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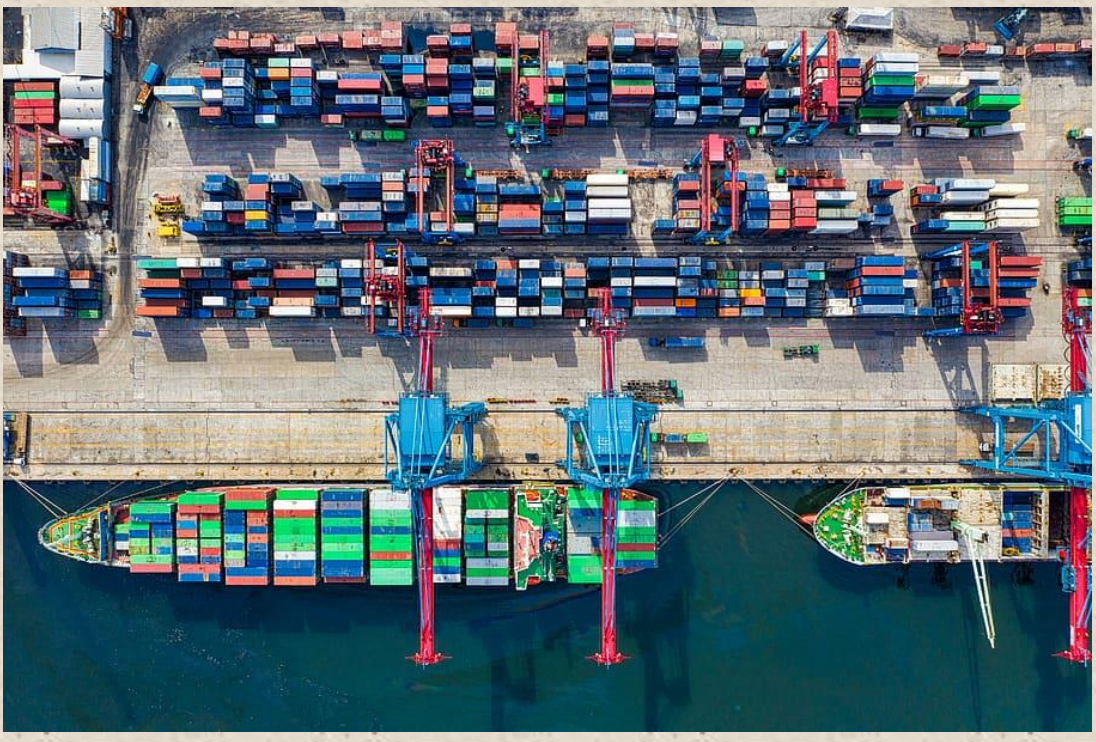

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Agricultural Export Competitiveness in developing countries: the case of Ethiopia and Uganda

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Introduction

The development prospects of many low and middle-income countries are strictly related to their ability to leverage international markets. Integration into the global marketplace is indeed a powerful vehicle for productivity growth, and with it, for increased income per capita (Frankel and Romer, 1999; Dollar and Kraay, 2004). International trade, in general, and export diversification, in particular, are often seen as the main drivers of output growth. However, as recently shown (Daruich *et al.,* 2019), the explanations for export success that focus only on industry competitiveness in the source country (and the policies that affect this) may be missing much of the origins of success, as the bulk of the variation in export growth is accounted for by international market factors.

Against this background, many developing countries have started promoting export diversification through direct policy incentives and export institutions. Over the last years, both Ethiopia and Uganda have introduced several export incentive schemes and set up government institutions aimed at boosting exports. Despite these efforts, however, Ethiopian and Ugandan exports have decreased and remained highly concentrated over the last decade.

The first chapter analyzes export and import diversification strategies in Ethiopia. Indeed, the high concentration of Ethiopian exports, with green coffee and oilseeds accounting for about 40 percent of total exports in 2018, coupled with a dependence on imported intermediate inputs such as capital goods and fuel as well as food – including wheat, rice, and edible oils – put the trade balance in a permanent structural deficit, amounting to 12.5percent of GDP in 2018/19. This chapter presents the results of the prioritization analysis of Ethiopia's agri-food exports and imports. These can be used to inform the Government of Ethiopia's strategies and investments for growth and transformation through diversified and competitive exports that target more dynamic, high-value markets, and competitive and productive import substitutes that contribute to Ethiopia's food sovereignty. These value chains have been selected according to a multi-stage process, integrating quantitative and qualitative analyses. In the first stage, trade and competitiveness indicators provide a comprehensive assessment of the potential for the entire basket of Ethiopia's agri-food traded products. The high-ranked products are then compared in the second stage following an additional set of quantitative and qualitative criteria such as the scope for market participation of smallholder and a domestic policy alignment index.

The second chapter analyzes beef export competitiveness and diversification in Uganda. Indeed, the high concentration of Ugandan exports, with both relatively few exporting firms and markets served, coupled with the presence of the Foot-and-Mouth Disease (FMD), which further restricted the access to export markets, put the beef and hides and skins exports on a decreasing trend. The main findings of the analysis show that there is ample scope for market diversification of beef and hides and skins exports, to capture the most dynamic markets. However, when assessing new potential destination markets, it is highly recommended to look not only at the import dynamics but also at the non-tariff measures imposed by the importing countries as both fresh and frozen beef exports face a relatively high number of regulatory requirements. Most trade flows occur via informal exports to nearby markets. Since these transactions mainly take place by foot, bicycle, car, motorcycle, or on the backs of livestock, the average value of informal trade shipments is much lower than the formal one. These results suggest the need for the government to promote diversification towards more dynamic markets, which will be critical for sustainable export growth, and to promote higher quality, the adoption of standards, and support the negotiation of better prices with international buyers, among others. The results also suggest the need to incentivize more exporting firms to enter into the sector, as the reliance on few exporters makes the country highly vulnerable to both local and foreign shocks. Finally, as the bulk of cross-border trade is informal, more should be done to support smaller informal traders to grow and integrate into the formal export market – e.g., by reducing trade costs, mainly NTMs but also tariffs - and to guarantee more enforcement at customs.

Chapter 1

Prioritizing value chains for export and import diversification in Ethiopia

1. Introduction

The development prospects of many low and middle-income countries are strictly related to their ability to leverage international markets. Integration into the global marketplace is indeed a powerful vehicle for productivity growth, and with it, for increased income per capita (Frankel and Romer, 1999; Dollar and Kraay, 2004). International trade, in general, and export diversification, in particular, are often seen as the main drivers of output growth. However, as recently shown (Daruich *et al.,* 2019), the explanations for export success that focus only on industry competitiveness in the source country (and the policies that affect this) may be missing much of the origins of success, as the bulk of the variation in export growth is accounted for by international market factors.

Against this background, many developing countries have started promoting export diversification through direct policy incentives and export institutions. Since the early 90s' Ethiopia has been striving to set the right conditions for expanding its export base. For example, in addition to overall economic liberalization reforms, Ethiopia has introduced several export incentive schemes and set up government institutions aimed at boosting exports (Assefa and Gedefe, 2016).

Despite these efforts, however, Ethiopian exports have remained highly concentrated over the last decade, with green coffee and oilseeds accounting for about 40 percent of total exports in 2018. Ethiopia's relatively undiversified exports, coupled with a dependence on imported intermediate inputs such as capital goods and fuel as well as food – including wheat, sugar, and edible oils – put the trade balance in a structural deficit, amounting to 12.5 percent of GDP in 2018/19 (UN Ethiopia, 2020).

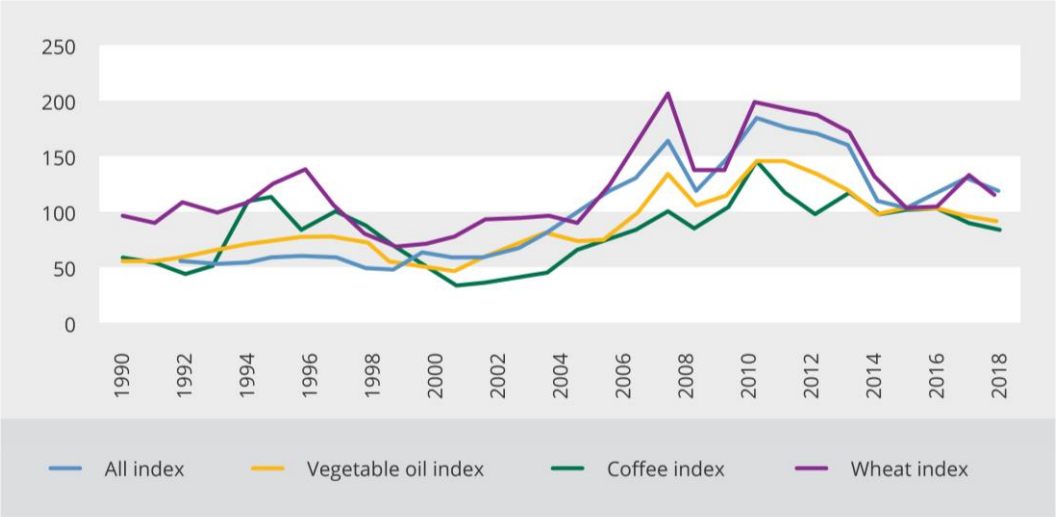
This chapter aims at providing reform options to diversify exports and imported products through the prioritization of value chains based on their diversification potential. The objective is to provide recommendations to propel growth and transformation of both traditional and non-traditional exports and assess the substitution strategies of relatively costly imports.

2. Background

The Ethiopian economy has been growing at double-digit rates over the last decade, largely attributed to extensive public investments in infrastructure, combined with a surge in global commodity prices including coffee, oilseeds and pulses during the early 2000s that propelled Ethiopia into the top ten countries in terms of growth in non-mineral exports (World Bank, 2014).

However, annual GDP growth began to decline from 12 percent in 2010 to an average 10 percent between 2103-2015, and then to 6.8 percent in 2018 (AfDB, 2020). On the one hand, pressure on foreign exchange availability is increasing, at least in part owing to external borrowing to finance public infrastructure projects as well as to a decline in agricultural export commodity prices since 2011 (Figure 1).

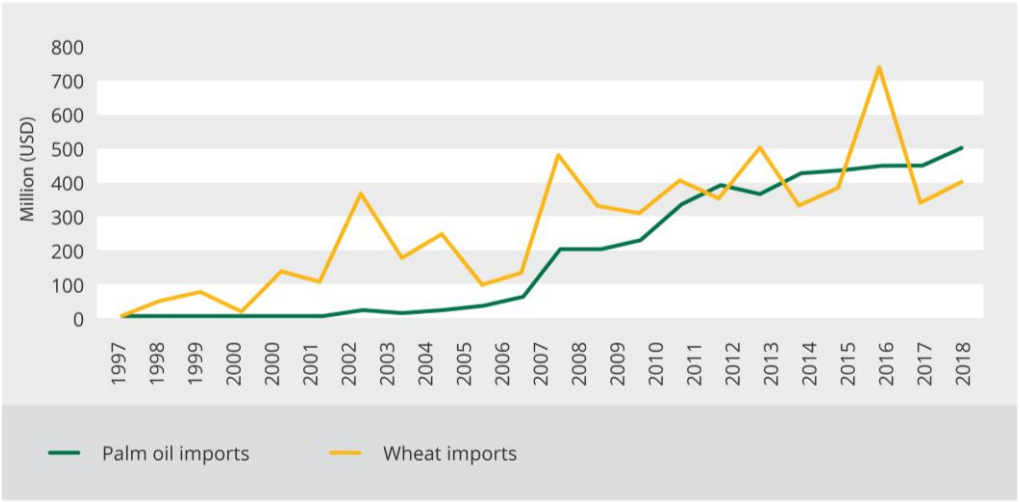
Figure 1 Primary commodity prices system indices for all, coffee, vegetable oil and wheat, in Ethiopia



Source: IMF, 2020

On the other hand, the reduction in the prices of agricultural imports has been overcompensated by the impact of population growth, increasing incomes and rates of urbanization which translated into higher demand for wheat and vegetable oil, Ethiopia's main food imports (Figure 2).

Figure 2 Total import value (in USD) of wheat and palm oil in Ethiopia, 1997-2018

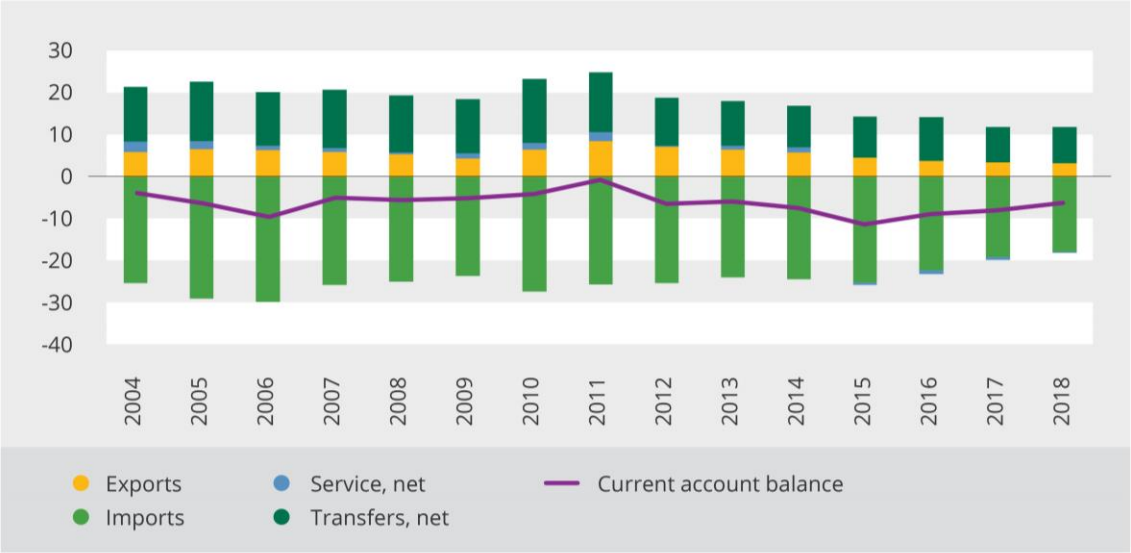


Source: UN Comtrade, 2020

Ethiopia has been striving to expand its export base since the early 1990s, through several export incentive schemes and export promotion organizations (Assefa and Gedefe, 2016). The Ethiopian Commodity Exchange (ECX), launched in 2008, has been viewed by some as successful in boosting export revenue from agriculture, modernizing the economy, and linking smallholder farmers to markets. However, critics argue that the ECX reduces traceability, has not increased the share of FOB price to producers, and has reinforced trade in raw, low-value agricultural commodities (Leung, 2014). The ECX is dominated by coffee and sesame, which also accounted for more than 40 percent of Ethiopia's total exports (30percent and 15 percent, respectively) in 2018 (ITA, 2020). This reliance on a relatively undiversified export basket, coupled with a dependence on imported intermediate inputs such as capital goods and fuel as well as food – including

wheat, sugar, and edible oils, has led to structural deficit in the trade balance, amounting to 12.5percent of GDP in 2018/19 (UN Ethiopia, 2020, see Figure 3.

Figure 3 Components of the current account deficit (% of GDP) in Ethiopia



Source: Office of the Prime Minister, 2019.

The trade deficit, in addition to massive outlays in publicly financed infrastructure projects from dams and railways to nationwide industrial parks that are currently underperforming, reinforces the scarcity of foreign exchange (Strobel and Suckling, 2019). Low availability of foreign currency in turn affects export competitiveness as wholesalers and domestic firms face higher production costs and reduced trade volumes because of forex shortages and delays (Lloyd and Teshome, 2018). Reduced export competitiveness and import substitution capacity therefore reinforces the cycle of weak exports and depleted reserves. In order to address the persistent balance-of-payments deficit, the economic risk associated with the ongoing dominance of raw agricultural exports, and the reliance on few trading partners increasingly dominated by China, Ethiopia must accurately target high-potential emerging exports and import substitutes, explore new trade partners, and revisit the institutional framework and market dynamics that might break this vicious cycle.

Box 1 The COVID-19 pandemic

The COVID-19 pandemic reached Ethiopia on 13 March 2020, and like governments around the world, Ethiopia began implementing quarantine, social distancing, and lockdown measures to contain the pandemic. This compounded an economic situation that was already challenging owing to multiple factors including high inflation, high unemployment, a major desert locust invasion, and erratic rainfall disrupting the country's dominant rain-fed agricultural sector (UN Ethiopia, 2020). Internationally, COVID response measures have led to a severe reduction in the transportation of goods (ground, ocean freight and air freight), services that rely on transport, as well as migration of labour domestically and internationally, and overall disruptions in the logistics of the food supply chains, impeding the shipment of food and agricultural inputs, threatening food security and nutrition, particularly for the most vulnerable population segments.

The pandemic has also exposed underlying vulnerabilities and magnified well-known weaknesses in the Ethiopian economy, in particular regarding the need to diversify trade – both in terms of products and markets.

The Covid-19 pandemic has therefore further enhanced the importance of trade diversification for the country, as it has disrupted global trade and highlighted the country's dependence on a limited number of commodities and partners It has thus raised the urgency in improving export competitiveness, substituting costly agricultural imports, and revisiting international and regional market opportunities. Import substitution and export value chain development will play a critical role in economic recovery for their ability to transform the trade deficit and thereby release the strain on forex, promote food and nutrition security, and relieve inflationary pressure on food items.

Some broad policy responses to the current predicament have been identified in the UN Ethiopia Assessment for 2020, including support to medium- and long-term business investments to drive the development and resilience of national as well as regional value chains, and revisiting opportunities to negotiate regional trade agreements, taking full advantage of the African Continental Free Trade Area (AfCFTA), and exploring cross-border digital trade (UN Ethiopia, 2020). The AfCFTA ratification is timely in that regard as it opens up new trade opportunities for Ethiopia's export industries.

3. Methodology for prioritization

The first component of the analysis aims at assessing and ranking value chains in Ethiopia, according to their competitiveness, and diversification potential. To do so, we rely on a set of different quantitative and qualitative indicators, which are jointly considered to produce an overall rank. These are summarized in Table 2.

Table 1 Prioritization indicators

EXPORT INDICATORS	IMPORT INDICATORS
Trade indicators	
Domestic export share	Domestic import share
Revealed Comparative Advantage (RCA)	1st suppliers share
Relatedness	Relatedness
Trade Balance Index (TBI)	
1st buyer share	
Competitiveness indicators	
Export competitiveness market share	Import relative demand
Number of dynamic importers	Import relative price
Export relative price	
Domestic potential indicator	
Quantity marketed	Quantity marketed
Policy indicator	
Policy alignment	Policy alignment

Source: Author's own elaboration.

Prioritization indicators for exported products are:

- Domestic export share: computed as the product value over total value of exports, it is a measure of the relative "importance" of the product in the Ethiopian export basket. A commodity's importance leads to a higher overall ranking.
- Revealed Comparative Advantage (RCA): the comparative advantages show the specialization patterns of an economy. A high RCA value results in a higher ranking because this means the commodity is internationally competitive.
- Relatedness: indicates how many related commodities have a comparative advantage in the same group (HS2 Chapter), enabling the identification and prioritization of high-potential commodity sub-groups. Commodities with a higher number of related products will be favoured in the prioritization (see table A3 in Annex).
- Trade Balance Index (TBI): the TBI – also known as the Lafay index - ranges from -1 to 1. A TBI < 0 means that a country is a net importer for goods k; whereas TBI>0 means that the country is net exporter. Combining the information from RCA-PR with the one from TBI is helpful also to have a first assessment of the role of imported intermediate inputs at the industry level. The higher the TBI value, the higher the commodity ranks.
- 1st buyer share: computed as the product share of the first importer in total exports, it shows the degree of concentration on the buyer side. The lower the indicator value, the higher will be the ranking as the commodity is diversified along the extensive margin.
- Export competitiveness market share: this indicator develops a decomposition of market shares growth, based on the methodology developed by Gaulier *et al.,* (2013), allowing to identify its sources. The higher the indicator, the higher the ranking, as the product shows a better export performance.

- Number of dynamic importers: it shows the most dynamic import markets, i.e., the number of the most relevant countries for "Demand Side Factors" that Ethiopia is able to serve. The higher the indicator, the higher the ranking, as the product is able to successfully meet the international demand.
- Export relative price: this indicator reports the relative price (unit value) of Ethiopia's products against its main competitors. A higher relative price improves the commodity's ranking.
- Quantity marketed: computed as the share of quantity sold over quantity harvested in last 12 months from household level data, this measure informs on the domestic marketing potential. A larger marketed share leads to a higher ranking.
- Policy alignment: this binary indicator identifies and prioritises commodities that have already been selected for the Agricultural Commodity Clusters (ACC) and Integrated Agro-Industrial Parks (IAIP) initiatives.

For the exported products, selections steps involve: i) select only those commodities with a revealed comparative advantage; ii) among these, identify commodities with the highest export share within each commodity group - HS2 digit level; and iii) rank the shortlisted commodities according to the full set of indicators.

Prioritization indicators for imports are:

- Domestic import share: computed as the product value overt total value of imports, it is a measure of the relative "importance" of the product in the Ethiopian import basket. The higher the indicator, the higher the ranking.
- 1st supplier share: computed as the product share of the first exporter in total imports, it shows the degree of concentration on the seller side. The higher the degree of concentration, the higher the ranking.
- Import relative demand: this measure informs on the relative strength of Ethiopian demand for foreign varieties with respect to the world (or SSA) average and shows any pattern of excess imports for the country: i.e., when a commodity reveals a score above the average, it implies that the volume of imports in that variety is higher than what the gravity benchmark would predict. Therefore, higher relative demand leads to a higher ranking.
- Import relative price: this measure informs on the relative import prices faced by Ethiopian firms against their competitors: i.e., it shows whether Ethiopian importers are facing relatively higher or lower prices in that specific product. The higher the indicator, the higher the ranking.
- Relatedness: indicates how many related commodities have a high import relative demand and price in the same group (HS2 Chapter), enabling the identification and prioritization of high-potential commodity sub-groups. Commodities with a higher number of related products rank higher in the prioritization
- Quantity marketed: computed as the share of quantity sold over quantity harvested in last 12 months from household level data, this measure informs on the domestic marketing potential. The higher the indicator, the higher the ranking.
- Policy alignment: this binary indicator prioritizes commodities that have already been included in the ACC and IAIP initiatives.

For the imported products, selection steps involve: i) select only those commodities with a high excess of import volumes and prices; ii) among these, identify commodities with at least 1 percent of import share; and iii) rank the shortlisted commodities according to the full set of indicators.

The overall rank indicator eventually reports the simple average of the indicators' rank. The products under analysis encompass all exported and imported agri-food goods in 2018 considered at HS6 digit level.

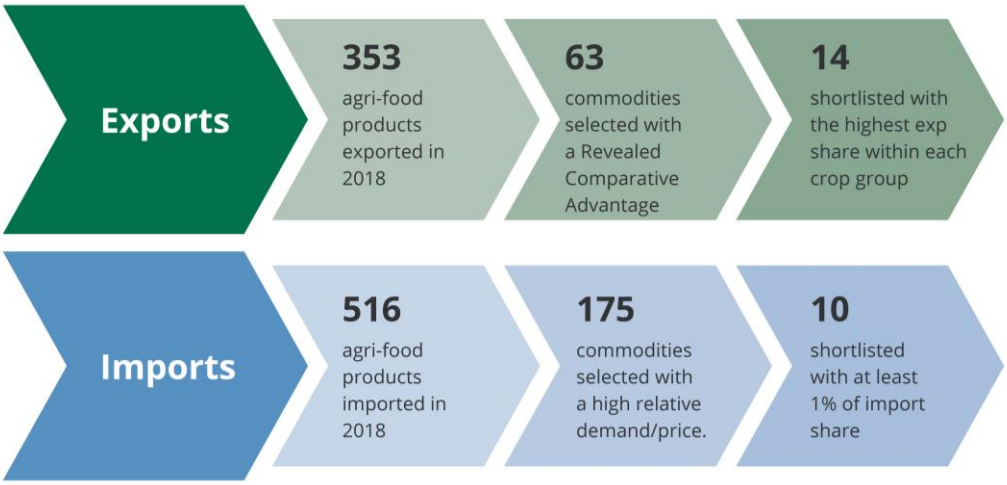
4. Prioritization analysis

In this section we first detail the steps followed to shortlist the HS-6 digit products with a high potential for export diversification and import substitution in Ethiopia, and then we rank these products based on the set of indicators introduced above.

For the exported products, selections steps involved: i) from the 353 agri-food products exported in 2018, commodities with a revealed comparative advantage were identified – Table A3 reports the list of these commodities along with the RCA; ii) among these 63, the commodities with the highest export share within each crop group (HS-2 digit level) were selected; and iii) the shortlisted 14 commodities are ranked according to the full set of indicators.

For the imported products, selections steps involved: i) from the 516 agri-food products imported in 2018, commodities with a high excess of import volumes and prices were identified – Table A4 reports the list of these commodities along with the import relative demand and price; ii) among these 175, the commodities with at least 1 percent of import share were selected; and iii) the shortlisted 10 commodities were ranked according to the full set of indicators. These steps are summarized in Figure 4.

Figure 4 Prioritization selection steps



Note: Selection is based at HS 6digit level.
Source: Author's own elaboration.

4.1. Fourteen short-listed export products

In Table 3 we report the 14 shortlisted export products along with their overall rank[1], computed as the simple average of the other indicators' ranks. Not surprisingly, coffee and sesame, the top two Ethiopian exported products, are also highly ranked. While these value chains are already relatively-well developed, the government can further increase their competitiveness by supporting diversification into new and most dynamic markets. Thus, both products rank relatively high on the trade indicators but low in the competitiveness. This is for instance the case of sesame, whereby the large majority of exports (33 percent) goes to China. This is however also the case for coffee, as the sector is performing relatively poor in terms of export market shares (see export market share indicator in Table 3).

[1] In the value chain analysis, we will remove ambergris, natural gums and cane molasses.

Table 2 Ranking for the 14 short-listed export products for Ethiopia

EXPORT												
			Trade				Competitiveness				Domestic	Policy
Description	HS code	Overall rank	Revealed Comparative Advantage	Ethiopia export share	Trade Balance Index	1st buyer share	Export market share	Number of dynamic importers	Export relative price	Relatedness	Quantity marketed	Policy alignment
Coffee, not roasted	90111	1	4	1	1	1	9	3	4	2	3	1
Sesamum seeds	120740	2	2	2	3	5	11	1	9	2	1	1
Kidney beans	71333	3	3	5	7	3	7	3	11	1	4	1
Goat meat	20450	4	1	4	2	9	6	3	8	4		6
Cut flowers	60310	5	7	3	8	6	3	1	10	5	2	6
Flour, meal of leguminous vegetables	110610	6	9	14	5	2	5	3	2	6		6
Natural Gums	130190	7	6	6	12	4	10	3	3	9		6
Ambergris, castoreum, civet musk	51000	8	13	13		8	4	3	1	9		6
Beeswax	152190	9	5	10	11	7	12	3	5	12		1
Strawberries	81010	10	14	8	10	10	2	3	7	9		6
Cane molasses	170310	11	8	9	4	13	8	3	6	12		6
Asparagus	200560	12	11	12	6	12	1	3	12	12		6
Teff	100890	13	10	11	9	14	13	3	13	6		1
Sheep	10410	14	12	7		11	14	3	14	9		6

Notes: For musk[2], product exported by Ethiopia under this HS Chapter is civet musk, which has been excluded from the prioritization owing to ethical concerns regarding the mistreatment of the endangered animals in captivity. Overall rank is a simple average of the indicators. The table reports indicators' rank and not their actual values.
Source: Author's own elaboration based on BACI dataset from the CEPII and WB LSMS-ISA.

Kidney beans, goat meat and cut flowers, which are usually considered traditional/highly exported products, also rank relatively high: third, fourth and fifth respectively. These products show relative prices lower than their respective competitors and are also highly concentrated on the buyer side. For instance, 40 percent of cut flowers and 60 percent of goat meat Ethiopian exports are imported by only one country. These results suggest the need to assess quality differences, standards and new terms of contracts with the international buyers.

As for non-traditional exports, chickpea flour is ranked sixth. While it performs particularly well on the competitiveness indicators, it does less so for trade ones. Since this is especially true for the export share indicator, where the product is only fourteenth, and there is evidence of global rising demand for both its health advantages and its importance as ingredient for the food process industry (https://www.transparencymarketresearch.com/chickpea-flour-market.html), the Government should further promote this product.

Ethiopia has a competitive edge in beeswax, ranking 9th overall but fairly high for the trade indicators (fifth in terms of RCA). It has a poor performance on the competitiveness side, especially for export markets share and relatedness indicators meaning that eventual positive developments would not easily spill over to other products. However, given

[2] The product exported by Ethiopia under this HS Chapter is civet musk, which has been excluded from the prioritization owing to ethical concerns regarding the mistreatment of the endangered animals in captivity.

that market forecasts predict increasing global demand for beeswax in the medium term for its uses in cosmetics, pharmaceuticals, and industry and the fact that Ethiopia is the world's tenth largest honey producer in the world (the Government has already prioritized this value chain), if issues related to incentives to meet quality standards will be addressed, there is ample potential to increase the diversification of the export base in apiculture products (Falcao-Bergquist and Startz 2020).

Strawberries and asparagus exports are expanding but still highly concentrated. Export volumes are low and highly concentrated, with 66 percent of strawberries going to Saudi Arabia, and asparagus remaining a nascent industry. However, Ethiopia has immense potential for high-value, labour-intensive horticulture production as its mild and stable climate allow for continuous production throughout the year. This suggests untapped potential for these and similar high-value horticultural value chains.

4.2. Ten short-listed imported products

Table 4 shows the ten short-listed imported products.[3] The number one priority for imports turns out to be rice, both as milled and broken. This is a relatively new grain to Ethiopia, as its introduction only took place in the 1970s. As shown by the indicators, the demand for rice has been steadily growing, but local production has not been able to keep up with import levels.

Table 3 Ranking for the 10 short-listed import products for Ethiopia

IMPORT									
			Trade			Competitiveness		Domestic	Policy
Description	HS code	Overall rank	Ethiopia import share	1st supplier share	Relatedness	Import relative demand	Import relative price	Quantity marketed	Policy alignment
Rice (milled)	100630	1	3	2	6	5	1	2	4
Rice (broken)	100640	2	6	5	6	4	2	1	4
Cane sugar, raw	170111	3	2	4	9	3	7	2	4
Barley (malt)	110710	4	4	8	2	2	10	4	1
Peas (dried, shelled)	71310	5	9	3	1	9	4	7	4
Grain sorghum	100700	6	5	10	6	1	5	6	1
Roasted malt	110720	7	8	6	2	8	9		4
Wheat	100190	8	1	9	6	10	6		1
Prepared food from cereals	190410	9	10	1	6	6	8		4
Food preparations from lactose or sugar syrups	210690	10	7	7	10	7	3	4	1

Note: Overall rank is a simple average of the indicators. The table reports indicators' rank and not their actual values.
Source: Author's elaborations based on BACI dataset from the CEPII and WB LSMS-ISA.

Furthermore, more than 80 percent of milled rice is sourced from India, making its imports highly vulnerable to local shocks. The number one priority for import substitution turns out to be rice, both as milled and broken. This is a relatively new grain to Ethiopia, as its introduction only took place in the 1970s. As shown by the indicators, the demand for rice has been steadily growing, but local production has not been able to keep up with import levels. Furthermore, more than 80 percent of milled rice is sourced from India, making its imports highly vulnerable to local shocks. Unfortunately,

[3] From the analysis we will remove prepared cereals and sugar food preparations.

Ethiopia is not currently prioritizing this product for import substitution strategies. Therefore, more should be done to reduce the reliance on (one) foreign producers.

Sugar ranks third, showing a high relative import demand in comparison with similar importing countries. Sugar has been high on the import substitution agenda since the first Growth and Transformation plan (GTP) in 2010, with the government financing multiple capital-intensive irrigation projects. However, because of high costs, the government is moving to privatize sugar factories.

Malt barley ranks fourth owing to high import relative demand indicators, suggesting that the volume of imports is higher than in other similar countries. Malt barley production is also aligned with Government strategies and has been a focus of the Agricultural Transformation Agency, as well as contract farming initiatives with large breweries (see policy alignment indicator). Considering the growing brewery industry and leading examples of success in out-grower contracts, malt barley should continue to be prioritized for import substitution strategies.

Wheat imports represent around 15 percent of all agri-food imports in 2018 and are in high demand (see Ethiopia import share and import relative demand indicators) as population growth, increasing incomes and rates of urbanization have dramatically pushed the demand for wheat over the last years, outpacing wheat productivity and quality improvements. Since, wheat imports are highly concentrated within few suppliers and the cost is relatively higher than neighbouring countries, the government should consider reassessing its sourcing strategies. In Tables A3 and A4 in the Annex, we report the indicators' values.

However, as the priority products are originally computed from the Harmonized System (HS) list, in Table 5 we move from the HS commodities to the corresponding value chains.

4.3. Final short-listed value chains

From the above list we drop ambergris, natural gums and cane molasses on the export side and prepared cereals and sugar food preparations on the import side. Therefore, the final list consists of 11 export and 6 import shortlisted value chains.

Table 4 Final short-listed value chains for Ethiopia

Export diversification	Import substitution
1. Coffee	**1. Rice**
2. Sesame	**2. Sugar**
3. Kidney beans	**3. Barley**
4. Goat meat	**4. Peas**
5. Cut flowers	**5. Sorghum**
6. Pulse flour	**6. Wheat**
7. Honey/beeswax	
8. Strawberries	
9. Asparagus	
10. Teff	
11. Sheep	

Source: Author's own elaboration.

5. Export diversification

The aim of this section is to study Ethiopia export diversification in the agri-food sector as a whole (HS-2 digit chapters 01-24). That is, we aggregate from the HS 6 digit up to HS 2-digit level to both provide a comprehensive assessment of the issue and better describe some of the above introduced indicators.

Revealed Comparative Advantage

We first study Ethiopia trade specialization patterns, relying on the well-known concept of the revealed comparative advantages (RCA). The cross-sectional and dynamic analysis of the latter allows us to draw a picture of country's relative productivity and its evolution over time. Specifically, we make use of the Proudman and Redding (2000) version of RCA as it eases comparison across sectors and over time (see Annex).[4] A country will have a comparative advantage in a product if the ratio is higher than 1.

In what follows, we present the evolution of the export specialization patterns of Ethiopia, evaluated using RCA-PR, over the period 2008-2018 for more than 5100 commodities (defined using HS1996 at 6-digit). Trade data are from the BACI dataset, compiled from ComTrade by the CEPII (Centre d'Études Prospectives et d'Informations Internationales).[5]

Figure 5 reports the evolution of the number of products exported by the country and the number of commodities for which Ethiopian exporters report a revealed comparative advantage in all industries and agri-food products, respectively. From 2008 to 2018 the country significantly increased the absolute number of products exported from 1890 (2008) to 2280 (2018); and the number of commodities with a revealed comparative advantage from 124 to 152.

In agri-food sectors, the absolute number of products exported and that of commodities increased from 289 to 353 whereas commodities with a revealed comparative advantage went from 69 to 63.

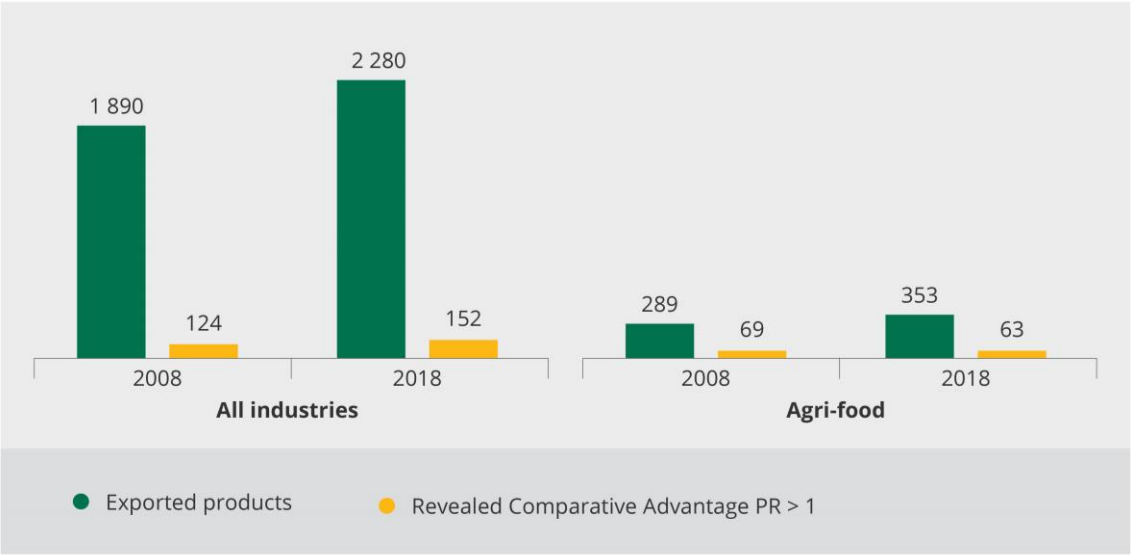
The sub-sample of 63 products represent the core of the export bundle, accounting for 53 percent of the total exports of the country in year 2018, down from 61.5 percent in year 2008.[6] The larger share is accounted by the "Coffee, tea, matï and spices" products; representing 22 percent of the country total exports in 2018 (they represented 27 percent of country total exports in 2008).

[4] It is worth mentioning that any RCA analysis, since it is based on observed trade patterns, can be influenced for example by government policies, resulting in a misrepresentation of the comparative advantage pattern. As point out by Timmer *et al.,* (2015) RCA measures remain a useful proxy in determining whether an economy has a comparative advantage, even if they are less useful in quantifying the extent of such comparative advantage.

[5] BACI is constructed using an original procedure that reconciles the declarations of the exporter and the importer. This harmonization procedure enables to extend considerably the number of countries for which trade data are available, as compared to the original dataset. BACI provides bilateral values and quantities of exports at the HS 6-digit product disaggregation, for more than 200 countries since 1995. It is updated every year.

[6] The full set of comparative advantage products, i.e. 152 commodities, represents about 85.4% of the country total exports in year 2018.

Figure 5 Exports and Revealed Comparative Advantage, number of products (6-digit), in Ethiopia



Source: Calculation based on BACI dataset from the CEPII; classification HS1996 at 6-digit (total number of products: 5132).

The transition matrix of Table 6 reports a significant churn rate for the exported commodities as well as for those with a comparative advantage. Out of the 2280 products exported in year 2018 almost two-third were already exported in 2008 (1484 commodities) and 1599 were already exported in 2013. Interestingly, over a 10-year period Ethiopia added 796 commodities to its export basket while dropping 406.

Attrition rates are also significant when looking at the sub-sample of varieties for which the country has a comparative advantage. Out of the 152 products with RCA>1 in 2018, 56 were already among the comparative advantaged commodities in 2008, 59 were already exported in 2008 but without recording any comparative advantage, whereas 37 were not even exported 10 years before.

Not surprisingly, revealed comparative advantage in the Agriculture and Food sample, report a significantly lower attrition rate: about 70 percent of agri-food products with a RCA>1 in 2018 were already reporting a comparative advantage in 2008.

Table 5 Exported products over time in Ethiopia

Exported products, all products				
	Exported in t	Also exported in t-k	Not exported in t-k	No longer exported in t
[t=2008, k = 5]	1890			
[t=2013, k = 5]	2015	1375	640	515
[t=2018, k = 5]	2280	1599	681	416
[t=2018, 2008; k = 10]	2280	1484	796	406
Exported products with RCA-PR>1, all products				
	RCA in t	Also, RCA in t-k	No RCA in t-k (but exported)	No RCA in t-k (not exported)
[t=2008, k = 5]	124			
[t=2013, k = 5]	137	63	48	26
[t=2018, k = 5]	152	71	50	31
[t=2018, 2008; k = 10]	152	56	59	37
Exported products with RCA-PR>1, agriculture and food (only)				
	RCA in t	Also, RCA in t-k	No RCA in t-k (but exported)	No RCA in t-k (not exported)
[t=2008, k = 5]	69			
[t=2013, k = 5]	62	45	14	3
[t=2018, k = 5]	63	45	12	6
[t=2018, 2008; k = 10]	63	43	16	4

Notes: Agriculture and Food sample is including commodities withing the HS chapters 01 to 24.
Source: Author's own elaboration. Calculations based on BACI dataset from the CEPII; HS 1996 at 6-digit, total number of products: 5132.

Trade Balance Index

To complement the information given by the comparative advantage index, we also report the Trade Balance Index (TBI, also known as Lafay index).[7] The TBI index ranges from -1 to 1. A TBI < 0 means that a country is a net importer; whereas TBI>0 means that the country is net exporter. At the limit, a TBI of -1 indicates the country does not produce the good and that the domestic consumption relies entirely on import. On the other hand, a TBI of 1 indicates that the country is producing only for export. Combining the information from RCA-PR with the one from TBI is helpful also to have a first assessment of the role of imported intermediate inputs at the industry level.

When computed on the full set of Agro-Food products imported and exported in each HS 2-digit industry that have an RCA above 1 (i.e. 63 varieties, see Figure 5), the average TBI is positive and very stable over time, with a level of 0.94, suggesting that exports dominate and imports of those commodities are marginal. Interestingly, a few industries with a negative trade balance in year 2008 (i.e. TBI < 0) managed to move towards parity and even develop a significant trade surplus, such as "Sugars and sugar confectionery" and "Cereals" (Table 7).

[7] See Lafay (1992) in Annex.

Table 6 Trade Balance Index by aggregate agro-food sectors in Ethiopia

Harmonized System code	Description	Trade Balance Index 2008	Trade Balance Index 2018
9	Coffee, tea, matï and spices	0.99	0.99
12	Oil seed, oleagi fruits; miscell grain, seed, fruit etc	0.97	0.98
7	Edible vegetables and certain roots and tubers	0.84	0.98
6	Live tree & other plant; bulb, root; cut flowers etc	0.84	0.96
2	Meat and edible meat offal	0.99	1.00
1	Live animals	1.00	0.43
13	Lac; gums, resins & other vegetable saps & extracts	0.80	0.46
8	Edible fruit and nuts; peel of citrus fruit or melons	0.91	0.84
10	Cereals	-0.01	0.75
17	Sugars and sugar confectionery	-0.14	0.99
15	Animal/veg fats & oils & their cleavage products; etc	0.95	0.68
5	Products of animal origin, nes or included	0.64	0.98
20	Preparation of vegetable, fruit, nuts or other parts of plants	0.91	0.09
11	Production milling industry; malt; starches; inulin; wheat gluten	-0.67	0.48
	Column Total	**0.94**	**0.95**

Source: Author's own elaboration based on data from BACI dataset from the CEPII, 2008-2018.

We now report the results for the above indicators at the commodity level (HS-6 digit). For instance, we look at HS chapter 09, i.e., Coffee, tea, mate and spices, which is the highest agro-food export of Ethiopia. In Table 8 we report the 2018 RCA and TBI for each of the products in the HS chapter 09 – Coffee, tea, mate and spices – with a RCA>1. Not surprisingly, the highest comparative advantages are found for coffee not roasted (45.72) followed by coffee decaffeinated (26.05) and other (coffee substitutes containing coffee in any proportion; 22.16). Also, coffee is almost entirely exported (TBA = 1) while other commodities, such as spices and seeds, show some degree of intra-industry trade. For the rest of agri-food products with a RCA>1 see Table A3 in Annex.

Table 7 Revealed Comparative Advantage (2018) and Trade Balance Index by Harmonized System code 09, in Ethiopia

Harmonized System code	Description	Revealed Comparative Advantage	Trade Balance Index
90111	Coffee, not roasted, not decaffeinated	45 718	1,000
90112	Coffee, not roasted, decaffeinated	26 046	1,000
90190	Other	22 156	0,947
90411	Pepper - neither crushed nor ground	3 472	0,919
90412	Pepper - crushed or ground	4 402	0,871
90700	Cloves (whole fruit, cloves and stems)	2 789	0,248
90920	Seeds of coriander	2 251	0,985
90930	Seeds of cumin	7 141	0,206
91030	Turmeric (curcuma)	21 298	0,989
91099	Other spices, other	2 385	0,327

Source: Author's own elaboration based on data from BACI dataset from the CEPII, 2008-2018

Export competitiveness market share

Here we focus on Ethiopia's export performance through the analysis of the decomposition of market shares growth. We rely on the methodology developed by Gaulier *et al.,* (2013) for the Measuring Export Competitiveness (MEC) database which analyses changes in world market shares adjusted by compositional effects. The general methodology allows to

disentangle from the observed export growth: i) a compositional effect due to market orientation (geography); ii) an industrial specialization (specialization); and iii) a country-specific supply side competitiveness shock (supply side). For more details, see Annex.

Looking at the evolution of market shares alone, may result in a flawed picture of a country external competitiveness. Market shares may contract even if exports are expanding, providing that they are growing at a slower pace than world average. On the opposite, an economy may improve its global market position only because it is serving the most dynamic importers or supplying most demanded goods. Then, a key question for policy makers would be: how much such (gains) losses are due to external factors, in terms of markets and sectors, and how much are related to country competitiveness?

We start from a world trade matrix of exports at HS-6-digit level of disaggregation over the period 2006q1-2019q2 and considering only the sub-set of those agricultural commodities for which Ethiopia recorded a comparative advantage (RCA-PR) in 2018: i.e. 63 commodities. Trade flows are recorded quarterly to control for the timing of any external shocks and the focus on year-on-year growth rates allows to get rid of any time-invariant export determinant as well as seasonality.

As reported in Table 9, over the whole period, Ethiopia RCA exports records an annualized growth rate of 8.3 percent, that given the world growth rate at 4.8 percent results in an annual increase of 3.6 percent in export market share. The evolution of market shares is mostly driven by a competitiveness contribution at 2.4 percent (supply side), a positive but low market orientation at 1.5 percent (geography) and a negative sector composition -0.4 percent (specialization).

Among its regional competitors, for the same group of 63 products, Uganda shows a positive supply side contribution resulting in an increase in export market shares over the period.[8] Noteworthy, Kenya's developments were also affected by a strong negative sectoral component (-0.7 percent) that coupled with an unfavourable market orientation (-1 percent) which more than offset the moderately positive supply side component (+0.3 percent). In terms of economic size (i.e., market shares), the only close regional competitor for Ethiopia (in the selected 63 commodities under scrutiny) is Kenya with an export market share in 2018Q2-2019q2 of 0.0071 percent.

Table 8 Decomposition of export growth: Ethiopia and main competitors for agri-food Revealed Comparative Advantage commodities, 2006q1–2019q2, in percentage change

Country			Pull factors	Pull factors	Supply side factors: Competitiveness		Market shares
	Δ Export	Δ Exp Mkt. Share	Geography	Sector	Values	Prices	2018q2-2019q2
		(a+b+c)	a	b	c		
Ethiopia	8.3	3.6	1.5	-0.4	2.4	0.4	0.00994
Kenya	3.4	-1.4	-1.0	-0.7	0.3	-1.0	0.00716
Madagascar	3.3	-1.4	-0.1	-0.3	-1.0	2.1	0.00110
Rwanda	-0.6	-5.4	0.0	-0.1	-5.3	-0.3	0.00047
Uganda	6.0	1.2	0.3	-0.9	1.8	0.0	0.00338
Zambia	-2.3	-7.1	-0.1	-0.8	-6.1	-0.3	0.00031
Zimbabwe	-4.8	-9.6	-0.4	-0.5	-8.7	-1.9	0.00029
World	4.8						

Notes: The underlying econometric decomposition considers only the 63 Agro-Food commodities for which Ethiopia has a comparative advantage in year 2018. The annualized growth rate in market shares is exactly decomposed in 2 pull factors (Geography, Sector) and 1 push factor (Overall) so that Δ Market Share = Geography + Sector + Competitiveness. Competitiveness Δ Exp Mkt Share stands for change in a country export market share. All the values are annualized percentage changes.
Source: Author's own elaboration and computation using Measuring Export Competitiveness database from the World Bank, https://mec.worldbank.org/.

[8] The comparator countries are computed using a methodology developed at the World Bank. This methodology aims at identifying countries that are similar in economic development and/or size, competitors with a similar position of the export basket. Specifically, the methodology consider country "distance" in a 5-dimensional space, by using the following indicators as coordinates: export basket composition; GDP per capita; population; human capital; and physical capital. Countries are then ranked by degree of similarity.

We also report the decomposition of export market shares growth for green coffee, the main export of Ethiopia (Table 10). Ethiopia's coffee records an annual increase of 1.5 percent in export market share, which is also the value reported for the prioritization analysis. This is almost entirely driven by a positive competitiveness contribution 1.4 percent (supply side), and very low market orientation at and sector composition. This further reinforces the view that there is ample scope for market diversification to capture the most dynamic markets. Among its competitors, only Uganda shows a positive result (see footnote 9 for comparator countries).

Table 9 Decomposition of export growth: Ethiopia and main competitors for green coffee, 2006q1–2019q2, in percentage change

Country		Pull factors	Pull factors	Supply side factors: competitiveness		Market shares
	Δ Exp Mkt. Share	Geography	Sector	Values	Prices	2018q2-2019q2
	(a+b+c)	a	b	c		
Ethiopia	1,5	0,1	0,0	1,4	0,6	3,644
Kenya	-0,4	-0,5	0,0	0,1	1,7	1,316
Madagascar	-4,3	-0,7	0,0	-3,6	4,1	0,008
Rwanda	-3,8	-0,1	0,0	-3,7	0,6	0,297
Uganda	1,1	-1,2	0,0	2,3	-0,2	2,446
Zambia	-17,5	0,4	0,0	-17,9	-1,0	0,025
Zimbabwe	-34,6	0,1	0,0	-34,7	1,3	0,003

Note: The underlying econometric decomposition considers only HS code 90111. The annualized growth rate in market shares is exactly decomposed in 2 pull factors (Geography, Sector) and 1 push factor (Overall) so that Δ Market Share = Geography + Sector + Competitiveness. Competitiveness Δ Exp Mkt Share stands for change in a country export market share. All the values are annualized percentage changes.

Source: Author's own elaboration and calculation using Measuring Export Competitiveness database from the World Bank, https://mec.worldbank.org/.

Number of dynamic importers

Despite Ethiopia's positive contribution of geography to export market share growth relative to its competitors (see Table 9), the Government may seek to further strengthen its performance by identifying and targeting the most dynamic importing market for such commodities.

To this aim, we apply the methodology defined above to the import flows, now capturing any country-specific demand factor affecting international trade dynamics. It is therefore possible to compare the observed market orientation of Ethiopia's exports to the benchmark in order to assess market potentials for Ethiopia's export products.

The top panel of Table 10 reports the 10 most relevant countries for "Demand Side Factors"[9], over the period 2006q1-2019q2, along with the share of Ethiopia total export absorbed by each destination (last column).

The distribution of Ethiopia export shares shows that country exports are able to reach only half of the most dynamic import markets. With the exception of China, which is the most dynamic destination market in the sample (absorbing 17.6 percent of Ethiopia exports in the RCA commodities sample), Ethiopian products are not meeting demand in several other expanding markets like Malaysia, India, or Thailand. The indicator used in the prioritization analysis is the number of the most dynamic import markets that Ethiopia is able to serve.

The bottom panel of Table 11 reports the decomposition results for top 10 destination countries for Ethiopia's agri-food exports. Overall, Ethiopia export structure seems to be highly concentrated within the first 10 destinations absorbing 78

[9] We exclude marginal markets, i.e. destinations with an import market share less than 0.25% of total trade.

percent of its total exports; the two main destinations, China and United States, absorbed one third (30 percent) of the country exports in Agri-Food comparative advantage goods.

Their global import market shares, for the basket of Ethiopia's RCA agri-food products, are also expanding, especially for China with a 10 percent growth between 2006 and 2009.

However, other relevant destination for Ethiopian agri-food exports are contracting, Germany -1.4 percent and Netherlands -2.5 percent. For both markets the decline is completely driven by a worsening of demand -1.7 percent in Germany and -2 percent in Netherlands on annualized import market share changes.

This evidence from the demand-side, coupled with the results from the supply-side (export) decomposition, suggests that market diversification and synchronization with international demand development will be key factors to meet the defined targets for the comparative advantage products.

Table 10 Decomposition of Import growth: main Buyers of Agri-Food RCA commodities 2006q1–2019q2, in percentage change

Country			Demand side factors: Attractiveness		World market shares	Ethiopia market shares
	Δ Import	Δ Import market share	Values	Prices	2018q2--2019q2	2018q2--2019q2
Malaysia	16.6	11.9	11.3	2.6	1.6	
China	14.8	10.0	8.0	-0.7	2.6	17.6
Singapore	11.1	6.3	6.1	0.4	1.0	
India	8.0	3.2	5.2	1.1	0.5	
Thailand	10.1	5.3	5.0	8.1	1.2	
Poland	8.5	3.7	4.6	2.7	0.5	
United Arab Emirates	6.7	1.9	3.7	2.3	0.9	2.0
Australia	5.1	0.4	3.6	0.0	2.5	1.3
Hong Kong	7.9	3.1	2.8	0.1	0.8	1.2
Mexico	6.2	1.5	2.5	-0.7	2.6	1.6
Top 10					**14.1**	**23.8**
Top 10 destinations for Ethiopian exports						
China	14.8	10.0	8.0	-0.7	2.6	17.6
United States	5.0	0.2	0.0	0.1	15.1	12.4
United Kingdom	4.9	0.2	0.0	-0.3	6.6	10.5
Germany	3.3	-1.4	-1.7	-0.4	9.6	10.2
Netherlands	2.2	-2.5	-2.0	-0.2	4.3	7.1
Japan	7.5	2.8	2.1	-0.6	0.4	5.7
Israel	5.0	0.2	-0.2	0.2	3.3	5.0
Switzerland	5.2	0.5	1.4	-0.1	1.7	3.6
Belgium	4.5	-0.3	0.3	0.2	1.6	3.2
Korea	2.2	-2.6	-2.2	-0.3	4.3	2.9
Top 10					**49.4**	**78.2**

Note: All the values are annualized percentage changes. Δ Imp Mkt Share stands for change in a country import market shares.
Source: Author's own elaboration and calculation using Measuring Export Competitiveness database, World Bank, https://mec.worldbank.org/.

In Table 12 we report the import decomposition results for top 10 destination countries for Ethiopia green coffee exports. These are highly concentrated as the first 10 destinations absorb 83 percent of its total exports; the two main destinations, US and Germany, absorbed half of the country exports in coffee.

However, most of the top destination for Ethiopian exports are contracting, US -0.2 percent, Germany -1.4 percent and Japan -3.3 percent which again suggest the need for market diversification strategies.

Table 11 Decomposition of Import growth: top 10 destinations for Ethiopian green coffee 2006q1–2019q2, in percentage change

Country			Demand side factors		World market shares	Ethiopia market shares
	Δ Import	Δ Import market	Values	Prices	2018q2--2019q2	2018q2--2019q2
United States	4,7	-0,2	0,7	0,2	23,7	20,4
Germany	4,1	-1,4	-1,9	-0,5	14,4	18,8
Japan	2,2	-3,3	-1,9	-0,1	6,2	12,0
Korea	6,4	3,4	3,4	0,1	2,3	7,0
Switzerland	6,5	2,5	3,0	1,2	3,0	5,9
Italy	5,3	0,8	0,8	0,2	7,7	5,8
France	4,2	-1,7	-2,8	-0,5	3,0	5,0
United Kingdom	7,1	2,5	2,8	0,5	2,7	3,0
Belgium	5,0	0,0	0,3	-0,6	3,8	2,6
Australia	7,6	3,7	3,6	0,5	1,5	2,4
Top 10					**68.2**	**82.9**

Notes: All the values are annualized percentage changes. Δ Imp Mkt Share stands for change in a country import market shares.
Source: Author's own elaboration and calculation using Measuring Export Competitiveness database, World Bank, https://mec.worldbank.org/.

Export relative price

Recent empirical works on trade patterns (Schott, 2004) document a significant heterogeneity in the price of traded commodities. According to classical trade theory countries should specialize according to their factor endowments and, as a result, different economies should export different products. However, empirical evidence confirms that countries tend to sell similar varieties of a given commodity with highly heterogeneous prices across different producers.

From a methodological perspective, we start from the "Trade in Unit Value" (TUV) database from the CEPII, reporting information on traded values and volumes for a wide range of markets and commodities.[10] We use the "import" version of the TUV dataset, which is constructed from importing country custom declarations and include in the exchanged values all the trade costs (CIF, Cost of Insurance and Freight). Since real import prices are generally not available, we rely on traded unit values (unit values = traded value/ traded volume) as a proxy (see Annex).

Table 13 details, for each destination market, the relative price (unit value) of Ethiopian RCA agri-food products against its main regional competitors. The first row looks at the exports in China (the main destination for Ethiopia exports of RCA varieties), the main destination of Ethiopian exports with a share of 17.6 percent. For the first row, each column

[10] The "Trade Unit Value Database" (Berthou and Emlinger (2011) reports bilateral exports and imports unit values (USD per thousand kg) for all the UN countries over the period 2000-2018 at 6-digit HS classification (approx. 5,000 commodities).

depicts the relative price of Ethiopian exports in China vis-à-vis the competitor (in column) for the sub-sample of goods exported jointly by the two countries. As an example, consider column 1, where Kenya is the competitor.[11]

The Ethiopian goods relative price (Ethiopia/Kenya) in China is 1.23 suggesting that for the same set of products, Ethiopian prices are 23 percent higher than Kenyan products. On average, exports from Ethiopia to China seem to be priced relatively higher than all the other main exporters of the sample, more than two times higher (2.54).

However, in other relevant destinations such has United Kingdom, Germany and Japan, export prices are much lower than most of the regional competitor. In United Kingdom and Japan, on average, Ethiopian products are sold at 33 percent lower price in United Kingdom (1/0.75 =1.33), 26 percent in Japan (1/0.79 =1.26) and 7.5 percent in Germany (1/0.93= 1.075).

Table 12 Relative Unit Values between Ethiopia and main competitors (selected markets), 2018

Ethiopia Market Shares 2018q2--2019q2	Comparator: Markets:	Kenya (1)	Mada-gascar (2)	Rwanda (3)	Uganda (4)	Zimba-bwe (5)	Zambia (6)	Average (7)
17.6	China	1.23	7.97	0.86	1.17	1.44		2.54
12.4	United States	0.87	0.64	1.14	2.20	1.42	1.55	1.27
10.5	United Kingdom	0.04		0.78	0.96	1.00		0.75
10.2	Germany	0.86	0.84	1.13	1.37	0.58	0.82	0.93
7.1	the Netherlands	0.86	1.10	1.00	1.47	1.99	1.74	1.31
5.7	Japan	0.46		0.47	1.18	1.07	0.77	0.79
3.6	Switzerland	0.90	0.32	0.76	1.58	0.64	1.44	0.99
3.2	Belgium	1.00	1.48	1.05	1.58	0.47		1.13
2.9	South Korea	0.73	1.30	0.95	2.14	0.58	0.93	1.11
73.2	Average	0.77	1.95	0.90	1.52	1.02	1.21	

Note: The table reports the relative prices for the sub-sample of 63 Agro-Food RCA commodities.
Source: Author's own elaboration and calculation based on TUV dataset from the CEPII, HS 1996 at 6-digit.

In Table 14 we show the relative price (unit value) of Ethiopia coffee against its main competitors. Unfortunately, due to lack of detailed data on traded values and volumes for coffee from the TUV database, we are not able to compare Ethiopia against its regional competitors. However, while this specific issue will be further assessed in the second part of the project, Table 14 already provides some interesting results. Specifically, if we look at column 1 first row, we find that Ethiopian coffee price is 29 percent higher than Brazilian price when exported to Belgium. On average, Ethiopian prices are 40 percent higher than this (small) set of competitor countries. This is also the value used for the indicator in the prioritization analysis.

[11] See footnote 9 for the selection of comparator countries. Markets are the top 10 destinations for Ethiopian exports (see Table 10).

Table 13 Relative Unit Values between Ethiopia and main competitors for coffee (selected markets, year 2018)

Comparator: / Markets:	Brazil (1)	Colombia (2)	India (3)	Viet Nam (4)
Belgium	1,29			
Switzerland	1,58			
China				2,35
Germany	1,20			
Italy	1,38			
Jordan	2,28		1,74	
Japan	1,06			
United States		1,62		

Note: The table reports the relative prices for coffee (HS code 90111).
Source: Author's own elaboration and calculation based on TUV dataset from the CEPII, HS 1996 at 6-digit.

6. Import diversification

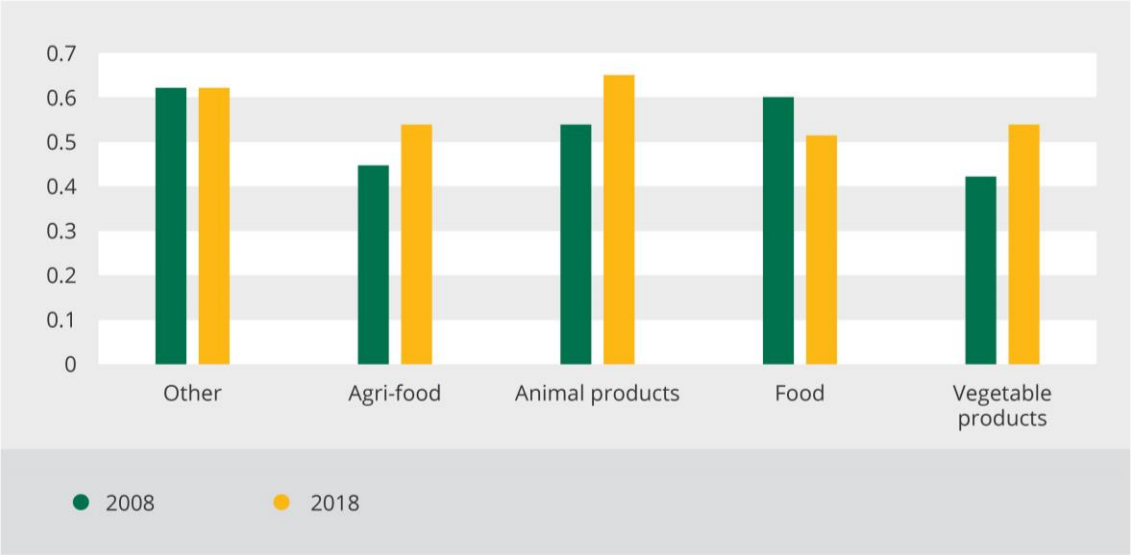
In this section, we focus on the import substitution indicators showing, as above, the main results for the whole set of agri-food traded products and some examples at product level. The aim is to assess each of the HS 6-digit products imported to Ethiopia along multiple dimensions, such as concentration, price and volumes.

First supplier share

Figure 6 reports the share of the first supplier for 516 commodities in the Agro-Food sector imported in Ethiopia in year 2018. As revealed in the graph, Ethiopian imports are significantly concentrated. In the Agro-food sector, on average, more than 53 percent of the demand for foreign varieties is supplied by no more than one country. This is even higher for the rest of the commodities, approximatively 61 percent. Within the Agri-Food sub-sample the increase concentration of imports manifests in the "Animal products" (HS1-5) increasing from 55 to 63 percent in the last decade, followed by the "vegetable products" (HS16-24) also increasing dependence from the first supplier from 41 to 54 percent. In the remaining Food group, (HS6-15) concentration declined.

At the product level the concentration of suppliers is heterogeneous, 127 out of the 516 agro-food commodities imported in 2018 were imported from a single country (28 of them only from China). Such "monopolized" trade represents 4.2 percent of imports of Animal Products, 1.3 percent of Vegetables and 1.2 percent for food products. Despite the relatively small share, monopolized imports may still affect significantly the demand and prices at the product level. In the following sections, we propose a quantitative approach to evaluate the import demand in both volumes and prices.

Figure 6 Share of the first supplier, agri-food commodities in Ethiopia



Note: The calculation includes only 516 agri-food commodities imported by Ethiopia in year 2018.
Source: Author's own elaboration and calculation based on BACI dataset from the CEPII, HS 1996 at 6-digit.

Import relative demand

In this paragraph, we analyse the relative strength of Ethiopian demand for foreign varieties with respect to the world average. Thus, the Inward Multilateral Resistance Terms (MRTs)[12] ,being a structural measure of the attractiveness of each destination in the world market, inform on any pattern of excess imports for the country: i.e., when a commodity reveals an Inward MRT scores above the average, it implies that Ethiopia is a relatively more attractive destination of imports, or that the volume of imports in that variety is higher than what the gravity benchmark would predict.

To evaluate developments in relative demand for foreign varieties in Ethiopia we build an index of relative attractiveness relying on a structural gravity decomposition of trade flows (see Annex). Values above 1 of 〖Demand〗_(k,t)^ETH reveal that Ethiopia is a relatively more attractive destination for exports than the world average or that the volume of imports in that variety is higher than what the gravity benchmark would predict. For comparison, we also report the relative demand vis-à-vis the other countries in the sub-Saharan Africa region (SSA).

Table 15 below reports the aggregate evolution of the relative demand in Ethiopia with respect to both the world (top panel) and the SSA average (bottom panel). In a decade, relative demand for agri-food commodities in Ethiopia increased significantly, from 1.13 in year 2008 (or 13 percent above the average) to 1.40.

Interestingly, such increase is more pronounced for the subset of products (e.g., 30) at the higher end of the distribution: for the top 90th percentile, the score increased from 1.74 to 2.06.

[12] See Theoretical background in Annex.

Table 14 Relative Demand (in volume) in agri-food imports in Ethiopia

Ethiopia demand over World average ($Demand^{ETH,WLD}_{.,t}$)					
Year	Average	25pc	Median	75pc	90pc
2008	1.13	0.08	0.30	0.72	1.74
2013	1.25	0.07	0.31	0.80	1.66
2018	1.40	0.11	0.28	0.81	2.06
Average	1.26	0.08	0.30	0.79	1.75
Ethiopia demand over World average ($Demand^{ETH,SSA}_{.,t}$)					
Year	Average	25pc	Median	75pc	90pc
2008	0.89	0.09	0.41	0.97	2.05
2013	0.94	0.12	0.48	1.11	2.16
2018	1.12	0.19	0.47	1.33	2.99
Average	0.98	0.14	0.44	1.11	2.39

Notes: The table reports the average relative demand. The calculation includes 305 agri-food commodities (out of the 516) for which the δ_(jk,t) is identifiable in the regression (some of the fixed effects are dropped due to collinearity, most commonly because imported from only one supplier or period).

Source: Own calculation based on BACI dataset from the CEPII, HS 1996 at 6-digit.

Table 16 shows the results for wheat, which is the most important imported agri-food product in Ethiopia, with respect to both the world (top panel) and the SSA average (bottom panel). Interestingly, the relative demand for wheat substantially increased, especially when we look at the other SSA countries. Thus, it is 39 percent above to the SSA average in 2018 while it was only 0.43 percent in 2008. This is the value used in the prioritization analysis.

Table 15 Relative Demand (in volume) for wheat in Ethiopia

Ethiopia demand over World average ($Demand^{ETH,WLD}_{.,t}$)	
Year	Average
2008	0.13
2013	0.07
2018	0.27
Average	**0.16**
Ethiopia demand over World average ($Demand^{ETH,SSA}_{.,t}$)	
Year	Average
2008	0.43
2013	0.34
2018	1.39
Average	**0.72**

Notes: The table reports the average relative demand. The table reports results for wheat (HS code 100190).

Source: Author's own elaboration and calculation based on BACI dataset from the CEPII, HS 1996 at 6-digit.

Import relative price

In this section, we analyse the price dynamics of the Ethiopia imported commodities. Leveraging on the properties of the gravity equation we fit a gravity model for import prices, explicitly controlling for Tariffs and trade costs (i.e., distance) and study the distribution of import prices with respect to the gravity predictions: again, thanks to the close link with theory, the structural gravity prediction provides a natural benchmark (Costinot *et al.,* 2015; Feenstra, 2018).

To complement the analysis on the import demand dynamics, we now move to the Trade Unit Value database (TUV) and analyze the relative price dynamics of Ethiopian imports of Agri-food commodities with respect to a group of benchmark countries. As benchmark countries we use the other low-income sub-Saharan African countries (SSA).[13]

The estimation period covers almost two decades from year 2000 to 2018. In what follows, we perform an empirical investigation of the Ethiopian import patterns for agri-food products by looking directly at the average price of the imported goods and the number of countries from which Ethiopia source its imports, which we refer to as varieties for convenience (see Annex).

Table 17 reports the results for an estimated equation of import prices in Ethiopia, where Treatment=1 if the destination of exports is Ethiopia.

In Column 1 to column 4 the control group is defined with SSA, while in column 5 we restrict the sample to a group of Ethiopian regional competitors (i.e., Djibouti, Kenya, Madagascar, Rwanda, Uganda, Zambia and Zimbabwe). In column 3 we include an interaction term between the Treatment and the variable, Concentration, measuring the market share of the first supplier of commodity k in Ethiopia.

Furthermore, in columns 4 and 5 we include an interaction between the Treatment and an indicator variable, Demand, taking the value of 1 for the 5 commodities for which Ethiopia reveals the highest score in the conditional demand (Section 5.1). We observe that, for the same variety, the average price is 22.5 percent higher with respect to the counterpart variety imported in regional competitor SSA countries (conditional on exchange rate, distance, and regional trade agreement and common currency – column 5).[14] This is the value reported for each commodity in the prioritization analysis.

We computed the estimated price differentials for Ethiopian imports by HS 6-digit product. For instance, for wheat the average price is 18 percent higher than those faced by neighbouring SSA countries, while malt is 7 percent and milled rice 30 percent (see Table A6).

[13] We rely on World Bank classifications for both regions and income level. Other data used in the empirical analysis are the real effective exchange rates of importing country currency from the EQCHANGE database (Couharde *et al.,* 2017), bilateral distance and regional trade agreements indicator from Gravity Database (Head and Mayer 2014).

[14] The percentage difference is computed as [exp(β Treatment)-1]*100.

Table 16 Average price differentials for Ethiopian imports vis-à-vis low-income sub-Saharan countries

	Dependent Variable: **log (import price)**				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Treatment	0.203***				
	(0.028)				
Treatment* Year(2001-2006)		0.157***			
		(0.036)			
Treatment* Year(2007-2012)		0.128***	0.051		
		(0.024)	(0.055)		
Treatment* Year(2013-2018)		0.303***	0.191***		
		(0.047)	(0.067)		
Treatment*Year				0.026***	
				(0.006)	
Treatment*Year*Concentration					0.019**
					(0.008)
FEs	ikt	ikt	ikt, ijk	ikt, ijk	ikt, ij, jt
Controls	Yes	Yes	Yes	Yes	Yes
Reference	Neighbours	Neighbours	Neighbours	Neighbours	Neighbours
Observations	68,934	68,934	60,731	60,731	68,825
R^2	0.962	0.963	0.985	0.985	0.970
Price difference	**22.5%**			**2.6%**	**1.9%**

Notes: In column 1 to 4 the control group includes sub-Saharan African countries, while in column 5 the control group includes only the Ethiopian neighbouring countries, this explains the difference in the number of observations. Robust standard errors clustered by destination-year in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Author's own elaboration and calculation based on X

In Table A2 in the Annex, we inspect closer the time dimension of the import price differentials. In column 1 we report the preferred baseline specification for references. We then split the treatment coefficient into three homogenous sub-period and allow for an heterogeneous price differential across them.

Interestingly, the wedge between Ethiopian and the benchmark group is positive and significant across the whole-time frame, albeit the gap increased substantially over the recent years, i.e. period 2013-2018.

In column 3 we enrich the specification by including origin-destination-product fixed effects, δ_ijk. The within (country-pair-product) specification confirms that over the recent years the increase in the import price gap is significantly higher than the first period, 2000-2006 (now excluded as the reference group).

In column 4, we interact the Treatment with a linear trend and evaluate the increase in the price gap to be approximately 2.6 percent a year (on average).

Finally, in column 5, we exploit both the time and product heterogeneity and include the interaction between Treatment a linear trend and Concentration, measuring the market share of the first supplier of commodity k in Ethiopia (to ease the interpretation of the coefficient the variable Concentration is standardized). Despite being a very demanding specification, results reported in column 5 confirms that Ethiopian import prices have been increasing over time especially for those products for which there is higher concentration of suppliers' market shares. One standard deviation in the Concentration is associate with an increase in the price wedge of imports of about 1.9 percent.

7. Conclusions

This chapter provides a prioritization analysis for export and import diversification in Ethiopia. To this end, we developed a prioritization methodology, based on quantitative and qualitative ranking criteria, which has been assessed on the whole set of agri-food exported and imported products.

From the list of 14 competitive export products, the analysis has shortlisted 11 export value chains, namely: coffee, sesame, kidney beans, goat's meat, cut flowers, pulse flour/meal, strawberries, honey/beeswax, asparagus, teff and sheep. From the list of 10 competitive imports, six value chains have been shortlisted: rice, sugar, barley, peas, sorghum and wheat.

Traditional and emerging tradable products have emerged, suggesting the need for diversification for both already well-developed value chains like coffee and emerging ones like strawberries and honey.

In particular, while the latter may improve competitiveness via targeted domestic policies affecting the quality and quantity of exports (e.g., increased technology adoption, quality testing etc.), the former may explore diversification strategies into new markets/buyers.

Furthermore, the broader analysis of Ethiopia's position in regional and global agri-food markets indicates that market diversification and synchronization with international demand will be critical for sustainable export growth and orientation towards a more internationally competitive agri-food sector.

On the import crops, on the one hand the indicators have highlighted the need to reassess the sourcing strategies as both prices and volumes for these crops are relatively higher than the neighbouring/benchmarking countries. On the other, the Ethiopian government should encourage smallholder commercialization, as a low share of these crops is marketed.

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Annexes

Annex 1. Tables and figures

Table A1. 1 Variable definition and data sources

Variable	Description	Source
Exchange Rate	Real Effective Exchange Rate	EQCHANGE, CEPII
RTA	Dummy variable for Regional trade Agreement in Force between country-pair at time t.	Gravity Database, CEPII
Tariffs	Applied Preferential and Most Favored Nation tariff rates by 6-digit HS goods	WITS, World Bank
CommCurr	Dummy variable for common currency between country-pair at time t.	Gravity Database, CEPII
Distance	Bilateral distance between capitals	Gravity Database, CEPII
Unit Values	USD per thousand kg	TUV database, CEPII
Unit Values, TCC	USD per quantity unit	TCC custom authority

Source: Authors' own elaboration.

Table A1 2 Average price differentials for Ethiopian imports vis-à-vis sub-Sharan countries, by period

	Dependent Variable: **log (import price)**				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Treatment	0.203***				
	(0.028)				
Treatment* Year(2001-2006)		0.157***			
		(0.036)			
Treatment* Year(2007-2012)		0.128***	0.051		
		(0.024)	(0.055)		
Treatment* Year(2013-2018)		0.303***	0.191***		
		(0.047)	(0.067)		
Treatment*Year				0.026***	
				(0.006)	
Treatment*Year*Concentration					0.019**
					(0.008)
FEs	ikt	ikt	ikt, ijk	ikt, ijk	ikt, ij, jt
Controls	Yes	Yes	Yes	Yes	Yes
Reference	Neighbours	Neighbours	Neighbours	Neighbours	Neighbours
Observations	68,934	68,934	60,731	60,731	68,825
R^2	0.962	0.963	0.985	0.985	0.970
Price difference	**22.5%**			**2.6%**	**1.9%**

Notes: Price is Unit Value expressed in log. In column 1 to 4 the control group includes sub-Saharan African countries, while in column (5) the control group includes only the Ethiopian neighbouring countries, this explains the difference in the number of observations. Robust standard errors clustered by destination-year in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration. Trade Unit Value database, CEPII, 2000-2018.

Table A1 3 Agri-food export commodities with a positive Revealed Comparative Advantage in Ethiopia

Harmonized System chapter	Harmonized System code	Description	Revealed Comparative Advantage
1	10410	Sheep	4.61
1	10600	Other live animals	2.64
2	20110	Carcasses and half-carcasses	3.42
2	20210	Carcasses and half-carcasses	32.99
2	20421	Other meat of sheep, fresh or chilled: carcasses and half-carcasses	20.37
2	20441	Other meat of sheep, frozen: carcasses and half-carcasses	1.19
2	20450	Goat meat	341.87
2	20690	Other, frozen	4.52
5	50690	Other	1.82
5	51000	Ambergris, castoreum, civet and musk	3.10
6	60210	Unrooted cuttings and slips	40.42
6	60240	Roses, grafted or not	1.99
6	60310	Fresh	16.77
6	60491	Other: Egg yolks: fresh	3.52
7	70110	Seed	2.21
7	70190	Other	1.74
7	70310	Onions and shallots	1.12
7	70390	Leeks and other alliaceous vegetables	20.11
7	70810	Peas (Pisum sativum)	3.08
7	70820	Beans (Vigna spp., Phaseolus spp.)	3.92
7	70910	Globe artichokes	57.02
7	70990	Other	17.75
7	71290	Other vegetables; mixtures of vegetables	11.44
7	71320	Chickpeas (garbanzos)	32.50
7	71331	Beans (Vigna spp., Phaseolus spp.): Beans of the species Vigna mungo	42.39
7	71332	Beans (Vigna spp., Phaseolus spp.): small red (Adzuki) beans	13.19
7	71333	Beans (Vigna spp., Phaseolus spp.): kidney beans	66.32
7	71339	Other	7.75
7	71350	Broad beans and horse beans	46.57
7	71390	Other	88.42
8	80720	Papaws (papayas)	1.01
8	81010	Strawberries	2.30
9	90111	Coffee, not roasted: not decaffeinated	45.72
9	90112	Coffee, not roasted: decaffeinated	26.05
9	90190	Other	22.16
9	90411	Pepper: neither crushed nor ground	3.47
9	90412	Pepper: crushed or ground	4.40
9	90700	Cloves (whole fruit, cloves and stems)	2.79
9	90920	Seeds of coriander	2.25
9	90930	Seeds of cumin	7.14
9	91030	Turmeric (curcuma)	21.30
9	91099	Other spices: other	2.38
10	100200	Rye	2.95
10	100820	Millet	4.51
10	100890	Other cereals	6.09
11	110430	Germ of cereals, whole, rolled, flaked or ground	1.42
11	110610	Of the dried leguminous vegetables of heading No. 07.13	8.30
11	110620	Of sago or of roots or tubers of heading No. 07.14	1.34
12	120220	Shelled, whether or not broken	4.43
12	120720	Cotton seeds	7.12
12	120730	Castor oil seeds	287.25
12	120740	Sesamum seeds	146.58
12	120799	Other: other	26.33
12	120890	Other	3.15
12	120929	Seeds of forage plants, other than beet seed: other	2.56
12	120999	Other	8.54
12	121190	Other	2.93
12	121292	Other: sugar cane	12.48
13	130120	Gum Arabic	1.67
13	130190	Other	16.84
15	152190	Beeswax and other insect waxes	23.18
17	170310	Cane molasses	9.47
20	200560	Asparagus	5.32

Source: Authors' own elaboration based on BACI by CEPII, 2018.

Table A1 4 Import commodities with a high relative demand and price in Ethiopia

HS code	Import relative demand	Import relative price	HS code	Import relative demand	Import relative price	HS code	Import relative demand	Import relative price
10599		0.222492	80940		0.926801	151550	1.329061	0.168622
10600	6.321672	0.246391	81010		0.268036	151610		0.211222
20120		0.680665	81120		0.210719	151800	3.541534	0.209144
20130		0.568632	81290		0.274517	152000		0.728207
20312		0.29327	81310	2.056726	0.769222	152110		0.647165
20410		0.512402	81320		0.283086	152190		0.30701
20422		0.466194	81350		0.425672	152200		0.196196
20629		0.534131	81400		0.376255	160210	4.911217	0.385238
20711		2.362372	90122	8.100633	0.161161	160232	1.151937	0.203193
20714	3.455181	0.904168	90220	9.537526	0.347923	160242		1.063982
20727		0.723343	90300		0.427969	160300	1.109534	0.535107
20890		0.817778	90411	1.639091	0.096769	160411	2.247107	1.093924
21011		0.669537	90620	1.012764	0.186218	160510		0.258765
21012		0.477281	90910		0.145424	160540		0.834911
30212		0.25232	91010	1.224829	0.597699	160590		0.385899
30329		0.225654	91030		0.096219	170111	4.691804	0.160601
30349		0.531994	91099	1.084536	0.324901	170112	1.667862	0.216802
30378		0.567943	100190	1.386369	0.176075	170191	11.08846	0.235005
30379		1.36519	100300	2.232927	0.186967	170220		0.264998
30410	3.433262	0.075264	100400		0.21032	170260		0.220573
30490		0.233056	100630	2.639543	0.299815	170290	1.533211	0.270652
30569		1.882102	100640	2.992048	0.239045	180620	1.168066	0.306239
30611		0.194955	100700	6.888823	0.202016	180631	3.876254	0.422663
30614		0.224074	100890		0.199116	180632	1.504646	0.217161
30619		0.244278	110313		0.320597	190211	1.264084	0.213109
40221	3.830796	0.265734	110321		0.449893	190300		1.951208
40229	1.828532	0.140711	110412	1.517109	0.187537	190410	2.283299	0.159875
40490		0.0546	110422	2.702385	0.260504	190510		0.484684
40520		0.198417	110423		0.21997	190520		0.410955
40630	1.780096	0.186546	110430		0.114171	190540	4.222359	0.427863
40700	1.033902	0.183061	110610		1.158407	190590	3.267828	0.268907
40899		0.607394	110620		0.157094	200190	3.018667	0.130501
51110		0.346547	110710	6.454517	0.073745	200310	1.615824	0.11806
60120		0.461197	110720	1.65313	0.134913	200410	11.73337	0.152478
60210	2.90868	0.096398	110811	2.934178	0.536571	200560		0.177738
60499		0.230984	110819	3.11589	0.888628	200570	2.414039	0.21668
70110	5.996503	1.004277	110900		0.518183	200600	1.985447	0.27202
70190		1.272786	120100	1.815694	0.131866	200710	3.833616	0.221151
70200		4.709291	120600		0.192258	200820	1.337051	0.195944
70320		0.891583	120710		0.174622	200892	4.309404	0.175885
70810	1.707834	0.182779	120740	2.867545	0.204394	200911		0.034811
70951	3.615095	0.210821	120810		0.559507	200920	1.00161	0.142396
71022	3.079026	1.271923	120921		0.225823	200960	2.158775	0.279575
71120		0.283627	121010		0.235719	200970	1.07153	0.104702
71310	1.556077	0.203972	121020	1.063404	0.325896	210130		1.243042
71320	2.399979	0.206466	121190	1.975533	0.632204	210310	1.952949	0.300063
71331	1.019296	0.154687	130120	1.420904	0.500506	210390	1.354134	0.290312
71332		0.564735	130219	1.276411	0.206502	210690	1.874565	0.224298
71333	2.700574	0.241722	130220		0.079205	220421	1.107337	0.261405
71340	2.651131	0.178033	130232	1.844455	0.676435	220430		0.555747
71490		1.387046	140110		0.24281	220820	3.031713	0.280154
80420		1.879306	140190		0.743029	220830	1.514758	0.279262
80430		0.795641	150710		0.211173	220850	3.534617	0.215955
80440		1.739734	150890		0.156389	220870	1.474942	0.271233
80510	1.326224	0.596036	150990	3.742576	0.258857	240210	1.249076	0.234038
80590		0.620083	151110		0.211759	240290		0.219097
80810	1.599748	0.469395	151229		0.205333	240310		0.186345
80820	10.48219	0.416835	151511		0.196592			
80930	1.258687	0.421766	151519	2.470765	0.172166			

Source: Authors' own elaboration based on BACI y CEPII and Trade Unit Value database.

Table A1 5 Indicators for short-listed export products in Ethiopia

EXPORT												
			Trade				Competitiveness				Domestic	Policy
Description	HS code	Overall rank	Revealed Comparative Advantage	Ethiopia export share	Trade Balance Index	1st buyer share	Export market share	Number of dynamic importers	Export relative price	Relatedness	Quantity marketed	Policy alignment
Coffee, not roasted	90111	1	45.72	38.06	1.000	0.15	1.49	0	1.41	10	72.80	1
Sesamum seeds	120740	2	146.58	18.65	1.000	0.33	-2.74	1	0.96	10	87.71	1
Kidney Beans	71333	3	66.32	4.84	0.995	0.21	3.33	0	0.68	16	60.85	1
Meat of goats	20450	4	341.87	5.48	1.000	0.64	5.00	0	1.00	6		0
Cut Flowers	60310	5	16.77	6.26	0.994	0.38	8.43	1	0.78	4	74.58	0
Flour & Meal Of Vegetables	110610	6	8.30	0.04	1.000	0.21	6.06	0	2.90	3		0
Natural Gums	130190	7	16.84	0.41	0.538	0.30	-2.47	0	1.47	2		0
Ambergris, castoreum, civetmusk	51000	8	3.10	0.05		0.63	6.10	0	12.83	2		0
Beeswax	152190	9	23.18	0.17	0.966	0.39	-3.23	0	1.14	1		1
Strawberries	81010	10	2.30	0.28	0.990	0.66	9.11	0	1.02	2		0
Cane molasses	170310	11	9.47	0.23	1.000	0.77	2.20	0	1.03	1		0
Asparagus	200560	12	5.32	0.06	0.999	0.76	113.98	0	0.57	1		0
Teff	100890	13	6.09	0.17	0.991	0.97	-5.94	0	0.47	3		1
Sheep	10410	14	4.61	0.33		0.76	-23.33	0	0.42	2		0

Notes: Overall rank is a simple average of the indicators. The table reports indicators' values.
Source: Authors' own elaborations based BACI dataset from the CEPII, World Bank LSMS-ISA and Trade Unit Value database.

Table A1 6 Indicators for short-listed import products in Ethiopia

IMPORT									
			Trade			Competitiveness		Domestic	Policy
Description	HS code	Overall rank	Ethiopia import share	1st supplier share	Relatedness	Import relative demand	Import relative price	Quantity marketed	Policy alignment
Rice (milled)	100630	1	0.04	0.85	7	2,64	0,30	49.93	0
Rice (broken)	100640	2	0.02	0.44	6	2,99	0,24	49.93	0
Cane sugar, raw	170111	3	0.05	0.54	6	4,69	0,16	79.17	0
Barley (malt)	110710	4	0.03	0.30	13	6,45	0,07	35.94	1
Peas (dried, shelled)	71310	5	0.01	0.68	15	1,56	0,20		0
Grain sorghum	100700	6	0.03	0.28	6	6,89	0,20	23.72	0
Roasted malt	110720	7	0.02	0.43	13	1,65	0,13	35.94	1
Wheat	100190	8	0.14	0.28	7	1,39	0,18	27.54	1
Prepared food from cereals	190410	9	0.01	0.89	7	2,28	0,16		0
Food preparations from lactose or sugar syrups	210690	10	0.02	0.31	4	1,87	0,22		0

Source: Authors' own elaborations based BACI dataset from the CEPII, World Bank LSMS-ISA and Trade Unit Value database.

Annex 2. Methodology

RCA-PR: Proudman and Redding "RCA-PR" is defined as:

$$RCA - PR_{ik} = \frac{(x_{i,k}/\sum_{\mathrm{i}} x_{i,k})}{\frac{1}{\mathrm{N}}\sum_{\mathrm{k}}^{\mathrm{N}}(x_{i,k}/\sum_{\mathrm{i}} x_{i,k})}$$

The main advantage in using the RCA-PR definition is that it evaluates the export share of an economy i in product k with respect to the average market share of the same economy in all other products: a country will have a comparative advantage in product k if the ratio is higher than 1.[15] For any point in time the mean value of RCA-PR will be constant and equal to 1. In other words, RCA-PR is equivalent to a standard RCA normalized by its cross-sectional mean.

TBI: Trade Balance Index (TBI, also known as Lafay index16) is computed as follow:

$$TBI_{ik} = \left(x_{i,k} - m_{i,k}\right)/\left(x_{i,k} + m_{i,k}\right)$$

where $x_{i,k}$ represents exports and $m_{i,k}$ imports of country i in product k. The TBI index ranges from -1 to 1. A TBI < 0 means that a country is a net importer for goods k; whereas TBI>0 means that the country is net exporter. At the limit, a TBI of -1 indicates the country does not produce good k and that the domestic consumption relies entirely on import. On the other hand, a TBI of 1 indicates that the country is producing only for export.

Export Competitiveness market share: export growth rates decomposition is carried out using an econometric shift-share analysis, where in each quarter the growth of exports in product k from country i to destination j is regressed on exporter, product, and destination fixed effects. The contribution of each dimension is identified by the estimated fixed effects:

- Fixed Effect i: exporter specific factors
- Fixed Effect j: destination market factors
- Fixed Effect k: exporter industrial specialization

For any quarter in the estimation sample, the baseline specification for the decomposition reads as follow:

$$\Delta Exports_{ijk} = FE_i + FE_j + FE_k + \varepsilon_{ijk}$$

From the above decomposition, we derive the "adjusted market shares": a supply side measure of the contribution of country-specific factors to market share change (i.e. normalized FEi), plus two indexes on the relative contribution of geography (FEj) and industrial specialization (FEk) to a country export growth.

Number dynamic importers: it is the same methodology defined above but applied to the import flows. The number of dynamic importers is the sum of the 10 most relevant countries for "Demand Side Factors" over the period 2006q1-2019q2 that Ethiopia is able to serve.

[15] See Carrère *et al.,* (2014) for a recent application of RCA-PR.
[16] See Lafay (1992).

Export Relative Price: for each 6-digit variety in the agri-food RCA basket exported by both Ethiopia and a competitor in a given destination market, we build a relative price index as weighted geometric average of relative unit values at 6-digit. The weights are given by the share of individual commodities in the total import of the destination country, ensuring that aggregation is not affected by changes of the export basket of the origin country.

$$RelPrices_k^j = \sum_{k=1}^{K} \frac{UV_{TCC,k}^j}{UV_{ref,k}^j} * w_{jk}$$

Import Relative Demand: to evaluate developments in relative demand for foreign varieties in Ethiopia we rely on a structural gravity decomposition of trade flows (see Annex). In so doing, we start by estimating the following model:

$$log(Exports_{ijk,t}) = \delta_{ijk} + \delta_{ik,t} + \delta_{jk,t} + \beta \log(1 + Tariff_{ijk,t}) + \varepsilon_{ijk,t}$$

Where the term $Exports_{ijk,t}$ refers to the volume of exports from origin i towards destination j in year t for the 6-digit variety k. The right-hand side of the equation includes the theoretical consistent determinant of bilateral trade flows as prescribed by the structural gravity approach: δ_{ijk} capturing bilateral time-invariant trade frictions (such as geography, language and historical ties); the applied $Tariff_{ijk,t}$ quantifies bilateral time-variant trade frictions (price shifter); $\delta_{ik,t}$ measuring the competitiveness of exporter i in variety k and year t (i.e. factory gate prices) and $\delta_{jk,t}$ capturing the demand components (such as preferences) at the destination market j. Finally, $\varepsilon_{ijk,t}$ represents an idiosyncratic error term.

The estimation is performed separately for each of the 516 agri-food varieties imported in Ethiopia. The sample period covers two decades from 1998 to 2018 over 5-year intervals as estimating the model on consecutive years may results in biased coefficients as the adjustment of trade flows to policy (and price) changes are not instantaneous. Data wise, bilateral exports at 6-digit HS classification are from the BACI dataset (CEPII) whereas tariffs are from WITS database (World Bank).

Equipped with the estimated determinants of bilateral trade flows we build an index of relative attractiveness of Ethiopia using the estimated demand components, $\hat{\delta}_{jk,t}$, as the ratio between the estimated demand for Ethiopia and the world average for variety k in year t, $Demand_{k,t}^{ETH,WLD} = \hat{\delta}_{k,t}^{ETH} / \hat{\delta}_{k,t}^{world}$. Where $\hat{\delta}_{k,t}^{world}$ reports the world average of the demand component for product k in year t. Due to the normalization, the vector of $\hat{\delta}_{jk,t}$ range from 0 to 1, where 1 implies the highest (conditional) demand for product k in year t. Values above 1 of $Demand_{k,t}^{ETH}$ reveal that Ethiopia is a relatively more attractive destination for exports than the world average. For comparison, we also report the relative demand vis-à-vis the other countries in the sub-Saharan Africa region (SSA), computed as follow: $Demand_{k,t}^{ETH,SSA} = \hat{\delta}_{k,t}^{ETH} / \hat{\delta}_{k,t}^{ssa}$. Importantly since $\hat{\delta}_{jk,t}$ is estimated controlling for both bilateral frictions (i.e. δ_{ijk} and $Tariff_{ijk,t}$) and supplier productivity ($\delta_{ik,t}$) such demand components are already purged from confounding factors coming either from geography, trade policy or exporter characteristics.

Import Relative Price: the estimated equation reads as follow:

$$y_{ijk,t} = \delta_{ik,t} + \beta_1 Treatment_{TCC,t} + \beta_s Controls_{ijk,t-1} + \varepsilon_{ijk,t}$$

$Treatment$=1 if the destination of exports is Ethiopia (and zero otherwise). $\delta_{ik,t}$ is the fixed effect at the product-year-country of origin level. The vector of $Controls_{ijk,t-1}$ includes: bilateral distance in logs (to proxy for transport costs), relative effective exchange rate vis à vis trading partners (controlling for purchasing power), a dummy for regional trade agreement and a dummy for common currency (as proxy for trade and monetary policy). Time varying controls are lagged one year to mitigate simultaneity bias. Furthermore, given the presence of $\delta_{ik,t}$ fixed effects, the estimated coefficient for the exchange rate is capturing the effect of bilateral exchange rate differentials by country-pair over time. As dependent variable , $y_{ijk,t}$, we use the import price in log, so that the estimate of β can be read as the expected % difference in the price of a variety being imported in Ethiopia with respect to the same variety being imported in another sub-Saharan country (where variety is defined by the commodity-supplier pair). Notice that the

estimation sample only include Sub-Saharan economies. The standard errors of the coefficients for all estimations are clustered at the destination country – time level. This structure concedes the unit values of imported products to be correlated within a destination country and year. This is the case, for example, whenever import prices are sensible to that country's general regulation. Finally, to control for possible measurement error in quantities and thus in unit values we estimate the equation with weighted least square, where weights are proportional to the value of a country imports of product k in period t.

Annex 3. Theoretical background

As for the empirical analysis we rely on the so-called workhorse of international trade analysis, the gravity model (Yotov *et al.,* 2017, Head and Mayer 2014). The main advantage of the gravity model for trade is that it is very intuitive: "using the metaphor of Newton's Law of Universal Gravitation, the gravity model of trade predicts that international trade (gravitational force) between two countries (objects) is directly proportional to the product of their sizes (masses) and inversely proportional to the trade frictions (the square of distance) between them" (Yotov et al 2017).

Beyond that the gravity model is firmly grounded into economic theory as a wide range of theories comply with the structural gravity assumptions. As highlighted in Head and Mayer (2014) both demand side and supply side model of trade imply as prediction a gravity type equation for bilateral trade flows.[17] Finally, when brought to the data the gravity model reveals a strong predictive power. Empirical gravity estimations are proven to fit the observed data very well, consistently explaining between 60 and 90 percent of the observed variation (Yotov *et al.,* 2017).

Such features helped the gravity model to become the workhorse for empirical assessment of the determinant of bilateral trade flows over the past 50 years (Head and Mayer 2014). The typical structural gravity system is given by:

$$X_{ij} = \frac{Y_i E_j}{Y}\left(\frac{t_{ij}}{\Pi_i \mathrm{P}_j}\right)^{1-\sigma} \quad \text{(i)}$$

$$\Pi_i^{1-\sigma} = \sum_j \left(\frac{t_{ij}}{\mathrm{P}_j}\right)^{1-\sigma} \quad \text{(ii)}$$

$$\mathrm{P}_j^{1-\sigma} = \sum_i \left(\frac{t_{ij}}{\Pi_i}\right)^{1-\sigma} \quad \text{(iii)}$$

The system of equations (i)-(iii) describes the theoretical gravity equation for bilateral trade flows between country i and j, X_{ij}. Consistently with the original law of gravity it can be broken down into two main components: a "size" term $Y_i E_j / Y$ representing the economic mass of exporter i (output Y_i) and importer j (expenditure E_j) relative to the world output (Y)[18];19 and a "friction" term, $\left(t_{ij}/\Pi_i \mathrm{P}_j\right)^{1-\sigma}$ covering all trade frictions between origin and destination. Finally, σ, represents the elasticity of substitution of varieties produced in different countries.

Most importantly the "friction" term can be further split into three components:

1. Bilateral Trade Costs, t_{ij}, capturing bilateral geographic and policy impediment to trade such as distance, tariffs, and other non-tariff barriers.

2. Outward Multilateral resistance term, Π_i, representing the exporter market access

3. Inward multilateral resistance term, P_j, representing the importer market access

The term (2) and (3) are particularly relevant as the Multilateral Resistance Terms (MRTs), originally introduced by Anderson and van Wincoop (2003), represent theory consistent aggregators of the bilateral trade costs. Measuring the supply-side (Π_i) and the demand-side (P_j) incidence of trade costs for a given economy across all its trade partners (recall that t_{ij} enters both equation ii and iii) the MRTs conveniently embed third country general equilibrium effects.

Anderson (2010) conveniently summarize the role of MRTs: "Multilateral resistance is equivalent to a Total Factor Productivity (TFP) penalty. The Π_i's push below the world price the 'factory gate' price that sellers receive, which

[17] Arkolakis *et al.,* (2012) demonstrated that a large class of models generate isomorphic gravity equations.
[18] Intuitively the size term imply that large producers tend to export more to all markets whereas rich countries tend to import more from all suppliers.

determines what they can pay their factors of production. Similarly, the P_j's raise the price that buyers must pay for final or intermediate goods".

To ease exposition the simplified representation of the structural gravity system presented so far did not consider any sectoral dimension. Importantly, one additional feature of the gravity model is the "separability" meaning that all the discussed properties holds at separately for each sector (Yotov et al 2017).

For the purpose of the report these are critical results on which we build the empirical strategy used to assess export and import performance of Ethiopia at a very detailed product level (considering over 5100 commodities on the HS 6-digit classification).

On one hand, by capturing the supply side incidence of trade costs, Costinot, Donaldson & Komunjer (2012) demonstrate how the outward multilateral resistance term can be interpreted as an index of ex-ante revealed comparative advantage. In the report we build on this result and analyse export competitiveness of Ethiopian producers combining structural and Balassa-type RCA along with a gravity-like export market share decomposition.

On the other hand, by capturing the demand side incidence of trade costs the inward multilateral resistance term provides a theoretically consistent measure of international attractiveness of a country as importer and the incidence on local buyers of trade costs. The report builds on this result and provides an assessment of Ethiopia imports patterns in volumes and prices.

Chapter 2

Beefing up: An analysis of Uganda's beef export competitiveness

1. Introduction

The development prospects of many low and middle-income countries are strictly related to their ability to leverage international markets. Integration into the global marketplace is indeed a powerful vehicle for productivity growth, and with it, for increased income per capita (Frankel and Romer, 1999; Dollar and Kraay, 2004). International trade, in general, and export diversification, in particular, are often seen as the main drivers of output growth. However, as recently shown by Daruich *et al.* (2019), the explanations for export success that focus only on industry competitiveness in the source country (and the policies that affect this) may be missing much of the origins of success, as the bulk of the variation in export growth is accounted for by international market factors.

Against this background, many developing countries have started looking at the international demand and promoting export diversification through direct policy incentives and export institutions. Over the last years, through the Agriculture Sector Strategic Plan (ASSP) 2015/16–2019/20, i.e. the overarching framework for developing the agricultural sector, the Ministry of Agriculture, Animal Industry & Fisheries (MAAIF) in Uganda has envisaged a variety of investments for the production and exports of the livestock, hides and skins products, totalling about USD 225 million. These include, for instance, the establishment of mobile and regional laboratories; control of vectors and diseases through vaccination, disease surveillance and construction of infrastructure for disease control; pasture development; provision of high genetic materials; promotion of labour-saving technologies; creating a buffer stock/animal handling grounds to support beef processing. Despite these efforts, however, Ugandan exports of frozen meat of bovine animals, i.e. the most exported beef product, from a peak of USD 804 000 in 2018 have decreased to USD 140 000 in 2019 and USD 510 000 in 2020.

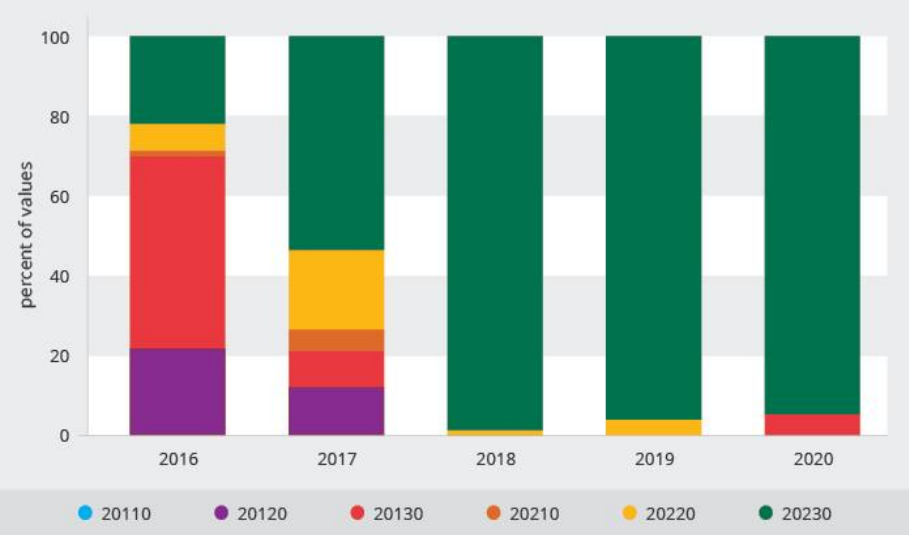
The livestock sector accounts for about 17 percent of agricultural value added and 4.3 percent of GDP. Among the livestock sub-sectors, cattle is the most important one, as Uganda has 14.2 million cattle, of which 11.9 million are raised for meat (FAO, 2019). Most cattle are in the 'Cattle Corridor', which extends diagonally across Uganda from the pastoralist Ankole area in the Southwest to the Karamoja region in the Northeast (Egeru *et al*. 2014). The highest concentration of cattle (head/km2) is found in the pastoral areas of Karamoja, where cattle is the main source of livelihoods and the backbone of the local economy (Gradé *et al.* 2009).

The cattle sector contributes to over 40 percent to the value of livestock production and to about 7 percent to the value of agricultural production (UBOS, 2017). Beyond providing food and other goods and services to the population – such as manure and draft power – the livestock sector contributes between 1 and 1.5 percent to Uganda's export trade value. Uganda's exports of livestock and meat products are currently limited by the presence of Foot-and-Mouth Disease-and-mouth disease (FMD), which restricts access to export markets under guidelines set by the World Organisation for Animal Health. Despite this, consignments of meat and livestock for export do appear in formal trade data.[20] Uganda is net exporter of livestock products while few live animals are exported. Animal products exports are dominated by dairy products and eggs (USD 80 million), with meat and meat products (USD 6.2 million) playing a minor role.

This chapter focuses on meat of bovine animals and hides and skins exports. Following the Harmonised System (HS) of customs classification codes developed by the World Customs Organization, i.e. the international standard for classifying tradeable goods, beef is first grouped by its preparation – fresh or frozen, and then into three subcategories – carcasses and half-carcasses, cuts with bone in, and boneless (mince). As shown in Error! Reference source not found., about 70 percent of meat is exported as frozen boneless (HS 020230), followed by 20 percent of fresh boneless meat (HS 020130) and 10 percent of fresh cuts with bon in meat (HS 020120).

[20] This may be the result of three recently certified abattoirs which meet international standards, or simply trading partners not following the World Organisation for Animal Health guidelines.

Figure 7. Composition of beef exports



Source: Author's own calculation based on UN Comtrade Database. 2021. [UN Comtrade Database]. In: *UN Comtrade Database.* New York, USA. Cited [2021]. www.comtrade.un.org.

With this considered and the consultations held with the Beef Platform Secretariat, led us to focus on the remainder of this report on the two following meat products:

i) Meat of bovine animals, fresh or chilled, boneless – HS 020130.

ii) Meat of bovine animals, frozen, boneless – HS 020230.

And their by-products:[21]

iii) Whole hides and skins – HS 410110.

iv) Whole hides and skins (other) – HS 410190.

The rest of the chapter is organized as follows: Section 3 provides an analysis of the export competitiveness, Section 4 describes the importing activities in Uganda, Section 5 assesses the characteristics of the exporting firms, while Section 6 deals with the degree of trade informality, and finally Section 7 concludes and provide policy recommendations.

2. Export competitiveness

2.1. Export specialization patterns

In this section we study whether Uganda has any specialization patterns in these four products, relying on the well-known concept of the revealed comparative advantages (RCA). The cross-sectional and dynamic analysis of the latter allows us to draw a picture of country's relative productivity and its evolution over time. Specifically, we make use of the Proudman and Redding (2000) version of RCA (PRA-PR) as it eases comparison across sectors and over time (see Annex).[22] A country will have a comparative advantage in a product if the ratio is higher than 1.

[21] It is important to note that tanned hides (in preparation for making leather products) account for 85 percent of the value Uganda's exports of skins and hides – and tanned cattle hides are the largest product in this category.

[22] It is worth mentioning that any RCA analysis, since it is based on observed trade patterns, can be influenced for example by government policies, resulting in a misrepresentation of the comparative advantage pattern. As point out by Timmer *et al.* (2015) RCA measures remain a useful proxy in determining whether an economy has a comparative advantage, even if they are less useful in quantifying the extent of such comparative advantage.

In what follows, we present the evolution of the export specialization patterns of Uganda, evaluated using RCA-PR, over the period 2007-2019 for the four selected products (defined using HS1996 at 6-digit). Trade data are from the BACI dataset, compiled from ComTrade by the CEPII (Centre d'Études Prospectives et d'Informations Internationales).[23]

We first show that both beef and hides and skins products under analysis reduced their export shares over time (**Error! Reference source not found.**). For instance, beef meat fresh exports decreased from about 0.2 percent of total exports in 2007 to 0.001 percent in 2019 (columns 1 and 2). More interestingly, beef products both fresh and frozen do not have a revealed comparative advantage, neither in 2007 nor in 2019, while whole hides and skins (HS 410110) lost its comparative advantage in 2019 (columns 3 and 4). The only product with a comparative advantage over the period under analysis is whole hides and skins (other) (HS 410190), although with a decreasing trend, i.e. from 3.4 in 2007 to 1.7 in 2019.

To complement the information given by the comparative advantage index, we also report the Trade Balance Index (TBI, also known as Lafay index).[24] The TBI index ranges from -1 to 1. A TBI < 0 means that a country is a net importer; whereas TBI>0 means that the country is net exporter. At the limit, a TBI of -1 indicates the country does not produce the good and that the domestic consumption relies entirely on import. On the other hand, a TBI of 1 indicates that the country is producing only for export. Combining the information from RCA-PR with the one from TBI is helpful also to have a first assessment on the stability of production at the industry level.

When computed on the selected four products, the average TBI is positive, with a level of 0.27, but highly heterogeneous, suggesting that exports tend to slightly dominate. Interestingly, beef frozen had a negative trade balance in year 2007 (i.e. TBI < 0) but managed to move towards parity and even develop a significant trade surplus in 2019, while the opposite is true for whole hides and skins (HS 410110) (columns 5 and 6).

Table 17. Export specialization patters

HS code	Description	Export share 2007 (1)	Export share 2019 (2)	RCA-PR 2007 (3)	RCA-PR 2019 (4)	Trade balance index 2007 (5)	Trade balance index 2019 (6)
020130	Meat of bovine animals, fresh or chilled, boneless	.197	.001	.051	.007	.976	.271
020230	Meat of bovine animals, frozen, boneless	.013	.008	.042	.023	-.031	.273
410110	Whole hides and skins	.201	.001	4.927	.134	.856	-.992
410190	Whole hides and skins (other)	.456	.013	3.403	1.729	.982	.992

Source: Authors' own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. BACI Database. In: CEPII. Paris. Cited [2021]. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37
Note: Export shares computed on total exports. HS 1996 codes at 6-digit level.

2.2. Decomposing export growth

Here we focus on Uganda's export performance through the analysis of the decomposition of market shares growth. We rely on the methodology developed by Gaulier *et al.* (2013) for the World Bank Measuring Export Competitiveness (MEC) database which analyses changes in world market shares adjusted by compositional effects. The general methodology allows to disentangle from the observed export growth: i) a compositional effect due to market orientation (geography);

[23] BACI is constructed using an original procedure that reconciles the declarations of the exporter and the importer. This harmonization procedure enables to extend considerably the number of countries for which trade data are available, as compared to the original dataset. BACI provides bilateral values and quantities of exports at the HS 6-digit product disaggregation, for more than 200 countries since 1995. It is updated every year.
[24] See Lafay (1992) in Annex.

ii) an industrial specialization (sector); and iii) a country-specific supply side competitiveness shock (supply side). For more details, see Annex.

Looking at the evolution of market shares alone, may indeed result in a flawed picture of a country external competitiveness. Market shares may contract even if exports are expanding, providing that they are growing at a slower pace than world average. On the opposite, an economy may improve its global market position only because it is serving the most dynamic importers or supplying most demanded goods. Then, a key question for policy makers would be: how much such (gains) losses are due to external factors, in terms of markets and sectors, and how much are related to country competitiveness?

We start from a world trade matrix of exports at HS-6-digit level of disaggregation over the period 2010q1-2019q4 and considering only the sub-set of selected commodities. Trade flows are recorded quarterly to control for the timing of any external shocks and the focus on year-on-year growth rates allows to get rid of any time-invariant export determinant as well as seasonality. Each table reports, along with Uganda, the scores for the comparator countries which are computed using a methodology, developed at the World Bank, aimed at identifying countries that are similar in economic development and/or size, competitors with a similar position of the export basket. Specifically, the methodology consider country "distance" in a 5-dimensional space, by using the following indicators as coordinates: export basket composition; GDP per capita; population; human capital; and physical capital. Countries are then ranked by degree of similarity. We report the world export market shares in the last column.

Table 18. Decomposition of export growth for HS 020130, 2010q1–2019q4, in percentage change

shows that, in product HS020130, Uganda decreased its market share substantially, -24.7 percent, mostly due to a negative contribution of the competitiveness supply side factor (-15.2 percent) and the residual sectoral term of the decomposition (-23.7 percent). Interestingly, Geography contributed positively for Uganda product exports (14.1 percent), highlighting the fact that the market served by this product have been relatively dynamic over the period 2010-2019. That is, the decrease in export market share is driven mostly by sector performance and supply-side factors and not by the dynamics of markets served.

Among its regional competitors, the United Republic of Tanzania shows a remarkable increase in market shares (155,4), entirely driven by supply side factors, while Kenya export market growth were affected by a strong negative supply side component (-58.8 percent) that coupled with an unfavourable sector component (-26.9 percent) more than offset the positive market orientation component (+72.9 percent).

Table 18. Decomposition of export growth for HS 020130, 2010q1–2019q4, in percentage change

Country	Description		Pull factors		Supply-side factors		Market shares
	Δ Export	Δ Export market share	Geography	Sector (residual)	Values	Prices	2010q1—2019q4
		(a+b+c)	a	b	c		
Uganda	**-19,34**	**-24,68**	**14,14**	**-23,66**	**-15,21**	**-14,38**	**0,0002**
United Republic of Tanzania	160,77	155,43	-7,54	0,00	162,97	-3,95	0,0078
Kenya	-8,39	-13,73	72,09	-26,93	-58,87	-22,70	0,0008
Côte D'Ivoire	-43,27	-48,61	0,00	0,00	-25,94	7,65	0,0001
United States	7,32	1,98	-5,49	0,00	7,46	1,49	18,0899
Australia	6,27	0,93	2,63	0,00	-1,70	1,90	15,0896
Ireland	1,79	-3,55	-1,59	0,00	-1,96	-1,41	9,9783
Netherlands	2,01	-3,33	-0,29	0,00	-3,04	-2,33	9,7506
Canada	6,76	1,42	1,54	0,00	-0,12	2,43	7,3270
Brazil	8,83	3,49	-0,52	0,00	4,01	-2,66	5,2732
World	*5,34*						*100*

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank*. Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. The annualized growth rate in market shares is exactly decomposed in 2 pull factors (Geography, Sector) and 1 push factor (Overall) so that Δ Market Share = Geography + Residual + Competitiveness. Competitiveness Δ Exp Mkt Share stands for change in a country export market share. All the values are annualized percentage changes

Despite Uganda's positive contribution of geography to export market share growth, the Government may seek to further strengthen its performance by identifying and targeting the most dynamic importing market for such commodities. To this aim, we apply the methodology defined above to the import flows, now capturing any country-specific demand factor affecting international trade dynamics. It is therefore possible to compare the observed market orientation of Uganda's exports to the benchmark in order to assess market potentials for Uganda's export products.

The first column in

Country			Demand-side factors: attractiveness		World market shares	Uganda market shares
	Δ Import	Δ Import market share	Values	Prices	2010q1--2019q4	2010q1--2019q4
Uruguay	54.26	48.93	48.38	1.90	0.15	
China	31.31	25.98	27.47	-0.03	0.35	
Israel	35.99	30.67	26.02	-0.13	0.33	
Sudan	-23.79	-29.11	21.80	-35.57	0.00	50.0
Algeria	21.83	16.51	15.47	1.11	0.33	
Indonesia	14.73	9.41	11.09	2.18	0.15	
Costa Rica	18.21	12.88	10.68	4.14	0.10	
Norway	15.58	10.25	10.48	0.52	0.25	
Korea	16.42	11.10	10.22	1.55	2.87	
Slovakia	16.33	11.01	10.07	-0.46	0.18	
Democratic Republic of the Congo	-9.18	-14.50	-28.29	-6.68	0.00	50.0

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. Δ Imp Mkt Share stands for change in a country import market shares. All the values are annualized percentage changes.

shows the most dynamic markets in terms of beef fresh imports (HS 020130), ranked according to their demand side attractiveness index (values). Uganda's market orientation has been positive (see Table 18. Decomposition of export growth for HS 020130, 2010q1–2019q4, in percentage change

) thanks to the increasing attractiveness of the Sudan (21.8 percent), while the Congo – the other destination market reached by Ugandan exporters of product HS020130 – decreased its demand by -28.9 percent. Overall, Ugandan beef fresh exports are able to serve only one country, i.e. the Sudan, of the top 10 most dynamic import markets. However, given the highly perishable nature of the product, market re-orientation towards some of the most dynamic importers farther located, such as Uruguay, China, and Israel, may not be feasible. Rather, it is advisable to consolidate exports to nearby relatively dynamic markets (the Sudan, the Democratic Republic of the Congo, at most Algeria).

Table 19. Decomposition of Import growth for HS 020130, 2010q1–2019q4, percentage change

Country			Demand-side factors: attractiveness		World market shares	Uganda market shares
	Δ Import	Δ Import market share	Values	Prices	2010q1--2019q4	2010q1--2019q4
Uruguay	54.26	48.93	48.38	1.90	0.15	
China	31.31	25.98	27.47	-0.03	0.35	
Israel	35.99	30.67	26.02	-0.13	0.33	
Sudan	-23.79	-29.11	21.80	-35.57	0.00	50.0
Algeria	21.83	16.51	15.47	1.11	0.33	
Indonesia	14.73	9.41	11.09	2.18	0.15	
Costa Rica	18.21	12.88	10.68	4.14	0.10	
Norway	15.58	10.25	10.48	0.52	0.25	
Korea	16.42	11.10	10.22	1.55	2.87	
Slovakia	16.33	11.01	10.07	-0.46	0.18	
Democratic Republic of the Congo	-9.18	-14.50	-28.29	-6.68	0.00	50.0

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. Δ Imp Mkt Share stands for change in a country import market shares. All the values are annualized percentage changes.

In product HS020230 Uganda market share also shrank significantly, -36.8 percent (**Error! Reference source not found.**). This is the mainly due to the strong negative contribution of the geography component, -60.8 percent, only partially offset by a positive supply side factor, 6.2 percent, and positive residual covariance factor 17.8 percent (sector). The associated import side decomposition in **Error! Reference source not found.** reveals that the Sudan, the Congo and Vietnam (adsorbing each one around one quarter of Uganda exports) reduced their attractiveness over the same period by -28, -3 and -0.16 percent respectively. The other foreign market served by Uganda exporters shows a positive development of global import demand, Rwanda by 91.8 percent. The fact that we observe a strong negative geography contribution for Uganda seems to suggest a substitution effect in Rwanda with the Congo and the Sudan.

Overall, while the performance of the supply (domestic) side of the sector improved over time, the import side, i.e. the performances of markets served, is severely limiting, as only Rwanda's attractiveness is increasing. Therefore, re-orienting exports towards most dynamic importers, such as China, Myanmar, Iraq, UEA, and Thailand, is highly recommended. For instance, trade missions or participation in trade fairs could be organized to facilitate contacts between Uganda exporters and buyers from these markets.

Table 20. Decomposition of export growth for HS 020230, 2010q1–2019q4, in percentage change

Country			Pull factors		Supply-side factors		Market shares
	Δ Export	ɲ 9 È LJ market share	Geography	Sector (residual)	Values	Prices	2010q1—2019q4
		(a+b+c)	a	b	c		
Uganda	**-28,94**	**-36,78**	**-60,84**	**17,85**	**6,25**	**-3,17**	**0,001**
Kenya	-7,81	-15,65	2,06	-1,33	-16,34	-3,67	0,008
United Republic of Tanzania	-53,50	-61,34	3,61	0,00	-64,94	-9,50	0,007
Brazil	5,54	-2,30	-3,22	0,00	0,92	-1,63	20,850
Australia	8,46	0,62	3,91	0,00	-3,29	1,64	17,851
India	8,74	0,91	-1,53	0,00	2,44	-1,70	16,509
United States	14,67	6,83	-1,14	0,00	7,98	0,83	8,864
New Zealand	6,47	-1,36	3,17	0,00	-4,54	1,17	8,642
Uruguay	6,12	-1,72	8,82	0,00	-10,54	0,77	5,374
Argentina	9,36	1,52	11,40	0,00	-9,87	-0,50	3,109
World	*7,84*						*100*

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. The annualized growth rate in market shares is exactly decomposed in 2 pull factors (Geography, Sector) and 1 push factor (Overall) so that Δ Market Share = Geography + Residual + Competitiveness. Competitiveness Δ Exp Mkt Share stands for change in a country export market share. All the values are annualized percentage changes.

Table 21. Decomposition of Import growth for HS 020230, 2010q1–2019q4, percentage changes

Country			Demand-side factors: attractiveness		World market shares	Uganda market share
	Δ Import	ɲ L ϒLJ market share	Values	Prices	2010q1--2019q4	2010q1--2019q4
Rwanda	29.46	21.62	91.80	-6.14	0.00	25.23
China	44.64	36.81	39.87	2.85	8.13	
Chile	25.41	17.57	18.88	-4.43	0.25	
Myanmar	10.57	2.73	12.97	-7.30	0.10	
Iraq	17.08	9.24	10.84	-0.29	0.62	
Brazil	7.80	-0.04	9.49	1.08	0.55	
Thailand	17.34	9.50	5.95	-2.00	0.31	
Indonesia	10.64	2.80	4.69	-0.96	1.66	
United Arab Emirates	14.15	6.31	4.18	-0.14	1.04	
Israel	5.62	-2.21	3.85	2.17	2.34	
Viet Nam	10.85	3.02	-0.16	0.11	7.78	24.32
Democratic Republic of the Congo	1.33	-6.51	-2.98	-4.53	0.03	25.23
Sudan	-23.85	-31.69	-28.08	-5.19	0.01	25.23

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. Δ Imp Mkt Share stands for change in a country import market shares. All the values are annualized percentage changes.

Error! Reference source not found. shows that in product HS410110 the export market share of Uganda improved slightly, +2.9 percent, particularly due to a positive supply side factor and a residual sector component (+11.1 percent). **Error! Reference source not found.** further shows that the negative geography component is due to the fact that Uganda hides and skins exports are able to serve only one, i.e. Rwanda, of the most dynamic import markets.

Table 22. Decomposition of export growth for HS 410110, 2010q1–2019q4, in percentage change

Country			Pull factors		Supply-side factors		Market shares
	Δ Export	ɲ 9 È LJ market share	Geography	Sector (residual)	Values	Prices	2010q1—2019q4
		(a+b+c)	a	b	c		
Uganda	**-6,80**	**2,89**	**-10,70**	**11,13**	**2,47**	**-3,74**	**0,008**
Rwanda	15,18	24,87	-7,61	-11,85	44,34	-19,28	2,476
Kenya	-1,87	7,82	26,39	-10,20	-8,40	-4,58	2,457
United Republic of Tanzania	7,70	17,40	-23,24	0,63	39,96	-10,35	0,354
Cameroon	29,57	39,26	-0,87	7,94	32,20	0,52	0,071
Malawi	10,83	20,53	-10,69	-12,25	43,44	3,36	0,038
Ghana	0,00	9,69	253,94	0,00	-244,25		0,005
Côte d'Ivoire	100,00	109,69	-12,35	0,00	122,04	36,36	0,002
United States	-12,76	-3,07	-10,40	0,00	7,35	-1,23	27,417
Mexico	13,40	23,09	-12,54	-0,50	36,17	18,75	12,180
World	*-9,69*						*100*

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. The annualized growth rate in market shares is exactly decomposed in 2 pull factors (Geography, Sector) and 1 push factor (Overall) so that Δ Market Share = Geography + Residual + Competitiveness. Competitiveness Δ Exp Mkt Share stands for change in a country export market share. All the values are annualized percentage changes.

Table 23. Decomposition of Import growth: HS 410110, 2010q1–2019q4, percentage changes

Country			Demand-side factors: attractiveness		World market shares	Uganda market share
	Δ Import	ɲ L ϒLJ market share	Values	Prices	2010q1--2019q4	2010q1--2019q4
Mexico	-7.02	-2.29	153.26	-1.29	3.71	
Rwanda	25.27	30.00	94.98	33.12	0.01	44.96
China	-16.57	-11.84	49.55	11.44	19.98	
Austria	29.16	33.89	39.19	7.52	0.40	
Greece	20.94	25.66	35.51	2.97	0.13	
Ghana	13.13	17.86	28.26	-1.13	0.16	
Serbia	1.94	6.67	26.53	6.79	0.21	
Croatia	-1.35	3.38	22.13	1.11	0.36	
Denmark	8.17	12.89	20.79	2.76	0.13	
Israel	5.30	10.03	17.25	-22.97	0.18	
Italy	7.82	12.55	15.14	-0.84	31.15	15.70
India	-0.74	3.99	3.05	-0.54	1.70	4.46
Pakistan	-17.85	-13.12	-19.60	6.74	0.08	34.88

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. Δ Imp Mkt Share stands for change in a country import market shares. All the values are annualized percentage changes.

Finally, in the case of product HS410190 the decline in the supply side factor (-10 percent) paired with an unfavorable geographic composition (-45.8 percent) induced a severe decline in the country export market share, -55.9 percent (**Error! Reference source not found.**). The negative geography contribution is not surprising considering that the only foreign market for Ugandan exports is Pakistan, whose global import market share declined of about 18 percent over the period (**Error! Reference source not found.**).

Table 24. Decomposition of export growth for HS 410190, 2010q1–2019q4, in percentage change

Country			Pull factors		Supply-side factors		Market shares
	Δ Export	ɲ 9 È LJ market share	Geography	Sector (residual)	Values	Prices	2010q1—2019q4
		(a+b+c)	a	b	c		
Uganda	**-53,29**	**-55,91**	**-45,84**	**0,00**	**-10,07**	**-13,06**	**0,009**
United Republic of Tanzania	-14,45	-17,07	-18,63	0,00	1,56	-17,96	0,043
Cameroon	10,85	8,24	-14,97	0,00	23,21	-24,70	0,028
Kenya	-19,14	-21,76	-24,03	0,00	2,27	-2,22	0,014
Malawi	-28,86	-31,48	-9,92	32,85	-54,41	-12,07	0,011
Rwanda	60,97	58,35	-240,45	102,43	196,39	-33,76	0,004
United States	0,07	-2,55	-6,00	0,14	3,36	0,59	41,027
Australia	12,36	9,75	-3,95	0,00	13,70	4,00	7,004
Germany	-2,75	-5,37	5,72	0,00	-11,09	1,34	6,839
France	5,30	2,68	4,65	0,00	-1,98	3,32	5,511
World	*2,62*						*100*

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. The annualized growth rate in market shares is exactly decomposed in 2 pull factors (Geography, Sector) and 1 push factor (Overall) so that Δ Market Share = Geography + Residual + Competitiveness. Competitiveness Δ Exp Mkt Share stands for change in a country export market share. All the values are annualized percentage changes.

Table 25. Decomposition of Import growth for HS 410190, 2010q1–2019q4, percentage changes

Country			Demand-side factors: attractiveness		World market shares	Uganda market share
	Δ Import	ɲ L Ÿ LJ market share	Values	Prices	2010q1--2019q4	2010q1--2019q4
Uruguay	35.62	33.08	35.27	-11.39	0.17	
Croatia	32.79	30.25	31.09	3.28	0.17	
Slovakia	16.42	13.88	24.88	-7.07	1.18	
Romania	11.58	9.04	24.40	12.69	0.22	
Poland	15.38	12.83	21.58	0.14	0.99	
France	18.19	15.65	19.86	-8.74	0.85	
Sweden	19.69	17.15	19.70	-1.36	0.53	
Netherlands	16.94	14.40	19.06	2.27	2.36	
Denmark	8.44	5.90	18.45	4.79	0.68	
Togo	19.87	17.33	16.20	7.55	0.50	
Pakistan	-15.46	-18.00	-24.15	-1.64	0.07	100,00

Source: Author's own computation based on the World Bank. [2021]. Measuring Export Competitiveness database. In: *World Bank.* Washington, DC. Cited [2021}. https://mec.worldbank.org

Note: The underlying econometric decomposition considers only the HS commodity indicated in the title. Δ Imp Mkt Share stands for change in a country import market shares. All the values are annualized percentage changes.

The results for both HS 410110 and HS 410190 highlight the fact that the geography is a limiting factor of exports performance. Therefore, re-orienting exports towards some of the most dynamic markets, such as Mexico, Uruguay, Croatia, Austria, and Slovakia, may result in improved performances.

Moreover, there is the need to assess the potential for upgrading to higher-value products, such as handbags (HS 420229) and belts of leather (HS 420330) - two products that Uganda is already exporting, with about 605,000 USD and 49,000 USD export values in 2019, respectively - or learning new trade opportunities from current importers, like Pakistan and India, that may be one or two value-addition steps above in the leather product value chain.

Overall, the import decomposition reveals how the lack of diversification of Uganda exports is likely to expose the selected industries to significant external demand shocks. Therefore, this evidence from the demand-side, coupled with the results from the supply-side (export) decomposition, suggests that market diversification and synchronization with international demand development will be key factors to meet the defined targets for the selected products.

2.3. Position along the competiveness ladder

In this section we evaluate the relative position of Ugandan firms along the competitiveness ladder for each of the key products, relying on the so-called workhorse of international trade analysis, the gravity model (Yotov *et al.* 2017, Head and Mayer 2014). Building on this, we can write (for additional details, see Annex):

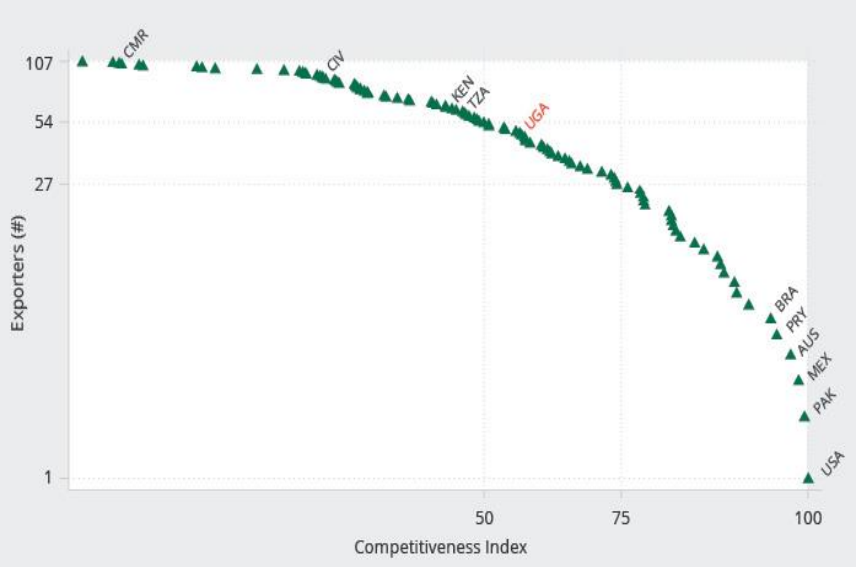
$$Exports_{ijk,t} = \mathrm{e}^{\delta_{ik,t} + \gamma_{jk,t} + \text{Gravity Controls} + \varepsilon_{ijk,t}}$$

where the $Exports_{ijk,t}$ refers to the volume of exports from origin *i* towards market *j* in year *t* for the 6-digit variety *k*. The right-hand side of the equation includes the theoretical consistent determinant of bilateral trade flows as prescribed by the structural gravity approach. The Gravity Controls matrix includes variables aiming to capture country-pair trade frictions determined by: geography and history (as the -log- of bilateral distance, a dummy variable for common language, historical ties and common border); as well as trade policy such as a dummy variable for Regional trade agreement and the (log) of the applied $Tariff_{ijk,t}$. $\delta_{ik,t}$ measuring the export performance of country *i* in variety *k* and year *t*. As shown in Costinot *et al.* (2010), $\delta_{ik,t}$ can be interpreted as a theoretically consistent index of revealed competitiveness.[25] Finally, $\gamma_{jk,t}$ captures the demand components (such as preferences) at the destination market j; and $\varepsilon_{ijk,t}$ represents an idiosyncratic error term. The estimation of the above equation is performed at the HS 4-digit commodity level. The sample period covers two decades from 1996 to 2019. Data wise, bilateral exports at 6-digit HS classification are from the BACI dataset (CEPII) whereas tariffs are from WITS database (World Bank).

Figures below report the relative position of Ugandan exports across the competitiveness index, $\delta_{ik,t}$, measured from the above equation. Considering products HS0201, Uganda position itself in the mid-range of the competitiveness distribution (i.e. between the 50th end 75th percentile), higher than regional comparator countries like Kenya and the United Republic of Tanzania, but well below the most competitive exporters like United States and Mexico (**Error! Reference source not found.**).

[25] In a similar vein, Hanson *et al.* (2015) provide a comparative analysis of revealed competitiveness.

Figure 8. Competitiveness ladder, HS0201, 2015–2019

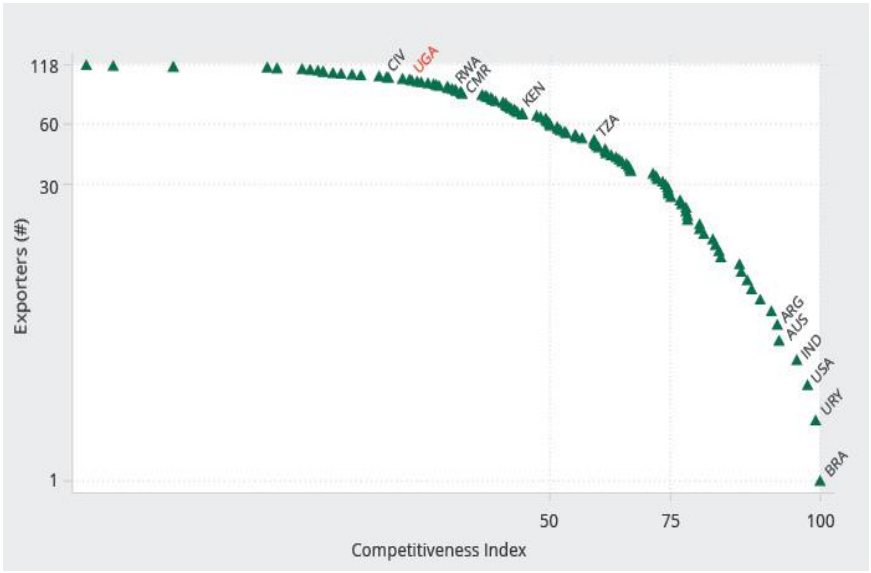


Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. BACI Database. In: CEPII. Paris. Cited [2021]. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: Calculation based on a structural gravity equation estimated with PPML on yearly data for the individual HS 4-digit commodity indicated in the title controlling for bilateral gravity forces, applied tariffs and destination country-year fixed effects.

In product HS0202 Uganda falls below the 50th percentile of the competitiveness distribution, slightly higher than Côte d'Ivoire (CIV) but well below Rwanda, Kenya, and the United Republic of Tanzania (**Error! Reference source not found.**).

Figure 9. Competitiveness ladder, HS0202, 2015–2019

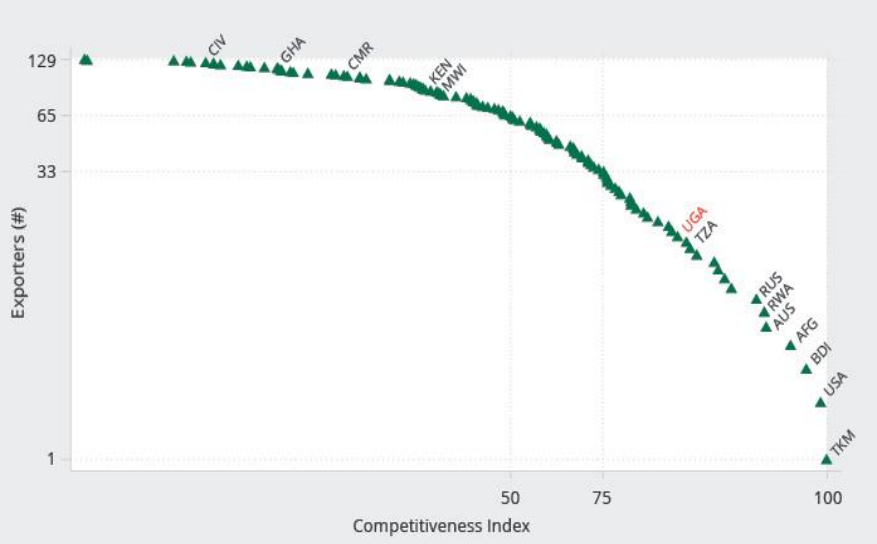


Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. BACI Database. In: CEPII. Paris. Cited [2021]. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: Calculation based on a structural gravity equation estimated with PPML on yearly data for the individual HS 4-digit commodity indicated in the title controlling for bilateral gravity forces, applied tariffs and destination country-year fixed effects.

Finally, in HS4101 Ugandan exports fall into the top quartile of the distribution (above the 75th percentile), still below regional comparator economies like Rwanda, the United Republic of Tanzania or Burundi (**Error! Reference source not found.**).

Figure 10. Competitiveness ladder, HS4101, 2015–2019



Source: Authors' own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. BACI Database. In: CEPII. Paris. Cited [2021]. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: Calculation based on a structural gravity equation estimated with PPML on yearly data for the individual HS 4-digit commodity indicated in the title controlling for bilateral gravity forces, applied tariffs and destination country-year fixed effects.

These results confirm that Uganda still lags behind in the competitiveness ladder of these products and, more specifically, that there is a lot that can be learned from the best practices of the more successful regional exporters.

2.4. Export relative prices

Recent empirical works on trade patterns (Schott, 2004) document a significant heterogeneity in the price of traded commodities. According to classical trade theory countries should specialize according to their factor endowments and, as a result, different economies should export different products. However, empirical evidence confirms that countries tend to sell similar varieties of a given commodity with highly heterogeneous prices across different producers. Knowing the market segment in which a country operate in each destination has important policy implications since exporters tend to compete directly only with those positioned in the same market segment and it is therefore crucial to design sound and effective export promotion policies.

From a methodological perspective, we start from the "Trade in Unit Value" (TUV) database from the CEPII, reporting information on traded values and volumes for a wide range of markets and commodities.[26] We use the "import" version of the TUV dataset, which is constructed from importing country custom declarations and include in the exchanged values all the trade costs (CIF, Cost of Insurance and Freight). Since real import prices are generally not available, we rely on traded unit values (unit values = traded value/ traded volume) as a proxy (see Annex).

Error! Reference source not found. details, for each destination market, the relative price (unit value) of Ugandan products against its five main regional and international competitors[27]: values greater than 1 indicates that Ugandan varieties are sold at higher price than competitor (over columns) in a given destination market (over rows). The first row looks at the exports in the Democratic Republic of the Congo, the main destination of Ugandan exports of fresh meats

[26] The "Trade Unit Value Database" (Berthou and Emlinger (2011) reports bilateral exports and imports unit values (USD per thousand kg) for all the UN countries over the period 2000-2019 at 6-digit HS classification (approx. 5,000 commodities).

[27] See Section 2.2. for the selection of comparator countries.

with a share of 55 percent.[28] For the first row, each column depicts the relative price of Ugandan exports in the Democratic Republic of the Congo vis-à-vis the competitor (in column) for the product exported jointly by the two countries. As an example, consider column 1, where Kenya is the competitor. The Ugandan fresh meat exports relative price (Uganda/Kenya) in the Democratic Republic of the Congo are sold at 16 percent lower price (1/0.86=1.16) than Kenyan products. On the contrary, the Ugandan goods relative price (Uganda/Netherlands) in the Democratic Republic of the Congo is 1.74 suggesting that for the same set of products, Ugandan prices are 74 percent higher than Dutch products. On average, exports from Uganda seem to be priced relatively higher than all the other exporters in the sample, about two times higher (1.99).

Table 26. Relative unit values of HS 020130 between Uganda and main competitors

Uganda export market shares 2010–2019	Comparator - markets:	Kenya (1)	United States (2)	Australia (3)	Ireland (4)	Netherlands (5)
55.3	COD	0,86			2,33	1,74
38.5	AUT		0,90	0,87		2,15
2.7	SEN		0,67	0,52	1,19	1,37
2.4	CZE		0,80	1,09		
1.1	RWA	0,45			1,76	1,75
	Average	*-15.46*	*-18.00*	*-1.64*	*0.07*	*100,00*

Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: HS 1996 at 6-digit. The table reports the relative prices for the selected commodity.

Table 27. Relative Unit Values of HS 020130 between Uganda and main competitors

Uganda export market shares 2010–2019	Comparator - markets:	Kenya (1)	United States (2)	Australia (3)	Ireland (4)	Netherlands (5)
55.3	COD	0,86			2,33	1,74
38.5	AUT		0,90	0,87		2,15
2.7	SEN		0,67	0,52	1,19	1,37
2.4	CZE		0,80	1,09		
1.1	RWA	0,45			1,76	1,75
	Average	*0,66*	*0,79*	*0,83*	*2,33*	*1,74*

Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: HS 1996 at 6-digit. The table reports the relative prices for the selected commodity.

Similarly, Table 28. Relative Unit Values HS 020230 between Uganda and main competitors reports the export relative prices of frozen meat exports (HS 020230) between Uganda and the main competitors. Export prices are relatively similar in the selected destination markets when compared with Kenya (1.01) and the United Republic

[28] Note that Uganda export shares in destination markets may differ from those reported in Section 2.2 for two main reasons. First, the underlying database is different. Second, here we report destination markets to which at least two producers in the TUV database have exported.

of Tanzania (1.01). However, Uganda sells on average at 42 percent higher prices than all other countries in the sample (1.42).

Table 28. Relative Unit Values HS 020230 between Uganda and main competitors

Uganda export market shares 2010–2019	Comparator - markets:	Kenya (1)	United Republic of Tanzania (2)	Brazil (3)	Australia (4)	India (5)
34.0	VNM	1,08	1,01	0,59	0,41	0,67
16.4	COD	1,47		1,77		2,35
16.1	EGY	0,93		1,03	0,84	0,62
14.5	ISR			1,55	0,73	
6.5	CIV			1,00	0,28	1,22
4.6	RWA	0,64				
3.8	SDN	0,96		0,58	0,97	1,59
3.6	GBR			2,11	1,62	5,74
	Average	*1,01*	*1,01*	*1,23*	*0,81*	*2,03*

Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: HS 1996 at 6-digit. The table reports the relative prices for the selected commodity.

Finally, for both hides and skins products, relative prices are higher than those recorded in the other countries in the sample, 2.31 and 1.52, respectively (Error! Reference source not found. and Error! Reference source not found.).

Table 29. Relative unit values of HS 410110 between Uganda and main competitors

Uganda export market shares 2010–2019	Comparator - markets:	Rwanda (1)	Kenya (2)	United Republic of Tanzania (3)	United States (4)	Mexico (5)
44.8	HKG	0,81	0,96	0,91	0,45	0,46
25.9	CHE	2,24		1,82	0,04	
8.5	KEN	0,88		0,46	0,11	
7.2	CHN	0,62	0,76	0,24	0,14	0,08
4.3	PAK	1,47		1,28	0,20	
3.1	IND		0,72	1,48	0,28	0,09
2.6	ITA	1,15	0,61	0,71	0,54	0,49
1.2	EGY	1,00		13,78		
	Average	*1,17*	*0,76*	*2,58*	*0,25*	*0,28*

Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: HS 1996 at 6-digit. The table reports the relative prices for the selected commodity.

Table 30. Relative Unit Values of HS 410190 between Uganda and main competitors

Uganda export market shares 2010–2019	Comparator - markets:	United Republic of Tanzania (1)	Cameroon (2)	Kenya (3)	United States (4)	Australia (5)
28.4	PAK	0,85		0,83	0,56	0,62
16.1	HKG	1,17		1,25	0,82	0,84
14.4	ZAF	0,02		1,07	0,20	0,19
11.9	CHN	0,41		2,67	0,40	0,54
8.7	TUR	1,34		2,52	0,61	0,58
8.5	EGY	1,36		2,58	0,40	0,75
8.2	IND	1,42		1,15	0,60	0,40
1.3	NGA	1,07	1,64	0,77	0,73	8,46
	Average	*0,96*	*1,64*	*1,60*	*0,54*	*1,55*

Source: Authors' own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: HS 1996 at 6-digit. The table reports the relative prices for the selected commodity.

2.5. Non-Tariff Measures

Ugandan exporters face a host of non-tariff measures (NTMs) that hamper improved export performance and the entry of new firms into export activities. NTMs are policy measures, other than ordinary customs tariffs, that range from technical regulations aiming to protect food and beverage supply, consumers, workers, and the environment to more trade-related measures traditionally used as instruments of commercial policy such as quotas, trade remedies, or rules of origin. In any cases, they are a prevalent part of the day-to-day conducts of trade businesses.

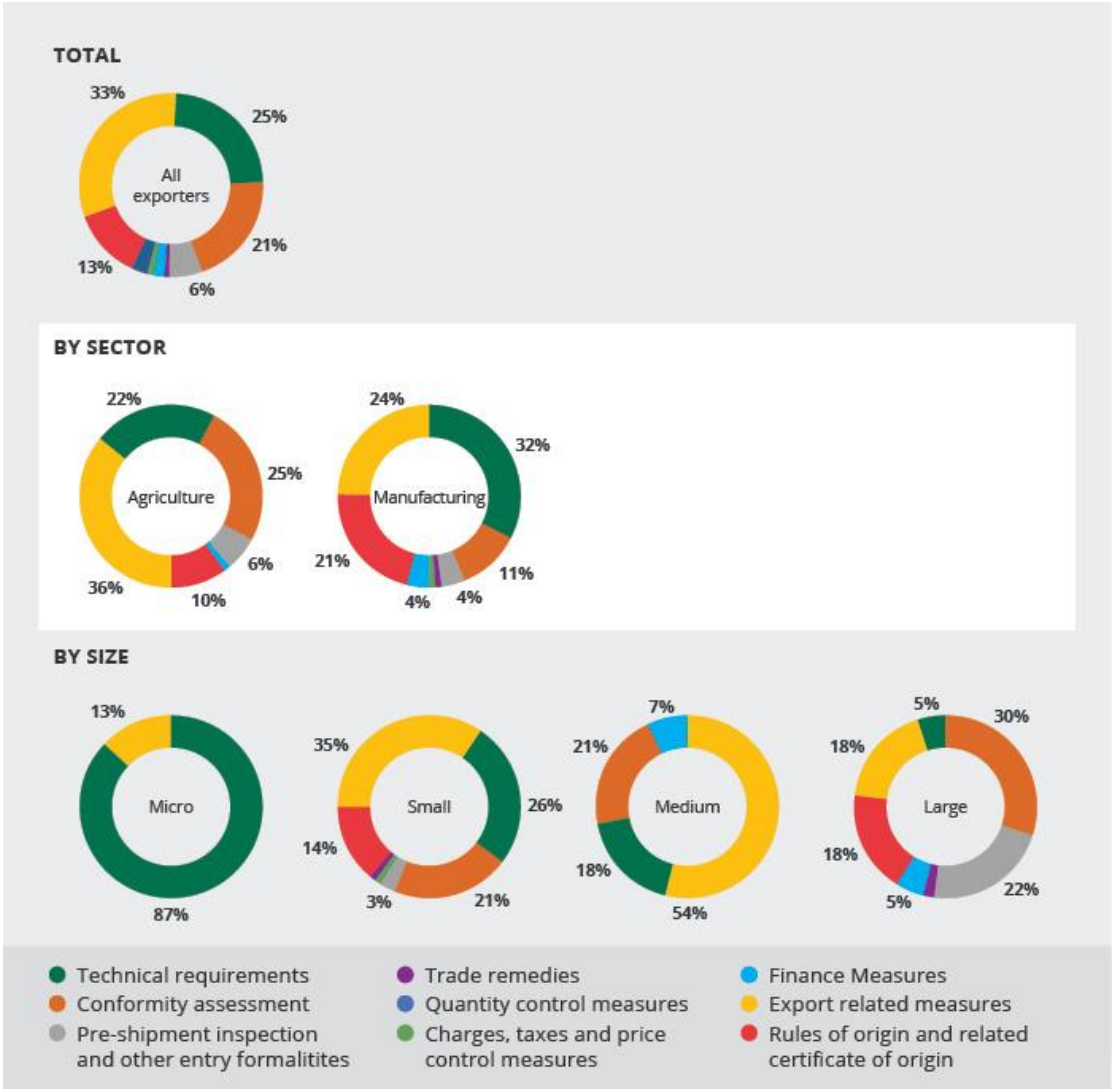
A 2016 survey of Ugandan companies revealed that NTMs to trade affect 40 percent of exporting companies. The survey found that NTMs hamper exporters of agri-food goods (42 percent) more than exporters of manufacturing products (35 percent), and that the "Exporters of coffee (62 percent) and processed foods (55 percent) are among the most affected" (ITC, 2018). More importantly, about two-thirds of these NTM cases concern regulations applied by partner countries (technical requirements and conformity assessment), with the rest relating to NTMs applied by Uganda and a few by transit countries (export related measures) see Error! Reference source not found..

Against this background, this section analyses the regulatory requirements imposed by partner countries on selected products. For each of the selected products, we report the number of regulatory requirements required by the three most dynamic importing countries, as identified by their demand side attractiveness index.

Error! Reference source not found. shows that, as expected, both fresh and frozen beef exports face a relatively higher number of regulatory requirements with respect to hides and skins products. On the other side, China seems a complicated export destination country, as the number of requirements is always well above the mean. These include, among others, for both beef and hides and skins exports, different prohibitions for SPS reasons, testing, certification, and inspection requirements, requirements on the disclosure of information on the origin of materials and parts used, labelling and packaging requirements.

Therefore, when assessing new potential destination markets, it is highly recommended to look not only at the import dynamics but also at the NTMs required by the market. For frozen meat (HS 020230) and hides and skins (HS 410110; HS 410190) exports, it is then recommended to assist exporters with NTM-intelligence and compliance assistance.

Figure 11. Non-tariff measures faced by Uganda exporters



Source: International Trade Centre (ITC). 2018. Uganda: company perspectives. ITC Series on Non-Tariff Measures. Geneva, Switzerland, ITC.

Table 31. Number of regulatory requirements faced by Ugandan products by trading partner

HS 020130		HS 020230		HS 410110		HS 410190	
Destination country	No. regulatory requirements	Destination country	No. regulatory requirements	Destination country	No. regulatory requirements	Destination country	No. regulatory requirements
Uruguay	10	China	144	Mexico	7	Uruguay	6
China	139	Chile	20	China	63	Croatia	8
Israel	67	Brazil	45	Austria	8	Slovakia	8

Source: Authors' own computation based on the International Trade Center. [2021]. Market Access Map database. In: *International Trade Center.* Geneva. Cited [2021}. https://www.macmap.org

Note: destination countries are selected according to the demand attractiveness index of section 2.2. Destination countries not available in the ITC database, are substitute with the following country in the rank. Regulatory requirements can be found at the following link: https://www.macmap.org/en/query/regulatory-requirement.

3. Ugandan imports

3.1. Import volumes

In this paragraph, we analyse the relative strength of Uganda demand for foreign varieties with respect to the world average. Thus, the Inward Multilateral Resistance Terms (MRTs), being a structural measure of the attractiveness of each destination in the world market, inform on any pattern of excess imports for the country: i.e. when a commodity reveals an Inward MRT scores above the average, it implies that Uganda is a relatively more attractive destination of imports, or that the volume of imports in that variety is higher than what the gravity benchmark would predict.

To evaluate developments in relative demand for foreign varieties in Uganda, we build an index of relative attractiveness relying on a structural gravity decomposition of trade flows (see Annex), for variety *k* in year *t*, as $Demand_{k,t}^{UGA,WLD} = \hat{\delta}_{k,t}^{UGA} / \hat{\delta}_{k,t}^{world}$. Where $\hat{\delta}_{k,t}^{world}$. Values above 1 of $Demand_{k,t}^{UGA}$ reveals that Uganda is a relatively more attractive destination for exports than the world average. For comparison, we also report the relative demand vis-à-vis two set of countries: i) low-income Sub-Saharan Africa peers (SSA): $Demand_{k,t}^{UGA,SSA} = \hat{\delta}_{k,t}^{UGA} / \hat{\delta}_{k,t}^{ssa}$, ii) MEC regional peers (Benin, Cameroon, Côte d'Ivoire, Ghana, Kenya, Malawi, Rwanda, the United Republic of Tanzania): $Demand_{k,t}^{UGA,MEC} = \hat{\delta}_{k,t}^{UGA} / \hat{\delta}_{k,t}^{MEC}$.

Error! Reference source not found. below reports the aggregate evolution of the relative demand in Uganda with respect to both the world (top panel), the SSA average (middle panel) and the MEC benchmark countries average (bottom panel). In general, the level of "conditional" demand for foreign varieties in Uganda has been substantially below the world average for products in the HS0201 and HS0202, while has been increasing steadily for commodities in the HS4101. Interestingly when compared to either SSA low-income economies (mid panel) or the narrower set of MEC benchmark countries (bottom panel), Uganda conditional demand for HS4101 in 2019 had been higher than the control average (1.037 and 1.65 respectively).

Table 32. Relative Demand (in volumes), key commodities at HS 4-digit

Country Demand over World Average ($Demand_{.,t}^{UGA,WLD}$)		
Year	0201/0202	4101[pc]
2000	0.008	0.013
2007	0.014	0.014
2019	0.013	0.494
Country Demand over sub-Saharan Africa average ($Demand_{.,t}^{UGA,SSA}$)		
Year	0201/0202	4101[pc]
2000	0.083	0.036
2007	0.116	0.369
2019	0.080	1.037
Country Demand over MEC average $Demand_{.,t}^{UGA,MEC}$)		
Year	0201/0202	4101[pc]
2000	0.105	0.329
2007	0.151	0.519
2019	0.175	1.065

Source: Author's own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. BACI Database. In: CEPII. Paris. Cited [2021]. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: HS 1996 at 6-digit. The table reports the average relative demand estimated using Equation (1). The estimated regressions are performed at the HS 4-digit level.

3.2. Import prices

In this section, we analyse the price dynamics of the Uganda imported commodities. Leveraging on the properties of the gravity equation we fit a gravity model for import prices, explicitly controlling for Tariffs and trade costs (i.e. distance) and study the distribution of import prices with respect to the gravity predictions: again, thanks to the close link with theory, the structural gravity prediction provides a natural benchmark (Arkolakis *et al*., 2012). To complement the analysis on the import demand dynamics, we now move to the Trade Unit Value database (TUV) and analyse the relative price dynamics of Uganda imports of the selected commodities with respect to a group of benchmark countries. As benchmark countries we use the other low-income sub-Saharan African countries (SSA) or a sub-sample of comparable neighbor economies as identified from the MEC database (namely: Benin, Cameroon, Côte d'Ivoire, Ghana, Kenya, Malawi, Rwanda, the United Republic of Tanzania).[29] The estimation period covers two decades from year 2000 to 2019.

Table A1 in Appendix reports the results for an estimated equation of import prices in Uganda, where Treatment=1 if the destination of exports is Uganda, [i]for different specifications of the reference groups and control variable vector.[30] We observe that, for the same variety, the average price is 9.8 percent higher with respect to the counterpart variety imported in neighboring SSA countries (conditional on exchange rate, distance, and regional trade agreement and common currency – column 2).[31] This differential increase substantially when we restrict the sample to the MEC benchmark countries (around 21.5 percent) and to the key commodities only (24.1 percent).

In Error! Reference source not found. we report the estimated coefficients of Ugandan price differential obtained from separate regressions for the different selected products. We find that frozen beef imports into Uganda (HS4 0202) are 33.5 percent more expensive than imports in other SSA countries and 57 percent when compared to MEC benchmark countries; for hides and skins products (HS4101) the price differential is equal to 33.2 percent when compared with MEC benchmark, while not significant for the rest of the estimates.

Figure 12. Price differential by products

Source: Authors' own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Notes: Price is Unit Value expressed in log. The graph reports the estimated coefficient of Ugandan price differential obtained from separate regressions; the set of control includes the same covariates as the baseline regression reported in column 2 and 3 of Table A1. Standard errors are clustered by destination-year level.

[29] We rely on World Bank classifications for both regions and income level.

[30] Column 1 and column 2 the control group is defined with SSA, while in column 3 to column 6 we restrict the sample to a group of Uganda comparator countries and defined by the MEC procedure (i.e. Benin, Cameroon, Côte d'Ivoire, Ghana, Kenya, Malawi, Rwanda, United Republic of Tanzania). In column 4 we include an interaction term between the Treatment and the variable, Concentration, taking the value of 1 if the product is "monopolized" (i.e. there is only one supplier in Uganda). Furthermore, in columns 5 and 6 we include an interaction between the Treatment and an indicator variable, Key Prods, taking the value of 1 for the 4 selected key commodities. In both cases the Treatment indicator is defined as the rest of the goods imported in Uganda.

31 The percentage difference is computed as [exp(β Treatment)-1]*100.

Finally, in Table A2 we inspect closer the time dimension of the import price differentials. Interestingly, the wedge between Ugandan and the benchmark group is not significant in the early 2000s while started building up during the period 2007-2014 and increasing in the last period 2015-2019. From column 3 to column 6, we further control for the purchase power at destination by including the (log) of GDP or the (log) of per-capita GDP. In column 5 and 6 we interact the Treatment with a linear trend and evaluate the price gap to be approximately 5 and 4 percent on an average year, with respect to SSA countries and MEC countries, respectively. These results confirm that Ugandan import prices have been significantly higher than the benchmark countries, especially for the selected key products.

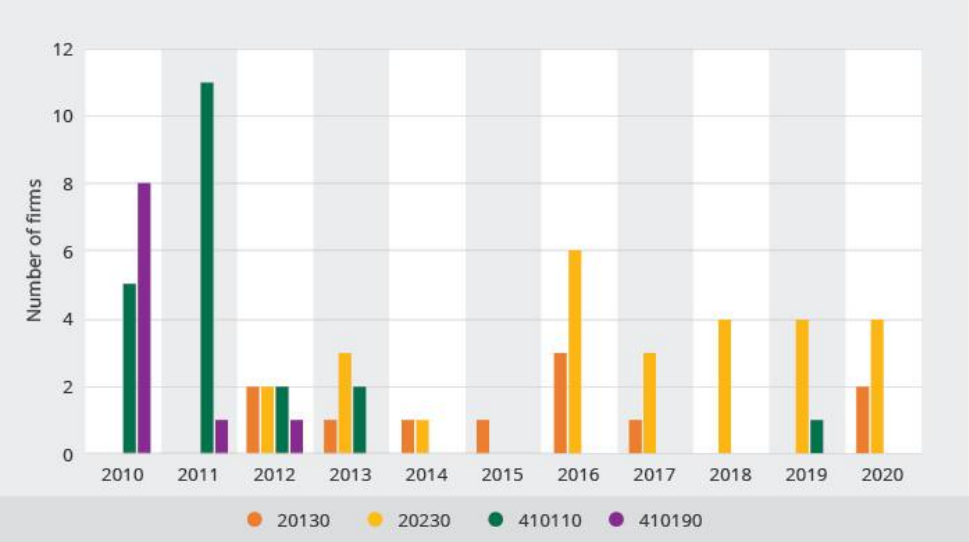
4. Characteristics of Ugandan export and importing beef firms

This section uses customs data collected by the Uganda Revenue Authority to describe exporting and importing firms' characteristics. The URA data (henceforth 'customs data') span from 2010 to 2020 and provide detailed information on individual consignments leaving, entering, or transiting through Uganda's ports.

Using masked taxpayer identification numbers (TINs) provided at customs checkpoints, we can identify the individual firms sending and receiving consignments of beef, skins, and hides to analyse firms' characteristics at the product level.[32]

Error! Reference source not found. shows that there are only a very small number of identifiable firms engaging in trade of beef and raw skins and hides. More specifically, there are on average 2.5 and 4 fresh and frozen beef and hides and skins exporters per year, respectively. Given the disease-related restrictions on trade in meat products, it is perhaps not surprising that the beef industry in Uganda is highly concentrated.

Figure 13. Number of exporters by product, 2010–2020



Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

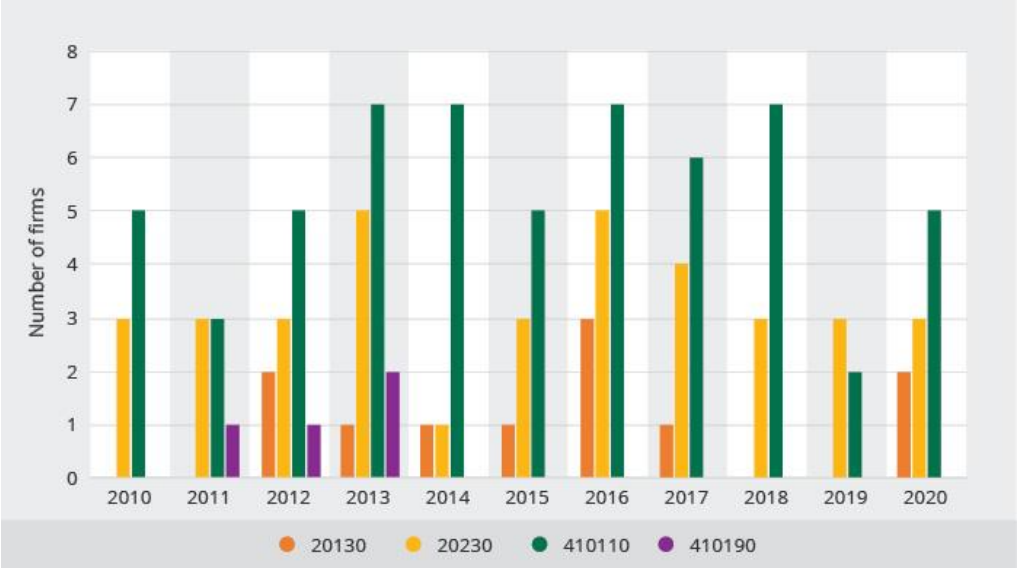
Most firms which export beef and hides and skins in the customs data also import these products into Uganda.

Figure 15. Cattle and beef export volumes, 2010–2017

reports the number of importing firms by product over the period 2010-2020. There are, on average, 2.6 beef and 5 hides and skins importing firms per year.

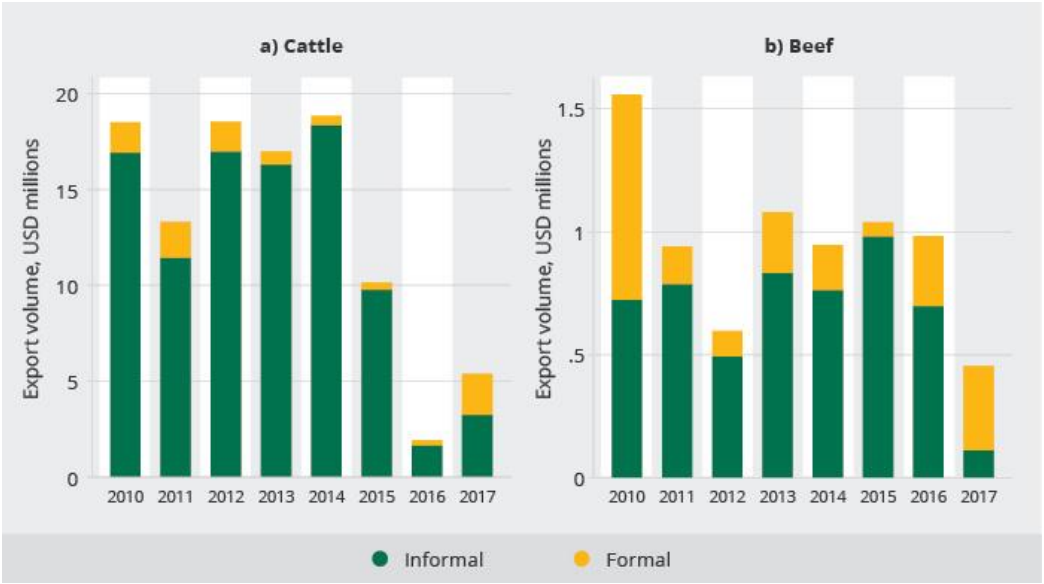
[32] A major limitation to this analysis is that some consignments are missing TINs due to incorrectly-filled paperwork or data management issues. While this is not a significant problem at an aggregate level, it is a concern within some product categories. However, in the case of fresh and frozen beef exports, around 70 percent and 80 percent of exports by value do have a TIN recorded, respectively. This share is higher in the case of hides and skins, i.e. around 95 percent. See Table A4 in Appendix.

Figure 14. Number of importers by product, 2010–2020



Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Figure 15. Cattle and beef export volumes, 2010–2017



Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Figures A1–A4 in the Annex provide a visual representation of the market concentration in each product category and trade regime. Each graph shows the trade volume for a given product category and regime over time, disaggregated by the firm responsible for each consignment. Since the customs data are anonymised, each firm is randomly assigned a colour for each chart and trade volumes without a TIN are represented in dark blue.[33]

Finally, from customs data, we are also able to identify other exported and imported products by these firms. Table 17 presents the share of meat and livestock exports and imports, by beef-exporting firms across the eleven years we have customs data for. There is significant product diversification among beef exporters – the share of live cattle exported by the same firms (23.6 percent) far outstrips that of fresh and frozen beef exports (8 percent), and the share of live and slaughtered chicken exported by these firms far exceeds their trade in beef and cattle.

[33] Except for the missing TIN trade flows, firm/colour combinations are not consistent across charts.

Table 33. Product share of exports and imports by beef-exporting firms, 2010 – 2020

Product category	Export share	Import share
Live horses, asses, mules and hinnies	0,97	0,00
Live bovine animals	23,60	9,70
Live swine	0,00	1,21
Live sheep and goats	1,46	0,00
Live poultry	36,25	20,00
Other live animals	0,24	0,00
Fresh or chilled beef	3,41	0,00
Frozen beef	4,87	0,00
Meat of swine	1,95	13,33
Meat of sheep and goats	0,97	1,21
Meat of horses, asses mules and hinnies	0,24	0,00
Offal - bovine animals, swine, sheep, goats, horses, mules, asses and hinnies	13,63	0,00
Meat and offal of poultry	9,00	13,33
Other meat and offal	0,49	0,00
Preserved meats	2,92	41,21

Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

5. Informal trade

Finally, this section analyses the importance of informal trade in the sector. The informal cross-border trade data (henceforth 'ICBT data') come from a survey conducted by Uganda Bureau of Statistics in partnership with the Bank of Uganda to establish the volume and value of informal trade flows between Uganda and neighbouring countries (Kenya, Rwanda, the Democratic Republic of the Congo, Burundi, the United Republic of Tanzania and South Sudan). In the context of this dataset, 'informal' means that shipments of goods are either not recorded by customs authorities at all, or are under-declared. These data span from 2010 to 2017.[34]

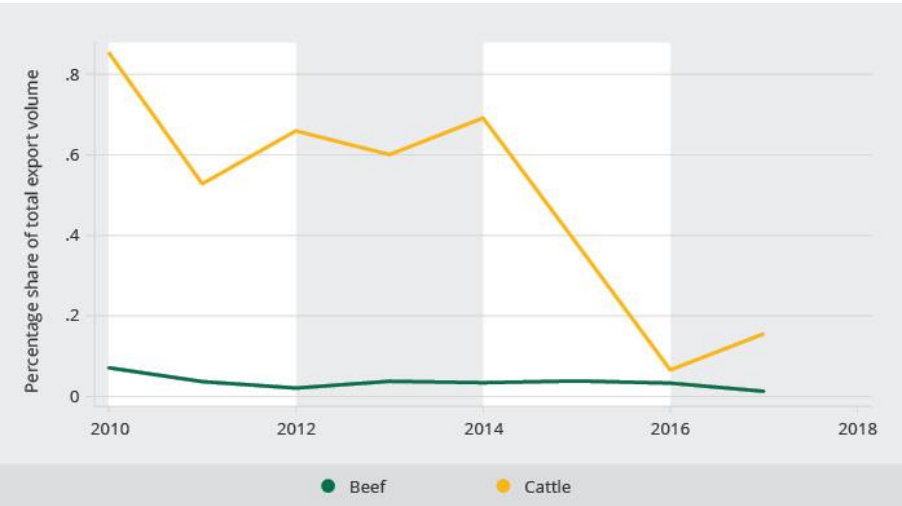
In contrast to formal trade, informal shipments are usually carried across borders by foot, bicycle, car, motorcycle or on the backs of livestock. As a result, the average value of shipments in the informal trade data is much lower – the mean value of a shipment of beef for export is USD 4 600 in the ICBT data, compared to USD 12 800 in the formal customs data.[35] While the value of each informal transaction is often low, these trade flows represent a significant volume of Uganda's exports. Official estimates suggest informal exports account for around 15 percent of Uganda's total export volume (BoU, 2020). Within the East Africa region, however, informal exports to neighbouring countries comprise around 40 percent of formal exports to the same destination (Rauschendorfer and Shepherd, 2020).

Ugandan livestock exports generate around USD 20 million per year in export earnings. Cattle is the single largest category within the livestock trade, accounting for more than 50 percent of the total volume of that product category. The export market for Ugandan meat products is much smaller than livestock – in total, slaughtered meat generates only USD 3

[34] Informal trade values and volumes are collected by enumerators stationed at around twenty key border posts for two weeks per month, and uprated to generate monthly trade flows. Copies of the ICBT survey instruments are provided in the Appendix.
[35] The *median* beef export is USD 280 in the ICBT data, compared to USD 1 990 in the formal customs data.

million per year in export revenue. Beef represents around 30 percent of this volume. Figure 10 shows the composition of cattle and beef exports over the period for which we have data, i.e. 2010–2017, for both informal and formal trade.[36]

Figure 16. Percentage share of total export volume for beef and cattle, 2010–2017

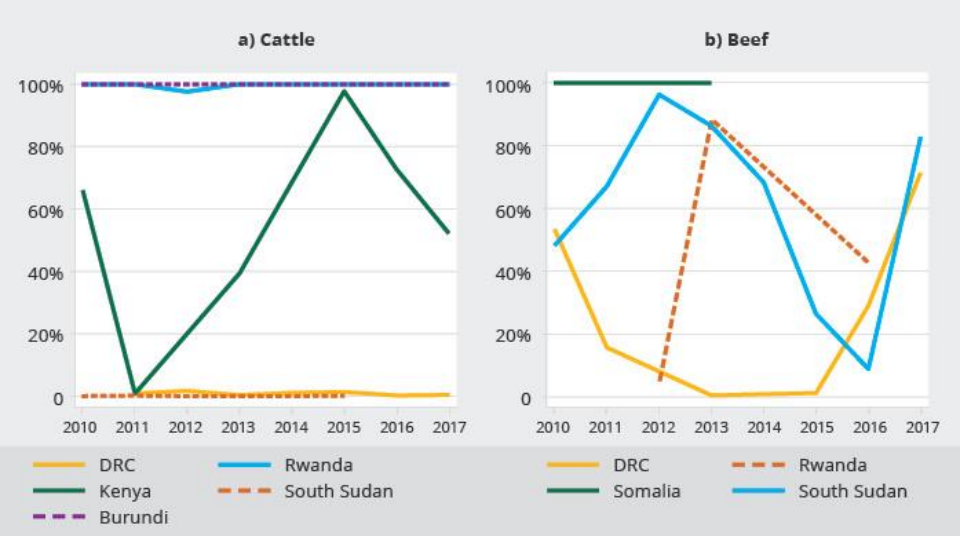


Source: ICBT data.

To contextualise these trade volumes, in 2017 the total value of Uganda's exports (both formal and informal) was USD 3.5 billion (BoU, 2021). Figure 17. Share of cattle and beef exports through informal channels by trading partner, 2010–2017

shows the share of total exports attributed to the sum of formal and informal cattle and beef exports over the period 2010-2017. Despite a decline in recent years, live cattle once accounted for almost 1 percent of Uganda's total export volume. Beef has remained relatively stable at just below 0.1 percent of total exports.

Figure 17. Share of cattle and beef exports through informal channels by trading partner, 2010–2017



Source: ICBT and URA customs data.

Trade with individual trading partners differs considerably with respect to the degree of formality of Ugandan beef and cattle exports (Error! Reference source not found.). For example, the vast majority of cattle exports to Burundi clear

[36] By contrast, trade in hides and skins occurs overwhelmingly through formal channels. The ICBT data does not disaggregate the hides and skins category by animal (so it is impossible to distinguish hides and skins of cattle from sheep, for example) – but informally-exported hides and skins between 2010 and 2017 accounted for less than 0.1 percent of the total value of Uganda's hides and skins exports.

customs formally, while cattle exports to South Sudan are overwhelmingly informal, mainly through the Oraba and Elegu ports. Trade agreements may have some role to play in determining the formality of trade with different trading partners – in the absence of trade agreements, high tariffs increase incentives for evasion at customs. Through the East African Community Customs Union, no tariffs are applied on Ugandan imports into the United Republic of Tanzania, Kenya, Rwanda, Burundi. South Sudan only joined the EAC in 2016, which may explain why the vast majority of cattle and beef exports to South Sudan in the data are informal. Through the Common Market for Eastern and Southern Africa, Uganda enjoys free trade with the Democratic Republic of the Congo and (since 2018) Somalia.

As all consignments clearing customs formally are weighed, and ICBT enumerators estimate weights of informally-traded goods, it is possible to calculate the implied price per kilogram of beef exports. Error! Reference source not found. shows the average price per kilogram of beef, disaggregated by trading partner and by whether the exports cleared customs formally.[37] Firstly, we can notice that, as expected, formal prices are about twice as large as informal prices in each destination. Secondly, the Sudan seems to be the market in which both formal and informal prices are the highest, although this is likely to be the result of the South Sudanese Civil War spreading to Equatoria region (see Rauschendorfer and Shepherd, 2020).

Table 34. Implied price per kilogram of beef exports by trading partner and formality

Trading partner	Informal – price per kg	Formal – price per kg
Burundi	$2.76	
Democratic Republic of the Congo	$2.54	$6.30
Kenya	$2.21	
Rwanda	$2.32	$4.15
Sudan	$3.04	$6.67
United Republic of Tanzania	$2.31	$4.21

Source: ICBT and URA customs data.

Overall, these results highlight the need to incentivize trade formalization through, for instance, regulatory and fiscal incentives.

6. Conclusions and policy implications

This chapter provides an analysis of beef export competitiveness and diversification in Uganda. To this end, we produced several analyses which have suggested that market diversification and synchronization with international demand will be critical for sustainable export growth and orientation towards a more internationally competitive agri-food sector.

More specifically, the main findings of the analysis showed that, while there is ample scope for market diversification of beef and hides and skins exports, when assessing new potential destination markets, it is highly recommended to look not only at the import dynamics but also at the regulatory requirements imposed by the importing countries. Moreover, market concentration is very high when we only consider formal trade, but there is a lot of lower-value informal trade happening. Therefore, there is the need to support smaller informal traders to grow and integrate into the formal export market - e.g. by reducing trade costs, mainly NTMS but also tariffs.

Building on these findings and analysis, the following value-chain-specific policy recommendations can contribute to advance the objectives of export competitiveness and diversification.

[37] There is a considerable amount of misreporting and data entry errors in the customs data on net weights, so these implied prices are more accurate where the total value of trade is larger.

6.1. Fresh beef (HS 020130)

Findings indicate that the gradual decrease of Uganda's fresh beef export market shares is driven by sector performance and supply-side factors. Although Uganda's exports are not oriented towards the most dynamic import markets, such as Uruguay, China or Israel, those will remain virtually out-of-reach given the high perishability of the product. Therefore, recommendations focus on addressing the factors contributing to the under-performance of the sector to consolidate and further develop existing flows towards neighbouring markets (e.g. the Sudan, Democratic Republic of Congo).

Policy recommendations focus on addressing two limiting factors: the prevalence of Food and Mouth Disease (FMD); the importance of informal trade.

Accelerate progress towards achieving the FMD-free zone status:

1. Foot-and-Mouth Disease-and-mouth disease (FMD), a severe and highly contagious disease, has significant economic impact on the livestock sector as it causes production losses with weakened, debilitated cattle heads as well as disruptions of the regional and international trade in animals and animal products.[38] Since it was first reported in the country in 1953, FMD remains endemic in Uganda (Velazquez-Salinas *et al.* 2020). With the support of the World Organisation for Animal Health (OIE) and other technical partners, Uganda is currently at Stage 2 along the Progressive Control Pathway for FMD control (PCP-FMD) and its objective is to reach Stage 5 and eligibility for application to the FMD-free status by 2025. Progress along the PCP-FMD is constrained by several factors including inadequate resources to procure imported vaccines and FMD drugs, limited capacity of veterinary laboratory services, insufficient awareness on livestock disease control among value chain participants, and uncontrolled movements of susceptible wildlife species across borders. Recommendations focus on mobilizing and prioritizing financial resources, including donor support, to sustain FMD surveillance, control and vaccination, enforcing stricter control on wildlife and cattle border movements and quality control of FMD vaccines and drugs distributed in the country, and promoting FMD control awareness among value chain participants.

Formalize existing trade flows:

2) Estimates indicate that informal cross-border trade (ICBT) represents a non-negligible share of Uganda's fresh beef exports. Trade flows with immediate neighbours are particularly prone to being un-declared or not declared at all to customs authorities. While ICBT creates income and employment opportunities, bringing informal traders into the formal economy allows for a more secure and predictable operating environment, and with prospects for greater trade volumes and higher incomes. Formalizing ICBT can also increase Government revenue. A first set of recommendations focuses on reviewing customs and administrative procedures to simplify those considered most cumbersome, lengthy and complex by informal traders, and facilitate compliance with formal business registration and trade consignment clearance. For instance, the Single Window Information for Trade (SWIFT) project in Rwanda, through the automation of both internal and external processes and workflows, is estimated to have a large impact on time and cost savings for local producers seeking test results and certification as they will be delivered electronically in reduced time durations. Another set of recommendations focuses on incentivizing formalization by providing specific business-support services to compliant firm. For instance, skills development and training, marketing services, subsidies to support cost of compliance with applicable norms and standards, export credit guarantee, and one-stop shops help producers to register for taxes can be provided cost-effectively.

6.2. Frozen beef (HS 020230)

Findings indicate that the gradual decrease of Uganda's frozen beef export market shares is driven by the declining attractiveness of the foreign markets predominantly served by Ugandan exporters (Democratic Republic of Congo, the

[38] https://www.oie.int/en/disease/foot-and-mouth-disease/

Sudan and Vietnam). Therefore, recommendations focus on enabling Uganda exporters to serve foreign markets that are comparatively more dynamic, such as China, Myanmar, Iraq, United Arab Emirates and Thailand.

Policy recommendations are two-fold: facilitate Ugandan exporters' compliance with Non-Trade Measures and private standards in the targeted markets; facilitate trade and business relations between Uganda exporters and potential buyers in the targeted markets.

1) *Facilitate compliance with NTM and private standards in targeted foreign markets*:

   Compliance with Non-tariff measures (NTMs) and private sector standards can present major obstacles to trade. Clearing the procedural steps and bearing the cost of compliance can prove particularly challenging for micro, small and medium-sized enterprises (MSMEs). Government plays a critical role in developing the national quality infrastructure (NQI), the ecosystem of public and private institutions, the legal and regulatory frameworks and the practices that establish and implement standardization, accreditation, metrology, and conformity assessment (testing, inspection and certification) of products (Kellerman, 2019). To gain access to the most dynamic foreign markets, Ugandan exporters need to access accurate and up-to-date information about NTM requirements and applicable private standards specific to these markets, and they need to count on responsive, reliable and affordable conformity assessment services from public and/or private providers. A first set of recommendations consists in developing an NTM and private standards monitoring service to provide exporters with comprehensive information on applicable requirements (e.g. minimum quality and food safety standards) and related conformity assessment procedures (e.g. certification, testing, inspection) for the targeted markets. A second set of recommendations consists in assessing the capacity of Uganda's NQI to meet the needs of exporters seeking to serve the most dynamic foreign markets, identify capacity gaps, and address them. A third set of recommendations consists in helping exporters' bear the costs of conformity assessment through targeted subsidies (see above, Formalize existing flows).

2) *Promote Ugandan exporters abroad*:

   Re-orienting Ugandan exports towards new, more dynamic foreign markets requires developing and nurturing business relationships with potential buyers from these countries. The Government can support these objectives by organizing specialized trade fairs to introduce Ugandan suppliers and their products to visitors, supporting the participation of Ugandan exporters to trade missions and specialized trade fairs and exhibitions abroad (e.g. IFFA; Meat Pro Asia; Halal World Food), and mobilizing the Economic and Commercial Sections of its embassies and business-oriented members of the diaspora.

6.3. Hides and skins (HS 410110; HS 410190)

Findings indicate that the export performance of Uganda's hides and skins sector is mostly hampered by the fact that exporters predominantly serve less dynamic foreign markets (e.g. Pakistan), or relatively dynamic but small foreign markets (e.g. Rwanda). Therefore, recommendations focus on re-orienting Ugandan exports towards foreign markets that are comparatively more attractive. Uganda already exports non-negligible volumes to Italy, among the world's top importers of hides and skins, and other European Union markets offer attractive prospects for a diversification (e.g. Austria, Croatia, Greece, Netherlands, and Slovakia).

Policy recommendations are similar those for the frozen beef sub-sector (see above). Efforts should focus on facilitating the compliance of Ugandan exports with Non-Trade Measures and private standards applicable to skins and hides products in the targeted markets. They should also seek to develop trade and business relations with Ugandan exporters and potential buyers in the targeted markets, for example through the participation in specialized trade fairs (e.g. LINEAPELLE). Finally, current trade with leather product manufacturers, both long-standing (e.g. Italy, Pakistan, India) or emerging (e.g. Rwanda), indicates that Ugandan skins and hides meet the quality requirements demanded by the leather processing industry. In this context, and in concertation with private sector stakeholders, the Government could organize

a formal consultation to explore the potential for manufacturing and exporting higher-value leather products (e.g. handbags, belts).

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Annexes

Annex 1. Tables and figures

Table A1. Average Price Differentials for Ugandan imports vis-à-vis Sub-Sharan countries

	Dependent variable: log (Import price)					
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	**0.096**	**0.093**	**0.195****	0.103	0.149	0.214
	(0.076)	(0.076)	(0.088)	(0.106)	(0.161)	(0.198)
Treatment*concentration				**0.309****		
				(0.139)		
Treatment*key prods					**0.216****	**0.168**
					(0.098)	(0.146)
Real effective ex-rate		0.010*	-0.071	-0.070	-0.074	0.756**
		(0.005)	(0.200)	(0.201)	(0.203)	(0.324)
RTA		0.268	0.686***	0.651***	0.693***	0.390**
		(0.220)	(0.197)	(0.199)	(0.195)	(0.179)
Common currency		-0.012	-2.055***	-2.039***	-2.058***	-2.502***
		(0.252)	(0.153)	(0.152)	(0.152)	(0.256)
Distance		0.323***	0.667***	0.663***	0.668***	0.807***
		(0.056)	(0.095)	(0.094)	(0.095)	(0.168)
Sample	6-digit commodities within HS4: 0201, 0202, 4101					
FEs	Product-Time-Origin, ikt					
Reference	SSA	MEC	MEC	MEC	MEC	SSA
Observations	3,461	3,461	792	792	792	792
R^2	0.615	0.622	0.698	0.698	0.698	0.898
Price difference	**10%**	**9.8%**	**21.5%**	**36.2%**	**24.1%**	**18.2%**

Source: Authors' own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Notes: Price is Unit Value expressed in logs. In column 1 to 2 the control group includes Sub-Saharan African countries, while in column 3 to column 6 the control group includes only the Uganda comparator countries from the World Bank Measuring Export Competitiveness database (MEC), this explains the difference in the number of observations. In column 6 regression is weighted using import values. Robust standard errors clustered by destination-year in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A2. Average price differentials for Ugandan imports vis-à-vis sub-Saharan countries, by period

	Dependent variable: log (Import price)					
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment*Year (2001-2009)	-0.155	-0.070	-0.153	-0.077		
	(0.121)	(0.132)	(0.121)	(0.135)		
Treatment* Year (2010-2014)	0.155	**0.330*** **	0.162	**0.333*** **		
	(0.110)	(0.107)	(0.111)	(0.108)		
Treatment* Year (2015-2019)	**0.248***	0.277	**0.254***	0.275	**0.216****	**0.168**
Treatment *Key Prods *Year					**0.050*** **	**0.039***
					(0.019)	(0.020)
Log(GDP)			-0.020	-0.029	-0.020	-0.029
			(0.021)	(0.059)	(0.021)	(0.058)
FEs	ikt	ikt	ikt	ikt	ikt	ikt
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Reference	SSA	MEC	SSA	MEC	SSA	MEC
Observations	3,461	792	3,461	792	3,461	792
R^2	0.622	0.699	0.622	0.699	0.622	0.699
Price Difference	28.2%	39.1%	28.9	39.5%	5.2%	4%

Source: Authors' own calculation based on Centre d'études prospectives et d'informations internationales (CEPII). [2021]. Trade Unit Value database. In: *CEPII*. Paris. Cited [2021}. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Notes: Price is Unit Value expressed in log. Starting from column 3 to column 6 the regressions are weighted using the value of trade. In column 5 and column 6 the treatment dummy is also included among the controls. Robust standard errors clustered by destination-year in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A3. Variable definition and data sources

Variable	Description	Source
Exchange Rate	*Real effective exchange rate*	EQCHANGE, CEPII
RTA	Dummy variable for regional trade agreement in force between country-pair at time t.	Gravity database, CEPII
Tariffs	Applied Preferential and Most-Favoured nation tariff rates by 6-digit HS goods	WITS, World Bank
CommCurr	Dummy variable for common currency between country-pair at time t.	Gravity database, CEPII
Distance	Bilateral distance between capitals	Gravity database, CEPII
Unit Values	USD dollar per thousand kg	TUV database, CEPII
Unit Values, TCC	USD dollar per quantity unit	TCC custom authority

Source: Authors' own elaboration.

Table A4. Share of trade volumes missing TINs

HS code	Imports	Exports
020130	0%	31%
020230	1%	19%
410110*	1%	1%
410190	1%	10%

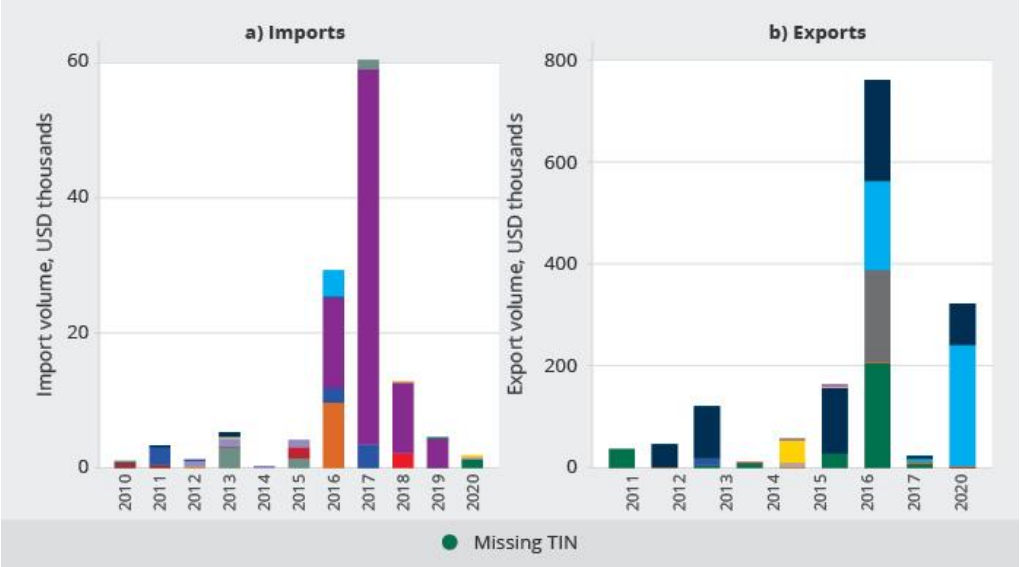
Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Notes: 410110 corresponds to 410120 'Raw cattle hides – whole'.

Figure A1. Firm-level trade volumes, fresh beef (HS 020130)

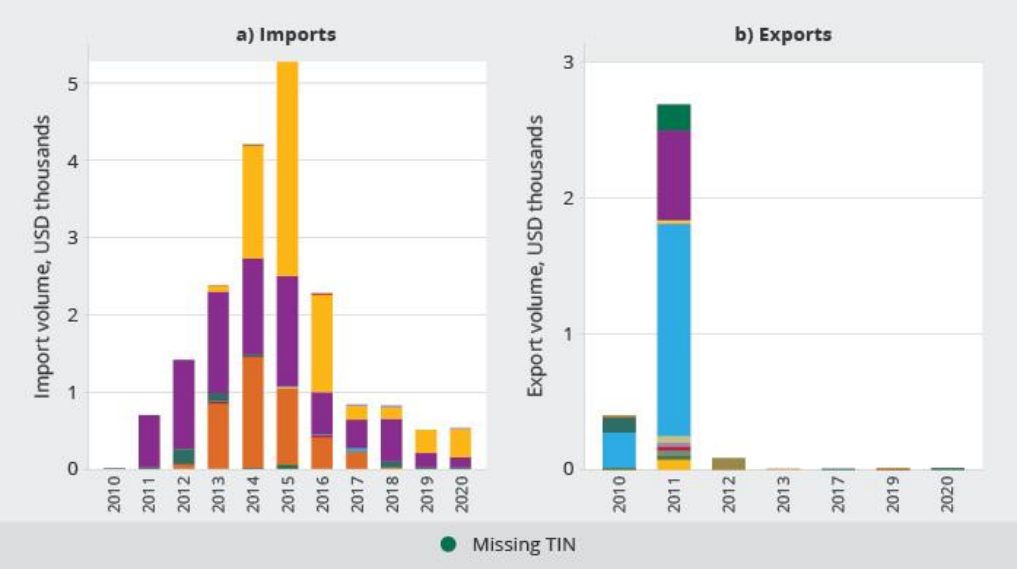
Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Figure A2. Firm-level trade volumes, frozen beef (HS 020230)



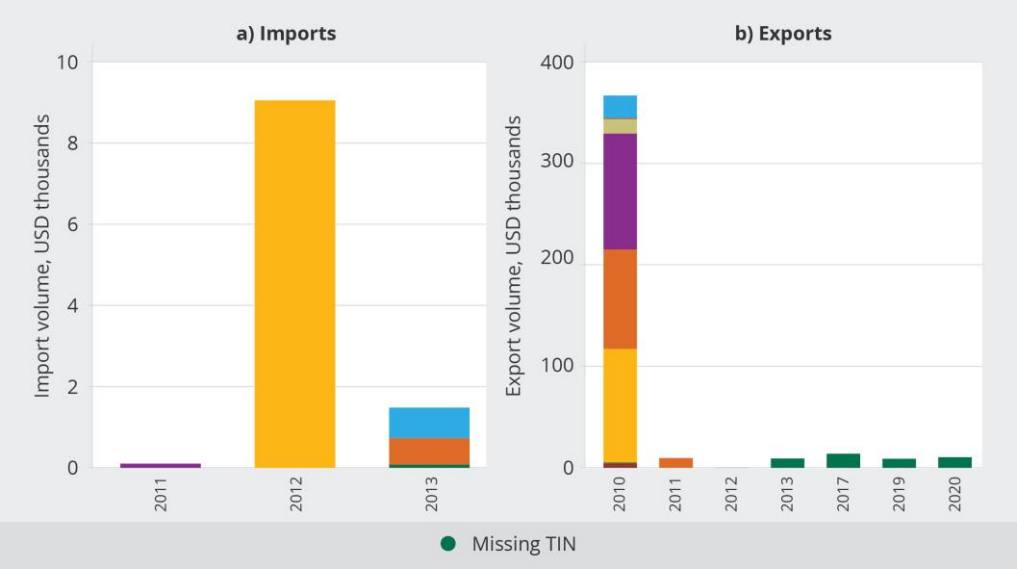
Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Figure A3. Firm-level trade volumes, hides (HS 400110)



Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Figure A4. Firm-level trade volumes, skins (HS 401090)



Source: Authors' own calculation based on Uganda Revenue Authority (URA) customs data.

Annex 2. Methodology

RCA-PR: Proudman and Redding "RCA-PR" is defined as:

$$RCA - PR_{ik} = \frac{(x_{i,k}/\sum_{\mathrm{i}} x_{i,k})}{\frac{1}{\mathrm{N}}\sum_{\mathrm{k}}^{\mathrm{N}}(x_{i,k}/\sum_{\mathrm{i}} x_{i,k})}$$

The main advantage in using the RCA-PR definition is that it evaluates the export share of an economy i in product k with respect to the average market share of the same economy in all other products: a country will have a comparative advantage in product k if the ratio is higher than 1.[39] For any point in time the mean value of RCA-PR will be constant and equal to 1. In other words, RCA-PR is equivalent to a standard RCA normalized by its cross-sectional mean.

TBI: Trade Balance Index (TBI, also known as Lafay index40) is computed as follow:

$$TBI_{ik} = (x_{i,k} - m_{i,k})/(x_{i,k} + m_{i,k})$$

where $x_{i,k}$ represents exports and $m_{i,k}$ imports of country i in product k. The TBI index ranges from -1 to 1. A TBI < 0 means that a country is a net importer for goods k; whereas TBI>0 means that the country is net exporter. At the limit, a TBI of -1 indicates the country does not produce good k and that the domestic consumption relies entirely on import. On the other hand, a TBI of 1 indicates that the country is producing only for export.

Decomposing export growth: export growth rates decomposition is carried out using an econometric shift-share analysis, where in each quarter the growth of exports in product k from country i to destination j is regressed on exporter, product, and destination fixed effects. The contribution of each dimension is identified by the estimated fixed effects:

- Fixed Effect i: exporter specific factors
- Fixed Effect j: destination market factors
- Fixed Effect k: exporter industrial specialization

For any quarter in the estimation sample, the baseline specification for the decomposition reads as follow:

$$\Delta Exports_{ijk} = FE_i + FE_j + FE_k + \varepsilon_{ijk}$$

From the above decomposition, we derive the "adjusted market shares": a supply side measure of the contribution of country-specific factors to market share change (i.e. normalized FEi), plus two indexes on the relative contribution of geography (FEj) and industrial specialization (FEk) to a country export growth. For import growth, it is the same methodology defined above but applied to the import flows. For further details see Gaulier et al (2013).

Competitiveness ladder position: The main advantage of the gravity model for trade is that it is very intuitive. "Using the metaphor of Newton's Law of Universal Gravitation, the gravity model of trade predicts that international trade (gravitational force) between two countries (objects) is directly proportional to the product of their sizes (masses) and inversely proportional to the trade frictions (the square of distance) between them" (Yotov et al 2017).

Beyond that, the gravity model firmly grounds into economic theory as wide ranges of theories comply with the structural gravity assumptions. As highlighted in Head and Mayer (2014) both demand side and supply side model of trade imply as prediction a gravity type equation for bilateral trade flows.[41] Finally, when brought to the data the gravity model reveals

[39] See Carrère *et al.* (2014) for a recent application of RCA-PR.
[40] See Lafay (1992).
[41] Arkolakis *et al.* (2012) demonstrated that a large class of models generate isomorphic gravity equations.

a strong predictive power. Empirical gravity estimations prove to fit the observed data very well, consistently explaining between 60 and 90 percent of the observed variation (Yotov *et al.* 2017).

Such features helped the gravity model to become the workhorse for empirical assessment of the determinant of bilateral trade flows over the past 50 years (Head and Mayer 2014). The typical structural gravity system is given by:

$$X_{ij} = \frac{Y_i E_j}{Y}\left(\frac{t_{ij}}{\Pi_i \mathrm{P}_j}\right)^{1-\sigma} \quad \text{(i)}$$

$$\Pi_i^{1-\sigma} = \sum_j \left(\frac{t_{ij}}{\mathrm{P}_j}\right)^{1-\sigma} \quad \text{(ii)}$$

$$\mathrm{P}_j^{1-\sigma} = \sum_i \left(\frac{t_{ij}}{\Pi_i}\right)^{1-\sigma} \quad \text{(iii)}$$

The system of equations (i)-(iii) describes the theoretical gravity equation for bilateral trade flows between country i and j, X_{ij}. Consistently with the original law of gravity it can be broken down into two main components: a "size" term $Y_i E_j / Y$ representing the economic mass of exporter i (output Y_i) and importer j (expenditure E_j) relative to the world output (Y);[42] and a "friction" term, $\left(t_{ij}/\Pi_i \mathrm{P}_j\right)^{1-\sigma}$ covering all trade frictions between origin and destination. Finally, σ, represents the elasticity of substitution of varieties produced in different countries.

The term (2) and (3) represent the Multilateral Resistance Terms (MRTs), originally introduced by Anderson and van Wincoop (2003) and defined as theory consistent aggregators of the bilateral trade costs. By measuring the supply (Π_i) and the demand-side (P_j) incidence of trade costs for a given economy across all its trade partners the MRTs also control for third country general equilibrium effects. We report the empirical counterpart of the Equation (i) in the main text.

Export Relative Price: for each 6-digit variety in the agri-food RCA basket exported by both Uganda and a competitor in a given destination market, we build a relative price index as weighted geometric average of relative unit values at 6-digit. The weights are given by the share of individual commodities in the total import of the destination country, ensuring that aggregation is not affected by changes of the export basket of the origin country. For a more in-depth presentation of the methodology see Fontagné et al (2008).

$$RelPrices_k^j = \sum_{k=1}^{K} \frac{UV_{TCC,k}^j}{UV_{ref,k}^j} * w_{jk}$$

Import volume: to evaluate developments in relative demand for foreign varieties in Uganda we rely on a structural gravity decomposition of trade flows. In so doing, we start by estimating the following model:

$$log\left(Exports_{ijk,t}\right) = \delta_{ijk} + \delta_{ik,t} + \delta_{jk,t} + \beta \log\left(1 + Tariff_{ijk,t}\right) + \varepsilon_{ijk,t}$$

Where the term $Exports_{ijk,t}$ refers to the volume of exports from origin i towards destination j in year t for the 6-digit variety k. The Gravity Controls matrix includes variables aiming to capture country-pair trade frictions determined by: geography and history (as the -log- of bilateral distance, a dummy variable for common language, historical ties and common border); as well as trade policy such as a dummy variable for Regional trade agreement and the (log) of the applied $Tariff_{ijk,t}$ aiming to capture bilateral time-variant trade frictions (price shifter); $\delta_{ik,t}$ measuring the competitiveness of exporter i in variety k and year t (i.e. factory gate prices) and $\delta_{jk,t}$ capturing the demand components (such as preferences) at the destination market j. Importantly since $\hat{\delta}_{jk,t}$ is estimated controlling for both bilateral frictions (i.e. both time invariant – such as geography – and time variant -such as RTAs and $Tariff_{ijk,t}$ - components) as well as supplier competitiveness ($\delta_{ik,t}$) the demand component is purged from confounding factors coming either from geography, trade policy or exporter characteristics. Finally, $\varepsilon_{ijk,t}$ represents an idiosyncratic error term. The sample

[42] Intuitively the size term imply that large producers tend to export more to all markets whereas rich countries tend to import more from all suppliers.

period covers two decades from 2000 to 2019 over 5-year intervals as estimating the model on consecutive years may results in biased coefficients as the adjustment of trade flows to policy (and price) changes are not instantaneous. Data wise, bilateral exports at 6-digit HS classification are from the BACI dataset (CEPII) whereas tariffs are from WITS database (World Bank).

Import Price: we perform an empirical investigation of the Ugandan import patterns for key commodities by looking directly at the average price of the imported goods and the number of countries from which Ugandan firms source their imports (which we refer to as varieties for convenience). The estimated equation reads as follow:

$$y_{ijk,t} = \delta_{ik,t} + \beta_1 Uganda_{i=UGA,t} + \beta_s Controls_{ijk,t-1} + \varepsilon_{ijk,t}$$

Where $y_{ijk,t}$ is the log of the unit value imports of product k from exporter i in destination j; $Uganda$=1 if the destination of exports is Uganda (and zero otherwise). $\delta_{ik,t}$ is the fixed effect at the product-year-country of origin level. The vector of $Controls_{ijk,t-1}$ includes bilateral distance in logs (to proxy for transport costs), relative effective exchange rate vis à vis trading partners (controlling for purchase power), a dummy for regional trade agreement and a dummy for common currency (as proxy for trade and monetary policy). Time varying controls are lagged one year to mitigate simultaneity bias. Furthermore, given the presence of $\delta_{ik,t}$ fixed effects, the estimated coefficient for the exchange rate is capturing the effect of bilateral exchange rate differentials by country-pair over time.

As dependent variable, $y_{ijk,t}$, we use the import price in log, so that the estimate of β can be read as the expected % difference in the price of a variety being imported in Uganda with respect to the same variety (where variety is defined by the commodity-supplier pair) being imported in another Sub-Saharan Low-income country (SSA benchmark) or in another comparable economy (as defined by the Measuring Export Competitiveness algorithm, MEC benchmark). Notice that the estimation sample does not include other destinations than the selected benchmarks.

The standard errors of the coefficients for all estimations are clustered at the destination country - time level. This structure concedes the unit values of imported products to be correlated within a destination country and year. This is the case, for example, whenever import prices are sensible to that country's general regulation.

Finally, to control for possible measurement error in quantities and thus in unit values we estimate Equation (7) also with weighted least square, where weights are proportional to the value of a country imports of product k in period t.