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Analysing beef price incentives to strengthen policies for production and exports in Uganda

TECHNICAL NOTE

MONITORING AND ANALYSING FOOD AND AGRICULTURAL POLICIES  MAFAP



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Analysing beef price incentives to strengthen policies for production and exports in Uganda

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by

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Abbreviations and acronyms

AfCFTA	African Continental Free Trade Area
ASSP	Agriculture Sector Strategic Plan
BoU	Bank of Uganda
CFI	cost, insurance and freight
CPI	Consumer Price Index
FAO	Food and Agriculture Organization of the United Nations
FMD	foot-and-mouth disease
FOB	free on board
ITA	International Trade Administration
MAFAP	Monitoring and Analysing Food and Agricultural Policies (FAO)
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDG	market development gap
NDP	National Development Plan
NRA	nominal rate of assistance
NPA	National Planning Authority
NRP	nominal rate of protection
NTM	non-tariff measures
PE	public expenditure
ReSAKKS	Regional Strategic Analysis and Knowledge Support System
UAA	Uganda Agribusiness Alliance
UBOS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UN COMTRADE	United Nations Commodity Trade Statistics Database
UBOS	Uganda Bureau of Statistics
URA	Uganda Revenue Authority
WTO	World Trade Organization

Executive summary

In Uganda, 58 percent of households depend on livestock for their livelihoods, with cattle being the most important livestock subsector in the country. Despite having cattle potential such as natural pastures, water resources, and big demand in national and world markets, beef production in Uganda experienced a low growth rate of 1 percent in the last decade. Production of beef lags behind local demand and this might worsen as the Ugandan population is expected to reach 100 million by 2050, from about 42 million today. In the last decade, the government has adopted several policies within the framework of the National Development Plan, aimed at increasing domestic beef production and exports.

This technical note, produced under the umbrella of the partnership between AgrInvest project in Uganda and the FAO Monitoring and Analysing Food and Agricultural Policies (MAFAP) programme, assesses the effects of policy support on the beef value chain in Uganda over the last four years, 2017 to 2020, and also includes previous analysis on live cattle for the period 2005–2016. The MAFAP methodology was used to measure the effects of trade and market policies and inefficiencies on prices received by beef farmers and traders, using the nominal rate of protection (NRP), nominal rate of assistance (NRA) and the market development gap (MDG) indicators.

The results reveal that in recent years (2017–2020), producers and traders of beef benefited from prices above the international equivalent, as a result of restrictions on cattle movement within the country due to a foot-and-mouth disease (FMD) outbreak, and increasing demand for beef. In the past, breeders of live cattle faced price incentives in some years (from 2005 to 2010), but were largely penalized from 2011 to 2016.

Overall, these persistent, often significant, price gaps between domestic and international prices could be explained by very limited price transmission and weak integration of the beef value chain, both at domestic and international levels. Moreover, the analysis of the market development gap (MDG) indicates the presence of important value chain inefficiencies, such as high transport costs and the presence of informal fees, still remain to be addressed.

Since beef production is still lagging behind demand, more or different type of incentives should be provided to the beef value chain agents to fully exploit the market and export potential of the sector. In particular, foot-and-mouth disease represents a critical issue to tackle to improve the commercialization and competitiveness of beef. Challenges on complying with non-tariff measures (NTMs), which hold back market access, need to be addressed by strengthening surveillance, control and management systems of foot-and-mouth disease through investments in developing infrastructure and human capacity for disease diagnosis and control, and investing in drug and vaccine manufacturing and distribution. To improve market access, the government would also need to eliminate bribes and other informal taxes and develop transportation infrastructure, logistic facilities and an integrated market information system.

1 Introduction

1.1 Overview

This technical note aims to assess the effect of trade and market policies, as well as market dynamics, on domestic beef prices in Uganda between 2017 and 2020. This note also includes a previous price incentives analysis for live cattle for the period 2005–2016. The results allow for a better understanding of the level of incentives on beef producers and traders and to identify potential policy gaps to address along the value chain.

This technical note has been produced under the umbrella of the partnership between FAO's AgrInvest project in Uganda and the FAO Monitoring and Analysing Food and Agricultural Policies (MAFAP) programme. Most of the data were provided by the Uganda Agribusiness Alliance (UAA), while the analysis was carried out by MAFAP with a review and contributions from FAO's AgrInvest project in Uganda team.

This technical note begins with a review of the cattle production, beef consumption/utilization, marketing and trade in the value chain (Chapter 1) and key policies in the cattle and beef sector (Chapter 2). It also provides a detailed description of how the indicators were calculated and how key data elements were obtained (Chapter 3). The indicators were then interpreted in light of existing policies and market characteristics (Chapter 4). Finally, key messages and policy recommendations are outlined as well as data issues, limitations and areas identified for further research to improve the analysis (Chapter 5).

The results and recommendations presented in this analysis of price incentives can be used by stakeholders involved in policymaking for the food and agriculture sector in Uganda. They can also serve as input for evidence-based policy dialogue at the national, regional or international level, more particularly in the context of the AgrInvest project, which has a dedicated component on policy dialogue.

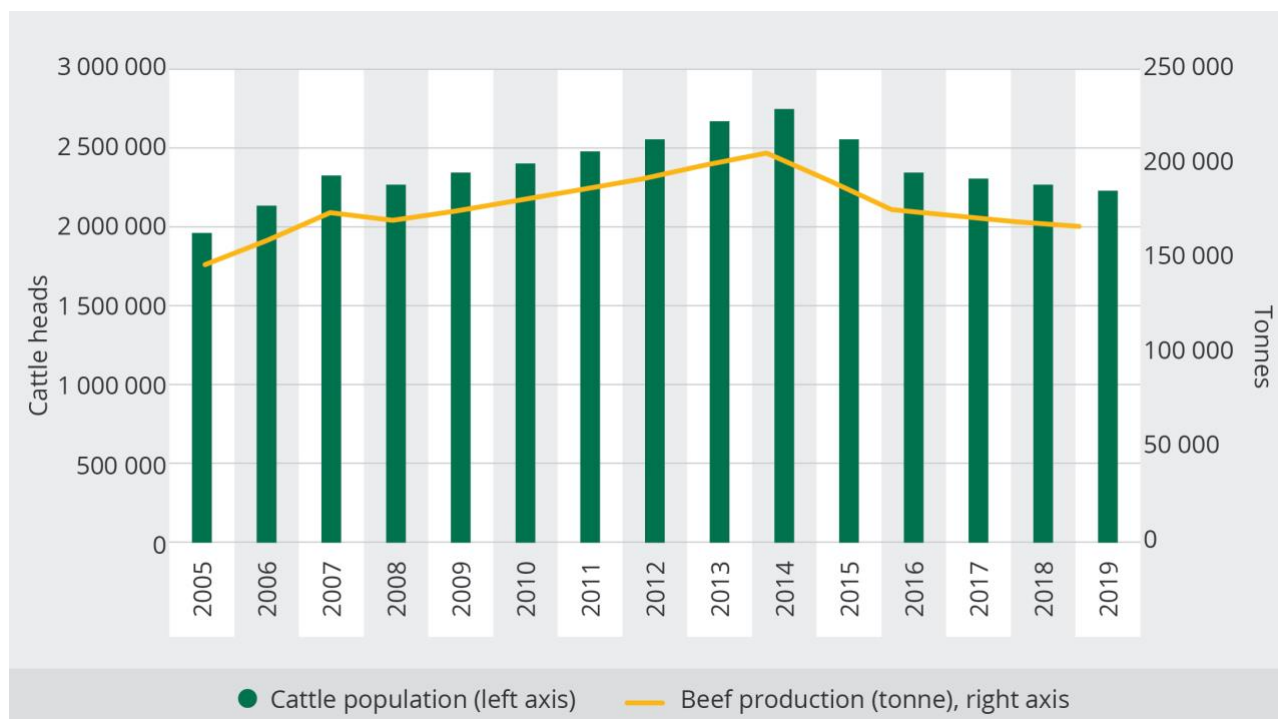
1.2 Commodity context

In Uganda, the livestock sector accounts for about 20 percent of agricultural value added and 3.8 percent of GDP (UBOS, 2020). Fifty-eight percent of households depend on livestock for their livelihoods and most of them are subsistence-oriented smallholders. Cattle is the most important livestock subsector in the country, with production valued at USD 8.7 million per year and with a population of about 14.6 million cattle (FAO, 2019; UBOS, 2020). The indigenous breeds continue to be dominant over the exotic ones; 9 in every 10 (13.6 million out of 14.6 million) cattle in Uganda are indigenous. Most cattle in Uganda are found in the 'Cattle Corridor', which extends diagonally across the country from the pastoralist Ankole area in the southwest to the Karamoja region in the northeast (Egeru *et al.*, 2014). The pastoral areas of Karamoja have the highest concentration of cattle in the country (head/km²), where cattle is the main source of livelihood and backbone of the local economy (Gradé, Tabuti and van Damme, 2009).

Uganda produced around 2.4 million heads of cattle annually on average between 2005 and 2019 (Figure 1) and the total number of cattle in the country has not changed much within this period, with an average growth rate of 1 percent (FAOSTAT, 2021). The growth rate is similar for beef production, reaching around 170 thousand tonnes in 2019. The low growth rate of cattle in Uganda could be explained by the fact that around 90 percent of cattle farmers are smallholders, engaged in pastoral, agro-pastoral or mixed crop-cattle production systems with limited access to animal health services.

Water shortages and scarcity of feed during droughts (cattle largely feed on natural pastures including communal grazing areas and fallow land), are other factors. (FAO, 2018). High productive systems such as commercial ranching with substantial investments made in animal health and breeding, accounts for less than 10 percent of the national herd (UIA, 2016). Cattle in Uganda is mainly raised for meat: over 80 percent of the national herd is devoted to beef production (FAO, 2019). Per capita annual consumption of beef is 6 kg and the trend is increasing. The growth in beef demand is explained by a population growth at 3.3 percent per annum, increasing urbanization, rising purchasing power and exports, and changes in consumption habits (Kingdom of the Netherlands, 2012).

Figure 1. Cattle population and beef production in Uganda



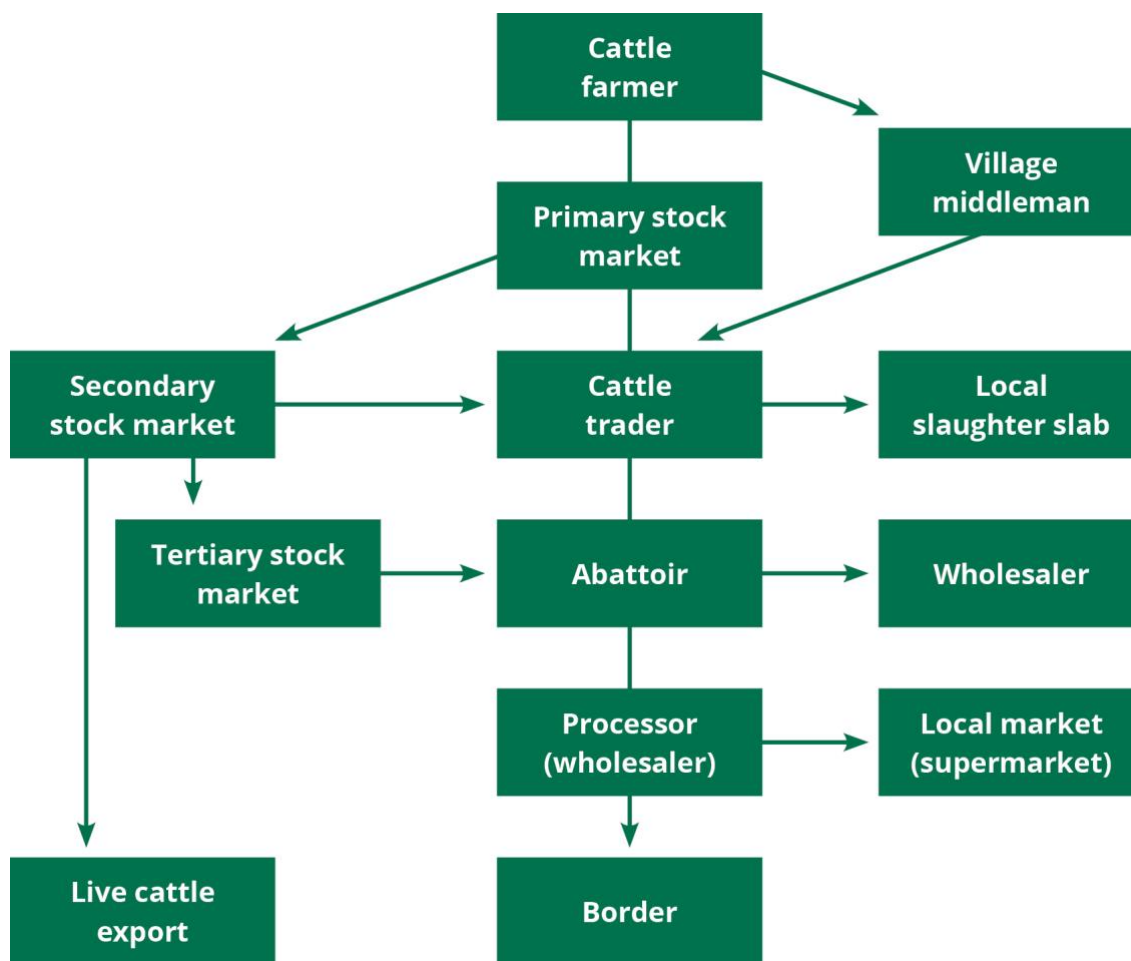
Source: FAO. 2021. FAOSTAT: Cattle. In: FAO. Rome. Cited 3 June 2021. www.fao.org/faostat/en/#data/QCL

The cattle market in Uganda has been liberalized since early 1990s whereby prices are determined by market forces to a larger extent (UIA, 2016). This has resulted in free participation of the private sector and also increased informal marketing. At farm level, cattle is purchased through direct negotiation with the producer either at the farm or at rural cattle markets. There are no standards or weighing facilities to guide the negotiation process. A price is determined from the physical attributes of the animal and guessed meat yield. The prices received therefore depend on the negotiation skills and experience of the farmer. Having market information is a vital tool for negotiation. However, for the most part, farmers are lacking this kind of information and end up with a lower than anticipated price.

Traders transport the purchased animals from farms or village markets either by truck or on foot to slaughterhouses in bigger cities or to the capital, Kampala (MAAIF, 2011). The costs of that transaction include the loading fee at animal markets, transportation, a movement certificate from the local veterinary and the lairage fee at the abattoir. Apart from abattoirs in and around Kampala there are a number of facilities in Uganda where animals are slaughtered: At-the-farm slaughters, slaughters at village markets, town slaughter slabs, and urban slaughterhouses. There are three abattoirs in Kampala that feed the capital market: City Abattoir (KCC), Ugandan Meat Packers Ltd. (UMI) and Nsooba Slaughterhouse Ltd. Meat inspection is carried out in all Kampala abattoirs albeit with different approaches and care. Bigger abattoirs and slaughterhouses serve also as an animal marketplace, where traders may either hire slaughter men in order to slaughter the animal and sell the carcass or sell the animal live to another trader/middle man that then deals with the slaughter business. The animals are resold in the primary, secondary or tertiary markets by cattle traders or intermediaries. Beef is offered for sale largely in its fresh state and consumers seem to prefer this type of beef. A schematic illustration of the beef value chain in Uganda is shown in Figure 2.

Beef processing in Uganda is hindered by supply and other logistical challenges. In 2016, the government launched one of the largest beef processing plants in Africa, worth an annual turnover of USD 10 million with a processing capacity of about 400 animals in a single shift and a holding capacity for nearly 5 000 animals (NPA, 2020). However, after its first beef export of 50 tonnes to Egypt, the company has been hampered by inadequate supply of raw materials. Furthermore, the majority of the beef is consumed locally. There are a number of small-scale meat processing establishments producing meat products for the local market. They are engaged in processing beef to produce some value-added products. Uganda's meat processing industry consists of a few companies dominating the market for packaged retail cuts and processed beef. These companies offer the full range of meat products (both from beef and pork, small quantities of poultry meat): prime cuts, retail cuts plastic packed, sausages (hot dogs, boiled sausages), ham, minced meat.

Figure 2. The beef and live cattle marketing chain in Uganda



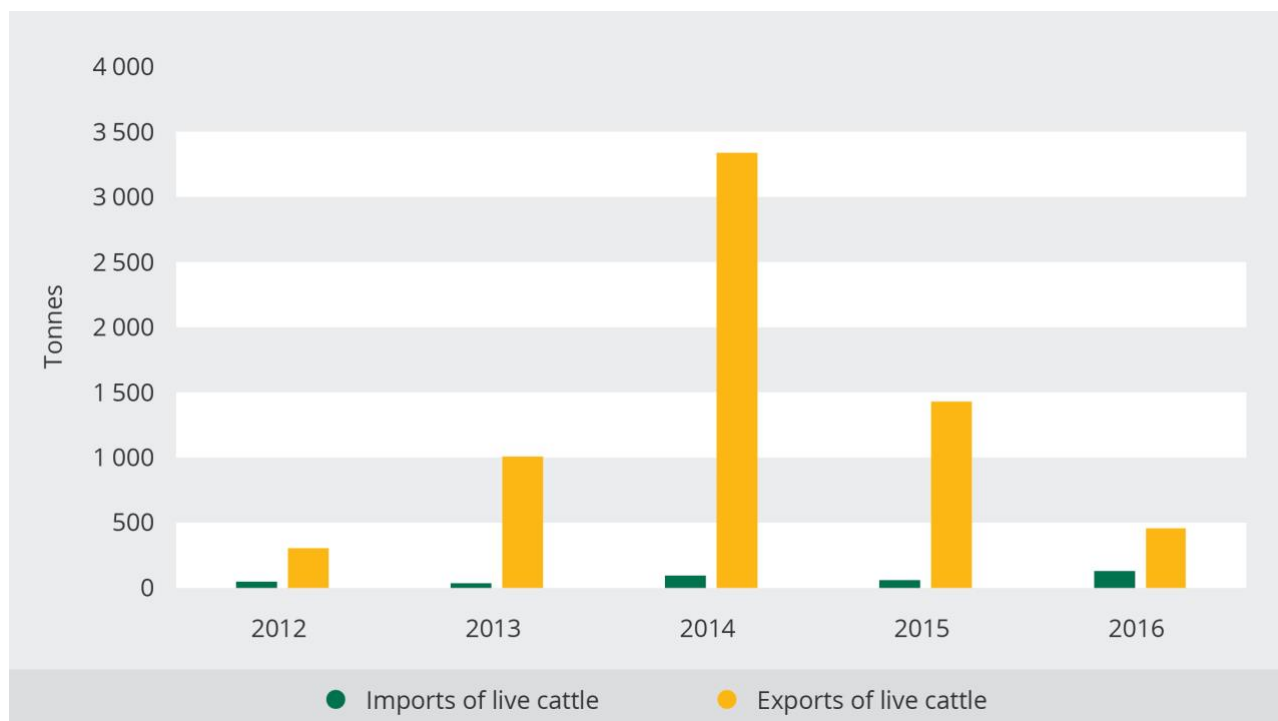
Source: Authors' own elaboration based on the description of a beef marketing chain by Landell Mills. 2011. *Study on promoting a commercial beef industry in Uganda. Final Report*. Entebbe.

Uganda's exports of livestock and livestock products are limited by the prevalence of FMD, a lack of an export-standard abattoir and high national demand (MAAIF, 2011). Generally, compliance with international or regional standards is often achieved at great cost. Despite this, Uganda is a 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 (Conron, del Prete and Santoni, 2021). Uganda exported on average about 1 300 tonnes of live cattle and 160 tonnes of beef in the period 2012–2016 and 2017–2020 respectively (Figure 3 and Figure 4).¹ About 70 percent of meat is exported as frozen boneless meat, followed by 20 percent of fresh boneless meat and 10 percent of fresh cuts with bone in meat (Conron, del Prete and Santoni, 2021). The major export markets for the products are Burundi, Democratic Republic of the Congo, Kenya, Rwanda, South Sudan and the United Republic of Tanzania. South Sudan is the major destination for Uganda's meat products. Other potential export markets for livestock and livestock products exist in the Near East and the European Union.

In addition to formal trade, live cattle and beef are informally exported to neighbouring countries (Burundi, Democratic Republic of the Congo, Kenya, Rwanda, South Sudan and the United Republic of Tanzania) (Conron, del Prete and Santoni, 2021). In contrast to formal trade, informal shipments, which are either not recorded by customs authorities at all, or under-declared, 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, compared to USD 12 800 in the formal customs data. 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).

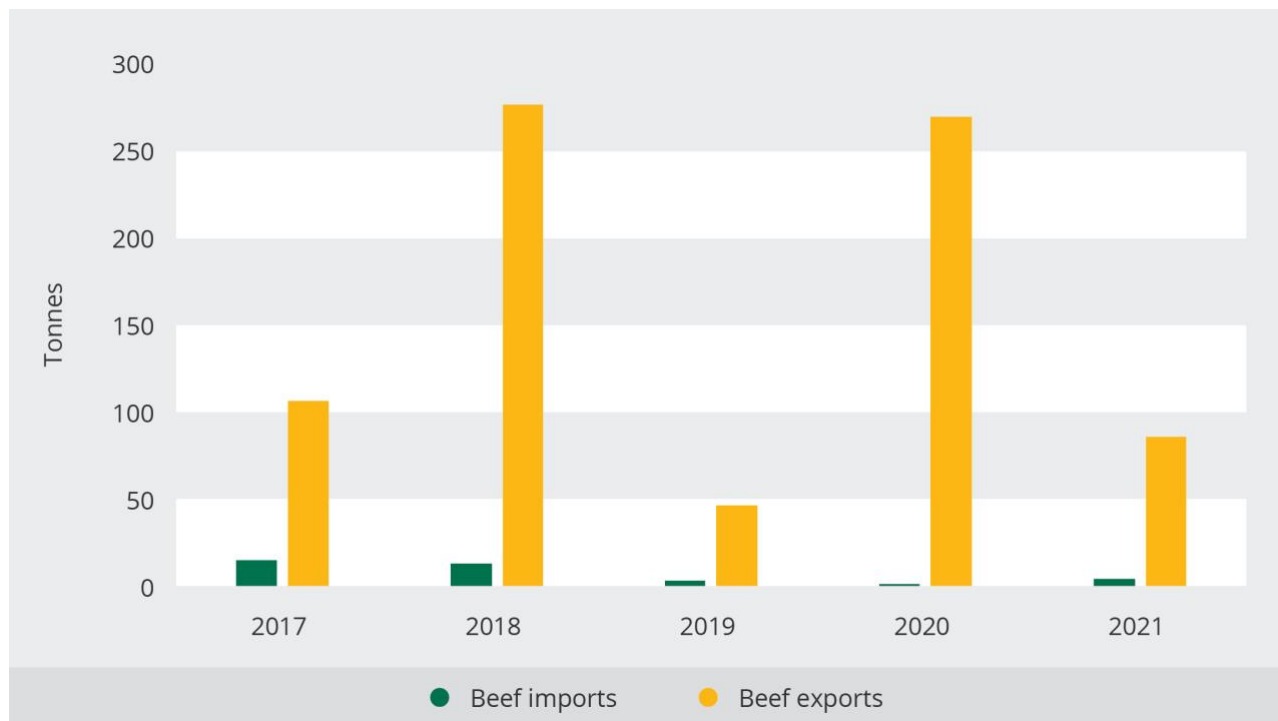
¹ In 2014, a record high of almost 3 500 tonnes of live cattle were exported in Uganda.

Figure 3. Import and export of live cattle in Uganda



Source: UN COMTRADE (United Nations Commodity Trade Statistics Database). 2021. Live cattle exports and imports, Uganda. In: *UN COMTRADE*. New York, USA. Cited 18 April 2022. www.comtrade.un.org/data

Figure 4. Imports vs exports of beef in Uganda, in tonnes



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

2 Key policies on the cattle and beef sector

The Uganda Vision 2040 aims to transform Uganda into a middle-income country by 2040. To achieve this, the government has developed a number of supporting plans, policies and strategies within the Third National Development Plan (NDP III) 2020/21 to 2024/25, which builds on the NDP II 2015/16 to 2019/20 (Malabo Montpellier Panel, 2020; NPA, 2020).

The NDP III identified livestock, and in particular, increasing and sustaining high-quality beef production and exports, as a strategic sector to achieve the Vision 2040. Through the Agriculture Sector Strategic Plan (ASSP) (the framework for developing the agricultural sector), Uganda has envisaged a variety of investments for the production and exports of livestock, hides and skins products. 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. The government also provides import incentives for inputs through several measures: plant and machinery duty free at importation (for most direct use), VAT and withholding tax exemption, duty draw back – a refund of all or part of any duty paid on materials, inputs imported to produce for exports (UIA, 2016).

Within the framework of the ASSP, several policies and acts have been established to guide investments and interventions in the livestock sector. These include the 2001 Animal Breeding Act, the 2005 Animal Feeds Policy, the 2003 Dairy Regulation, the 2003 Meat Policy, the 2002 National Veterinary Drug Policy and the 2018–2022 One Health Strategic Plan, among others (FAO, 2021). Though with different priorities and timeframes, these policies aim to support the sustainable development of the livestock sector.

The central authority charged with the development of the livestock industry is the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). Specifically, the livestock industry is managed by the Directorate of Animal Resources. The mandate of the directorate is, as stated the document:

To support, promote and guide all livestock, fisheries, apiculture and sericulture production to enable the country to achieve and maintain qualitative and quantitative self-sufficiency in animal protein, animal by-products, honey, bee wax, propolis and silk products (Mbabazi and Ahmed, 2012).

The directorate executes this mandate through three departments but only two of them focus on livestock production and animal disease, namely the Department of Animal Production and Marketing and Department of Livestock Health and Entomology. The animal health sector is well equipped by the necessary legal and certification tools to provide adequate information to potential importers of livestock and livestock products and to regulate the veterinary profession and the animal health sector in the country. Veterinary inspections at slaughterhouses are the responsibility of veterinary officers belonging to MAAIF, supported by properly trained technicians.

In terms of trade policies, all cattle exports are tax exempt except for raw hides and skin (UIA, 2016). Taxes on raw hides and skin exports is aimed at encouraging value addition locally. To promote exports, the government implements duty draw back, which is a refund of all or part of any duty paid on materials, inputs imported to produce for export. Imports of live animals into Uganda are subject to an average tariff of 18.5 percent, while a rate of 25 percent applies to meat and edible offal (WTO, 2006). In 2018, Uganda imposed a higher tariff rate of 35 percent on imports of meat and edible offal for 12 months (WTO, 2021). Additionally, importing beef involves lengthy paperwork and slow processing, essentially banning it imported into Uganda (ITA, 2021).

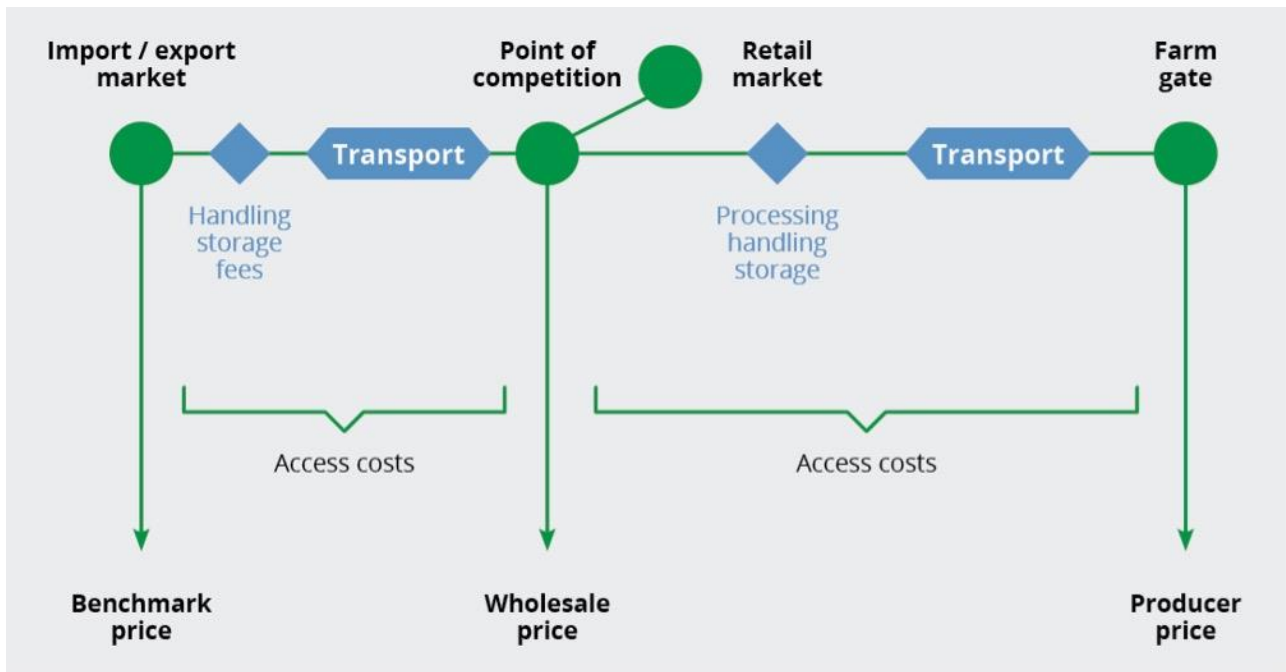
3 Methodology and data

3.1 Price incentives analysis

Estimates of the nominal rates of protection (NRP) are used in this report as a measure of the effects of public policies and market factors on agricultural prices. In line with the approach proposed by Krueger, Schiff and Valdés (1988, 1991), NRPs have been used mainly to examine two types of policies: (i) direct support of the agriculture sector or a specific value chain through direct sector-specific price policies (or interventions); and (ii) indirect support through trade policies, exchange rates and any other macroeconomic or non-agricultural policies.

The point along the value chain where the NRPs are calculated plays a key role: the border price and domestic price need to be compared at the same point in the value chain. The methodology used by MAFAP (MAFAP, 2015) is closest to that described by Monke and Pearson (1988) and Tsakok (1990), as NRPs are estimated at the farm gate, wholesale and retail levels, which helps to locate market and policy failures along the value chain. To compare prices in a wholesale market for an imported commodity, the border price that is used for comparison needs to be modified in such a way that it accounts for the costs (such as handling costs at the border, transportation and any processing costs) incurred to take the commodity from a CIF (cost, insurance and freight) position to sale in the wholesale market. The same formula is used in reverse in the case of an export. In this latter case, the border price will be an FOB (free on board) price (or unit value). The elements considered in the calculation of the NRP are schematically illustrated below (Figure 5).

Figure 5. Components of the nominal rate of protection



Source: FAO. 2015. *MAFAP methodological paper: Volume I. Analysis of price incentives*. MAFAP Technical Notes Series. Rome.

The NRP, expressed as a percentage, can be calculated as the difference between the border price and the domestic price at the farmgate, wholesale and retail levels:

$$NRP_x(\%) = 100 * \frac{(DP_x - RP_x)}{RP_x}$$

where DP stands for domestic price and RP for reference (border) price at a certain point of the value chain (x) where the NRP is computed (farm gate, wholesale or retail). At farm gate, the NRP measures the percentage by which the domestic producer price is raised above (if positive) or has fallen below (if negative) the reference price (the border price adjusted for market costs and quality/quantity factors), which is considered to be the undistorted price of a commodity. A positive NRP indicates that the policy environment and market dynamics provide price incentives to produce or commercialize the analysed product. On the contrary, a negative NRP signals that farmers and/or traders receive disincentives in terms of a specific commodity's output prices.

By adding public expenditure allocated to the commodity (PE) to the price gap at farm gate ($DP - RP_{fg}$), it is possible to obtain the nominal rate of assistance (NRA). In addition to estimating the effects of policies affecting the output market, the NRA measures the effect of budgetary transfers allocated to the specific commodity on price incentives to production. Mathematically, the NRA expressed as percentage, is defined as:

$$NRA_{fg}(\%) = 100 * \frac{(DP_{fg} - RP_{fg}) + PE}{RP_{fg}}$$

In order to quantify disincentives stemming from value chain inefficiencies, MAFAP generated a methodology to compute the market development gap (MDG) indicator. The MDG is an aggregate estimate of the effect of excessive market access costs within a given value chain on prices received by producers. “Excessive” access costs may result from factors such as poor infrastructure, high processing costs due to obsolete technology, government taxes and fees (excluding fees for services), high profit margins captured by various marketing agents, illegal bribes and other informal costs. All of these can impede the transmission of world prices to domestic markets. The MDG is expressed as a share of the farm gate price, as follows:

$$MDG_{fg}(\%) = 100 * \frac{ACG_{wh} - ACG_{fg}}{DP_{fg}}$$

where ACG is the access costs gap at wholesale and farm gate level. The access costs gap is computed as the difference between the observed access costs and those adjusted by removing market inefficiencies, which therefore reflect the costs that would prevail under a more efficient market structure.

3.2 Data for the analysis

To calculate the indicators needed to estimate (dis)incentives to producers and traders (NRP, NRA) as well as the MDG, several types of data are needed. These includes trade flows, border prices, exchange rate, domestic prices at different points of the value chain, market access costs and conversion factors. This study covers two separate periods: for the most recent years 2017–2020 beef is analysed, while analysis for the period 2005–2016 focuses on live cattle. This decision, driven by data limitations, makes the two indicators analysis in the two periods not fully comparable. In this section, we describe the data used for analysis for the two periods.

3.2.1 Market pathway

Market pathway refers to locations of the main producing area, wholesale and port of entry or exit (border) if the product is imported or exported. The path analysed for live cattle in 2005–2016 was Nakasongola districts (as the main producing region) and the capital Kampala (main wholesale and exporting market). In the recent analysis (2017–2020) for beef, the Nakasongola districts remains the main producing region, with the capital Kampala being the main wholesale market (the point of competition) and Busia the border point.

3.2.2 Trade status of the products

Trade status identifies whether the commodity is imported, exported or thinly traded. When imports volumes are higher than export volumes, the trade status of the commodity is imported, and otherwise it is exported. Trade data were obtained from UN COMTRADE for live cattle for 2012–2016, and data were not available for the previous years (Figure 3) and from the Uganda Revenue Authority for beef for the 2017–2020 period (Figure 4). This suggests that Uganda is a net exporter of live cattle and beef for the period of study.

3.2.3 Benchmark prices

Since cattle and beef are export commodities in Uganda, the benchmark price is the free on board (FOB) price received by exporters. FOB prices were obtained by dividing the value of exports by its volume. Data to calculate benchmark prices were obtained from the Uganda Revenue Authority (URA). In the past, for the period 2005–2016, benchmark prices were computed as the ration between values and volumes of live cattle exported in unit USD per head. Volumes and values for 2005–2013 prices were expressed in tonnes and converted in heads by applying a conversion factor (15 percent), while volumes and values for the period 2014–2016 were reported in heads and no conversion factor was applied. The benchmark price for beef during 2017–2020 was derived from quantity and value of exports of ‘Frozen boneless meat of Bovine animals’ in unit USD per tonne, since about 70 percent of the meat exported from Uganda is frozen boneless meat.

3.2.4 Domestic prices

For period 2005–2016, producer prices of live cattle were obtained through primary survey from the markets of Kashongi and Nakitomi (2005–2013) and from Lwamutogo market (2014–2016). Farm gate prices in recent years 2017–2020 were obtained from the Uganda Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)'s Data Department as a price of live cattle in UGX/head. Beef wholesale market in Kampala is assumed to be the point of competition. For the period 2005–2016, prices at the point of competition were obtained through primary surveys at Kampala market in UGX/head. For period 20017–2020, prices at the point of competition were obtained as average beef wholesale price in Kampala through the Uganda Cattle Traders and Transporters Association.

3.2.5 Exchange rates

These data are used to convert the benchmark price expressed in USD into domestic currency: The annual average of monthly exchange rates was obtained from the IMF Financial Statistics.

3.2.6 Market access costs

Livestock marketing (both live cattle and beef) involves many stages and marketing agents. Marketing costs in this analysis are based on movement of cattle from producers at the farm gate in the Cattle Corridor to primary and secondary markets within the district and then to the major livestock wholesale markets in Kampala. Cattle are then slaughtered and processed for domestic consumption and some exported. More information data, sources and assumptions for access costs are outlined in Table A1 in the Annex.

3.2.7 Budget transfers to producers

Budgetary transfers are retrieved from the MAFAP public expenditure dataset and account for payments made to farmers individually, usually inputs or output subsidies or income-support measures. We could only obtain budgetary transfers for cattle for the period 2005–2017.

3.2.8 Conversion factors

A conversion factor is needed when the commodity traded in one point differs in its quantity (or quality) from the commodity traded or produced in another point of the value chain, due to processing or any physical transformation. For the period 2005–2016 where live cattle is analysed, producers' prices and export prices are both for live animals. Therefore, a quantity adjustment was not needed. We assume that there is no difference in quality between exported and domestically traded meat and hence a quality adjustment is irrelevant.

However, in recent years, 2017–2020, farm-gate prices were obtained for live cattle, while the exported commodity is beef. We used a conversion factor of 0.15 (carcass to live animals) obtained from the FAO note on technical conversion factors for agricultural commodities and based on an average adult bovine of about 300 kg. Local sources provided some conflicting information on this, but some stated that the dressing ratio for pasture raised beef slaughtered at 300 to 350 Kg for a local breed cannot exceed 45 to 47 percent.²

Sources of the data variables used in the analysis of the policy and market indicators of live cattle and beef are summarized in Table 1 and Table 2.

² Other sources stated that the dressing ratio for pasture raised beef slaughtered before 3 years is about 53 to 54 percent, others estimate that about 65 percent of the weight of a typical animal slaughtered results in beef meat.

Table 1. Summary description of data used for price incentives indicators for live cattle in Uganda for 2005–2016

Data	Description	
	Observed	Adjusted
Benchmark price	FOB prices were computed as the ratio between values and volumes of live cattle exported in unit USD per head. Data obtained from URA.	N/A
Domestic price at point of competition	Obtained through primary survey at Kampala market in UGX/head.	N/A
Domestic price at farm gate	Producers' prices of live cattle were obtained through primary surveys at Kashongji, Nakitomi and Lwamutogo markets.	N/A
Exchange rate	Annual average of monthly exchange rates, obtained from IMF Financial Statistics.	N/A
Access costs from farm gate to the point of competition	Transport, handling costs, taxes and other fees, were computed based on Landell Mills (2011) and MAAIF 2013 data. Margins were computed as 10 percent of the farm gate price.	Transport costs were adjusted using LPI from the World Bank. Adjusted margins are computed as 5 percent of the farm gate price. Handling costs were not adjusted due to lack of data.
Access costs from border to the point of competition	Handling costs were reported by the head of the market association in the Kampala market and margins were computed as 10 percent of wholesale price. No transport costs, as Kampala was considered as wholesale and border point.	Adjusted margins are computed as 5 percent of the wholesale price. Handling costs were not adjusted due to lack of data.

Source: Authors' own elaboration.

Table 2. Summary description of data used for price incentives indicators for beef in Uganda for 2017–2020

Data	Description	
	Observed	Adjusted
Benchmark price	FOB prices derived as ratio between export values and volumes of frozen boneless bovine meat in USD per tonne. Data obtained from URA.	N/A
Domestic price at point of competition	Average beef wholesale price in Kampala. Data obtained from Uganda Cattle Traders and Transporters Association.	N/A
Domestic price at farm gate	Producer prices of live cattle in UGX/head, obtained from MAAIF.	N/A
Exchange rate	Annual average of monthly exchange rates, obtained from IMF Financial Statistics.	N/A
Access costs from farm gate to the point of competition	Transport costs were obtained through primary surveys in lump sum and includes all other costs such as handling costs, taxes, fees and profit.	Transport costs were adjusted using LPI from the World Bank. Handling and other costs were not adjusted due to lack of data.
Access costs from border to the point of competition	Lump sum access costs that include transport, handling and other costs. Transport costs were disaggregated based on ReSAKKS (2009) study.	Transport costs were adjusted using LPI from the World Bank.

Source: Authors' own elaboration.

4 Analysis of price incentives indicators

4.1 Nominal rate of protection

In recent years, domestic beef prices at farm gate in Uganda have constantly increased from 2017 to 2019, but have dropped in 2020 (Figure 6). During this period, they were well above the reference price (i.e. their international equivalent price) in almost all years, except in 2017. The increase in domestic beef prices may be due to restrictions on cattle transportation and an increase in the demand for Ugandan beef, both at domestic and international levels, coupled with a still limited supply, which has even declined in the recent years as seen in Figure 1.

In 2017, the country witnessed an outbreak of foot-and-mouth disease (FMD)³ in western Uganda that affected cattle across the country (Abdallah, 2018). In order to prevent the spread of the disease, MAAIF imposed quarantine measures and banned cattle transportation, leading to a reduction of beef supply to local markets and increase in prices (Abdallah, 2018; Kutamba and Musasizi, 2019). For districts near the borders, the ban on cattle transportation was initially less enforced and later partially lifted after they were declared disease free (Abdallah, 2018; Kutamba and Musasizi, 2019). With restricted access to local markets, livestock farmers – especially those close to the borders such as at Mutukula and Bugango border posts in Kyotera and Isingiro districts – increased cattle supply to neighbouring markets. In 2018, beef exports in Uganda increased by almost threefold (from 100 tonnes in 2017 to about 280 tonnes in 2018) while beef imports in 2018 reduced by 17 percent exacerbating the beef supply deficit in the domestic market and contributing to further farm-gate price increases (Figure 3).

Figure 6. Domestic and reference prices at farm gate for beef in Uganda, 2017–2020



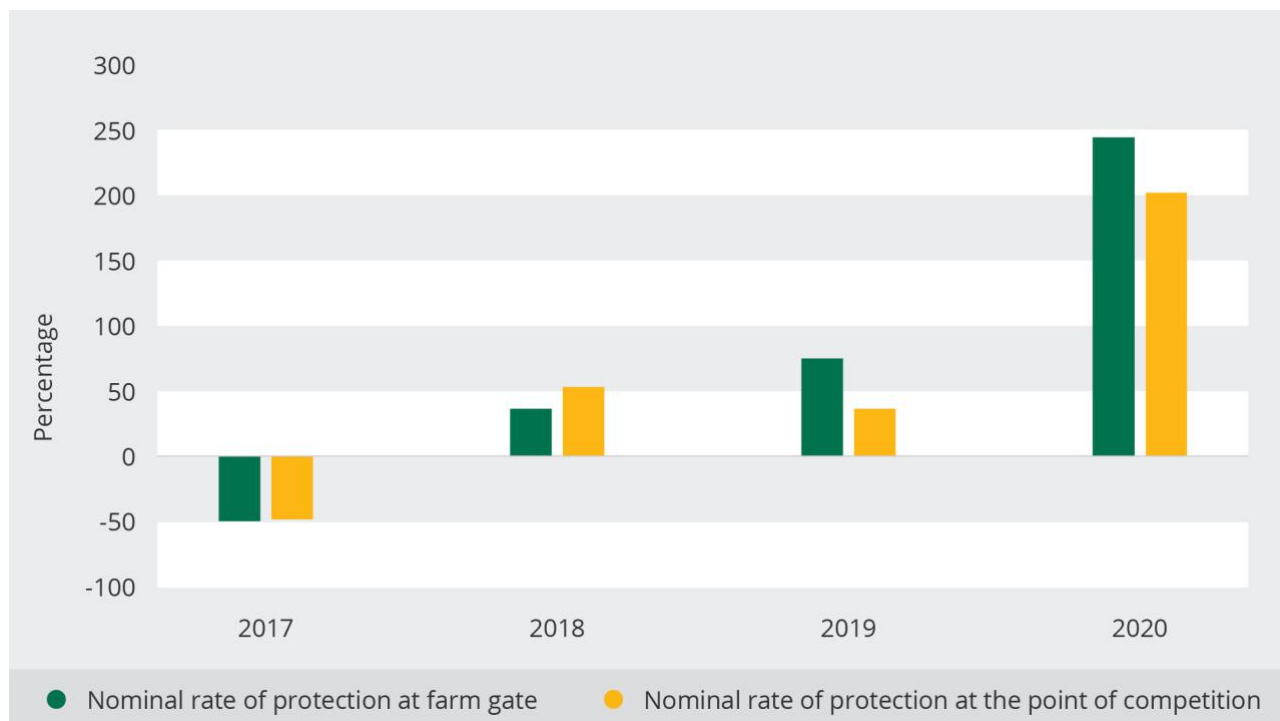
Source: FAO. 2022. Price incentives database. In: *MAFAP*. Rome. Cited 4 April 2022. www.fao.org/in-action/mafap/data

The increase in cattle prices at farm gate with a very volatile – yet declining – benchmark (FOB) price translated into a positive NRP for cattle breeders, at an average 77 percent for the 2017–2020 period (Figure 7). This trend was quite similar for prices at wholesale, which remained rather constant but above the reference price in most years. Traders at the point of competition benefited from an average NRP of 60 percent during 2017–2020. These very high rates of protection both for breeders and traders indicate that price transmission from international to domestic market in the beef value chain is quite low in Uganda. Since there are no explicit policies preventing such transmission, most of the

³ FMD is a highly contagious disease of cattle and other livestock and wildlife species, which has been eradicated in many parts of the world but remains endemic in Uganda and other developing countries (Velazquez-Salinas *et al.*, 2020).

factors fall down to supply and demand dynamics. However, two issues should be considered. First, even if we are analysing an export commodity, the imposition of an import tariff on meat at a high rate of 25 percent (increased to 35 percent in 2018) may also play a role in supporting domestic prices. Second, quantities of official beef exports are still limited making export prices very volatile and somewhat unreliable, a factor that can undermine the validity of the analysis. This is especially the case for the last year of analysis, when the benchmark price⁴ declined from over USD 3 200/tonne in 2019 to USD 1 900/tonne in 2020, which combined with an increased domestic price caused a massive rise in the level of price incentives, from 75 percent to 245 percent in just one year.

Figure 7. Nominal rate of protection for beef in Uganda 2017–2020



Source: FAO. 2022. Price incentives database. In: *MAFAP*. Rome. Cited 4 April 2022. www.fao.org/in-action/mafap/data

The NRP for live cattle analysed in the past presents a different and more variable trend, compared to the one for beef in recent years. At the beginning of the analysed period, between 2005 and 2010, breeders faced price disincentives on average, while from 2011 to 2016, the NRP was systematically negative at an average of -30 percent (Figure 8). There were no known policy measures in Uganda that could have influenced prices and therefore we can assume that (dis)incentives are likely influenced by market factors and very poor price transmission.

As Figure 9 indicates, especially from 2010 onwards, the reference price started to diverge significantly from the domestic farm-gate price. Domestic prices seem not to respond to world market price signals, penalizing farmers to a large extent, in some years. However, domestic prices look rather stable both for producers and traders and even trended upward constantly. This is a positive tendency for value chain agents, even if with increased price transmission and more integrated markets they could have fetched much higher prices.

In addition to price incentives, cattle producers also benefited from direct budget support, mainly composed of input subsidies. The joint effect of budget transfers and price incentives is calculated through the nominal rate of assistance (NRA). However, budgetary support was quite minimal, about UGX 15 000 per head on average for 2005–2016, therefore the NRA is almost equal to the NRP in all years for which the indicator is computed (Figure 8).

⁴ Benchmark price is the free on board (FOB) price received by exporters. FOB prices were obtained by dividing the value of exports by its volume.

Figure 8. Nominal rate of protection for live cattle in Uganda 2005–2016



Source: FAO. 2022. Price incentives database. In: *MAFAP*. Rome. Cited 4 April 2022. www.fao.org/in-action/mafap/data

Figure 9. Domestic and reference prices at farm gate for live cattle in Uganda, 2005–2016



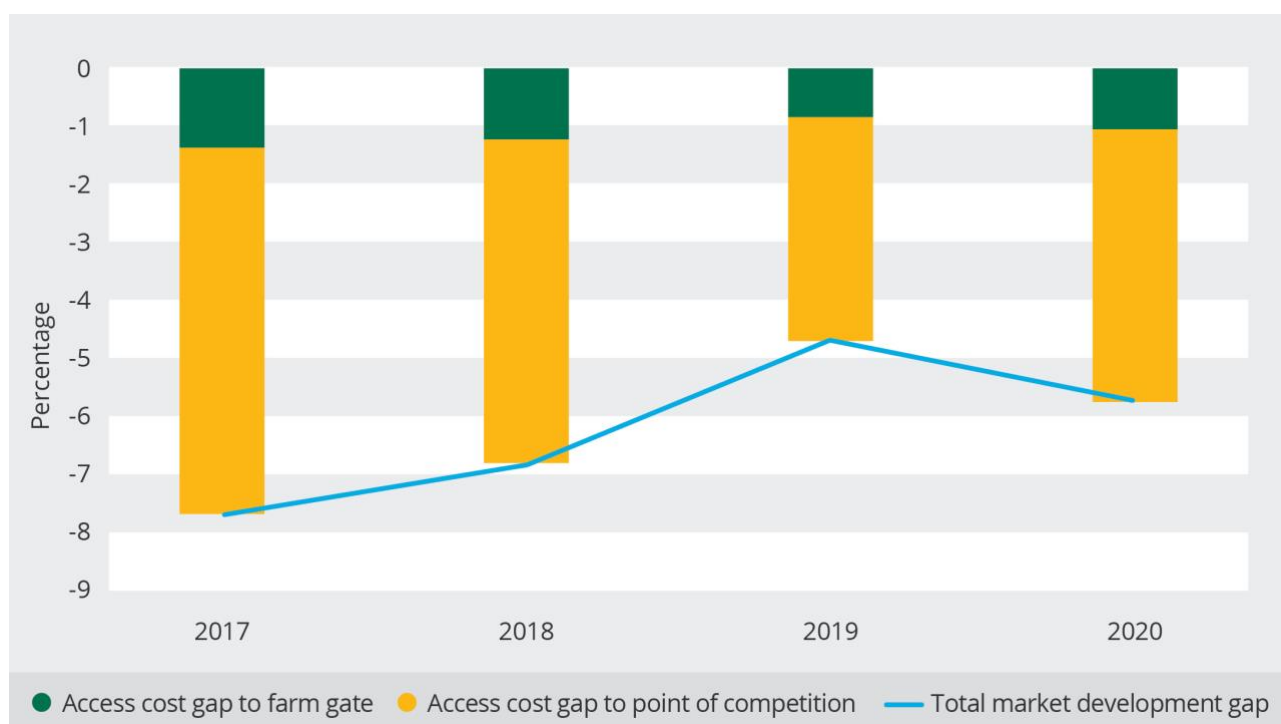
Source: FAO. 2022. Price incentives database. In: *MAFAP*. Rome. Cited 4 April 2022. www.fao.org/in-action/mafap/data

4.2 Market development gap

The analysis of the market development gap (MDG) suggests that livestock breeders were penalized by market inefficiencies, over the period. The negative MDG of -6 percent on average between 2017 to 2020 for beef producers indicates that farm-gate prices could be, at most, 6 percent higher if all market inefficiencies were eliminated and all benefits accrued to the producers (Figure 10).

This is an underestimation of market inefficiencies, since in our analysis for 2017–2020, we were only able to quantify inefficiencies in transport, due to lack of information on access costs breakdown or an adjustment factor to reflect a more efficient value chain functioning. Transport costs, however, account for at least half of all marketing costs for moving beef from the farm gate to the export border, and these costs are about 30 percent more than the transport costs in a more efficient market, such as South Africa.

Figure 10. Market development gap (share of farm gate price) for beef in Uganda, percentage

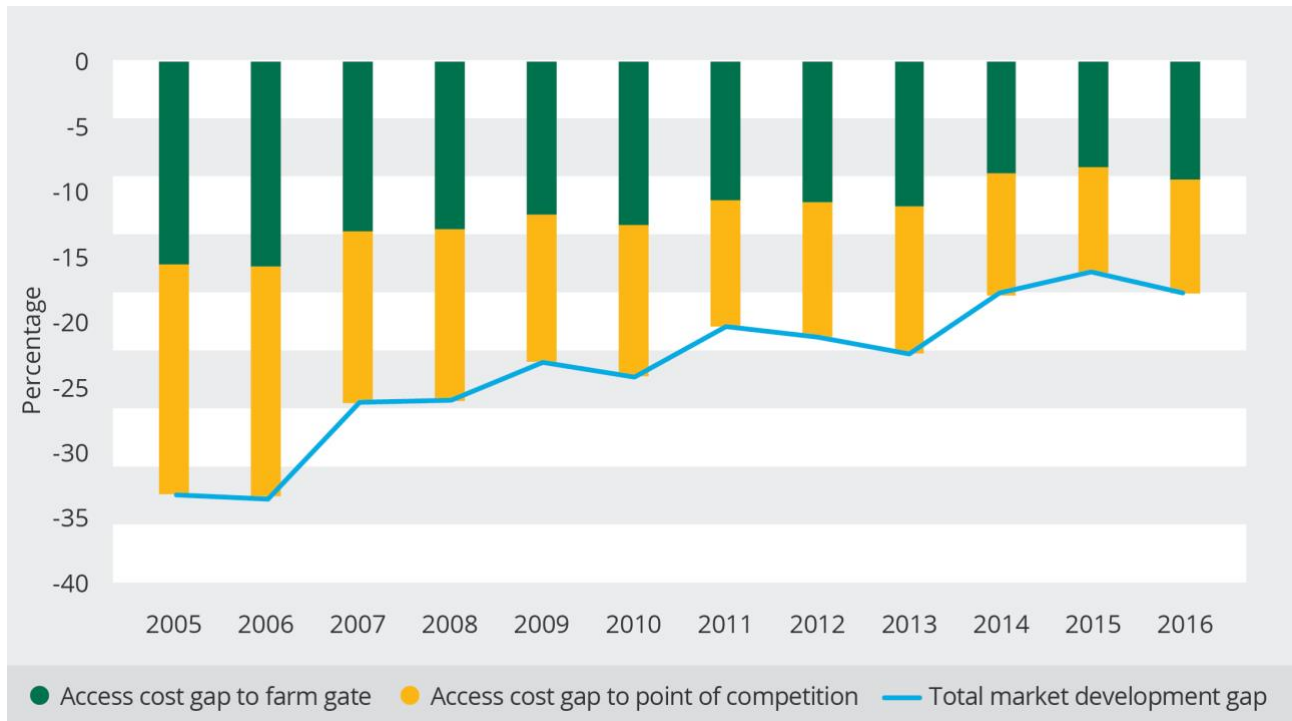


Source: FAO. 2022. Price incentives database. In: *MAFAP*. Rome. Cited 4 April 2022. www.fao.org/in-action/mafap/data

In the past, when a breakdown of marketing costs was available, it was possible to disentangle sources of inefficiencies more clearly and better approximate their effect on farm-gate prices. The MDG was much larger, at an average -22 percent of the farm-gate price (Figure 11).

In addition to excessive transport costs, also local fees (those not corresponding to a service) such as informal marketing costs and bribes and excessive profit margins by wholesalers and exporters weighted largely on farmers. Removing these inefficiencies through by improving rural road networks and other infrastructure, or eliminating informal fees or bribes would have allowed breeders to get much higher prices (up to 20 percent) and increase their revenues.

Figure 11. Market development gap (share of farm gate price) for live cattle in Uganda



Source: FAO. 2022. Price incentives database. In: *MAFAP*. Rome. Cited 4 April 2022. www.fao.org/in-action/mafap/data

5 Policy implications

5.1 Main messages

The livestock sector in Uganda is largely liberalized, with no relevant barriers to exports, but large informal trade flows. In recent years (2017–2020), producers and traders of beef seem to have benefited from prices above the international equivalent, as a result of restrictions on cattle movement within the country and increasing beef demand, with domestic supply unable to keep up the pace. In the past, breeders faced price incentives in some years (2005 to 2010), but were largely penalized from 2011 to 2016.

Although the two analyses are not fully comparable, since the value chain analysed and data sources have changed, there is a common factor that can explain these persistent price gaps between domestic and international prices: the very limited price transmission, and the integration of the beef value chain. In some cases, this poor price transmission could work in favour of beef producers and traders by sustaining their prices in comparison with the (international) reference ones. However, this is also an indication that the sector is not well integrated with international markets. More importantly, despite price incentives enjoyed by breeders in recent years, it seems that production and productivity of meat is still lagging behind in Uganda. This may suggest that other types of policy incentives, more targeted to beef commercialization and exports, need to be put in place in order to fully exploit the export potential of the sector. In particular, foot-and-mouth disease represent a critical issue to tackle to improve beef commercialization and competitiveness.

Despite positive NRPs in recent years, the analysis of the market development gap highlights important value chain inefficiencies, such as high transport costs and the presence of informal fees that still need to be addressed. These factors limit farmers' access to markets in major cities in the country and at the international level, and leads to an unequal distribution of market power in which smallholder producers could earn significantly less than other actors, such as large processors and exporters. Lower earnings reduce the ability of farmers to invest in productivity-raising technologies. To address this, specific interventions are needed to ensure a more transparent market environment and better infrastructure and technology to process, move and export meat.

The analysis has proven hard due to lack of data on official trade flows and limited (sometimes contrasting) information on market access costs. Informal trade flows are hard to track, and official data available sometimes do not provide a reliable indication of export prices. In such context, a price incentives analysis, which builds on the comparison of domestic and border prices accounting for transport and processing costs, may result largely compromised.

5.2 Recommendations

The Government of Uganda, through its Third National Development Plan (NDP III) 2020/21 to 2024/25, which builds on NDPII 2015/16 to 2019/20, has committed to increase domestic beef production and exports through strategies aimed at improving productivity, market access, storage and processing facilities and competitiveness of cattle products at domestic and international markets. However, as emerges from this analysis, trade barriers and market inefficiencies still persist and undermine such objectives.

- To improve market access, the government would need to work towards **eliminating of bribes and other informal taxes** that weigh on farmers and **improving transportation infrastructure and logistic facilities** (e.g. refrigerated trucks, warehouses and other storage facilities). An adequate and well-functioning transport infrastructure will reduce the costs and time to move beef from production areas to processing centers and export markets. This would facilitate trading within the country and at regional and international levels. In particular, better infrastructure would strengthen Uganda's capacity to take advantage of the African Continental Free Trade Area (AfCFTA),⁵ which aims to create a single market for goods and services facilitated by movement of persons in order to deepen the economic integration of the African continent. Improved transportation infrastructure should be complemented by modern logistics facilities to ensure that beef arrives into markets in good quality and meets food-safety standards.

⁵ African Continental Free Trade Area (AfCFTA) is a flagship project of Agenda 2063 of the African Union. It was approved by African Heads of State and Government in 2012 in Addis Ababa, Ethiopia, to establish a Continental Free Trade Area. <https://au-afcfta.org/about/>

- In addition, **a robust market-information system is needed** to correct market failures due to asymmetry of information, by sharing information related to price, quantities and qualities to beef value chain actors. This will reduce transaction costs (in searching for market information), improve decision making (not only at farm level but also for the government) and re-balancing of power between the different market actors, especially for smallholder farmers who can be largely penalized by the limited price information.
- For Uganda to sustain and increase its market share, **challenges complying with non-tariff measures (NTMs) that limit market access need to be addressed**. Ugandan beef competes in markets such as the European Union, AfCFTA, China and the Near East that are demanding in terms of quality and food-safety requirements. Some of these countries have imposed NTM ranging from “technical measures” such as standards, testing and certification, sanitary and phytosanitary (SPS), to “non-technical” measures such as quantitative restrictions. The Government of Uganda would need to enforce and strengthen adherence to product-quality requirements through **food safety, social and environmental standards**, train beef value chain actors on sanitary and phytosanitary standards, develop and adequately equip certification laboratory facilities across the country and regulate cross border informal trade in beef.
- **Control and prevention of foot-and-mouth disease (FMD)** should remain a key priority for the government if Uganda is to attain a disease-free status that is a prerequisite for free movement of cattle and cattle products needed to boost exports. FMD has a significant economic impact on the livestock sector as it causes production losses with weakened, debilitated cattle heads as well as disruptions in the regional and international trade in animals and animal products. Progress to eradicate FMD in Uganda 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 (Conron, del Prete and Santoni, 2021). Controlling FMD and other livestock diseases impose heavy costs on farmers and reduce incentives for them to invest in higher yielding cross breeds or exotic animals that are more susceptible to tropical diseases (Baluka, 2016). At the processing level, various actors lost income amounting to around 80 percent due to FMD (Baluka, 2016). A critical step would be to increase investments in developing and equipping infrastructure and human capacity for disease diagnosis and control, and investing in drugs and vaccine manufacturing and distribution.

5.3 Data limitations

The validity of the analysis presented in this technical note is contingent on the quality of the data used. The main data gaps include the following:

- We were unable to obtain proper conversion factors from cattle carcass to boneless meat in Uganda. The analysis for 2017 to 2020 was based on boneless meat, while the commodity traded at farm gate was live cattle. Therefore, there is need for a conversion factor in order to ensure that the commodity at different levels of the value chain is comparable. We used a conversion factor for live animals to carcasses that is based on global estimates using an average adult bovine of about 300 kg, which is unlikely the average weight of cattle delivered in local markets in Uganda.
- The price incentives analysis for beef was done only for the last four years, while the previous analysis refers to live cattle. The beef analysis could be extended to the previous years if price and trade data for beef were made accessible. Expanding the timeline of analysis, would provide a better picture of the structure of price (dis)incentives of beef in Uganda and their trend over time.
- Access costs data for beef value chain in Uganda were obtained as a lump sum, with no breakdown to cross check their accuracy and means of comparison with data provided for the previous period. This makes it difficult to estimate the level of value chain inefficiencies and their sources. A breakdown of access costs and adjustment factors would enable us to compute more robust market development gaps and assess value chain inefficiencies better.

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Annex

Table A1. Data, sources, and assumptions on access costs for price incentives analysis

Access cost	Data description
Farm gate to wholesale	<p>Observed market access costs from the farm gate to wholesale markets include transportation, handling and processing costs, lairage and a variety of local fees and taxes and profit margins. For the period 2005–2016, transportation and handling (loading and off-loading) costs were computed based on data from the study on promoting a commercial beef industry in Uganda prepared by Landell Mills LTD for MAAIF in 2011 and data collected by MAAIF in 2013 through a primary survey. Transport and handling costs reported in Landell Mills (2011) for 2011 were extrapolated to other years, and adjusted by the consumers’ price index (CPI) for inflation. Data on CPI were obtained from Uganda Bureau of Statistics (UBOS).</p> <p>Transport and handling costs collected in 2013 were used to compute the costs over the period 2014–2016 using the CPI. Due to lack of reliable data on profit margins, these were computed as 10 percent of the farm-gate price according to the MAFAP methodology. Taxes included permits, levies at the secondary markets, lairage fees and inspection costs. Taxes as well as other fees and local police costs reported by Landell Mills (2011) for 2011 were assumed to be constant during the period 2005–2012, while taxes collected in 2013 were assumed to be constant over the period 2014–2016.</p> <p>Market access costs for the period 2017–2020 are obtained through primary surveys, provided as a lump sum and include all costs such as transport (up to butchers in Kampala), taxes, fees and profits and total UGX 57 000 per animal. Handling costs were made of slaughter costs at UGX 15 000 per animal.</p>
Point of competition to border	<p>These costs in the period 2005–2016 included handling costs (storage, chilling and freezing costs) as reported by the head of the market association in the Kampala market and margins were computed using MAFAP assumption of 10 percent wholesale price since data were not available on profit margins. No transports costs were incurred since Kampala was considered as border point for live cattle.</p> <p>For 2017–2020, access costs from point of competition to the border Busia, were provided as a lump sum that includes transport, handling and other costs. Transport costs are disaggregated based on ReSAKKS (2009) study, whereby transport costs are estimated to accounts for half of all marketing costs for beef from Kampala to Busia.</p>
Adjusted access costs	<p>Observed access costs reflect the current functioning status of the domestic value chain for a specific commodity, which are often considered excessive or inefficient and may have an impact on the producer prices.</p> <p>By methodology, we also compute adjusted (lower) access costs that reflect the potential situation that could prevail if the necessary actions to improve efficiency were taken. In this case, transport costs were adjusted using the ratio between the Uganda and South Africa infrastructure logistics performance index (LPI) from the World Bank.</p> <p>Adjusted profit margins at farm gate and point of competition are computed as 5 percent of the farm-gate price and wholesale price respectively, according to the MAFAP methodology. For adjusted taxes and fees, local authority fees and fees not related to payments for a service were removed. Handling costs were assumed to be the same for observed and adjusted, due to lack of data.</p>

Source: Authors’ own elaboration.

MONITORING AND ANALYSING FOOD AND AGRICULTURAL POLICIES [MAFAP]

The FAO Monitoring and Analysing Food and Agricultural Policies (MAFAP) programme seeks to establish country owned and sustainable systems to monitor, analyse, and reform food and agricultural policies to enable more effective, efficient, and inclusive policy frameworks in a growing number of developing and emerging economies. MAFAP is funded by the Bill & Melinda Gates Foundation.

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