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One-stop border posts (OSBPs): an assessment of the economic and social impact

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Acronyms

CPI	Consumer Price Index
EAC	East African Community
EU	European Union
OSBP	one-stop border post
PMA	Plan for the Modernisation of Agriculture
TMA	TradeMark Africa
UK	United Kingdom
UN	United Nations
USAID	United States Agency for International Development
WTO	World Trade Organization

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Executive summary

This report aims to assess how reduced trade costs resulting from the introduction of one-stop border posts (OSBPs) have been transmitted to the rest of the economy and, in particular, how this has affected consumer prices and household expenditure across value chains. For this purpose, we selected two products based on two criteria. First, the products had to be widely consumed by households in the region. Second, they had to be regularly traded among the countries of the East African Community (EAC) and across OSBPs. The study analysed the Busia (Kenya–Uganda) and Taveta–Holili (Kenya–Tanzania) OSBPs. The assessment of the impact on consumer prices is a significant component to understand the impact of OSBPs on poverty in East Africa.

To provide prima facie evidence of the impact of OSBPs on prices and its transmission across actors involved in the supply chain of selected consumer products, we assume that a reduction in cross-border trade costs provides consumers several benefits, through lower prices, higher quality and availability of greater product variety.

The change in prices depends on at least two main channels: the competition channel and the cost channel. In the competition channel, the reduction in trade costs may increase the participation of domestic and foreign businesses in importing, exporting and trading activity, which can increase competition. As competitors influence firms' pricing decisions, the pro-competitive welfare gains of a trade cost reduction can be realised through lower markups by businesses, bringing down firms' profit margins and affecting the prices consumers pay. In the cost channel, the decline in trading costs may affect prices directly. We assume that the selling prices observed in 2022 reflect both the pro-competitive effects of OSBPs and the actual reduction in the costs of cross-border trade observed because of OSBPs. Therefore, the approach followed to analyse the impact of OSBPs on consumer prices is to project what the selling prices would have been in 2022 had the cost of trading across the border and the profit rate remained the same as in 2015. That is, for the trade costs assumption, we use the share of trade costs in 2015 as a reference point; for the analysis of the pro-competitive effects, we use the profit rate in 2015 as a base.

For maize, we found the following:
- *Under Scenario 1 (baseline scenario) (No gain from competition channel and trade cost channel)* – that is, the trade cost and the profit rate remain the same as in 2015 – we estimate that consumers saved KES 788, equal to a 12.3% saving to these consumers. The

gain from maize in Holili, Tanzania, is 6.8%. This scenario assumes what would have happened if OSBPs had not been there altogether.

- *Under Scenario 2 (Gain from competition channel but no gains from lower trade cost)* – that is, the profit rate in 2022 is as observed in 2022 but the trade cost is as in 2015 – we estimate that consumers saved KES 575 for maize originating from Busia, Uganda. This is equal to 9% of savings to these consumers. Savings for consumers from maize in Holili, Tanzania, equal 6.8%.

- Under *Scenario 3 (No gain from competition channel but gains from lower trade cost*) – that is, the markup rates for 2015 and 2022 are the same but there is a lower trade cost in 2022 – we estimate that consumers in Mombasa, Kenya, saved KES 720 for maize originating from Busia, Uganda, equal to 10% of savings to these consumers. In a similar analysis for maize coming through Taveta–Holili (Tanzania), savings for consumers equal 4.5%.

In general, under different scenarios, the gain for consumers in terms of lower prices could range from 9% to 12.3% for maize originating from Busia and from 4.5% to 6.8% for that originating from Taveta–Holili. Using the same approach, we find a similar result but with a lower magnitude of gain for rice.

The survey results support these findings. Although OSBPs were introduced several years ago, and thus businesses may not be able to calculate the exact amount of their impact on prices, and traders may not have considered what the price might have been if OSBPs had never existed, they can compare whether the price increased or decreased after their establishment. Close to half of business traders said that OSBPs had reduced the prices of commodities they traded across the border.

We also provide some evidence on the impact of OSBPs on household income, based primarily on the assumption that a reduction in consumer prices induced by lower transport costs owing to OSBPs allows us to calculate the monthly food expenditure per adult equivalent households have saved. Using the fall in consumer prices and the Kenya Integrated Household Budget Survey for 2015/16, we find that rural households saved on average KES 68–76 in monthly adult equivalent terms for maize from Busia and KES 34–68 for maize from Taveta–Holili. Similarly, core urban households saved KES 64–87 per month. The household gains from rice are lower than the gains from maize for both rural and urban households. In other words, OSBPs could be saving some rural Kenyan families one month of their total food expenditure on maize every year.

To complement these findings related to the impact of OSBPs on household income, we surveyed households living at the border. We found the following:

- In aggregate, for 40% of household respondents, they or a member of the household was involved in activities at the OSBP, either working directly at the OSBP (5%), providing services or goods to the

OSBP (10.5%) or as users of the OSBP or truck drivers (27%). In Busia, the majority of households provide goods or services to users of the OSBP as well as truck drivers. In Taveta, Kenya, only 10% of households are working in OSBP activities; the share is higher on the Tanzania side of the border, in Holili, with close to 70% of respondents saying households were involved in OSBP activities. In Holili, 40% of households provide goods or services either to the OSBP or to lorry drivers.

- With respect to incomes from activities associated with OSBPs such as providing services to their users, most households (61%) at both border posts said that incomes had increased since the OSBP was introduced.

- In aggregate, a quarter of respondents said that since the arrival of the OSBPs, there had been an increase in the number of jobs and new businesses. A third of respondents reported that incomes had increased.

- In aggregate, 87% of households at both border posts reported that the impact of the OSBP on the economy of the area had been positive. Only 6% reported that there had been a negative impact while 7% said there had been no impact or they were not sure about the impact.

1 Introduction

One-stop border posts (OSBPs) aim to reduce the time and associated operational costs for transport companies generated by the duplication of customs procedures in the countries on either side of the border, lack of coordination in the provision of services within each country and other inefficiencies. Mendez-Parra and Calabrese (2021) have quantified the impact of OSBPs on transport times in Busia (Kenya–Uganda), Taveta–Holili (Kenya–Tanzania) and Mutukula (Uganda–Tanzania). Specifically, they find that OSBPs have reduced total dwelling time by between 62% (Busia, Kenya) and 87% (Holili); the impact is larger for those borders with long crossing times. Furthermore, they have reduced operational costs for transporters covering routes such as Nairobi–Kampala (-14%), Mombasa–Mwanza (-11.7%) and Dar es Salaam–Kampala (-9.8%).

This study aims to assess how the reduction in the transport and trade costs generated by the OSBPs has been transmitted to the rest of the economy and how it has affected consumer prices and households' incomes. In this sense, the reduction in trade costs acts as an enabler for further impacts and economic transformation. In addition, a reduction in trade costs brings aggregate economic benefits, such as a reduction in poverty. Porto (2005) finds a positive impact of trade cost reduction on poverty in Moldova, using household data to examine this impact. Balat et al. (2009) find that a reduction in trade costs reduces poverty in Uganda. Thus, the hypothesis to verify is that, under competitive market conditions, the reduction in transport costs should lead to a reduction in consumer prices and, consequently, a fall in poverty levels.

This research forms an extension of ODI work carried out for TradeMark Africa (TMA) during 2021 that quantified and qualified the impact of OSBPs on transport times and costs. It specifically aims to assess how the reduction in transport costs observed at the Busia and Taveta–Holili OSBPs has affected the producer and consumer prices of some products in relevant East African Community (EAC) countries.

The rest of the report is organised as follows. Section 2 outlines the methodology employed to assess the impacts of OSBPs on consumer prices and household savings, as well as other economic dimensions; approaches used to select cross-border traded and widely consumed products to trace the price transmission from transport costs to consumer prices; and the questionnaires.

Section 3 provides prima facie evidence on the impact of OSBPs on prices and the transmission of this across actors involved in the supply chain of selected consumer products (maize and rice). It also provides results from the business survey. Section 4 describes the impact of OSBPs on household income, assuming that a reduction in consumer prices induced by lower transport costs owing to OSBPs allows us to calculate the monthly food expenditure per adult equivalent that households save. This section also provides several results from the household survey, including the most common goods coming from the country across the border, the reasons households buy commodities, whether the respondent or their household members are involved in OSBP activities directly or indirectly and, finally, to what extent the existence of the OSBP affects households in terms of jobs, incomes, new business, rent and prices. Section 5 concludes.

2 Methodology

This section briefly outlines the methodology to assess the impacts of OSBPs on consumer prices, household expenditure and other economic dimensions. The methodology will allow us to quantify, to a certain extent, how much the introduction of OSBPs has contributed to the reduction in prices. Section 2.1 provides a short brief on transport and trade costs and prices. Section 2.2 presents the approaches used to select two cross-border traded and widely consumed products to trace the price transmission from transport costs to consumer prices. Finally, Section 2.3 discusses the questionnaires used to collect data from traders. Furthermore, as it may be difficult to quantify econometrically some of the impact of OSBPs on prices and welfare, it identifies stakeholders in the border area and presents some information on the impact of the OSBPs on prices generated through interviews.

2.1 Transport costs and prices

Anderson and Van Wincoop (2004) define trade costs as:

> … all costs incurred in getting a good to a final user other than the cost of producing the good itself. Among others, this includes transportation costs (both freight costs and time costs), policy barriers (tariffs and non-tariff barriers), information costs, contract enforcement costs, costs associated with the use of different currencies, legal and regulatory costs and local distribution costs (wholesale and retail).

Specifically, transport costs are the costs incurred in transporting goods from one place to another, including to distribution centres and retail stores, before they reach the final consumers. Among other factors, the transport costs for a particular product depend on the distance travelled and the time taken, which is influenced by the quality of the transport service offered and the weight/value ratio of the goods.

As a result, transport costs usually drive a wedge between the price at the place of origin and the price at the destination. Under perfect competition, the change in the transport cost is expected to affect transport prices directly as it can increase the cost of providing and delivering the goods. Furthermore, an increase in transport costs for intermediate inputs generates additional costs for producers. However, the magnitude of pass-through of the change in transport costs and transport prices to import prices, producer prices and finally consumer prices may not be a one-to-one correlation. It depends on the interest in raising or keeping their profit margins of businesses along the supply chain, such as importers, producers, intermediaries and eventually retailers. Meanwhile, if wages are

indexed with inflation, then there will be second-round effects on this. This shows that a change in transport costs affects price transmission through the domestic supply chain by means of importers, producers, intermediaries and eventually retailers.

Several theoretical and empirical works show that the reduction in production costs is not entirely passed through to lower consumer prices (incomplete pass-through). Furthermore, even if the change in costs is passed on in the form of lower consumer prices, this process may be sluggish and take time. Empirical evidence also shows that the pass-through of transport costs to consumer prices is asymmetric, such that, while an increase in the cost of production is passed quickly to consumers, decreases in the cost of production do not usually transmit fully to lower consumer prices, resulting in asymmetric transmission of cost to consumer prices.

2.2   Identifying products

The methodology traces the price transmission along the supply chain of the fall in the transport costs of products. This involves collecting data from producers, wholesalers and retailers. To do this, we identify two products based on two criteria. First, the products must be widely consumed by households in the region. Second, the products must be regularly traded among EAC countries and across the OSBPs.

We use a detailed list of commodities and their weight in the construction of the Consumer Price Index (CPI) in each country to identify the commodities widely consumed across households and the impact they may have on consumer welfare. We use UN Comtrade data to identify which goods are regularly traded between countries. For example, Table 1 shows the weights assigned in constructing Kenya's CPI, and imports from Uganda, Tanzania and the world for 2020 and 2021. The CPI weight is from the Kenya National Bureau of Statistics.

The list of consumer products we collected included maize and rice.

Table 1   Kenya's CPI and trade with EAC and rest of world ($ '000s)

Product	CPI weight	Uganda		Tanzania		Rest of world	
		2020	2021	2020	2021	2020	2021
Rice	2.122	0	24.4	34,850.8	107,219.6	211,869.9	175,773.9
Maize flour	1.891	0	0	1,534.2	958.7	219.3	233.7
Sugar	1.435	16,599.5	47,110.7	0	0	216,054.2	189,363.5
Maize	0.699	1.6	575.3	22,010	114,035.1	46,802	9,159.7

Source: UN Comtrade for trade data and Kenya National Bureau of Statistics for CPI weights.

2.3 Business and household surveys

Business interviews

The business traders the survey targeted were those involved in cross-border trading in Kenya, Tanzania and Uganda. The data collection was conducted in Busia (Kenya–Uganda) and Taveta–Holili (Kenya–Tanzania). In Busia, two enumerators collected data from Kenya while two collected data from Uganda. In Taveta–Holili, two enumerators collected data from Kenya (Taveta) while two collected data from Tanzania (Holili). We collected data from 166 businesses – 90 in Busia, 45 in Taveta–Holili, 18 in Moshi and 13 in Arusha. By country, 86 were from Kenya, 30 from Tanzania and 50 from Uganda.

The business questionnaire had two main parts (see Appendix 1). The first asked for the basic characteristics of traders, including their main activity and location, the gender of the respondent and the business size in terms of number of employees. The second part of the questionnaire was designed to understand the impact of the OSBP on the prices of traded commodities. We collected data on the main sources of suppliers of the business, the challenges they faced in sourcing products, whether they used formal channels, the cost they incurred in trading and whether these costs had increased or decreased after the arrival of the OSBP. We specifically analysed the price transmission channel and changes in the maize, rice, oil and sugar trade.

Household interviews

The targeted survey households were those in the vicinity of the OSBPs in Kenya, Tanzania and Uganda. The household questionnaire aimed to gather the views of households living at the borders regarding the impact of the OSBP on their income, on prices and on employment creation. The questionnaire had two main parts. The first part asked for basic information on the border post and the country and on household characteristics, including age, education, employment status, average household size and marital status. The second part asked households about the impact of the OSBP on household welfare.

A team of four enumerators collected household data from the two border towns. In Busia, two enumerators were on the Kenyan side and two on the Ugandan side. Training was carried out and a pre-test survey was held on 20 September 2022. The actual survey was carried out on 21–22 September 2022. In Taveta–Holili, two enumerators from Kenya (Taveta) and two from Tanzania (Holili) were contracted to collect data. The training was carried out and a pre-test survey was done on 27 September 2022. The actual survey was carried out on 28–29 September 2022.

Overall, we collected data from 315 households: 160 (51%) from Kenya, 80 from Tanzania (25%) and 75 from Uganda (24%). In Busia, data were collected from 155 households, with 48 male respondents (31%) and 107 female respondents (69%). In Taveta–Holili, data were collected from 160

households, with 38 male respondents (24%) and 122 (76%) female respondents.

Figure 1   Surveyed households (%)

A. By country

B. By border post

C. By country and border post
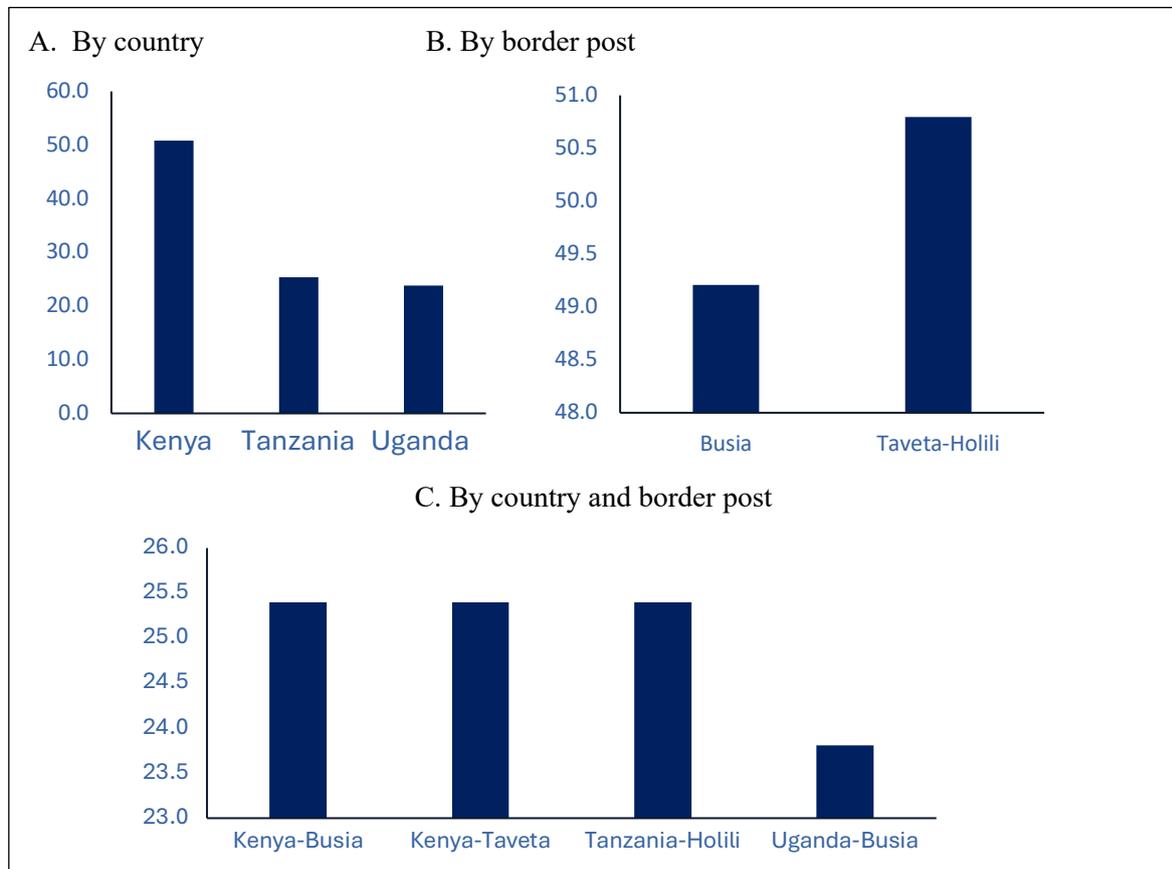
Note: The total number of households is 315. Source: Household survey.

3 OSBP impacts on costs and prices

3.1 Introduction

A reduction in cross-border trade costs, such as through the introduction of OSBPs, has several benefits for consumers, including lower prices, higher quality and more product variety. The impact on consumer prices depends on the prices firms charge, which depend on at least two main channels: the competition and the cost channels. In the competition channel, lower cross-border costs increase the participation of domestic and foreign businesses in trading activity, thus increasing competition. The pro-competitive welfare gains of the trade cost reduction for consumers can be realised through lower markups charged by businesses, bringing down firms' profit margins and affecting consumer prices.[1] For example, because of OSBPs, more businesses from Uganda may export to the Kenyan market, and more Kenyan businesses may start to be involved in cross-border trading. In the cost channel, the lower trade cost may lead directly to lower consumer prices, although several factors, including market structure, prohibit full pass-through to consumers in terms of lower prices.[2]

Precisely quantifying the sources of consumer gains that may arise as a result of reduced cross-border trade costs is very difficult, and these are harder to disentangle from other economic factors. Any effort in this regard requires granular-level data using complicated modelling and econometric analysis. Moreover, the decomposition of prices into costs and markups that is necessary to calculate consumer gains is complex. This section aims to present *prima facie* evidence on the impact of OSBPs on prices and its transmission across actors involved in the supply chains of selected consumer products using survey data collected from 166 business traders (see Section 2.3).

Section 3.2 provides basic information on the business interviewees. Section 3.3 discusses the impacts of OSBPs on the cost of trading. Section 3.4 provides a detailed discussion of the impact of OSBPs on prices. Section 3.5 analyses informal trade and OSBPs. Finally, Section 3.6

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[1] Decomposing these prices into costs and markups is not straightforward.

[2] Recent empirical work examines the impact of trade cost-reducing trade liberalisations on prices charged by domestic firms. De Loecker et al. (2016) find that domestic price reductions are small when taking into account the large reduction in trade costs brought by the liberalisation. Edmond et al. (2015), using Taiwanese data, find that international trade increases competition and reduces markup distortion.

presents challenges traders face at OSBPs when trading across the border, and recommendations suggested by these traders.

3.2   Basic information about businesses

For more than half of the businesses surveyed, the primary economic activity is retail (58%); this is followed by wholesale (30%) and farming (9%). Direct importers and brokers constitute 1% and 3% of the sample, respectively. Regarding women-owned businesses, 66% are involved in cross-border trade as retailers, compared with just 37% of men-owned businesses. The main activity of men-owned businesses is wholesaling (48%); this share is only 22% for women-owned businesses. Half of the businesses have sole proprietorship; this is followed by partnerships (29%) and limited partnerships (14%). Only 6% are shareholding companies. Most business respondents were women (71%).

Most businesses (79%) are not formally registered, with not much difference across countries (Kenya 87%, Tanzania 77% and Uganda 65%) or border posts (Busia 74% and Taveta–Holili 84%). This is despite the fact that the average and median business ages are 13 and 10.5 years, respectively. The traders have had a long presence in the region: they could provide essential information on the impacts of the OSBPs as they had been operating since before their establishment. Most of the businesses are small, with on average two permanent employees and one temporary worker. The maximum number of permanent employees is 10.

3.3   Impact of OSBPs on costs and prices

Trade theory shows that higher trade costs are associated with higher prices of traded products (WTO, 2005). The direct impact of the introduction of OSBPs is increased efficiency through a reduction in duplicative customs procedures, leading to reduced time to cross borders. This leads to reduced transport costs, arising from a reduction in parking fees, lower costs on accommodation and subsistence for drivers and a significant reduction in labour inputs for transporters. The reduction in the cost of transport could also benefit not only transporters but also forwarders and other trade operators. Mendez-Parra and Calabrese (2021) find that OSBPs have significantly reduced the time needed to process cargo consignments, border crossing times and the associated costs involved in cross-border trade. Under a perfectly competitive market structure, the lower trade costs should be passed through – that is, translated into lower traded commodity prices and producer and consumer prices. This is one of the main channels through which consumer benefits are expected to materialise as a result of trade liberalisation or trade facilitation activities that reduce trade costs.

However, several complex factors related to supply chains lead to incomplete pass-through to prices in the form of lower commodity prices. First, the pass-through to import prices is incomplete at the border. Even if the change in costs is passed on in the form of lower consumer prices, this process may be sluggish and take time. Second, distribution services such as local storage, transportation, wholesaling, insurance, retail, etc. increase the local value-added content of the imported good in the final consumer price, which helps dampen the effect of the reduced trade cost on the

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consumer price. Besides, distributors may also actively adjust their profit margin to absorb some of the reduced trade costs.[3] As a result, the reduced trade costs may be absorbed by other actors involved in the supply chain, such as transporters and distributors, instead of benefiting consumers in the form of lower prices. This is especially the case when there is a lack of competition across the supply chain, for example in the transport, wholesale or retail sectors. Furthermore, the rate of transfer of an increase in trade costs to producers and consumers is faster and more direct than that of a reduction. That is, the cost pass-through to consumer prices is asymmetric: while an increase in the cost of production is passed quickly to consumers, decreases do not usually transmit fully to lower consumer prices.

This section looks first at maize, presenting a detailed breakdown of the value chain, costs, prices and the impact of OSBPs on consumer prices and welfare gains. It then assesses the impact of OSBPs on consumer prices of rice.

3.3.1 Assessing the impacts of OSBPs on maize

Kenya is a major consumer of maize but domestic production is insufficient. Meanwhile, Uganda produces maize but is not a major consumer. As a result, much of the maize in Kenya comes from Tanzania and Uganda. The major source of maize in Busia, Uganda, is Masindi, while maize coming through Holili in Tanzania into Taveta, Kenya, is sourced from Moshi and other markets near Arusha.

The major value chain actors involved in maize production and trade are similar across Kenya, Tanzania and Uganda: farmers, aggregators, wholesalers, importers, retail distributors and transporters. Figure 2 provides a schematic representation of the value chain for maize to help us understand the price transmission from the reduced transport cost as a result of the OSBP to the selected product. The schematic representation is similar across countries studied: the value chains and the actors may differ a little but are broadly similar in Kenya, Tanzania and Uganda.

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[3] There is a wide literature examining the incomplete pass-through of reduced trade costs, such as lower tariffs or a depreciation or appreciation in exchange rates, to import and consumer prices (see Campa and Goldberg, 2005; Berman et al., 2012; Amiti et al., 2014; Fitzgerald and Haller, 2014; Fontagné et al., 2018).

Figure 2   General value chain for maize and rice
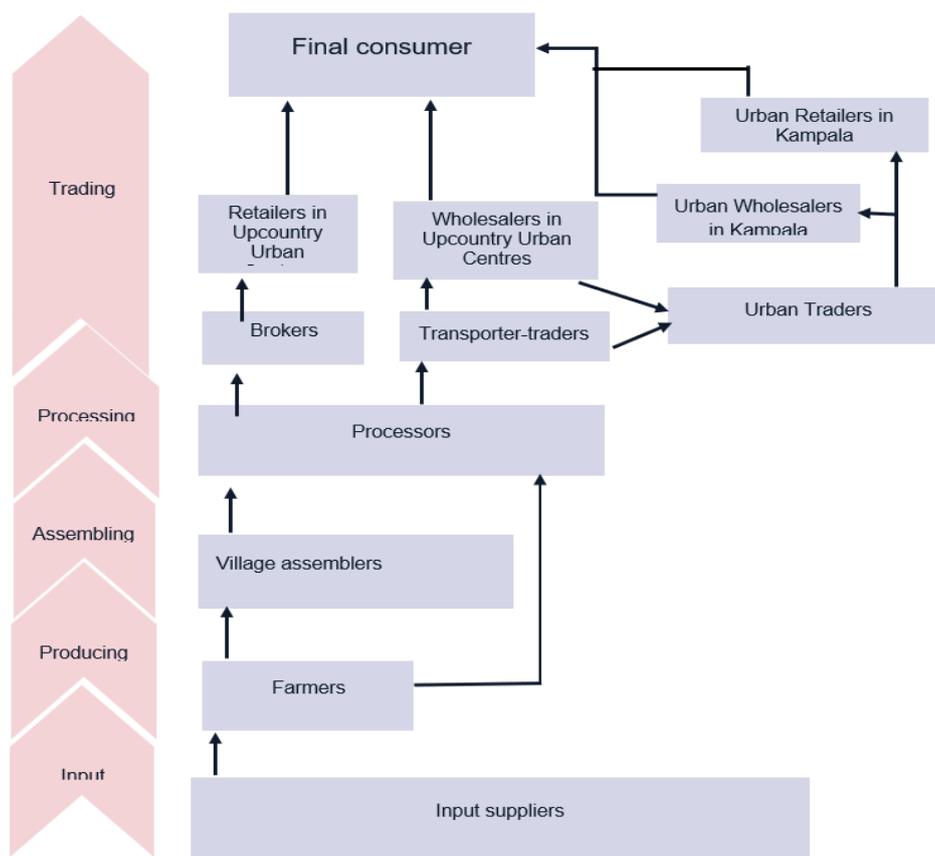
Source: Adapted from PMA (2009); World Bank (2009); USAID (2010); Ahmed (2012).

In the survey, most businesses in Busia, Uganda, source maize supplies from farmers (68%), wholesalers (58%) and brokers (56%), while those in Busia, Kenya, source mainly from direct importers (50%) and wholesale traders (33%) (see Figure 3). In Taveta–Holili, 58% of businesses trade maize and 49% trade rice. In Moshi, 44% of businesses trade maize, 44% rice and 11% oil. In Taveta, Kenya, most suppliers obtain their maize and rice from wholesalers, while those in Holili obtain most of their maize and rice from farmers and wholesalers. In general, at all border posts, maize is the dominant traded commodity across the border, followed by rice.

Traders follow the maize supply chain to take advantage of supply and demand in various markets to buy maize at lower prices, consolidate the product and eventually cross the border into Kenya. Specifically, rural agents buy maize from numerous farmers. After aggregating a large enough quantity, they sell this to urban traders and processors (Daly et al., 2017). Next, the maize flows to regional towns, urban markets, major buying centres and export markets. For example, traders from Kenya can purchase from the wholesale market or go to markets on the outskirts of Moshi. Large buyers of maize use semi-trailers (300 bag carrying capacity) to buy maize from various markets. Wholesale markets normally open twice a week.

Figure 3   Trading across borders and main sources of supplies (%)
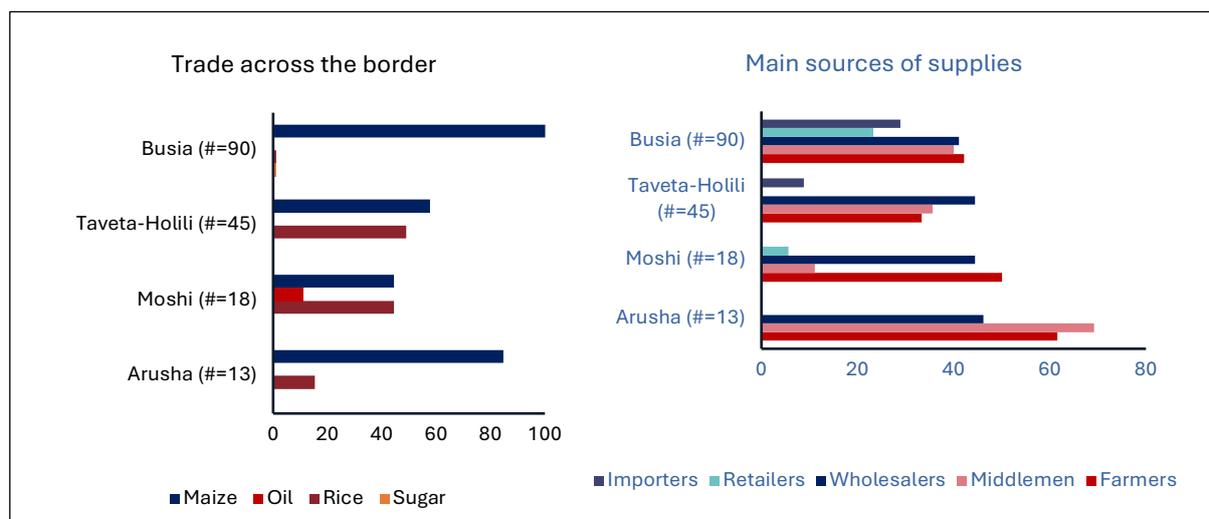
Note: Authors' calculations.

Brokers also play a role in determining the prices of products in the wholesale market. Most times, brokers fix the price. They purchase maize from trucks and sometimes actually own maize trucks.

Most traders can store maize for two to three months. Wholesalers, however, store maize for only six weeks maximum, given the volatile nature of prices and the arrival of new maize, which reduces demand for old maize. It is risky for wholesalers in Busia, Uganda, to store maize for long periods. Traders from Busia, Uganda, also resort to smuggling maize across the border, especially when it is not dried enough and may fail the moisture content test at the border. Others cross the border by bicycle, disguised as small traders moving one bag at a time across the border to the local market, thus avoiding phytosanitary requirements. Maize that is rejected at the border for failing phytosanitary, moisture content and pest tests is usually sold through illegal channels at a lower-than-market rate.

Before the maize reaches Mombasa, several costs are involved. Businesses reported that the typical costs incurred during cross-border trading were transport costs (68%), customs duties (66%) and local municipal council charges (49%); the rest (7%) comprised other kinds of costs. Table 2 shows typical costs incurred during cross-border trade by businesses.

Table 2   Typical costs incurred when trading across the border (KES)

Border post	Country	Number of businesses	Customs duties	Local municipal council charges	Transport costs	Other costs
Busia	Kenya	40	48	98	100	0
	Uganda	50	72	14	60	14
Taveta–	Kenya	41	71	46	44	2
Holili	Tanzania	31	81	55	81	13

Source: Business survey

Table 3 below presents a detailed breakdown of the costs from the border to the final destination, comparing the prices and costs of maize between 2015 and 2022 in Mombasa, Kenya. The first two columns report on maize originating through Busia while columns 3 and 4 show maize originating through Taveta–Holili. Generally, the prices of maize in the Busia and Taveta–Holili markets are determined by demand and supply on the Kenyan side. For example, maize prices decrease if there is a bumper harvest in Kenya.

Transporters: Transport costs include vehicle operating costs (direct costs to operate a given vehicle, notably maintenance, tires, fuel, labour and capital costs) and indirect costs such as licences, insurance and road toll and roadblock payments. The relationship between transport prices and transport costs depends partly on the transport sector market structure: the less competitive the transport sector, the more likely there will be a divergence between transport prices and costs.

The price of transporting maize is affected by demand and supply. For example, during the high season (December for Busia, Uganda), transport providers flock to Busia town; therefore, transporting bags of maize to Kenyan cities becomes cheaper because of the oversupply of transport options. This, in turn, affects the commodity's price in the cities. At the time of the survey (2022), transporting one bag of maize from Busia to Mombasa cost KES 400, although the price may come down to KES 350 per 90 kg bag during the high season. However, the transport price (KES 400) is what the trader in Mombasa pays, which in most cases is different from the price the transporter charges. This is because brokers negotiate the transportation of the goods, and they charge a small fee, typically between KES 20 and 50 per bag or more, depending on the truck size and transport availability. In 2015, the transport cost was KES 240. Therefore, transport prices in 2022 were up by 66.7% from 2015. Note that the transport prices shown in the table include only charges from Busia to Mombasa.[4] In

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[4] Transport prices would be a great deal higher and be the significant cost in determining the price of maize if we aggregated transport charges, starting from obtaining maize from farmers. This is because it passes through several transportation stages before reaching the border, also requiring loading and offloading at each stop.

aggregate, the share of transport in the wholesale price at Mombasa declined from 9.87% in 2015 to 6.87% in 2022.

In Taveta, Kenya, transporters cited fuel prices as the determining factor in transport costs. The cost of transporting maize from Taveta to Mombasa at the time of the study (2022) was KES 300 per 90 kg bag, while it was KES 200 in 2015.[5] For this maize, the share of transport in the wholesale price at Mombasa declined from 8.1% in 2015 to 5.5% in 2022.

Labour costs: The labour offloading cost constituted 0.5% of the wholesale price in Mombasa in 2022, down from 0.8% in 2015.

Local tax costs: One of the main local taxes for maize (and other agricultural produce) is a council/local cess, charged by the municipal council for every product accessing a wholesale/retail market. Table 3 shows that the local cess constituted 0.5% of costs in 2022, up from 0.4% in 2015.

OSBP costs: In 2022, the phytosanitary and clearance charges at the border were KES 140 per bag (2.4%). In 2015, there were no phytosanitary charges, and the fumigation charges were KES 300 per truck (a truck carries 300 bags). Thus, the OSBP equivalent cost was KES 1 per bag.

Other costs: In Taveta, Kenya, maize of different qualities is sometimes mixed and sold at a higher price than it should. If the Kenya Bureau of Standards notes the inconsistency, the maize must undergo grading, incurring additional costs and time.

Table 3 shows the wholesale and selling price of maize, which includes costs and profit margin. In 2022, a bag of maize from Busia would arrive at the wholesale market in Mombasa at KES 5,820 per bag with a selling price of KES 6,390. That is, maize from Busia would sell in Mombasa at KES 71 per kg in 2022. In 2015, the wholesale price of maize from Busia was KES 27 per kg, with a selling price of KES 33 per kg. Between 2022 and 2015, then, the price of maize from Busia increased by 142%, while the wholesale and retail prices in Mombasa increased by 139% and 115%, respectively. Similarly, the price of maize from Taveta–Holili had increased by 120% in 2022 relative to 2015. In addition, the wholesale and retail prices for this maize in Mombasa had increased by 119.5% and 109.6%, respectively.[6]

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[5] If a transporter spends more time at the border, the charges for transportation per bag remain the same.

[6] The Kongowea wholesale market in Mombasa had maize from Mpeketoni in Lamu county (north coast). Maize arrived at a cost of KES 5,300 per bag, or KES 58 per kg, to the trader, and was sold at KES 65–70 per kg. The maize from Busia, at KES 5,820, was, therefore, too expensive to sell in Kongowea market.

Table 3   Costs and prices of maize in the market (KES)

	Busia		Taveta–Holili		Kampala	
	2022	2015	2022	2015	2022	2015
Maize price per kg	58	24	55	25	64	25.6
90 kg bag	5,220	2,160	4,950	2,250	6,400	2,560
OSBP	140	1	140	1	0	0
Transport Mombasa	400	240	300	200	320	96
Labour (offloading)	30	20	30	20	32	16
Market cess	30	10	30	10	32	
Total amount per bag	5,820	2,431	5,450	2,481	6,784	2,672
Current cost price in Mombasa	5,820	2,431	5,450	2,481	6,784	2,672
Cost price per kg in Mombasa	65	27	60.6	27.6	67.84	26.72
Selling price per kg	71	33	65	31	70.4	30.4
Selling price per bag	6,390	2,970	5,850	2,790	6,336	2,736

Note: Authors' calculations.

Assessing the impact of OSBPs on maize prices

A reduction in cross-border trade costs, such as through the introduction of OSBPs, provides consumers with several benefits, including lower prices, higher quality and more product variety. Specifically, as we have seen, the impact on consumer welfare depends on the prices charged by domestic and foreign exporting firms. This depends on at least two main channels: the competition channel and the cost channel.

Ideally, to examine whether a reduction in trade costs associated with the introduction of OSBPs is passed through to producers and consumers in the form of lower prices needs to control for other factors that may have affected the prices of the products in both the domestic and the international market. For example, an increase in fuel prices could affect the price of transport, and an increase in fertiliser prices could raise the cost of production of maize. These and other factors make it harder to pin down exactly how much the efficiency gain actually results in lower prices to consumers and welfare gains. This may need a carefully crafted econometrics analysis.

Nevertheless, we show *prima facie* evidence of the impact of OSBPs on prices and its transmission across actors involved in the maize supply chain using the survey data.[7] To do this, we assume that the selling prices observed in 2022 reflect both the pro-competitive effects of OSBPs and the actual reduction in the costs of cross-border trade observed because of OSBPs. Therefore, the approach followed to analyse the impact of OSBPs on consumer prices is to project what the selling prices would have been in 2022 had the cost of trading across the border and the profit rate remained the same as in 2015. That is, for the trade costs assumption, we use the share of trade costs in 2015 as a reference point; for the analysis of the pro-

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[7] We should note that several factors affect the price of the products and other costs involved in cross-border trade, some domestic and some international, such as fuel prices.

competitive effects, we use the profit rate in 2015 as a base. Based on the approach mentioned above, we present three scenarios to quantify the impact of OSBPs on consumer prices of maize. The baseline scenario is essentially the prices and costs observed in 2022 – that is, the selling price reflects reductions in both the trade cost and the pro-competitive effects (see Scenario 3*: No gain from competition channel but gains from lower trade cost.* In the third scenario, we assume the introduction of OSBPs has reduced cross-border trade costs but has not resulted in a pro-competitive induced reduction in consumer prices, so that the profit rate for business traders in 2022 remains the same as in 2015. This means that the profit rate in 2022 is 22.2% when maize is sold to consumers, instead of the observed 9.8% in 2022. In other words, we assume that the reduction in the profit rate is because of the introduction of OSBPs, while several factors affect this profit rate. In this case, the result we find would be the upper-bound estimates of the impact of OSBPs on consumer prices. We find that, if the profit rate for 2022 had stayed at the same rate as in 2015, but the cost reduction benefits of OSBPs had been maintained, then the selling prices to consumers in 2022 would have been KES 7,110.4. If we compare this with the 2022 selling prices (KES 6,390), the consumer would have saved KES 720 for maize originating from Busia, Uganda. This is equal to a saving of 10% for consumers. This is, of course, an upper-bound estimate, and we are attributing all of the fall in the profit rate or markup to OSBPs. In a similar analysis, we find savings for consumers from maize coming through Taveta–Holili of 4.5%.

Table 4 for a summary of the results).

Scenario 1 (baseline scenario): No gain from competition channel and trade cost channel. In the baseline scenario, we consider what the selling prices of maize would have been had there not been an OSBP. This means the trade cost and profit rate remain the same as in 2015. In this case, in 2022, the selling price of maize would be KES 7,178. If we compare this with the actual selling price of 2022, then consumers saved KES 788. This is equal to a 12.3% saving to consumers. The gain from Holili would have been 6.8%.

For maize going from Taveta–Holili to Mombasa, when we compare prices in 2015 and those in 2022, the costs involved cover 9.2% of the selling price in 2022; the figure for 2015 is 6.4%. If we assume that this owes simply to the trade facilitation efforts of the OSBP, then we can assume that it resulted in a 0.2 percentage drop in the prices of goods transferred. This gain emanates from the transport sector's unchanged prices over the time period, probably as a result of the efficiency gained at the OSBP.

Scenario 2: Gain from competition channel but no gains from lower trade cost. In the second scenario, there is a gain from the competition effect but none from a cost reduction. That is, the profit rate in 2022 is as observed in 2022 but the trade cost is as in 2015. In this case, we estimate what the selling prices of maize to consumers in 2022 would have been had the share of the cost of cross-border trade remained the same as before (2015) but the profit rate is at 9.8%. In this scenario, we find that the selling price to consumers in 2022 would have been KES 6,450. If we compare this with

the 2022 selling price (KES 6,390), the consumer would have saved KES 575 for maize from Busia, Uganda. This is equal to a saving of 9% for consumers. In a similar analysis, the saving for consumers from maize from Taveta–Holili is 6.8%.

Scenario 3: No gain from competition channel but gains from lower trade cost. In the third scenario, we assume the introduction of OSBPs has reduced cross-border trade costs but has not resulted in a pro-competitive induced reduction in consumer prices, so that the profit rate for business traders in 2022 remains the same as in 2015. This means that the profit rate in 2022 is 22.2% when maize is sold to consumers, instead of the observed 9.8% in 2022. In other words, we assume that the reduction in the profit rate is because of the introduction of OSBPs, while several factors affect this profit rate. In this case, the result we find would be the upper-bound estimates of the impact of OSBPs on consumer prices. We find that, if the profit rate for 2022 had stayed at the same rate as in 2015, but the cost reduction benefits of OSBPs had been maintained, then the selling prices to consumers in 2022 would have been KES 7,110.4. If we compare this with the 2022 selling prices (KES 6,390), the consumer would have saved KES 720 for maize originating from Busia, Uganda. This is equal to a saving of 10% for consumers. This is, of course, an upper-bound estimate, and we are attributing all of the fall in the profit rate or markup to OSBPs. In a similar analysis, we find savings for consumers from maize coming through Taveta–Holili of 4.5%.[8]

Table 4   The impact of OSBPs on consumer prices of maize

Border post	Assumptions		Hypothetical selling price (KES)	Hypothetical cost in Mombasa (KES)	Actual selling price (KES)	Actual cost in Mombasa (KES)	Consumer gain (KES)	Consumer gain (%)
	Cost reduction	Competition effect						
	Yes	No	7,110	6,390	6,390	5,820	720	10.1
Busia	No	No	7,178	5,875	6,390	5,820	788	12.3
	No	Yes	6,450	5,875	6,390	5,820	575	9
	Yes	No	6,390	6,129	5,850	5,450	279	4.5
Holili– Taveta	No	No	6,138	5,458	5,850	5,450	288	4.9
	No	Yes	5,858	5,458	5,850	5,450	401	6.8

Source: Authors' calculations.

In summary, in the absence of complicated econometric analysis, the approach we have followed provides useful insights into the impact of OSBPs on maize prices. We find that the gains from Busia, Uganda, are higher than those from Taveta–Holili. The approach we follow to quantify this provides the upper limit of the impact of OSBPs. The actual impact on

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[8] Breinlich et al. (2016) show that quality-adjusted prices for imported goods have decreased by 19% and the quality of goods has increased by 26% for the UK as a result of the free trade agreements concluded by the EU.

consumer prices may be smaller than Table 4 suggests; nevertheless, we can infer that the OSBPs have affected consumer prices and welfare.

3.3.2 Assessing the impacts of OSBPs on rice

The rice consumed in the EAC is either imported from abroad or produced within EAC countries. For locally produced rice, most farmers sell to local traders or brokers, who usually visit them to collect the rice. Next, the local traders or brokers further process or mill the rice, and sell it to other traders, who transport it to urban and other centres. Then, the traders – bulk buyers, wholesalers and retailers primarily based in the capital and urban centres – sell to final consumers, including individuals and institutions such as schools and hospitals. The locally produced rice can then be exported by the producing country in the EAC and imported by another EAC country for consumption.

Table 5 summarises the prices and costs of rice at Mombasa that comes from various parts of Tanzania – Mbeya, Iringa, Arusha, Tanga and Kilimanjaro. Traders buy from markets in Arusha and Moshi then cross into Kenya through Taveta. The price of rice, at KES 155 per kg, is the same in Holili, Moshi and Arusha (Holili to Arusha is 117 km). The price is also the same on the Kenyan side. Traders can negotiate for a discount when buying in bulk, although they were reluctant to disclose the amount.

The price of rice is affected by grading and quality in the various seasons. When Kenya sees a bumper harvest for locally grown rice, the price of rice from Tanzania reduces. The various grades are priced at KES 130, 140, 150 and 160 per kg for retail. This research focuses only on the best grade (KES 160 retail and KES 155 wholesale).

Table 5   Impact of OSBPs on rice price (KES)

	2022	2015
Rice price per kg	155	35
50 kg bag	7,750	1,750
OSBP	140	1
Transport Mombasa	200	75
Labour (offloading)	30	10
Market cess	30	10
Current cost price in Mombasa	8,150	1,846
Cost price per kg in Mombasa	163	36.92
Selling price per kg	170	40
Selling price per bag	8,500	2,000

Source: Authors' calculations.

Table 6 shows the impact of OSBPs on consumer prices for rice. In scenario 3, the gain for consumer prices would range between 3.7% and 4.2%.

**Table 6   Impact of OSBPs on consumer prices (rice)**

Assumptions		Hypothetical selling price (KES)	Hypothetical cost in Mombasa (KES)	Actual selling price (KES)	Actual cost in Mombasa (KES)	Consumer gain (KES)	Consumer gain (%)
Cost reduction	Competition effect						
Yes	No	8,830	8,500	8,500	8,150	330	3.7
No	No	8,857	8,157	8,500	8,150	357	4.2
No	Yes	8,526	8,175	8,500	8,150	351	4.1

Source: Authors' calculations.

3.4   Businesses' responses on OSBPs, costs and prices

Traders' direct responses partially support the analysis in the previous subsection. As OSBPs were introduced several years ago, businesses may not know the exact amount of their impact on prices. Furthermore, traders may not have considered what the price might have been if OSBPs had never existed. Nevertheless, traders were asked about the impact of OSBPs on the prices of commodities they traded. With all these caveats, Figure 4 shows that, in aggregate, a slight majority of businesses (56%) do not believe the existence of the OSBP has affected these prices. However, the responses differ starkly, especially between traders surveyed in Tanzania and those in Uganda: 90% of the former felt that the existence of the OSBP had not affected prices but an overwhelming majority of the latter (80%) agreed that the presence of the OSBP had reduced them. Traders in Busia, Uganda, said that the phytosanitary charges at the OSBP were a leading contributing factor to the price of maize (when they cross using formal channels). In Kenya, 36% said that the OSBP had reduced the prices of traded commodities. There is a difference between Kenyan traders at Taveta, 44% of whom responded that the OSBP had affected prices, and Kenyan traders at Busia, of whom only 28% said the same.

Figure 4   Effect of the OSBP on the prices of traded commodities (%)
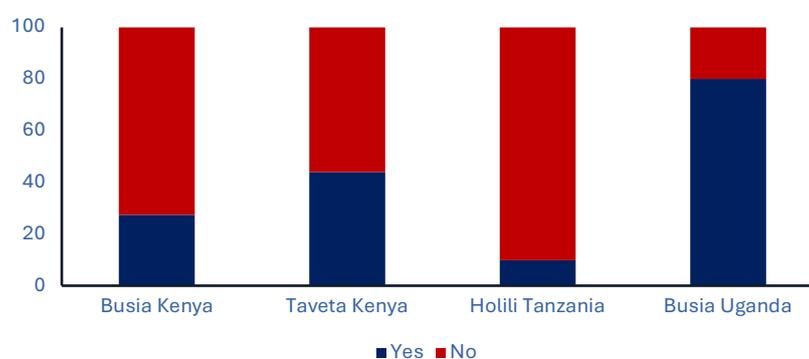
Source: Business survey.

Table 7 presents businesses' responses on the impacts of OSBPs on prices of commodities. Overall, 59% of wholesalers said the existence of an OSBP had affected prices, compared with only 31% of retailers. Among those who

use informal channels to trade, 75% said that the OSBP had not affected prices; the figure for those using formal channels was 53%. Women-owned businesses were 10 percentage points more likely than men-owned businesses to say OSBPs had not affected prices.

Businesses that said that the OSBPs had affected prices reported that the price benefit from OSBPs was reflected mainly onto traders, who buy in tonnes, unlike small wholesalers, who are charged a great deal of money. Other reasons for price impacts include bribery, high transport costs and customs duties. Furthermore, it was reported that Ugandan maize had moisture, leading to it going through informal routes. On the other hand, those who responded that the OSBPs had not affected prices said that the price was affected mainly by demand, supply and seasonality of the traded products.

Table 7   Impact of OSBP*s* on prices, by different dimensions

		Number of businesses	Yes (%)	No (%)
Type of business	Direct importer	2	50	50
	Farmer	15	60	40
	Broker	4	75	25
	Retailer	96	31.3	64.6
	Wholesaler	49	59.2	40.8
Gender	Male	47	51.1	49
	Female	115	41.7	58.3
Formality*	Informal	20	25	75
	Formal	107	46.7	53.3

Note: * We categorised businesses that said that they sometimes used formal channels as formal channel traders. Furthermore, we dropped firms that did not wish to disclose how they traded and those that obtained supplies locally.

Source: Business survey

3.5   **Informal trade and OSBPs**

Theoretically, trade costs and benefits affect business decisions to be involved in formal and informal trade.[9] Reduced trade costs because of the introduction of OSBPs could increase the formalisation of trade across the border. In our survey, a third of the businesses use formal channels to bring goods across the border (see Figure 5). If we consider the responses of the businesses that said they sometimes used formal channels to bring goods across the border, 65% of businesses use formal channels. Only 12% of businesses are still using only informal channels to trade across the border. However, the responses differed between traders surveyed in Kenya, Tanzania and Uganda. While 86% of Tanzanian traders use formal channels either all the time or sometimes, only 46% of Ugandan cross-border traders said the same. This is driven mainly by the higher sourcing of

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[9] See Bhagwati and Srinivasan (1974).

supplies locally instead of from across the border. Gender-wise, there is no significant difference between men- and women-owned businesses in the use of informal channels, although a greater share of men than women obtain supplies locally (28% vs 17%). These responses reveal the continued presence or use of significant informal channels to bring or take goods across the border.[10]

3.6 Challenges in trading through OSBPs and potential impact on prices

Despite the trade facilitation provided by the introduction of OSBPs, business traders still reported several challenges and difficulties engaging in cross-border trade. When asked what challenges they went through (at the OSBP) when trading across the border, most cross-border trader respondents identified high taxes as the main challenge (51%), followed by traffic jams (47%) and time-consuming procedures when sourcing products (33%) (see Figure 6). Bribery (25%) and harassment (30%) are also faced in sourcing products. Disruption to the network is a challenge for 19% of respondents.

The challenges facing Busia Ugandan and Busia Kenyan traders are similar except for high taxes, which a significant majority of Ugandan traders (80%) reported as a problem compared with only 23% of Kenyan traders. High municipal cess was cited as a significant challenge in Taveta, Kenya (54%); the response on this on the Ugandan side was 16%. Furthermore, traders identified several other challenges they faced when sourcing supplies, including too many brokers, delays at the OSBP, high charges at the OSBP (phytosanitary checks), bad road networks and commodity price fluctuation. The continued challenges to cross-border trade reported by businesses may dampen the pass-through of the reduced trade costs to consumer prices.

Figure 5   OSBPs and use of informal cross-border trade (%)

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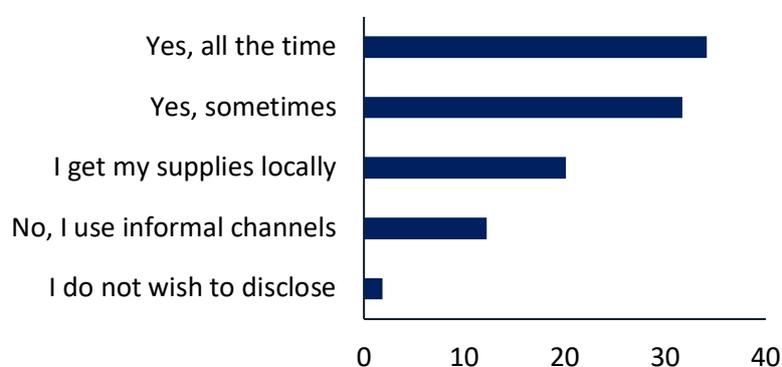
[10] Siu (2021) examines the impact of OSBPs in Uganda on trade costs and informal trade. She finds that the introduction of an OSBP has reduced the informal–total trade ratio by 68%, although this could be a one-off effect, and finds persistence of informality in cross-border trade.

Figure 6   Challenges when trading across the border (OSBPs) (%)
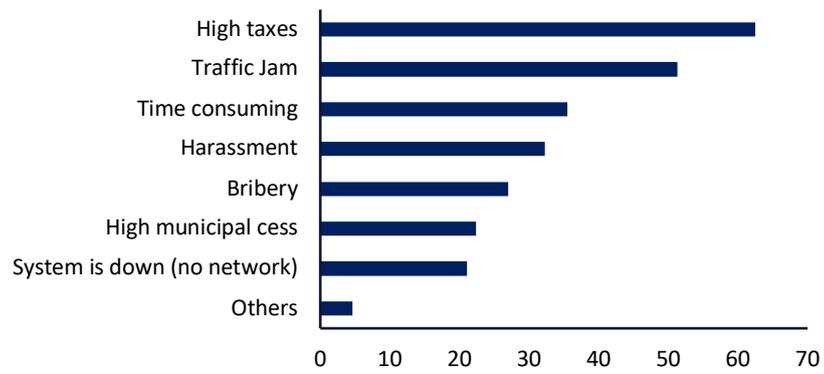
Source: Business survey

4 OSBP impact on household income

4.1 Introduction

This section aims to provide an overview of the impact of the reduction in transport costs observed as a result of the introduction of OSBPs on household welfare. Theoretical and empirical evidence shows that trade can influence household income through several channels, including relative prices, spurring high economic growth, providing macroeconomic stability and increasing government revenue, which can be spent on poverty reduction (Winters et al., 2004). Trade can benefit the poor by reducing the prices of the goods they consume and also by creating overseas market opportunities for the products they produce.[11] However, lack of competition in the market and high transportation and logistics costs could prevent the gains of trade from being passed to poor households and consumers. Trade facilitation efforts such as OSBPs reduce trade costs. Precisely quantifying the impact of OSBPs on households and welfare requires complicated econometric modelling and extensive data, as there are several factors other than OSBPs that have simultaneously affected poverty since the inception of the border posts.

This section uses Kenya's household survey to provide evidence of OSBP impacts on household income based primarily on the assumption that a reduction in consumer prices induced by lower transport costs and trading costs through reduced clearance time and simplification of border procedures at OSBPs allows us to calculate the monthly food expenditure per adult equivalent households have saved. The introduction of OSBPs could affect household income and poverty through the impact on trade costs, especially through lower transportation costs. This channel needs the transmission of lower transport costs to lower transport prices and finally to lower consumer prices. We showed this channel in Section 3. This approach provides a rough and upper-bound estimate, and the results should be interpreted carefully.

OSBPs could also affect the welfare of households living at the border through direct employment or by providing goods and services to OSBP users. To complement the first assessment based on consumer prices and to measure OSBPs' direct impact in border towns, data were collected from 315 households in the two border towns of Taveta–Holili and Busia. The survey covered the most common goods coming from the neighbouring

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[11] If rural households are net producers of the goods that saw a fall in prices as a result of trade liberalisation they could see a fall in income.

country across the border, the reasons households buy commodities, whether they or their household members are involved in OSBP activities directly or indirectly and finally to what extent the existence of OSBPs has affected households in terms of jobs, incomes, new business, rent and prices.

Section 4.2 provides estimates of OSBP transport cost reduction impacts on household income. Section 4.3 presents results from the survey to assess the impact of the OSBPs on households.

4.2 Trade costs, consumer prices and household income

The approach followed is that the reduction in consumer prices induced by lower transport costs through OSBPs allows us to calculate the monthly food expenditure per adult equivalent households have saved. We use the Kenya Integrated Household Budget Survey for 2015/16. For rural households, food and non-food expenditure per adult equivalent were KES 3,447 and KES 1,879 in 2015/16, respectively, while for core urban households they were KES 5,550 and KES 6,349. In other words, rural households spend 64.7% of their income on food, significantly more than the share of households in core urban areas, which spend 46.6%.

Table 8 shows the results. For example, it shows various maize products, with the share of each in the household expenditure basket. By multiplying the product's weight in the basket by the average monthly food expenditure per adult equivalent household member, we can obtain the exact amount the household is spending on the product. For example, rural consumers spend KES 565 on loose maize flour (i.e., 0.164*3447 KES=565).

Table 8 shows the amount households have saved under different scenarios since the fall in consumer prices owing to lower transportation costs. The three scenarios are from Section 3.3. For example, in scenario 1, where we assumed the total absence of OSBPs (i.e., no gain from the competition channel and the trade cost channel), we find that the typical rural household might have saved KES 70 per month. If we aggregate all kinds of maize and maize products, Table 8 shows that rural households saved KES 68–93 in monthly adult equivalent terms from Busia and KES 34–68 from Taveta–Holili. Core urban households saved KES 64–87 per month. The household gain from rice is lower than that from maize for both rural and urban households.

This indicates a potentially large impact of the OSBPs on Kenyan households. Consider that maize and rice are only two out of over 200 products consumed by Kenyan households, albeit very important ones, standing at 25% of the total consumption basket for rural households and 22% for urban households. So, if we consider that the typical rural household saved around KES 80 per month (an average of the most and least impactful scenarios) on 25% of its food basket, we can hypothesise that the total monthly saving will be of around KES 320. In a year, this translates to a total saving of KES 3,840 per rural household, higher than the cost of food for one month. In other words, the introduction of OSBPs

could potentially be saving some rural Kenyan families one month of food expenditure on maize every year. This applies only to food items, but similar considerations could be applied to non-food items, making the savings generated by OSBPs potentially even higher.

Table 8   OSBP impacts on household spending (KES)

	Food item	Disaggregated food item	Household survey		Busia			Taveta–Holili		
			Share in basket	Consumer expenditure (food)	S1	S2	S3	S1	S2	S3
Rural	Maize	Loose maize flour	0.164	565	51	70	57	51	28	25
		Loose maize grain	0.038	131	12	16	13	12	6	6
		Green maize	0.009	31	3	4	3	3	2	1
		Loose green maize	0.008	28	2	3	3	2	1	1
			0.219	755	68	93	76	68	37	34
	Rice	Non-aromatic white rice	0.029	100	4	4	4			
		Broken white rice	0.017	59	2	2	2			
			0.046	159	14	20	16			
Urban	Maize	Loose maize flour	0.064	355	32	44	36	24	17	16
		Loose maize grain	0.022	122	11	15	12	8	6	5
		Fortified maize flour	0.021	117	10	14	12	8	6	5
		Sifted maize flour	0.021	117	10	14	12	8	6	5
			0.128	710	64	87	72	48	35	32
	Rice	Non-aromatic white rice	0.049	272	11	11	10			
		Broken white rice	0.024	133	12	16	13			
		Aromatic white rice	0.008	44	4	5	4			
		Brown rice	0.008	44	4	5	4			
			0.089	494						

Note: S1 refers to scenario 1: No gain from competition channel and trade cost channel; S2 refers to scenario 2: Gain from competition channel but no gains from lower trade cost; S3 refers to scenario 3: No gain from competition channel but gains from lower trade cost.

As Section 3 showed, though, we should interpret these results carefully. These are upper-bound estimates that make several critical assumptions. Actual savings by households from OSBPs could be lower. Moreover, we are generalising our findings from only two products to the full food consumption basket of Kenyan households: the price reductions for other products may be different (higher or lower) than those found for maize and rice. Furthermore, the impact of lower consumer prices as a result of lower trade costs owing to OSBPs depends on whether the household is a net consumer or a producer. This is especially important when considering rural households' welfare.

4.3 Impact of OSBPs on household welfare based on the survey data

Section 4.2 estimated how much households had saved as a result of OSBPs based on the reduction in consumer prices. To complement this assessment, and also to consider the welfare of households living on the border through direct employment in the project or by providing goods and services to the users of OSBPs, data were collected from 315 households in the border towns of Taveta–Holili and Busia (see Section 2.3 and Appendix 3).

OSBPs create direct and indirect employment. In aggregate, 40% of households responded that either they or a member of their household was involved in OSBP activities, either working directly at the OSBP (5%) or providing services or goods to OSBPs (10.5%) or as users of OSBPs and truck drivers (27%). In Busia, the majority of households provide goods or services to users of the OSBP as well as truck drivers (see Figure 7). In Taveta, Kenya, however, only 10% of households are working on OSBP activities; the share is higher on the Tanzanian side (Holili): close to 70% of respondents here said household members were involved in OSBP activities (Holili is close to the OSBP, whereas Taveta, on the Kenyan side, is far from it). In Holili, 40% of respondents provide goods or services to the OSBP or truck drivers.

Figure 7   Activities households are involved in at OSBPs (%)
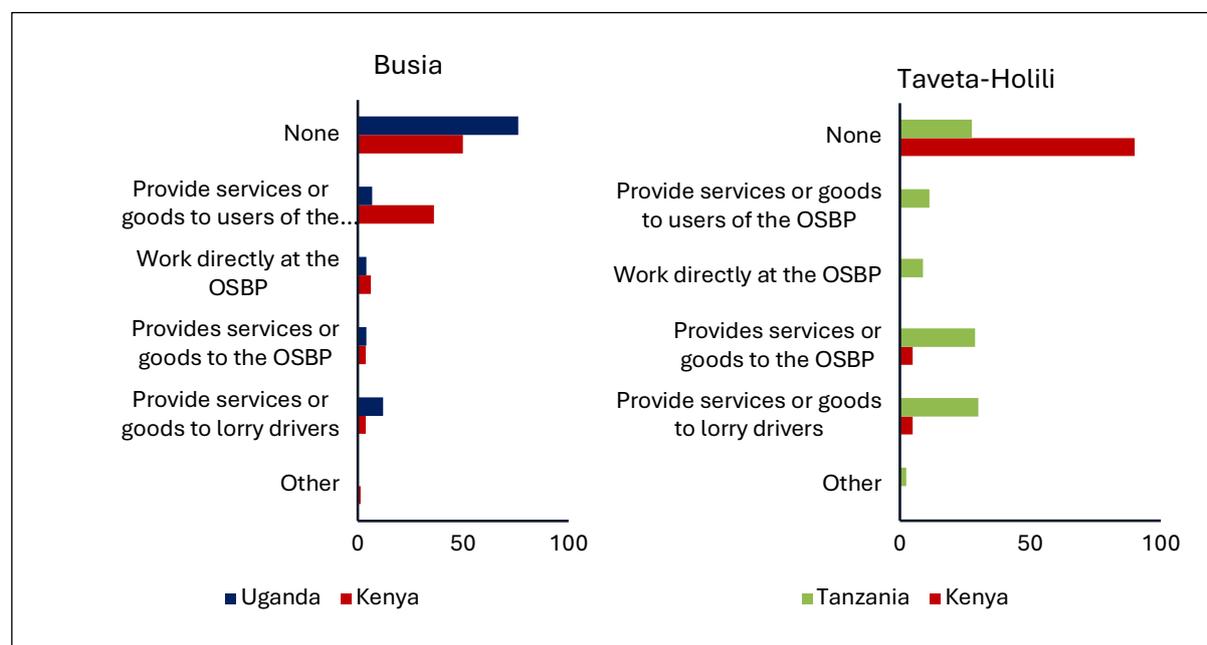
Source: Household survey

With respect to incomes from activities associated with OSBPs, at both border posts most households (61%) said that incomes had increased since the OSBP had been introduced, while 21% responded that incomes had decreased (see **Error! Not a valid bookmark self-reference.**). Among those who pointed to an increase, 97% said that income had increased by more than 50%, while the rest 3% said it had been by less than 50%.

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Twenty-one percent responded that incomes had remained the same or that they could not tell. Looking at households' responses disaggregated by border post/country, there is a substantial difference between Kenya–Uganda at the Busia border post and Kenya–Tanzania at the Taveta–Holili border post. In Busia, 84% of Kenyan households said that incomes had increased since the OSBP, while only 56% of Ugandans said the same – a 28 percentage point difference. The same is observed at Taveta–Holili: 69% of Kenyans said incomes had increased while only 44% of Tanzanians said the same.

Table 9   Incomes since the OSBP has been introduced (%)

How has income associated with these activities evolved since the OSBP was introduced?	Busia			Taveta–Holili			Aggregate
	Kenya	Uganda	Total	Kenya	Tanzania	Total	
Decreased	2.3	17.3	11.8	26.3	28.8	27.5	20.8
I cannot tell	11.4	17.3	15.1	2.5	16.3	9.4	11.8
Increased	84.1	56	66.4	68.8	43.8	56.3	60.6
Remained the same	2.3	9.3	6.7	2.5	11.3	6.9	6.8

Source: Household survey

Households were asked what had changed after the establishment of the OSBPs. Table 10 reports the response in aggregate. A quarter said that there were more jobs and new businesses while a third reported that incomes had increased. In the same period, prices and rent have also increased, as has vehicle traffic.

Table 10   Perceived effects of the existence of OSBPs (%)

	Increased	Reduced	No change	I cannot tell
Jobs	24.8	10.5	1.0	1.3
Incomes	33.0	17.5	1.0	1.6
New businesses	24.4	8.9	0.0	2.5
Prices	38.1	4.8	0.0	2.5
Vehicle traffic	28.6	0.3	0.6	0.3
Rent	36.2	0.3	0.3	1.0

Source: Household survey

Figure 8 reports on the same question, disaggregated by country/border post. Most households in Kenya indicated that rent, the price of goods and services and vehicle traffic had increased; fewer households responded thus in Tanzania.

In aggregate, at both border posts 87% of households reported that the impact of the OSBP on the economy of the area had been positive. Only 6% reported a negative impact, while 7% said there had been no impact or they were not sure. Figure 9 shows responses by border post. The majority

of households in Busia (90%) and Taveta–Holili (83%) indicated that the OSBP had had a positive impact on the economy of the border town. However, in Taveta–Holili, more Kenyans (96%) than Tanzanians (70%) said that the impact of the OSBP had been broadly positive.
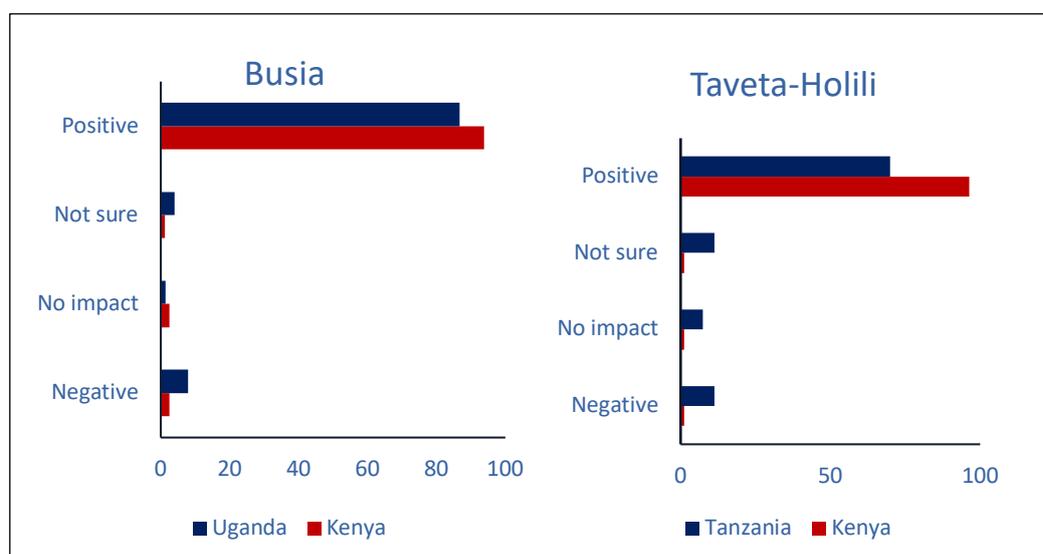
Figure 8   OSBPs and their effects (%)
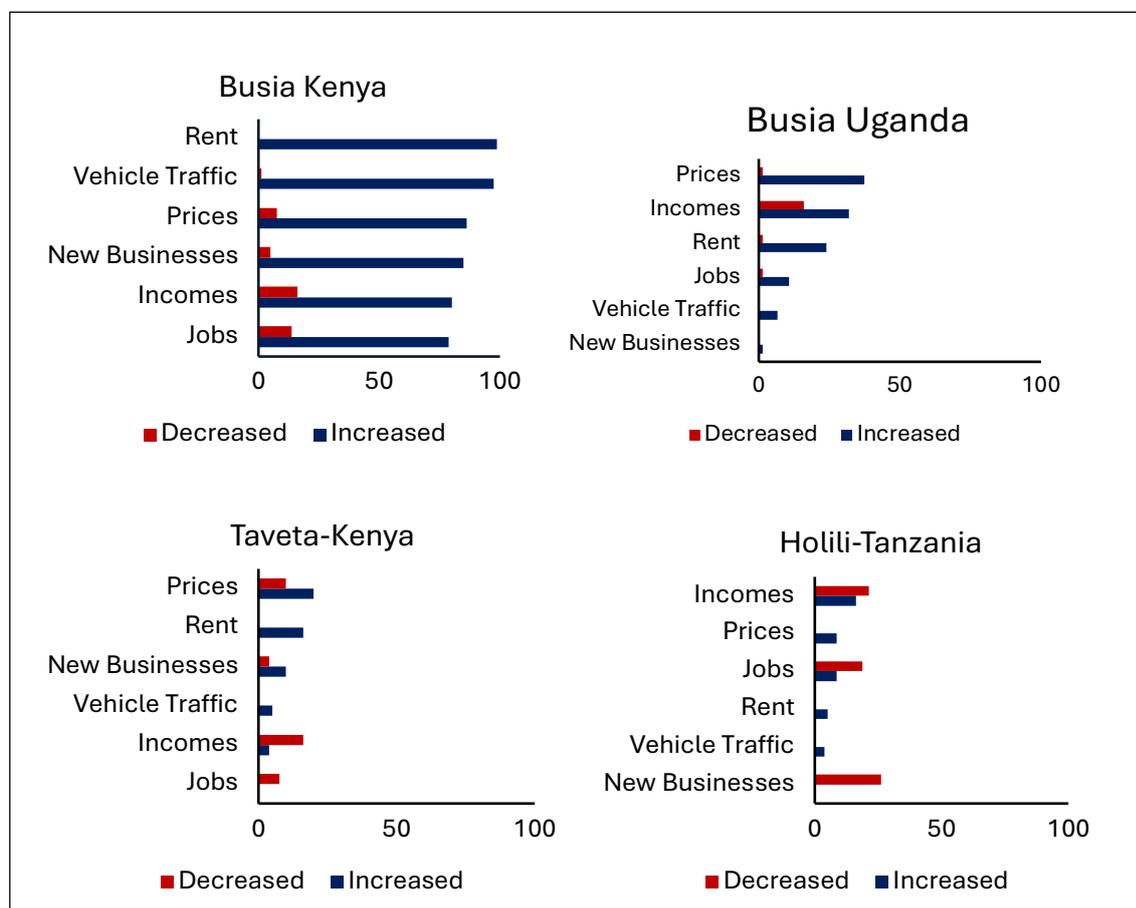
Source: Household survey

Figure 9   Impact of OSBP on local economy (%)

Source: Household survey

5 Conclusions and recommendations

This report has examined how the impact of trade cost reductions through the introduction of OSBPs has been transmitted to the rest of the economy. For this purpose, we selected two products based on two criteria: their weight in consumer baskets and their tradability across the EAC.

For maize, we found the following under different scenarios: the gain for consumers in terms of lower prices could range from 9% to 12.3% for maize originating from Busia and from 4.5% to 6.8% for maize from Taveta–Holili. Using the same approach, we find similar results for rice but with a lower gain magnitude. These findings are partially supported by the survey results: half of business traders responded that OSBPs had reduced the prices of commodities they traded across the border.

We also provide some evidence on the impact of OSBPs on household income, using the fall in consumer prices and the Kenya Integrated Household Budget Survey for 2015/16. We find that, for maize, rural households have saved between KES 68 and KES 76 in monthly adult equivalent terms for maize from Busia and between KES 34 and KES 68 for maize from Taveta–Holili. Core urban households have saved KES 64–87 per month on rice and maize. The household gain from rice is lower for both rural and urban households compared with maize. Generally, the introduction of OSBPs could potentially be saving some rural Kenyan families one month of food expenditure every year.

To complement the above assessment of the OSBPs and household income, we surveyed households living at the border. A total of 40% of households said that they or a member of their household was involved in OSBP activities and, at both border posts, most households (61%) said incomes from activities associated with the OSBPs had increased. In aggregate, a third of the respondents said that, since the OSBP had been introduced, income had increased, and a quarter said there were more jobs and new businesses. In aggregate, at both border posts, 87% of households reported that the impact of the OSBP on the economy of the area had been positive. Only 6% reported a negative impact, while 7% said no impact or were unsure.

Finally, we asked business traders if they had any recommendations on the OSBPs. These are listed below:

- Allow small traders with small luggage to pass through the customs yard: traders said that they had to pass through the informal route and there was a lot to pay there (this recommendation was very common).
- Consider motorcycle and bicycle users and reserve them a route that is safe from traffic.
- Address traffic jams.
- Reduce bribery.
- Reduce custom duties.
- Improve services.
- Reduce taxes (this recommendation was very common).

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Appendix 1 Business questionnaire

Basic information about the business

1. Main activities of this business
   - a) Wholesaler
   - b) Retailer
   - c) Direct importer
   - d) Farmer
   - e) Broker
   - f) Others, specify

2. Location of the company (city, country)
   - a) Kenya
   - b) Uganda
   - c) Tanzania

   Select town
   - a) Busia
   - b) Kampala
   - c) Taveta
   - d) Moshi
   - e) Arusha
   - f) Mombasa

3. Gender of the respondent (male/female)

4. When was the business established (specify year), specify type of business (sole proprietor, partnership, limited company, shareholders)

5. Number of permanent employees (including yourself)

6. Number of temporary employees

Impact of OSBP on costs

7. Do you trade in any of the following (maize/oil/rice/sugar) across the border?

8. What is your main source of supplies (of maize/oil/rice/sugar)?
   a) Farmer
   b) Broker
   c) Wholesaler
   d) Retailer
   e) Direct importer
   f) Others, specify

9. From which towns do you source your products?

10. Are there any challenges you face when sourcing your products?

11. Do you use formal channels to bring your goods across the border?
   a) Yes, all the time
   b) Yes sometimes
   c) No, I use informal channels
   d) I get my supplies locally
   e) I do not wish to disclose

12. Does the existence of the OSBP affect the price of your commodities? Yes/No

13. If yes/no please explain

14. Do you incur any of the below costs when trading across the border?
   a) Transport cost
   b) Customs duties
   c) Local municipal council charges (cess)
   d) Other charges, specify

14. Have any of the below costs when trading across the border increased or decreased since the OSBP? If so by how much?
   a) Transport cost
   b) Customs duties
   c) Local municipal council charges (cess)
   d) Other charges, specify

15. What costs do you incur for transport/customs duties, local municipal council charges (cess), others?

16. Who are your customers?
   a) Consumers (end users)
   b) Retailers
   c) Wholesalers
   d) Brokers
   e) Farmers
   f) Others, specify

17. We will keep all information confidential, are you ok giving us price information? Yes/No

18. If yes, at what price do you sell maize/oil/rice/sugar?

19. If yes, at what price were you selling it in 2015 (before the OSBP)?

20. What volumes do you trade per month?

21. What challenges do you go through (at the OSBP) when trading across the border?
   a) Time consuming
   b) Traffic jam
   c) High taxes
   d) High municipal cess
   e) System is down (no network)
   f) Bribery
   g) Harassment
   h) Others, specify

22. Do you have any recommendations on the OSBP?

Appendix 2   Household survey

Introduction: *Trademark East Africa (TMEA) is a not-for-profit organisation funded by governmental development agencies from Belgium, Canada, Denmark, the European Union, Ireland, Finland, the Netherlands, Norway, the United Kingdom and the United States. TMEA has supported the East African Community (EAC) and national governments in reducing trade barriers and improving the business environment since 2010. In addition, TMEA has been supporting the EAC in setting up the Single Customs Territory (SCT) since 2014 in terms of systems, processes and capacity-building aspects. Therefore, there is a need to assess the SCT to determine the effectiveness of the processes and further examine the broader economic impact on users.*

Use of information gathered: *The information we gather will help us assess the impact of the OSBP on your livelihood to inform programming and policy aspects. We will also seek your opinion on what more can be done in these areas.*

What to expect: *You have been selected to participate in this survey as you live across the border. TMEA would want to know the impact of the OSBP on your livelihood. The survey should take no longer than 10 minutes to complete.*

Benefits: *There will be no direct benefit to you from this survey. However, aggregated information gathered from this survey will be used to inform policy-makers on both short- and long-term support. The analysed information may be used in various communication products like short feature stories, publications, proposals, annual reports and appeals. Depending on the relevance, these products will be used in our annual reports, PowerPoints, meeting briefs, website and social media. Therefore, your information is valuable to us, and we will treat it with respect and confidence.*

Your rights: *If the survey tool has question(s) that you do not want to answer, please feel free to indicate as such and skip them. If you decide not to provide some or any information or wish to stop the interview, let the enumerator know. There will be no effect on your relationship with TMEA or its partners.*

Risk: *We do not anticipate that you will suffer ill effects from participating in this survey. But if you have any questions or concerns regarding some sensitive questions that you do not like answering, please feel free to let the enumerator know. Alternatively, please feel free to write to TMEA or call the following numbers +254 20 423 5000; +254 724 315 425; +254 737 423 500.*

Consent to use information: *All answers you give will be treated with respect and confidence. The aggregated information we receive may be used to develop public information materials like short videos, feature stories, annual reports and other publications and disseminated to TMEA's audiences. Should we choose to utilise information attributable to you directly, we will share the draft products related to your responses and seek your approval.*

Basic information

1. Country of data collection

Kenya	Uganda	Tanzania

2. Post

Busia	Taveta–Holili

Household characteristics

3. Are you the head of your household?

Yes	
No	

4. What is your age? [interview if age is 18 years and above]

18–25	26–35	36–45	46–55	56 and above

5. What is your marital status?

Married	Single	Window	Cohabitation	Divorced/separated

6. How many people, including you, currently live in the same house or homestead?

Impact of OSBP on household welfare

7. Are you aware of the existence of this OSBP?

Yes	
No	

8. What are the most common goods consumed by your household that come from the neighbouring country across the border? [multiple select]

Items	Put mark
Fish and fish products	
Milk and dairy products	
Meat products (beef, mutton, goat meat)	
Poultry and poultry products	
Cereals and grains	
Horticulture (fruits, vegetables)	
Household furniture	
Electronics (TV, radio, mobile phones)	
Basic farm equipment	
Other (specify)	

9. What make you buy household commodities from the neighbouring country?

Reason	Put mark
Affordable price	
Good quality	
Stable supply	
Available near this vicinity	
Other (specify)	

10. Do you travel to the neighbouring country to buy goods consumed by your household?

Yes	
No	

11. What has been the impact of this OSBP broadly on the economy of this area?

Impact	Put mark
Positive	
Negative	
No impact	

12. Are you or any member of the household involved in the following activities?

Work directly at the OSBP (e.g. customs/migration officer)	
Provide services or goods to the OSBP (e.g. cleaner)	
Provide services or goods to users of the OSBP (e.g. custom clearing agent/forwarder)	
Provide services or goods to lorry drivers (e.g. selling food)	
Other	

13. How has the income associated with these activities evolved since the OSBP was introduced?

Increased		Decreased		Remained unchanged	I cannot tell
Greater than 50%	Less than 50%	Greater than 50%	Less than 50%		

14. To what extent has the existence of the OSBP affected the following aspects in this area?

	Increased	Reduced	No change	I cannot tell
Jobs				
Incomes				
New businesses				
Prices				
Vehicle traffic				
Rent				

15. Any other comments you may have on OSBPs?

# Appendix 3   Household demographics and other characteristics

In aggregate, 46% of respondents in our survey have primary school as the highest level of education, 17% college or university and 31% secondary school; only 5% are not educated or attended informal education. The majority of respondents in Busia (63%) and Taveta–Holili (64%) are self-employed. In Busia, 68% of Kenyans are self-employed compared with 57% of Ugandan households. In Taveta–Holili, 69% of Kenyans are self-employed compared with 59% of Tanzanians. At both borders, only 9% of respondents are employed full time; 2% are not employed. The average number of people currently living in the same house or homestead is six; this is the same in Busia and Taveta–Holili and across the borders.

Figure A4.1 shows the most common goods households consume that come from the neighbouring country across the border. In aggregate, horticulture (fruits, vegetables), cereals and grains, and new clothes are the top three items. At both border posts, cereals and grains, and horticulture are the top two items; this is followed by new clothing for Busia and second-hand clothing for Taveta–Holili. While there is a difference at the border posts, there is a significant overlap in the top five items, albeit with a different order. The lower half of the figure shows the most commonly consumed goods by households from across the border disaggregated by border post and country. For example, at the Busia border post, the top four most common items Kenyans buy from Uganda are cereals and grains, new clothes, horticulture, and fish and fish products. At the same border post, the top four most common items for Ugandans are household consumables (flour, cooking oil, salt), second-hand clothes, others and electronics. At Taveta–Holili, for Kenyans, cereal and grains, horticulture, second-hand clothes, and poultry and poultry products are the top items they buy from Tanzania; for Tanzanians, these items are new clothing, horticulture, household consumables and second-hand clothes. Furthermore, we find that more Kenyans from Taveta buy items from Holili in Tanzania than Tanzanians who buy from the Kenyan side.

In Busia, 99% of households reported that a member of their household crossed the border to buy goods from the other side of the border. In Taveta–Holili, the figure is 93%. Figure A4.2 shows the reasons households buy from the neighbouring country. In aggregate, affordable prices and availability in the vicinity are the top reasons. By border post, in Busia, Kenyan and Ugandan households buy goods from across the border mainly
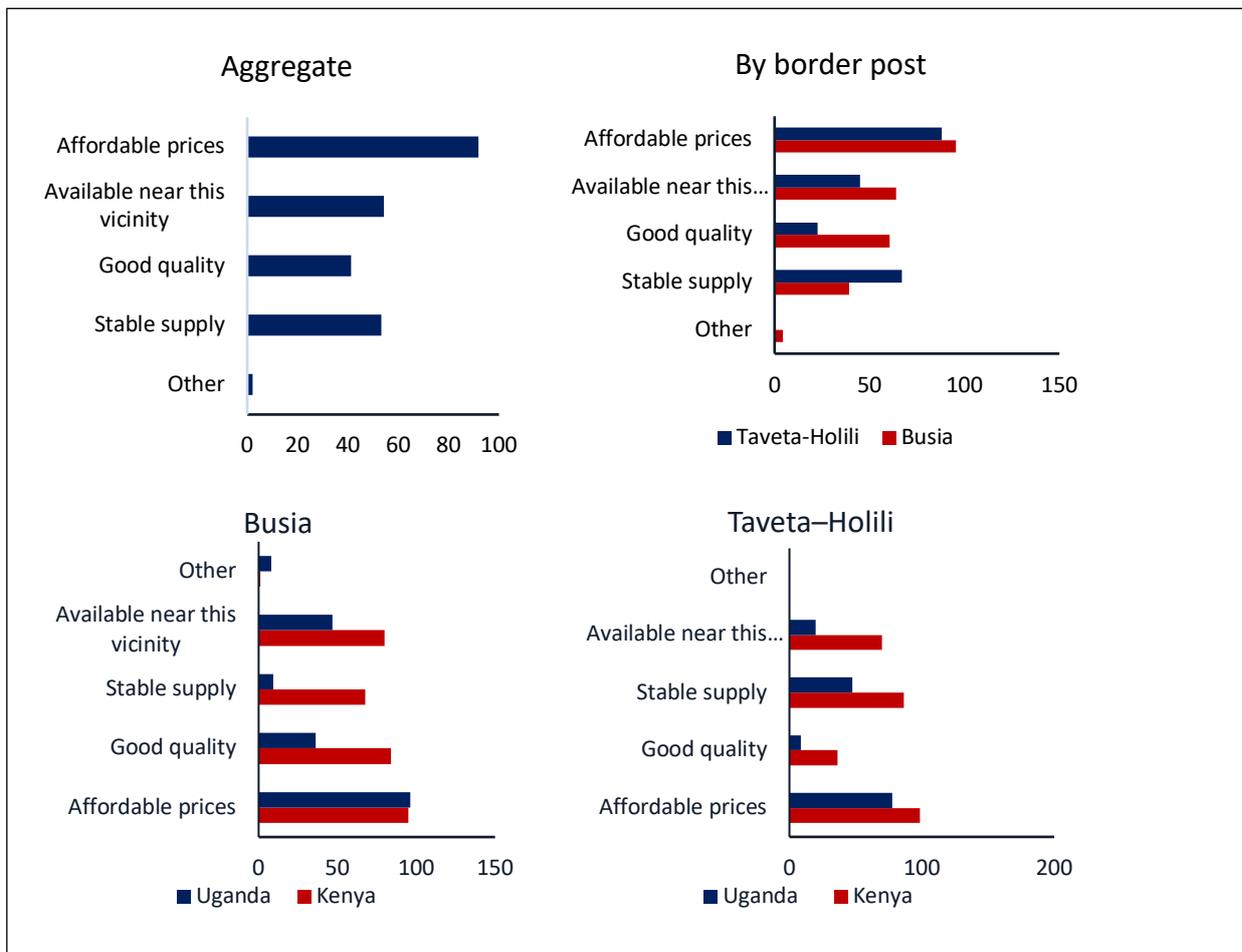
because of the affordable prices. Good quality products are the second most important reason for Kenyans, while availability in the vicinity is the second reason for Ugandans. In Taveta–Holili, Kenyan and Tanzanian households buy goods across the border for reasons to do with affordability and stable supply. In general, affordable prices are one the main reasons at both border posts, for households from the three countries.

Figure A4.1 Most commonly consumed goods from across the border (%)
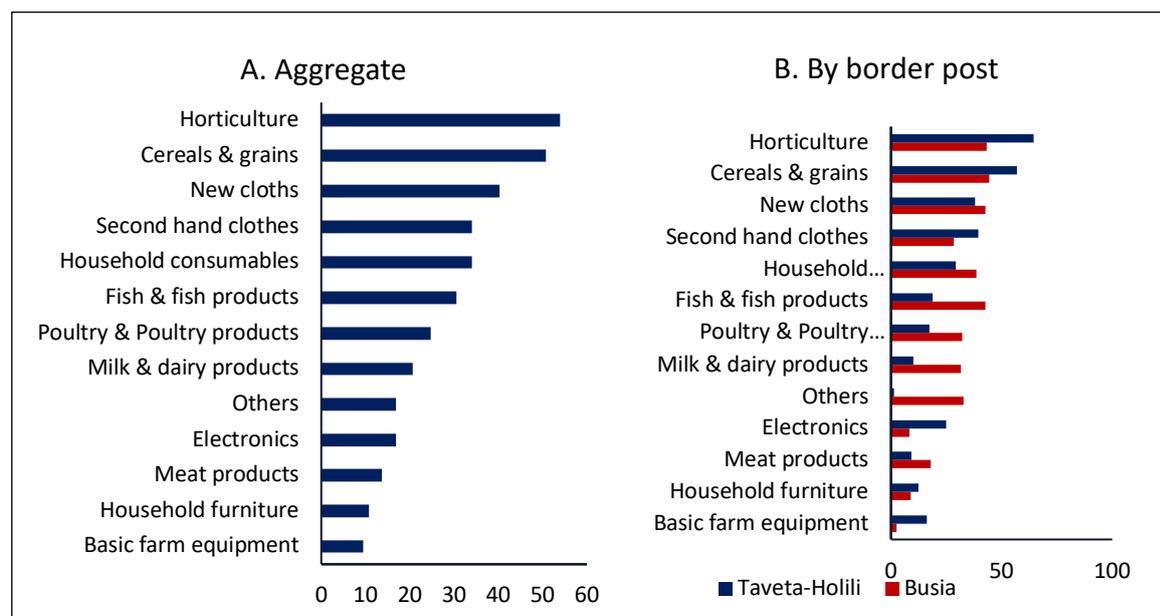
Source: Household survey

Figure A4.2 Reasons household buy commodities from the neighbouring country (%)

Source: Household survey