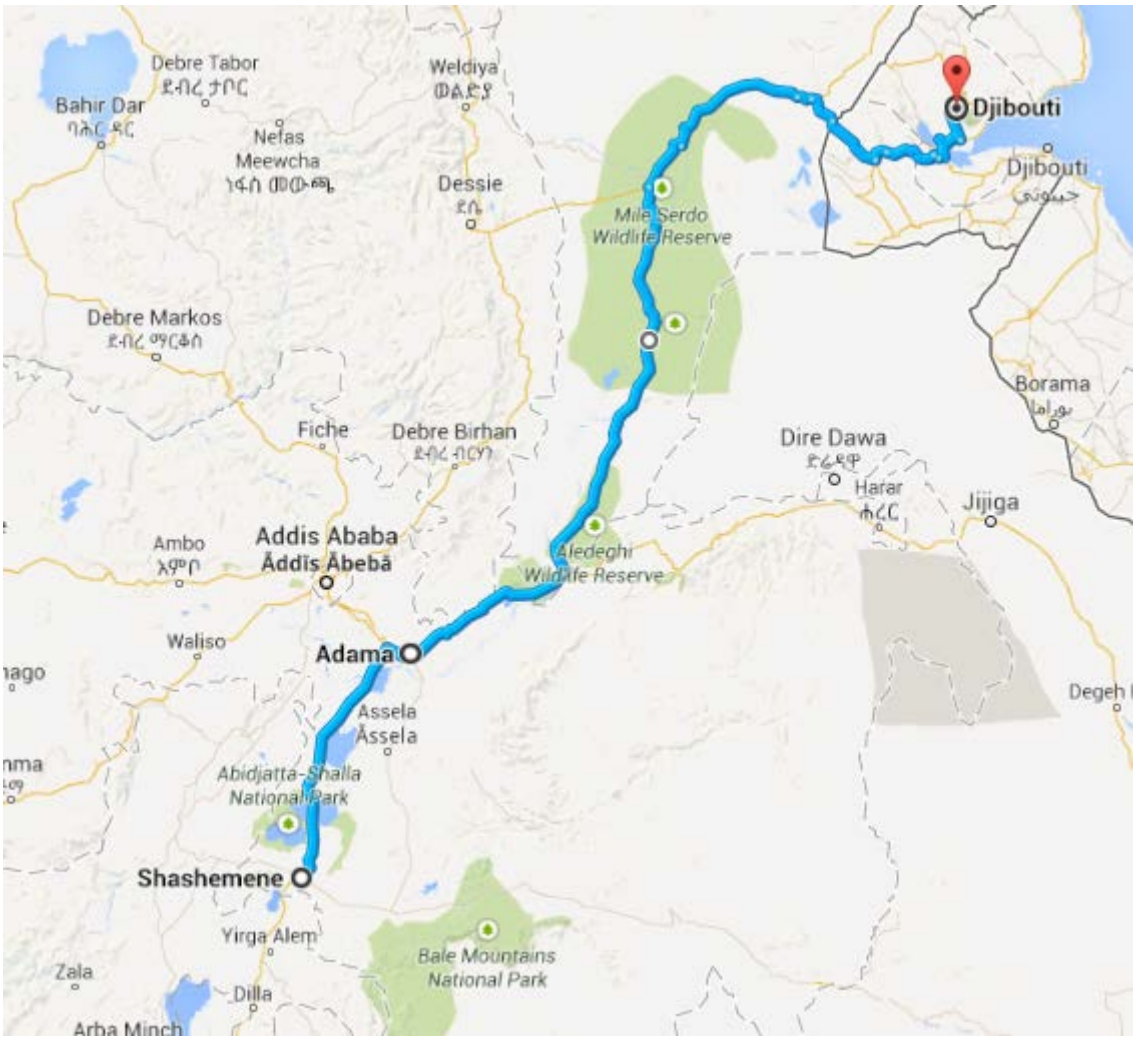
Source: ERCA for exports, and FAOSTAT for imports, 2012

MARKET PATHWAY ANALYSED

The type of haricot beans that were analysed was the white haricot bean, although the data available refers to an unspecified type.

The main production areas for pulse production are the lowlands and the Rift Valley. The Oromia Region is the main production area, accounting for 48 percent of national production, followed by SNNPR, accounting for 22 percent (as described in the PRODUCTION section). The Shashemene zone, a regional hub for bean trade located in the Oromia Region, was thus considered a representative production area for the MAFAP analysis (see Figure 13). Shashemene lies at the junction between the two regions of Oromia and SNNPR.

Figure 13: Market Pathway Analyzed for Haricot Beans in Ethiopia, from Farm Gate (Shashemene) to Wholesale (Adama) and to the Exit Point (Djibouti), 2005 - 2012



Source: Authors from Google maps, 2014

Haricot bean traders (licensed or not) buy from farmers and deliver to primary market centers, which then deliver to district level wholesalers in Nazreth where the beans are finally sold to exporters (see MARKETING AND TRADE section and Figure 13). Since 2010, after the establishment of the ECX, exporters have to buy their beans from the ECX trading floor, and then transport the pulses from ECX regional warehouses (in Nazreth) to their own warehouse. Therefore, the wholesale market chosen for the study is Nazreth, which is the traditional hub for haricot beans produced in the country and then traded abroad.

The final stage for exporters is to reprocess the beans to reach export standards, get quality certification and customs requirements to finally ship them directly to Djibouti toward the international market.

BENCHMARK PRICES

Observed

A benchmark price is established as a basis to calculate a reference parity price to determine whether Ethiopia's haricot bean farmers receive market incentives or disincentives. Since Ethiopia is considered to be a major exporter of haricot beans, a unit value serving as the FOB price is calculated

from the Ethiopian Revenue and Customs Authority (ERCA) data. Therefore, FOB price is the average price per tonne of all varieties of raw unprocessed haricot beans (white and red) exported from Ethiopia via the port of Djibouti (Table 4).

Table 4: Unit Value FOB/benchmark Prices of Raw Haricot Beans, 2005-2012, in USD/tonne

	2005	2006	2007	2008	2009	2010	2011	2012
Quantity (tonne)	66 923	52 431	71194	74 800	77 742	80 703	105,796	143,010
Value (1000 USD)	19164	21142	39099	50149	41757	48492	63,190	95,305
Unit Value (USD/tonne)	286	403	549	670	537	600	597	666
Exchange Rate	8.67	8.74	9.21	9.8	12.1	12.89	16.9	17.6
Unit Value (ETB/tonne)	2480	3522	5056	6566	6498	7747	10089	11721

Source: National Bank of Ethiopia and ERCA, 2013

Adjusted

No adjustments to the benchmark prices were made.

DOMESTIC PRICES

Observed prices at point of competition

The MAFAP analysis uses two prices: producer and wholesale prices. For the reader's convenience, prices are presented both in Ethiopian Birr and US dollars per tonne, but the analysis uses prices in the domestic currency.

The government has enforced compulsory trade through the ECX for white haricot beans since October 2010, covering only the last two years of the study period. Therefore, the study is based on wholesale prices of red and white beans in Nazareth from the Ethiopian Grain and Trade Enterprise (EGTE) for the period 2005-2010. Wholesale prices in 2011 and 2012 were collected through ECX.

The prices have steadily increased over the study period, with the exception of a slight decrease in 2009 and 2012 by 5 percent, whereas wholesale prices surged and jumped by 78 percent in 2007, and by 43 and 45 percent in 2010 and 2011. This shows a rather good price transmission along the haricot bean value chain and over the period. Closely following the food crisis, domestic prices dramatically increased. In the years 2010 and 2011, it is probable that the price increase is correlated with the introduction of the trading floor in ECX. First of all, this could have raised the marketing costs as a first market reaction (which since then, has stabilized) and second, enhanced the link between domestic and international markets (likely owing to a better information system for domestic agents).

Table 5: Average Wholesale Prices, 2005-2012 (in Birr/tonne and USD/tonne)

	Unit	2005	2006	2007	2008	2009	2010	2011	2012
Average wholesale price in ETB	ETB/tonne	1830	2130	3811	4437	4158	5984	8730	8290
Official nominal exchange rate	ETB/USD	8.67	8.7	9.0	9.6	11.9	14.7	16.9	17.6
Average wholesale price in USD	USD/tonne	211	245	423	462	349	407	517	471

Source: EGTE, ECX and NBE, 2013

Observed prices at farm gate

Farm gate (producer) prices were calculated for Shashemene as an average price of Oromia and SNNPR regional states for white and red haricot beans, using monthly average producer price statistics obtained from the Central Statistical Agency (CSA).

Like the wholesale prices, producer prices have increased over the period, except in 2009. The Farm gate prices followed the trend of the prices at the point of competition, but with a short delay most of the time. Compared to the surge of wholesale prices in 2007 and 2010, the producers only benefited from a relatively small price increase of 47 percent in 2007 and 19 percent in 2010. However, in both years after the price surges (2008 and 2011), farm gate prices increased substantially with a much higher ratio than the wholesale's. This delay is most likely because of a lack of an efficient market information system that allows the wholesalers to benefit from higher international prices without passing it on to the farm gate level. As we consider only yearly data, the delay seems consistent but could be refined with more detailed data (such as monthly prices and access costs).

Table 6: Farm Gate Price[11] at Shashemene (Birr/tonne and USD/tonne)

	Unit	2005	2006	2007	2008	2009	2010	2011	2012
Average farm gate price in ETB	ETB/tonne	1287	1510	2228	3593	3307	3949	6,630	6,796
Official nominal exchange rate	ETB/USD	8.67	8.7	9	9.6	11.9	14.7	16.9	17.6
Average farm gate price in USD	USD/tonne	148	174	248	374	278	269	392	386

Source: CSA, NBE, 2013

EXCHANGE RATES

Observed

The observed exchange rate varied little between 2005 and 2008. It increased from an average of Birr 8.67 per USD in 2005 to 9.00 in 2008. The rate increased to Birr 11.9 in 2009 and Birr 14.7 in 2010. As of September 2010, it was at Birr 16.3 per USD. This continued devaluation has a direct bearing on the government's intention to promote exports, and hence reduce foreign exchange shortage and encourage foreign direct investment.

Despite this devaluation, it is believed that the domestic currency (Birr) was overvalued, especially in 2008, 2009 and 2010. The extent of overvaluation was estimated at 40 percent during this period. A study by Dorosh et al. (2009) suggests that the real exchange rate appreciated by 9.7, 12.8, 14.9 and 33.8 in July 2005, July 2006, July 2007, July 2008 and by 26.3 percent in June 2009, respectively. To curb an excessive drawdown, access to foreign currencies for imports was restricted in March 2008. Still, the high rates of domestic inflation in Ethiopia relative to the country's major trading partners exacerbated the upward trend of the domestic prices.

As stated by Demeke (2012), the local currency was, on average, 20 percent overvalued during the period 2005-2010. An adjusted exchange rate has been accordingly calculated. The adjustment factor approximates the depreciation of the local currency, had a more liberal policy been pursued. The

[11] Shashemene is a major cash and food crop marketing center located in between SNNPR and Oromia region. It served as a reference market for price information.

adjusted exchange rate has thus increased from Birr 10.40 in 2005 per US$ 1 to Birr 17.70 in 2010. For 2011 and 2012, the adjusted exchange rate was calculated on the basis of information obtained from the IMF Consultative Group report on the status of Ethiopia's exchange rate (2013). According to this group, the Ethiopian Birr was estimated to be overvalued by 10-14 percent in 2012, thus a 12 percent overvaluation (average rate) was considered to calculate the adjusted exchange rate for year 2012. From the same source, the exchange rate for 2011 was estimated to be overvalued by 13.26 percent. The adjusted exchange rate thus increased from Birr 10.40 in 2005 per US$1 to Birr 19.70 in 2012 (Table 4).

Table 7: Observed and Adjusted Exchange Rate Birr to US$ (Annual Average)

	2005	2006	2007	2008	2009	2010	2011	2012
Observed (Birr per US$1)	8.67	8.70	9.00	9.60	11.90	14.7	16.9	17.6
Adjustment Factor	1.2	1.2	1.2	1.2	1.2	1.2	2.2	2.1
Adjusted (Birr per US$1)	10.40	10.49	10.80	11.50	14.30	17.7	19.1	19.7

Source: National Bank of Ethiopia, IMF and Demeke, 2012

ACCESS COSTS

Observed

Point of competition to border

The first segment used for the calculation of access costs is between the wholesale market of Nazreth and the port of Djibouti. Exporters purchase haricot beans from wholesale markets (Nazreth or Adama) through brokers,[12] re-clean them either through machine cleaning or hand-picking up to export quality standards, re-bag them in 50 kg bags, get clearances from the Ministry of Agriculture on phyto-sanitary and Customs permits, and then ship them from the port of Djibouti (since Ethiopia does not have access to the sea). Major exporter marketing costs include loading/unloading, cleaning, costs of impurity losses, bagging and packing, fumigation, capital cost, transport and overhead costs. Data for these costs have been collected through group discussions with traders and brokers in the Nazreth and Shashemene areas, and are thus considered as observed costs.

[12] About 97% of transactions between local suppliers and exporters was carried out through brokers before the introduction of ECX.

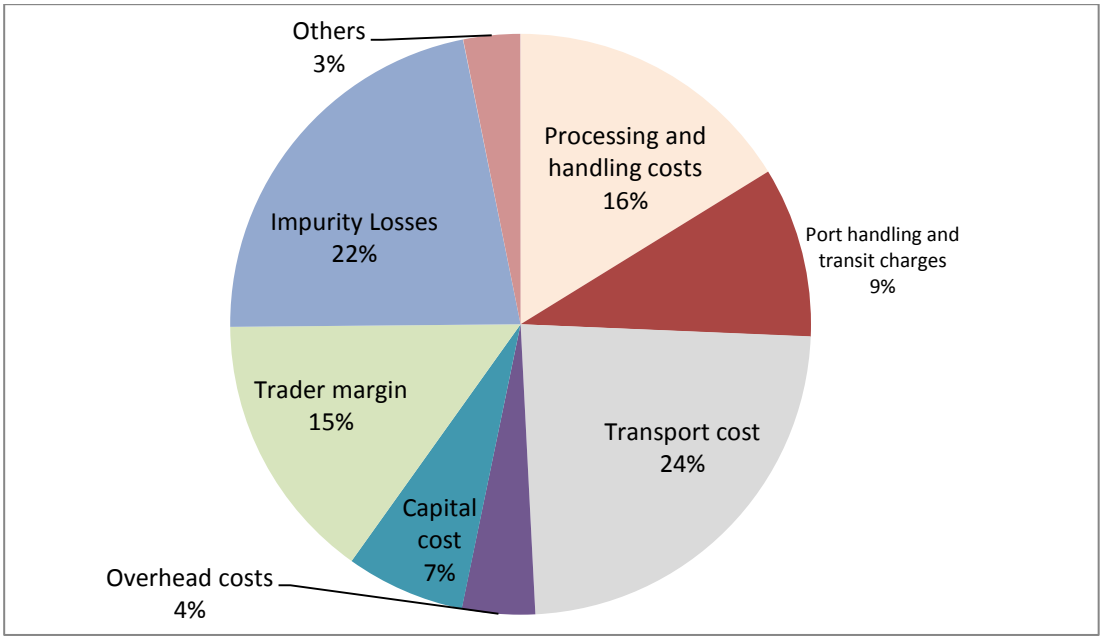
Table 8: Observed Access Costs from Wholesale Market (Nazreth) to Border (Djibouti)

Data	Units	2005	2006	2007	2008	2009	2010	2011	2012
Processing and handling costs									
Loading unloading	ETB/Tonne	16	18	25	40	67	73	80	120
Seed cleaning	ETB/Tonne	100	140	150	150	180	182	242	286
Storage costs	ETB/Tonne	10	11	13	19	21	22	29	35
Packing	ETB/Tonne	13	15	15	20	20	20	27	31
Cost of bags	ETB/Tonne	70	75	80	100	120	140	186	220
Fumigation at exporter warehouse	ETB/Tonne	2	2	2	5	5	8	10	12
Certification	ETB/Tonne	4	4	4	4	5	7	7	7
Phyto-sanitary fee	ETB/Tonne	5	5	5	5	5	5	5	7
Impurity Losses (10 % of FOB)	ETB/Tonne	198	280	395	515	511	600	890	1100
Port handling and transit charges	ETB/Tonne	173	174	179	192	233	282	350	350
Tax and Admin cost									
Insurance	ETB/Tonne	18	18	21	31	34	36	48	57
Overhead costs (2% wholesale price)	ETB/Tonne	18	21	38	44	42	60	87	83
Capital cost (interest on capital)	ETB/Tonne	61	73	115	134	131	179	256	252
Transport cost									
Transport cost form Nazreth to Djibouti	ETB/Tonne	300	450	460	520	560	650	765	890
Other costs									
Port Postage, telephone, fax and interest	ETB/Tonne	8	8	9	13	14	16	21	24
Estimated margins for traders, observed (5% total costs)	ETB/Tonne	50	65	76	90	97	114	150	173
Total Observed Costs from PoC to Border	ETB/Tonne	1046	1359	1587	1880	2044	2391	3149	3642

Source: Calculation by authors

Over the 2005-2012 period, processing and handling costs represented half of total access costs between the wholesale market in Nazreth and the border in Djibouti (see Figure 14). Transport costs, impurity losses, processing and handling, and exporters' margin represent four main components of access costs, accounting for 25, 22, 16 and 15 percent, respectively. Transport costs remained major costs among the others, mainly owing to a lack of bulk transportation facilities. An impurity loss is a loss that the exporter incurs because of the poor quality of beans supplied. When exporters clean to the level of export standards, it is assumed that 10-15 percent are lost due to impurity. Processing and handling costs (loading/unloading, cleaning, storage, cost of bags, packing, etc.) account for a substantial share of the cost component. It is also interesting to note that the share of trader margins in total access costs is almost on par with handling and processing costs.

Figure 14: Composition of Access Costs from Border in Djibouti to Wholesale in Nazreth, 2005-2012 average



Source: Authors' computation

Farm gate to point of competition

The second segment used for the analysis of access costs is between the wholesale market of Nazreth and the producing area of Shashemene. The area around Shashemene is considered to be a representative production area, the town being part of the Oromia region, where 53 percent of Ethiopian production is located. Marketing costs from Shashemene to Nazreth were obtained through discussions with traders and brokers at the Shashemene and Nazreth wholesale markets. The major access costs of traders include loading, transport, unloading, cost of bags, storage, losses, brokers' fees for selling beans at Nazreth and overhead costs (Table 9). Their margins are also counted in the access costs.

Table 9: Observed Access Costs from Farm Gate (Shashemene area) to Wholesale Market (Nazreth)

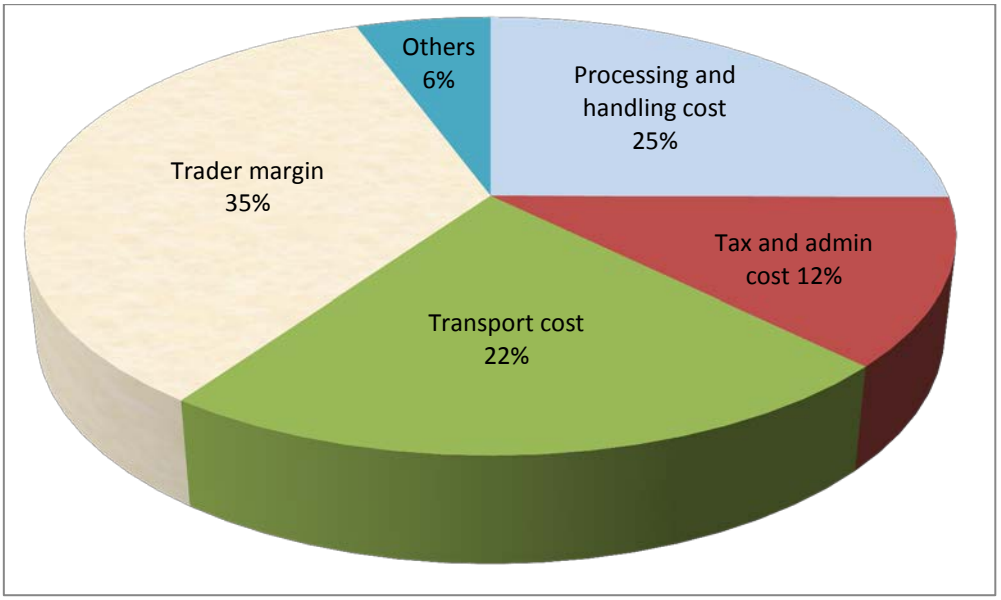
	2005	2006	2007	2008	2009	2010	2011	2012
Processing and handling costs								
Loading and unloading	70	70	80	90	100	120	130	130
Losses (1% of wholesale price)	18	21	38	44	42	60	80	100
Fumigation	20	20	20	20	20	20	30	30
Bag cost, per 10 bags of 100 kg	30	30	35	40	50	75	75	89
Broker's fees	25	40	60	60	80	100	130	150
Tax and Admin cost							**0**	**0**
Turn Over Tax 2% over total sell	37	43	76	89	83	120	160	190
Municipality fee at suppliers market	20	30	30	30	40	40	53	63
Fees at check points	0	0	0	15	15	15	20	25
Transport costs								
Transport costs from primary market to warehouse	25	25	30	30	44	50	67	78
Transport cost from warehouse wholesale market (Adama/Nazreth)	100	140	170	200	240	250	333	392
Other								
Overhead costs (2% producer price)	26	30	45	72	66	79	105	125
Trader margins (10% total costs)	166	196	281	428	409	488	649	765
Total Observed Access Cost from PoC to FG	**536**	**645**	**865**	**1118**	**1189**	**1416**	**1831**	**2138**

Source: Calculation by authors

Over the 2005-2012 period, the bulk of farm gate to wholesale access costs were margins at 35 percent, processing/handling costs at 25 percent and transport costs at 22 percent (see Figure 15). Transport costs increased by 140 percent between 2005 and 2012, from 125 ETB/tonne to 470 ETB/tonne. The main factors behind increasing transport costs include high fuel cost, high rate of general inflation and lack of competition in the transport service delivery. High costs for transport are owe also to the use of smaller trucks (often less than 10 tons capacity) for transporting goods from regional centers to the wholesale market.

Margins, overhead costs, taxes and administrative costs, however, have witnessed an even greater increase: 194 percent, 207 percent and 209 percent, respectively.

Figure 15: Composition of Access Costs from Farm Gate in Shashemene Area to Wholesale in Nazreth, 2005-2012 average

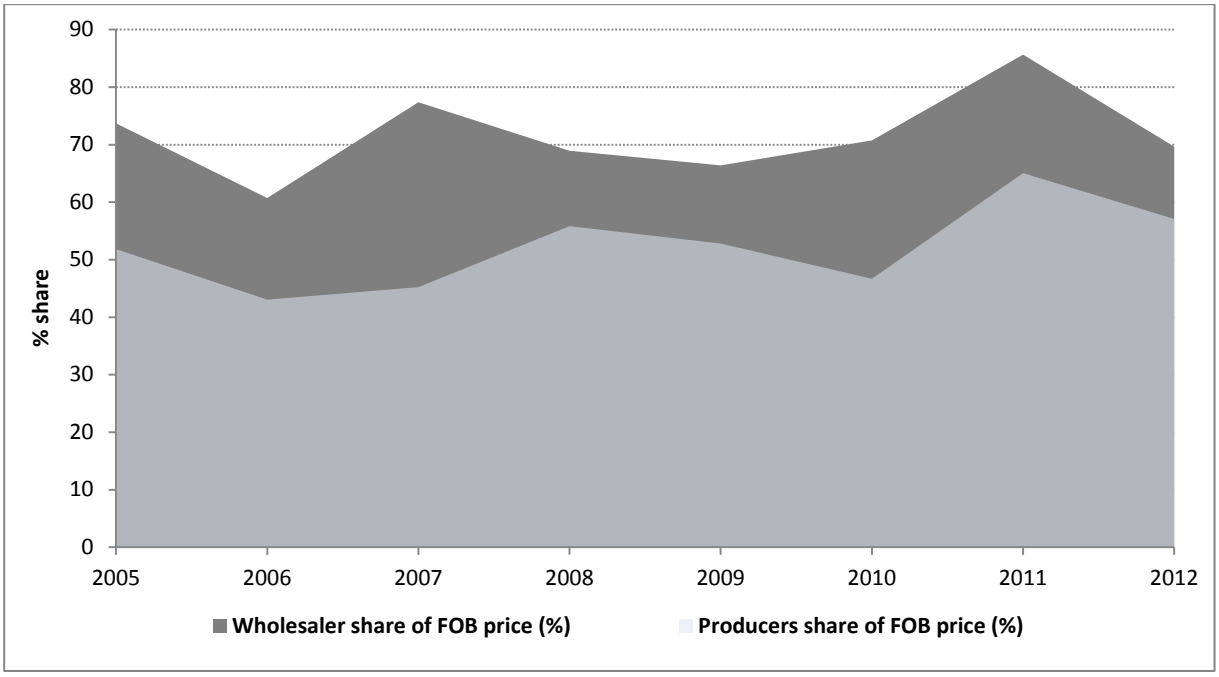


Source: Authors

Trade margins were obtained through group discussions with the Nazreth and Shashemene traders. They were around 442 ETB/tonne over the period, which is about 35 percent of the access costs, and thus they are higher than transport costs in nominal terms. Traders' margins diminished in 2009, possibly owing to competition stemming from a higher number of traders and better marketing information. A recent study by Minte et al. (2011) also found that traders' net margins declined significantly in 2010 compared to 1996 because of an improvement in road networks and market information, which gave more market power to producers. Introduction of mobile phone technology has been the main reason for improvement in the price information transmission. Nevertheless, producers still earn less than half of the haricot bean's reference price. However, MAFAP analysis suggests that despite the bump in 2009, traders' margins rose up over the 2010-2012 period, mainly because of the international high price environment.

Overall, the wholesalers' share of FOB price remained stable during the 2005-2012 period, but went up from 2007 to 2011, while that of the producers' share fell below 50 percent in 2006, 2007 and 2010, improving in 2011 and dropping later in 2012. The average share of wholesalers and producers over 2005-2012 was 72 and 52 percent, respectively. This may be the consequence of a lack of bargaining power from producers owing to weak marketing institution arrangements at the producer level.

Figure 16: Share of Djibouti FOB Price for Wholesalers (Nazreth) and Producers (Shashemene)



Source: Authors

Adjusted

Point of competition to border

From the wholesale market to the point of competition, observed costs are adjusted by reducing costs related to system inefficiencies, including impurity losses (estimated at 8 percent of FOB price), transport costs (30 percent lower), profit margins (2.5 percent lower), traders' margins (as 2.5 percent of total costs) and processing and handling cost (30 percent lower). On average, observed costs were higher by 34 percent over the 2005-2012 period.

Table 10: Calculation of Adjusted Access Costs for the Wholesale to Border Segment for Haricot Beans in Ethiopia, 2005-2012, in ETB/tonne

Adjusted access costs from Border to PoC	2005	2006	2007	2008	2009	2010	2011	2012
Total Observed Access Costs from PoC to Border	**1160**	**1494**	**1826**	**2161**	**2308**	**2767**	**3833**	**4604**
Adjusted impurity Losses (5 % of FOB)	99	140	198	257	256	300	445	550
Adjusted port handling (30% lower)	52	52	54	58	70	84	105	105
Adjusted transport cost (40% low)	120	180	184	208	224	260	305	356
Adjusted capital cost (6% interest rate)	24	29	46	53	52	71	101	99
Estimated margins for traders, adjusted (2.5% total costs)	25	32	38	45	49	57	75	87
Adjusted Access Costs from PoC to Border	321	434	519	621	650	773	1031	1197
Total adjusted costs	**726**	**925**	**1068**	**1260**	**1394**	**1619**	**2117**	**2445**

Source: Authors

Farm gate to point of competition

From wholesale market to farm gate, observed costs are adjusted by discarding the turnover tax, brokers' fee, municipality fee, checkpoint fee, weight loss, and by reducing the trader's profit margin (5 percent lower). Weight losses are also removed (1 percent of wholesale price). On average, observed costs are 40 percent higher over the period compared to adjusted costs, implying that systemic inefficiencies account for a considerable share of access costs.

Table 11: Calculation of Adjusted Access Costs for the Wholesale to Farm Gate Segment for Haricot Beans in Ethiopia, 2005-2012, in ETB/tonne

	2005	2006	2007	2008	2009	2010	2011	2012
Observed access costs	**536**	**645**	**865**	**1118**	**1189**	**1416**	**1831**	**2138**
Turn over tax	37	43	76	89	83	120	160	190
Broker's fee	25	40	60	60	80	100	130	150
Municipality fee	20	30	30	30	40	40	53	63
Check point fee	0	0	0	15	15	15	20	25
Weight loss (1 percent wholesale price)	18	21	38	44	42	60	80	100
Traders margin (5% of total cost)	83	98	141	214	204	244	324	383
Difference b/n observed and adjusted	183	232	345	452	464	578	768	911
Adjusted access costs	**354**	**413**	**520**	**666**	**724**	**838**	**1063**	**1227**

Source: Authors

BUDGET AND OTHER TRANSFERS

No budgetary transfer has been taken into account in the analysis.

QUALITY AND QUANTITY ADJUSTMENTS

No quantity or quality adjustments were used since impurity losses are taken into account in the adjusted access costs calculation.

DATA OVERVIEW

Following the discussions above, the table below summarizes the main data sources used and methodological decisions taken for the analysis.

Table 12: Sources of Data Used in the Calculations of Indicators

		Description	
Concept		***Observed***	***Adjusted***
Benchmark price		Unit value (FOB) computed from Ethiopian Customs Authority data on volume and value of unprocessed haricot beans exported through the port of Djibouti.	Not relevant
Domestic price at point of competition		Average wholesale prices for white and red haricot beans, together in the trade hub of Nazreth, have been obtained from Ethiopian Grain Trade Enterprise (EGTE) for the entire study period.	Non relevant
Domestic price at farm gate		Calculated for Shashemene area as an average price of Oromia and SNNPR regional states for white and red haricot bean, using monthly average producer price statistics obtained from the Central Statistical Agency (CSA).	Non relevant
Exchange rate		Birr-US dollar exchange rate collected from National Bank of Ethiopia	1.2 adjustment factor to take into account estimated overvaluation of birr, computed from Demeke's work (2012).
Access cost from border to point of competition		Processing and handling, tax and administrative costs, transport costs, overhead costs between Nazreth and Shashemene collected from local counterparts and CSA. Trader margins estimated at 5 percent.	Trader margins are estimated at 2.5 percent, weight losses at 8 percent of FOB price, and transport costs at 0.06 USD/ton/km.
Access cost from farm gate to border		Processing and handling, tax and administrative costs, transport costs, overhead costs between Nazreth and Shashemene collected from local counterparts and CSA. Trader margins estimated at 10 percent.	Trader margins are adjusted at 5 percent. Municipality tax, broker fee, checkpoint fee and turnover tax discarded. Weight loss estimated at 1 percent of wholesale price. Transport costs are not adjusted in this segment of the value chain since distance between farm-gate and wholesale is hardly assessable.
QT adjustment	Bor-Wh	-	-
	Wh-FG	-	-
QL adjustment	Bor-Wh	-	-
	Wh-FG	-	-

The data used for this analysis is summarized below.

Table 13: Data Used for the Analysis.

		Year	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
		trade status	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
DATA	*Unit*	*Symbol*								
Benchmark Price										
Observed	USD/tonne	$P_{b(int\$)}$	**286**	**403**	**549**	**670**	**537**	**601**	**597**	**666**
Adjusted		P_{ba}								
Exchange Rate										
Observed	ETB/USD	ER_o	8.7	8.7	9.2	9.8	12.1	12.89	16.9	17.6
Adjusted	ETB/USD	ER_a	10.4	10.5	11.5	11.7	14.5	15.5	19.1	19.7
Access costs border - wholesale										
Observed	ETB/tonne	AC_{owh}	1046	1359	1587	1880	2044	2391	3149	3642
Adjusted	ETB/tonne	AC_{awh}	726	925	1068	1260	1394	1619	2117	2445
Domestic price at wholesale	ETB/tonne	P_{dwh}	**1,830**	**2,130**	**3,811**	**4,437**	**4,158**	**5,984**	**8,730**	**8,290**
Access costs wholesale - farm gate										
Observed	ETB/tonne	AC_{ofg}	536	645	865	1,118	1,189	1,416	1,831	2,138
Adjusted	ETB/tonne	AC_{afg}	354	413	520	666	724	838	1,063	1,227
Farm gate price	ETB/tonne	P_{dfg}	**1,287**	**1,510**	**2,228**	**3,593**	**3,307**	**3,949**	**6,630**	**6,796**
Externalities associated with production		E								
Budget and other product related transfers		BOT								
Quantity conversion factor (border - point of competition)	**Fraction**	**QT_{wh}**								
Quality conversion factor (border - point of competition)	**Fraction**	**QL_{wh}**								
Quantity conversion factor (point of competition – farm gate)	Fraction	QT_{fg}								
Quality conversion factor (point of competition – farm gate)	Fraction	QL_{fg}								

SUMMARY OF INDICATORS

Table 14: MAFAP Price Gaps for Haricot Beans in Ethiopia, (ETB/tonne), 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Trade status for the year	x	x	x	x	X	x	x	x
Observed price gap at point of competition	397	-33	342	-249	-296	629	1789	210
Adjusted price gap at point of competition	-419	-1,172	-1,187	-2,183	-2,245	-1,694	(555)	(2384)
Observed price gap at farm gate	390	-8	-376	25	42	10	1,520	854
Adjusted price gap at farm gate	-608	-1,380	-2,250	-2,361	-2,372	-2,892	-1,592	-2,652

Source: Author's own calculations using data as described above.

Table 15: MAFAP Nominal Rates of Protection and Assistance for Haricot Beans in Ethiopia, (%), 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Trade status for the year	x	x	x	x	x	x	x	x
Observed NRP at point of competition	28%	-2%	10%	-5%	-7%	12%	26%	3%
Adjusted NRP at point of competition	-19%	-35%	-24%	-33%	-35%	-22%	-6%	-22%
Observed NRP at farm gate	43%	-1%	-14%	1%	1%	0%	30%	14%
Adjusted NRP at farm gate	-32%	-48%	-50%	-40%	-42%	-42%	-19%	-28%

Source: Author's own calculations using data as described above.

Table 16: MAFAP Market Development Gaps for Haricot Beans in Ethiopia, (ETB/tonne), 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Trade status for the year	x	x	x	x	x	X	x	x
Access costs gap to competition point (ACGwh)	-321	-434	-519	-621	-650	-773	-1,031	-1,399
Access costs gap to farm gate (ACGfg)	-183	-232	-345	-452	(-64	-578	-768	-911
Exchange rate policy gap (EXRP)	-495	-705	-1,010	-1,313	-1,300	-1,551	-1,313	-1,399
International markets gap (IMG)								

Source: Author's own calculations using data as described above.

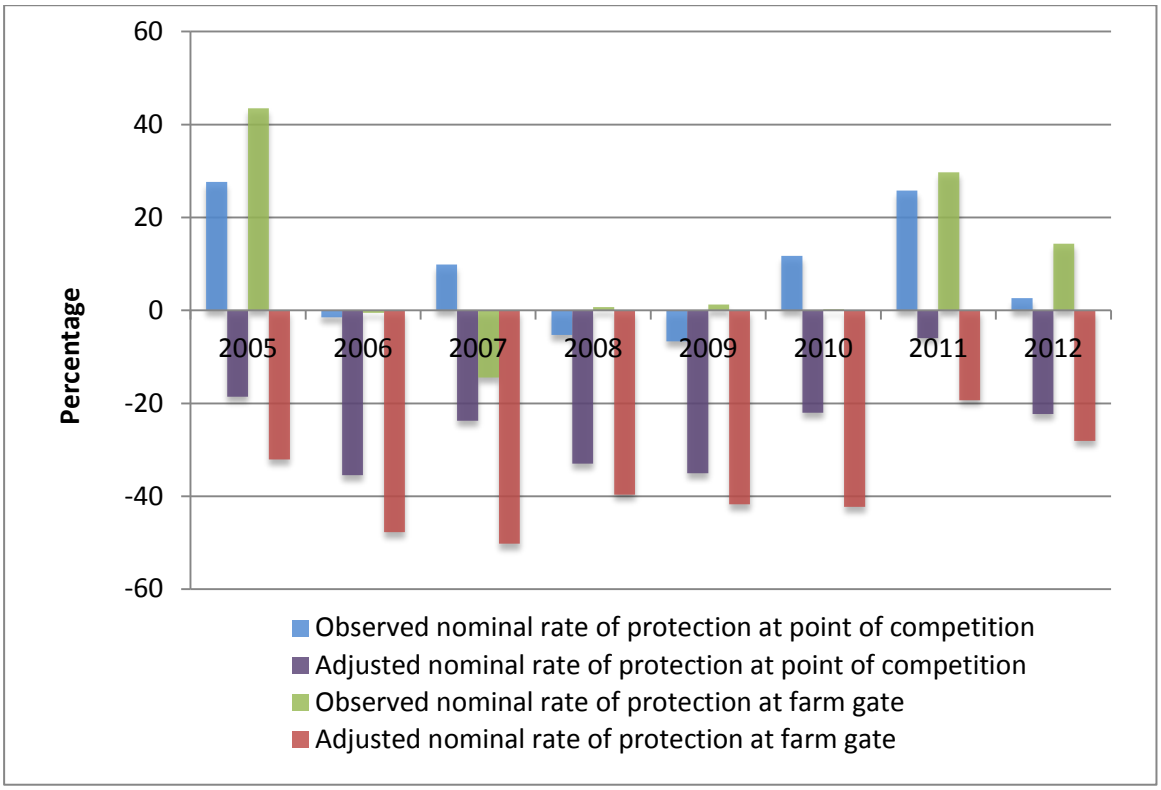
5. RESULTS AND INTERPRETATION

Over the 2005-2012 period, policy measures that may have directly affected haricot bean price incentives in Ethiopia were very scarce. Although the government globally supported the development of high-value crops, such as haricot beans, it did not implement producer or consumer support measures, like price subsidies for instance; neither did it adopt specific trade measures (export tax, import bans, etc.). However, it did adopt two important measures affecting the haricot bean value chain (see POLICY DECISIONS AND MEASURES). First, the government included haricot beans in the Ethiopian Commodity Exchange (ECX) market system in October 2010, which substantially modified the structure of the value chain. Second, it established price boards in the country to spread market and price information to agents. Nonetheless, since only the 2010-2012 period corresponds with our period of analysis, the inclusion of haricot bean wholesale trade in the ECX market system has low weight for our analysis.

Given the policy context, observed nominal rates of protection (NRPo) close to zero should be expected, while adjusted nominal rates of protection (NRPa) should reflect the impact of the overvalued exchange rate, i.e. prices of exported haricot beans would be higher and hence, would seem to provide more incentives to wholesalers and farmers.

MAFAP analysis, in the observed domain, seems to confirm what could be expected. Incentives at farm gate and point of competition are close to 0 from 2006 to 2009. Such a result suggests that the policy environment in Ethiopia is not highly distortive, and that haricot traders and producers were close to be aligned with reference international prices until 2010.

Figure 17: Observed and Adjusted Nominal Rates of Protection at Wholesale and Farm Gate in Ethiopia, 2005-2012 (%)

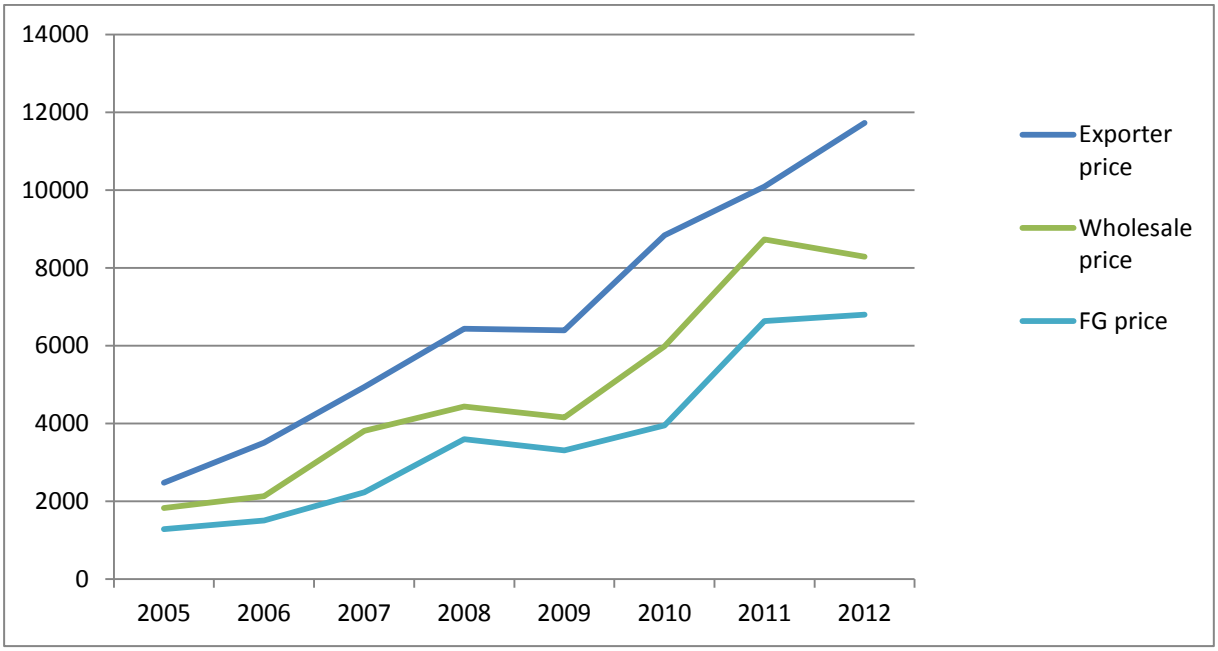


Source: MAFAP, 2014

Despite a great incentives environment for both wholesalers and farmers in 2005, the market was rather not distorted by public policies. Indeed, from 2006, the incentives were almost zero on average, which means that the haricot beans trade was well linked to the international market. In 2011, farmers and traders have experienced raising domestic prices while international prices depressed, which resulted in major incentives in that year.

Figure 18 shows that the price gap between wholesale and producers increased slightly in 2010 and 2011, to finally decrease in 2012. This is likely because of the introduction of beans in the ECX, which did not have the expected outcome at first (better linkages between the agents), but later improved. Still, the significant gap between wholesale and export prices indicate that acquiring information from the international market is still a major issue for domestic agents who otherwise cannot benefit from great price increases.

Figure 18: Exports (by 10 tonnes), FOB Price, Wholesale Price and Producer Price (ETB/tonne) for Haricot Beans in Ethiopia, 2005-2012



Source: Authors from Customs, CSA and EGTE

It is tempting to attribute high producer disincentives in 2010 to the introduction of the ECX system. However, haricot beans were only introduced in the ECX in October 2010. Nevertheless, it is interesting to note that although producers' incentives worsened between 2009 and 2010, wholesalers' incentives only decreased by -3 percent. Wholesalers may have adjusted to upcoming changes in the value chain owing to the introduction of haricot beans in the ECX by raising prices, while less informed and less powerful producers were not able to do so.

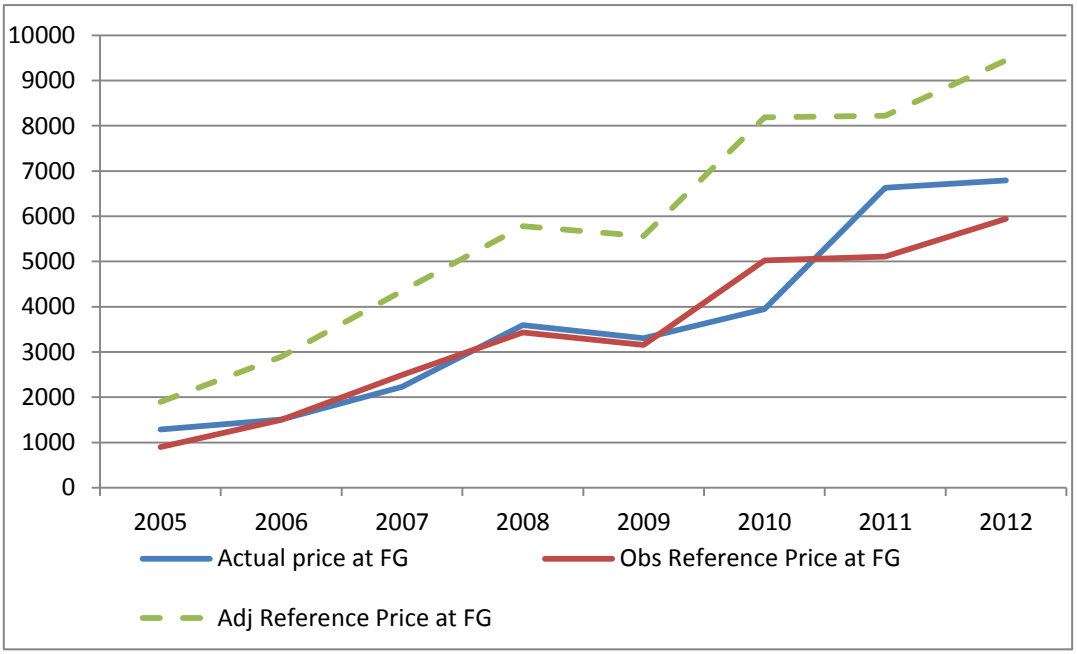
An analysis of the adjusted domain, taking into account market inefficiencies (excessive transport costs, margins, bribes) and the overvalued exchange rate, clearly reveals that wholesalers and producers would have received strong disincentives. This means that if the additional inefficiencies aforementioned were removed, and if the exchange rate was not overvalued, producers and wholesalers could have benefited from much higher prices (see Figure 17). This is especially true for producers; although the average difference in incentives between producers and wholesalers in the

observed domain is -1 percent, it is of 13 percent in the adjusted domain, meaning that wholesalers would have received higher incentives.

Figure 19 also shows an increasing gap between the adjusted and observed price at farm gate along the period. Although the observed price and the observed reference price follows very correlated trends, the adjusted reference price is increasing more rapidly than the two others. Market inefficiencies and an overvalued exchange rate weigh increasingly on prices throughout the 2005-2012 period, and hinder traders from benefiting from higher prices.

Lastly, producers received significant disincentives in 2010, even in the observed domain. The price received by producers in 2010 was much lower than in the other years (Figure 19). At the same time, the gap between wholesale and farm gate prices was broadest in the year 2010. The rise in international prices (+35 percent in 2010) was profitable for wholesalers who registered a 43 percent increase, but did not benefit producers.

Figure 19: Adjusted and Observed Reference Price Compared to Observed Price, all at Farm Gate Level, for Haricot Beans (ETB/tonne) in Ethiopia, 2005-2012



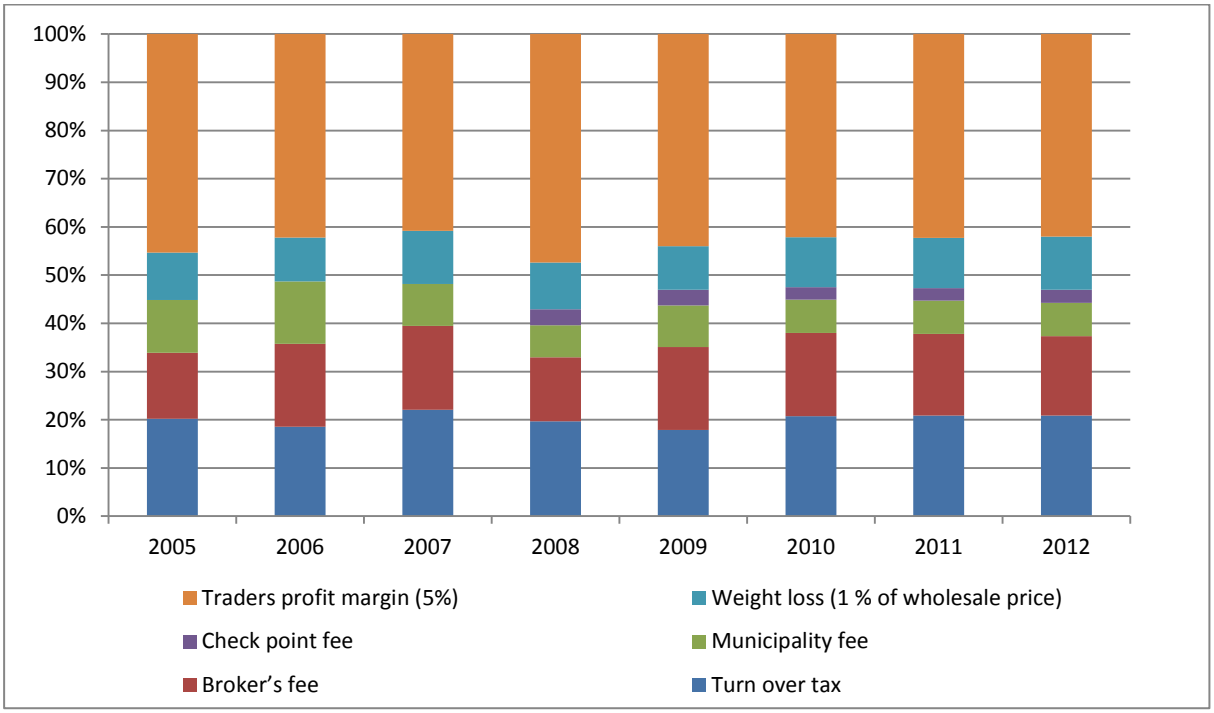
Source: Authors

The reason for additional disincentives in the adjusted domain depends on whether the wholesale price or the farm gate price is considered. At wholesale level, the overvalued exchange rate and market inefficiencies are the main excessive costs removed in the adjusted domain.

An analysis of the adjusted domain, taking into account market inefficiencies (excessive transport costs and excessive margins) and the overvalued exchange rate clearly reveals that wholesalers and producers would have received strong disincentives. This means that if the inefficiencies aforementioned were removed and if the exchange rate was not overvalued, producers and wholesalers would have received higher prices. Impurity losses represent by far the highest share of such market inefficiencies at wholesale level whereas the excessive margins from traders represent

the highest share at the farm-gate level. This finding has to be regarded with caution however, since excessive margins were estimated through discussions with local consultants and traders.

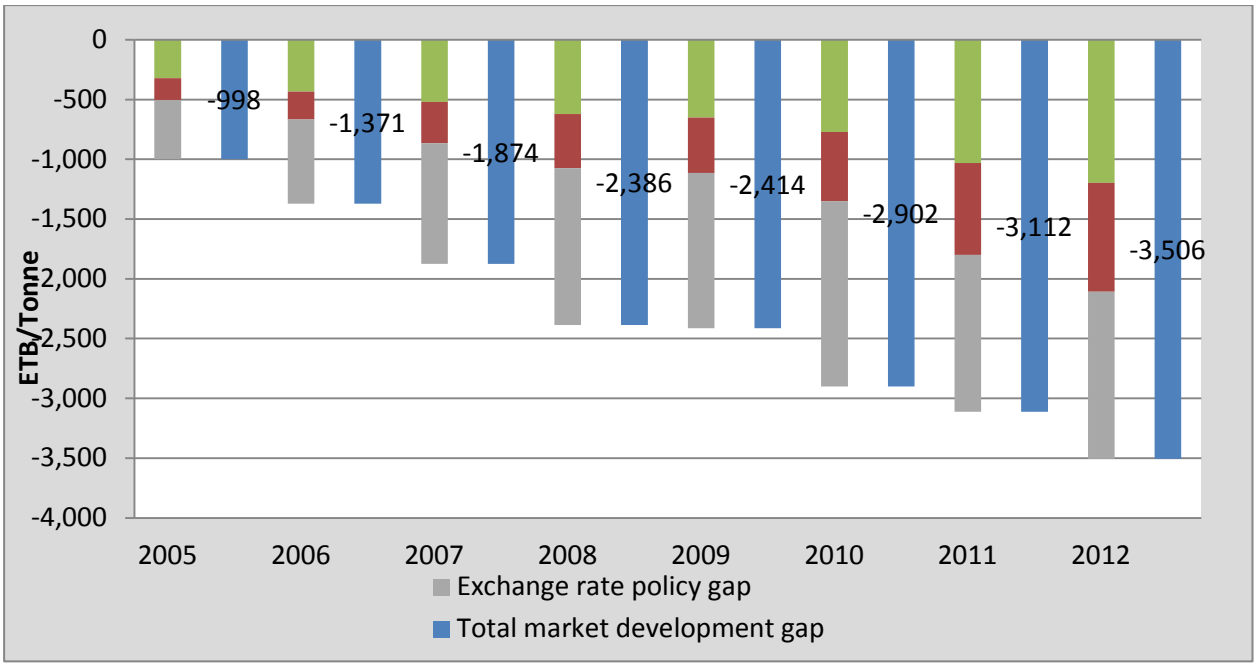
Figure 20: Share of Various Market Inefficiencies in the Observed and Adjusted Access Costs Gap Between Farm Gate and Wholesale for Haricot Beans in Ethiopia, 2005-2012



Source: Authors

The difference between observed and adjusted access costs is used in the calculation to construct what is referred to as the Market Development Gap (MDG). The Market Development Gap indicator allows us to understand the structural inefficiencies (market and exchange rate) that hinder producers and wholesalers from getting higher price levels. For haricot beans, the MDG is notable, at -2,320 ETB/tonne, on average, over the 2005-2012 period (see Table 17). This indicator reflects the fact that despite a relatively neutral situation for incentives and disincentives for haricot beans in the country, the market development gap remains high, revealing that the domestic market is under-developed, disallowing farmers to easily access the international market (see Figure 21).

Figure 21: Market Development Gap for Haricot Beans in Ethiopia (ETB/tonne), 2005-2012



Source: MAFAP, 2014

Table 17: Market Development Gaps and Components for Haricot Beans in Ethiopia (ETB/tonne, %), 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Exchange policy gap	-495	-705	-1,010	-1,313	-1300	-1,551	-1313.4	-1398.6
Access costs gap to wholesale	-321	-434.0	-519.0	-621	-650.1	-773	-1031.3	-1196.6
Access costs gap to farm gate	-183	-232	-345	-452	-464	-578	-767.5	-910.5
Net MDG at farm gate (ETB/tonne)	-998	-1371	-1874	-2386	-2414	-2,902	-3,112	-3,506
Net MDG at farm gate (%)	-78	-91	-84	-66	-73	-73	-47	-52

Source: MAFAP, 2014

6. RECOMMENDATIONS

In order to improve haricot bean exports and raise incomes for haricot bean farmers and wholesalers, the government could:

- Stop overvaluing the exchange rate, as it prevents actors in the value chain from benefiting from higher prices, and thus acts as a disincentive to production. Although exchange rate overvaluation has various impacts to be considered, it is particularly important not to over-value it if the government wants to stimulate haricot bean exports together with other agricultural export crops such as coffee and sesame seeds.

- Limit excess market power of traders. It appears that from 2005 to 2010, haricot bean traders had excessive market power over producers, exacting high margins. The government has already tried to address this concern by putting in place the ECX system; however it has yet to be seen if the trade-off (i.e. more important access costs due to bureaucratic practices) has not brought about more negative than positive effects.

- Improve processing in the value chain, especially between wholesale and the border, as impurity losses represent the main market inefficiency for wholesalers, and an important one for producers.

- Improve transport infrastructures, so as to lower transport costs, which are especially high between Gonder and Djibouti through Addis-Ababa.

- Improve the input side of haricot bean production. If price incentives are important, so is the input side. The government could, for instance, provide more technical assistance and develop infrastructure to boost haricot bean production and trade in the country.

- Improve producer share of the reference price by improving the institutional arrangement enabling producers to bargain and secure a proper share. Finally, improving market information systems and quality of haricot beans are likely the most important actions to raise producer gain.

7. CONCLUSION

MAIN MESSAGE

The absence of explicit government policies directed toward the haricot bean value chain in Ethiopia seems to allow a normal international price transmission for producers and wholesalers over the 2005-2010 period. The MAFAP analysis shows incentives close to zero from 2006 to 2010, which corresponds to the boost in haricot bean exports.

However, the apparent price transmission is undermined by considerable market inefficiencies, which actually bring down prices received by producers and wholesalers. One of the explanations of these market inefficiencies, especially between farm gate and wholesale, is the excessive margins exacted from traders; a reason why the government added haricot beans to the new Ethiopian Commodity Exchange market in 2010.

In that sense, it will be interesting to carry on the MAFAP analysis for 2013, 2014 and 2015, to observe whether the ECX system has had an effect on reducing market inefficiencies (which would bridge the market development gap) without increasing access costs (which would incur additional disincentives). Discussions with traders in 2013 suggest that the balance has not yet been struck. However, the MAFAP analysis reveals that for the wholesale to border segment, the overvalued exchange rate actually accounts for most of the market development gap, as it prevents wholesalers from benefitting from higher prices.

LIMITATIONS

All results and conclusions provided are contingent on the quality of the data. Price data provided by CSA is of good quality, however it remains at the North Gonder regional level rather than at the city or village level, which would be required for a very precise analysis. Data on access costs has been collected through various sources, but mainly results from discussions with traders in Addis-Ababa and on the field. Thus, access costs may have been over-valued, although they have been crosschecked to ensure they are close to reality.

The benchmark price has been considered for unspecified dried beans, shelled. Specific data for haricot beans could refine the indicators and provide a more accurate analysis. As MAFAP analysis is based on the benchmark price at the border of the country, detailed data could significantly improve the results.

Finally, the note does not look at the input side, but this is intended for the next stage of MAFAP work.

FURTHER INVESTIGATION AND RESEARCH

There are a number of areas where further research would be useful:

- As we have seen the delay in price increase at wholesale and farm gate levels, further research to get monthly data could provide very interesting results and indicators with the MAFAP methodology. This could give policy makers a better understanding of what are the main on-going issues and challenges faced by the agents.

- Although the data collected on access costs is already quite detailed, to ensure the structure is as precise as possible, further research would be necessary.

- To have prices for specific production areas and cities, rather than prices for the whole of the North Gonder zone, would improve the analysis overall.

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ANNEX I: Data and Calculations Used in the Analysis

DATA		Unit	Symbol	Year trade status	2005	2006	2007	2008	2009	2010	2011	2012	Notes
					x	x	x	x	x	x	x	x	
Benchmark price													
	Observed	USD/TON	$P_{b(int\$)}$		286	403	549	670	537	601	597	666	FOB Price
	Adjusted	USD/TON	P_{ba}										
Exchange rate													
	Observed	ETB/USD	ER_o		8.67	8.74	9.21	9.80	12.10	12.89	16.90	17.60	
	Adjusted	ETB/USD	ER_a		10.40	10.49	11.05	11.76	14.52	15.47	19.10	19.70	
Access costs border - point of competition													
	Observed	ETB/TON	ACo_{wh}		1,046	1,359	1,587	1,880	2,044	2,391	3,149	3,642	Linked to Sheet 3
	Adjusted	ETB/TON	ACa_{wh}		726	925	1,068	1,260	1,394	1,619	2,117	2,445	Linked to Sheet 3
Domestic price at point of competition		ETB/TON	P_{dwh}		1,830	2,130	3,811	4,437	4,158	5,984	8,730	8,290	
Access costs point of competition - farm gate													
	Observed	ETB/TON	ACo_{fg}		536	645	865	1,118	1,189	1,416	1,831	2,138	Linked to Sheet 3
	Adjusted	ETB/TON	ACa_{fg}		354	413	520	666	724	838	1,063	1,227	Linked to Sheet 3
Domestic price at farm gate		ETB/TON	P_{dfg}		1,287	1,510	2,228	3,593	3,307	3,949	6,630	6,796	
Externalities associated with production		ETB/TON	E										
Budget and other product related transfers		ETB/TON	BOT										From public expenditure analysis
Quantity conversion factor (border - point of competition)		Fraction	QT_{wh}										
Quality conversion factor (border - point of competition)		Fraction	QL_{wh}										
Quantity conversion factor (point of competition - farm gate)		Fraction	QT_{fg}										
Quality conversion factor (point of competition - farm gate)		Fraction	QL_{fg}										

CALCULATED PRICES		Unit	Symbol	2005	2006	2007	2008	2009	2010	2011	2012	
Benchmark price in local currency												
	Observed	ETB/TON	$P_{b(loc\$)}$	2,480	3,522	5,056	6,566	6,498	7,747	10,089	11,722	[1]*[2]
	Adjusted	ETB/TON	$P_{b(loc\$)a}$	2,974	4,227	6,066	7,879	7,797	9,297	11,403	13,120	[1]*[2b]
Reference price at point of competition												-

	Observed	ETB/TON	RPo_{wh}	1,433	2,163	3,469	4,686	4,454	5,356	6,941	8,080	[9]-[3]
	Adjusted	ETB/TON	RPa_{wh}	2,249	3,302	4,998	6,620	6,404	7,679	9,285	10,675	[10]-[3b]
Reference price at farm gate												
	Observed	ETB/TON	RPo_{fg}	897	1,518	2,604	3,568	3,265	3,939	5,110	5,942	[11]-[5]
	Adjusted	ETB/TON	RPa_{fg}	1,895	2,889	4,478	5,954	5,679	6,841	8,222	9,448	[12]-[5b]

INDICATORS		*Unit*	*Symbol*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	
Price gap at point of competition												
	Observed	ETB/TON	PGo_{wh}	397	-33	342	-249	-296	629	1,789	210	
	Adjusted	ETB/TON	PGa_{wh}	-419	-1,172	-1,187	-2,183	-2,245	-1,694	-555	-2,385	
Price gap at farm gate												
	Observed	ETB/TON	PGo_{fg}	390	-8	-376	25	42	10	1,520	854	
	Adjusted	ETB/TON	PGa_{fg}	-608	-1,379	-2,250	-2,361	-2,372	-2,892	-1,592	-2,652	
Nominal rate of protection at point of competition												
	Observed	%	$NRPo_{wh}$	28%	-2%	10%	-5%	-7%	12%	26%	3%	
	Adjusted	%	$NRPa_{wh}$	-19%	-35%	-24%	-33%	-35%	-22%	-6%	-22%	
Nominal rate of protection at farm gate												
	Observed	%	$NRPo_{fg}$	43%	-1%	-14%	1%	1%	0%	30%	14%	
	Adjusted	%	$NRPa_{fg}$	-32%	-48%	-50%	-40%	-42%	-42%	-19%	-28%	
Nominal rate of assistance												
	Observed	%	NRAo	43%	-1%	-14%	1%	1%	0%	30%	14%	
	Adjusted	%	NRAa	-32%	-48%	-50%	-40%	-42%	-42%	-19%	-28%	

			-	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	
			(494.78)	(705.25)	(1,010.16)	(1,313.20)	(1,299.54)	(1,550.58)	(1,313.40)	(1,398.60)	([2]-[2b])*[1]

DECOMPOSITION OF MDG	*Unit*	*Symbol*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	
International markets gap	ETB/TON	IMG	0	0	0	0	0	0	0	0	
Exchange rate policy gap	ETB/TON	ERPG	-495	-705	-1,010	-1,313	-1,300	-1,551	-1,313	-1,399	([2]-[2b])*[1]
Access costs gap to point of competition	ETB/TON	ACG_{wh}	-321	-434	-519	-621	-650	-773	-1,031	-1,197	[3b]-[3]

Access costs gap to farm gate	ETB/TON	ACG_{fg}	-183	-232	-345	-452	-464	-578	-768	-911	[5b]-[5]
Externality gap	ETB/TON	EG	0	0	0	0	0	0	0	0	
Total market development gap	ETB/TON	MDG	-998	-1,371	-1,874	-2,386	-2,414	-2,902	-3,112	-3,506	[25]+[26]+[27]+[28]+[29]
Market development gap as share of farm gate price	%	MDG	-78%	-91%	-84%	-66%	-73%	-73%	-47%	-52%	[30]/[6]
Market development gap as share of adjusted reference price at farm gate	%	MDG	-53%	-47%	-42%	-40%	-43%	-42%	-38%	-37%	[30]/[14]

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