ODI

Report

One-stop border posts in East Africa

Impact on transport costs and issues for further analysis

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Acknowledgements

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Acronyms

CPI	Consumer Price Index
EAC	East African Community
OSBP	one-stop border post
TMA	TradeMark Africa
TMEA	TradeMark East Africa

Executive summary

This report forms part of a research project aimed at assessing how one-stop border posts (OSBPs) have affected trade, production, prices, employment and poverty in East Africa, and the impact of OSBPs supported by TradeMark Africa (TMA, formerly TradeMark East Africa) on transport times and operational costs in East Africa. It quantifies the direct and immediate impacts of OSBPs, which can be used in subsequent analysis to assess indirect impacts.

OSBPs aim to reduce the time and associated operational costs for transport companies generated by the duplication of customs procedures between both countries, lack of coordination in the provision of services within each country and other inefficiencies.

Based on the assessment of the effects of OSBPs in Busia (between Kenya and Uganda), Taveta–Holili (Kenya and Tanzania), Mirama Hills–Kagitumba (Uganda and Rwanda) and Mutukula (Uganda and Tanzania), we found the following:

- Reductions in the total dwelling time because of the OSBP are between 62% (Busia, Kenya) and 87% (Holili).

- The impact is larger for those borders that had long crossing times to start with. In this sense, the impact in Holili and Mutukula (Uganda) involves a reduction larger than a full driver-day equivalent.

- The reduction in dwelling times owes, in general, to significant reductions in the time it takes for customs procedures. This leads also to a reduction in queuing times.

- Reductions in dwelling times have been greater at the border posts located in Uganda (Busia and Mutukula) and Tanzania (Holili and Mutukula).

- The reductions are lower at border posts located in Kenya.

- The consequent reduction in operational transport costs is higher for traffic entering Uganda and Tanzania.

- Consequently, the operational costs for transporters are calculated to have fallen substantially on routes such as Nairobi–Kampala (-14%), Mombasa–Mwanza (-11.7%) and Dar es Salaam–Kampala (-9.8%).

- In the case of the transport flows going into Kenya, the fall in transport costs has been small (around 1%).

These estimates can be used at the start of a fuller impact assessment in subsequent analysis. The impact on producer and consumer prices will be assessed once information on the market structure of the transport sector and the respective products has been evaluated. However, assuming a full transmission of the reduction of the operational transport costs, we can obtain for some key products an upper bound on the price effects generated by OSBPs. The reduction in transport costs for imports of maize will be around 5% between Mombasa and Mwanza of the price of the product.

1 Introduction

Trade is critical for unlocking the development potential of East African countries. It can raise productivity by expanding markets, bringing competition and giving access to cost-effective inputs. In this way, trade provides employment opportunities and reduces prices and poverty.

The East African Community (EAC) has made significant advances towards the integration of its member states. The elimination of tariffs and the reduction of non-tariff barriers in regional trade are among its main achievements. However, a reduction in tariffs has laid bare other constraints that affect trade. The high cost of trade, involving transport and logistics, constitutes a major barrier to the expansion of trade both within the region and with the rest of the world.

TradeMark Africa (TMA, formerly TradeMark East Africa, TMEA) has worked extensively towards facilitating trade and reducing trade costs in the East African region. TMA contributes to the coordination of policies by bringing together and aligning actions of governments and other stakeholders in the region around hard and soft infrastructure.

One of the main activities by TMA is the development of one-stop border posts (OSBPs) around border crossings between East African countries. OSBPs aim to simplify and expedite customs procedures by providing adequate infrastructure for the operation of the different services involved in the trade process, coordinating their action and eliminating their duplication. As a result of these actions, the times and the associated costs involved in trade are expected to reduce significantly.

The reduction in transport times and costs is the first part of the causal chain of the impact of OSBPs on trade and the economies of East African countries. It is expected that the reduction in trade costs affects consumer prices (including for buying intermediate inputs) and employment and poverty. In this sense, the reduction of trade costs acts as an enabler for further impacts and transformation of economies.

This report provides a brief overview of the impact of OSBPs on operational transport times and costs. It can be used to examine the direct impact and subsequently will be able to act as an essential input into a comprehensive assessment of the impact of OSBPs on the economies of East Africa. The report is an initial step in the

identification and quantification of the impact of OSBPs on trade, production, employment and poverty in the region.

Section 2 provides a general context for this paper within the whole methodology of the project. Section 3 aims to describe and characterise the type of operations performed, and how OSBPs work to simplify and expedite border procedures. Section 4 assesses the direct effect that OSBPs have had on the transport times and trade costs at five border crossings in East Africa, including Busia (between Kenya and Uganda), Taveta–Holili (Kenya and Tanzania), Mirama Hills–Kagitumba (Uganda and Rwanda) and Mutukula (Uganda and Tanzania). This section focuses on obtaining the direct impact of OSBPs on the transport costs of trade flows, comparing the situation before and after their introduction.

Sections 5 and 6 describe how the effects observed in terms of reductions in transport costs can transmit to the rest of the economy, to prices (Section 5), and to producers and consumers (Section 6). They do not quantify the impact but rather outline the channels of impact. A more comprehensive assessment will be carried out in subsequent analysis.

2 A methodology to assess the impact of OSBPs

This section presents a methodology to assess the direct and indirect impacts of OSBPs. This will help in outlining the route for the whole research project beyond this report. It provides context to the results of this report within the whole project.

A number of methodologies exist to assess the impact of regional infrastructure on trade facilitation, considering the direct and indirect impacts on households, firms and government (see Jouanjean et al., 2015). We build on this broad assessment framework and adapt it to the case of OSBPs.

The first stage in the assessment involves describing the measures and the expected direct impact within the context of OSBPs (see Jouanjean et al., 2015). This includes a description of the main actions adopted to reduce transport times and operational costs, which constitute the main direct impact of the OSBPs. It involves identifying how the simplification of customs procedures affects various dimensions, such as parking costs, crossing times, etc.

The impact on operational costs (that is, the costs transport companies incur, such as to pay for fuel and wages) is based on standardised transport cost structures. The reduction of transport times is expected to affect the time-related component of operational costs such as labour inputs and subsistence costs. It will not affect, for example, the consumption of fuel. The methodology involves calculating a before and after intervention operational cost on some typical routes that use the affected border crossing.

The impact of the reduction in operational costs incurred by transport companies on transport prices will depend on the market structure of the transport sector. This impact, which is not covered in this report (but will be assessed later), will indicate whether the reduction in transport costs is transmitted further in the supply/value chain. This report includes a simplified assessment assuming a full transmission of the reduction in the transport operational costs to the producer price. This will provide an upper boundary of the expected impact on prices.

Depending on the assessment of the transport market, the effects of the reduction of transport prices will affect the economic behaviour of producers and consumers (see Jouanjean et al., 2015). Lower

transport prices will reduce the cost of acquisition of inputs and increase commercialisation margins. This could trigger a series of changes in terms of production, commercialisation, trade and employment. These impacts will depend on the market structure of the product or sector considered.

In competitive markets, the increase in commercialisation margins will lead to an increase in production and supply. This increase could be met by an increase in the demand for labour and/or productivity. However, in very concentrated markets, it is possible that the increase in the commercialisation margins will expand monopolistic rents without significant changes in the level of production and employment.

The increase in supply, in competitive markets, should lead to a reduction in equilibrium prices. Consumers are thus expected to benefit in this scenario from the increase in supply. Lower consumer prices can generate significant reductions in poverty depending on the weight of the affected products in the consumption basket of households.

Such increases in supply are likely to lead to increases in trade. Therefore, an increase in trade volumes should lead to effects on production, employment and prices.

There are two additional impacts to assess. If OSBPs increase trade, based on the mechanisms outlined, government revenue from tariffs should also increase. This will depend on the origin of the trade affected by OSBPs. In the case of intra-EAC trade, given zero duties applied, OSBPs would have a minimum impact on tariff revenue. However, as there may also be goods originating from outside the EAC, OSBPs could have an indirect impact on tariff revenue.

In addition to the direct impact on tariff collection, OSBPs could contribute to the formalisation of trade. OSBPs may have contributed to the registering and formalisation of trade operations that, before their introduction, were performed through unregistered or informal channels. This could also change the volume of informal trade, though the direction of change is unclear (e.g. see Siu, 2020). Finally, the formalisation of trade could contribute to increased government revenue through the collection of other duties such as value-added tax.

Another impact to assess is related to the impact of OSBPs on the communities around border posts. There is significant economic activity in border towns, which depends on the provision of goods and services (e.g. food) to truck drivers and to the border posts themselves. OSBPs could generate significant challenges to these activities by reducing the time that trucks, for example, remain idle at the borders.

However, at the same time, OSBPs can facilitate the provision of cross-border goods and services by expanding market opportunities on both sides of the border. This is expected to reduce consumer prices (by increasing competition) and increase employment opportunities by way of an expansion of the market.

The analysis presented in this report is based exclusively on a review of data and information provided by TMA and a calculation of the impact on operational transport times and costs. The rest of the project will involve the gathering of information on transport operators, producers, consumers and other stakeholders in relation to the structures of the relevant markets. This will help in assessing the most adequate adjustment mechanism.

Empirically, in addition to qualitative analysis and discussion of responses, the project aims to perform a series of time series-based techniques (e.g. intervention analysis) on relevant variables such as trade volumes and prices. Additionally, it will use cross-section-based techniques comparing intervened and non-intervened border posts.

In much of the project, the Busia border post will constitute the lead case studied. This is particularly the case with regard to assessing the impact on cross-border trade. It will also determine significantly the results of the study, which will be based on assessing the impact on trade, prices and production as affected by the main route (Kampala–Nairobi–Mombasa) through this border.

The assessment of benefits and costs of OSBPs, in their broadest sense, will be used to evaluate their economic returns. Once the benefits associated with the creation of employment and production are evaluated, together with the investment and other costs, it will be possible to assess the economic and social benefits with respect to the opportunity costs of the investment.

3 Understanding the role of OSBPs

This section describes how OSBPs work. It describes the typical operations and services provided at borders in relation to the payment of duties, migration, certification of standards compliance, etc (Section 3.1). It then discusses how OSBPs can contribute to reducing transport costs and times by highlighting specific savings they can generate (i.e., direct impact) (Section 3.2).

3.1 Border operations

Traders and other operators have to comply with a series of procedures in order to be able to bring goods from one country into another. The government requires information about the characteristics of the product traded and, in many cases, a duty is required to bring that product into the country.

The requirements vary significantly across products. Many of these requirements are associated with certifying the compliance of quality and/or safety standards and the control of certain dangerous products (e.g. explosives).

The duty treatment, on the other hand, varies significantly depending on the origin of the product. This depends on whether there is a trade agreement that eliminates or reduces tariffs between countries. Authorities need to receive evidence on the origin of the product so they can apply the appropriate duty.

There are different import regimes depending on the final use of the product. Certain products are imported temporarily (e.g. commercial samples); others are subject to a transformation before eventually being re-exported. In some cases, goods are transiting to a third country. In general, such cases do not trigger a duty but some paperwork is required to support the claim for this treatment.

In addition to putting controls on the product imported, governments need to certify compliance with other domestic regulations associated with the transport of the product (e.g. the road safety of lorries), the migration formalities of drivers and other trade-connected procedures.

While most checks are made when goods are imported, there are also checks on exports. Sometimes, goods are checked and

authorisation is required to export the product. In some cases, duties must be paid when goods are exported. Even when the payment of duties on imports and exports can be made in advance, there is a need to provide proof to customs authorities at the border that the product to bring in or take out has had the corresponding duty paid.

These requirements necessitate infrastructure and resources at borders. They involve different agencies in charge of collecting revenue (e.g. customs) and verifying compliance with specific requirements (e.g. the relevant food safety agency). The infrastructure entails a wide range of buildings, facilities and instruments. This includes, for example, offices, warehouses, road infrastructure, parking lots and scanners.

The infrastructure and resources are deployed on both sides of the same border and perform similar functions. In some cases, when both countries apply similar standards, they perform identical functions. For example, in the EAC, the Agriculture and Food Safety Authority in Kenya and the National Bureau of Standards in Uganda certify the compliance of equivalent food standards on food products and agricultural goods crossing the border.

These controls require time. Going through each of the stages involves paperwork, which authorities need to verify. Even when many of these procedures can be performed in parallel, a delay in one of them will involve a delay to the whole cross-border shipment. These times lead to significant costs for transporters and traders:

- Parking: While all procedures are cleared, lorries must park in dedicated parking lots.

- Driver subsistence: If procedures are not dealt with quickly, drivers will incur additional subsistence costs.

- Working capital: Reductions in times bring reductions in the direct labour costs (e.g. when drivers are freelance) or a better utilisation of their time.

- Capital rent: Delays at the border imply that the lorry cannot be used productively for other transport. Therefore, this translates into higher rent costs for the user or the need to have additional capital.

- Administrative costs: Lengthy and cumbersome procedures are costly as more administrative resources are required.

- Other costs: Shipping companies may impose fines if containers are not returned within specified times.

3.2   **The direct impact of OSBPs**

OSBPs aim to reduce crossing times and inefficiencies by simultaneously dealing with the duplication of border crossing procedures and improving their efficiency. Unified border control implies a reduction in costs for the administrations in both countries. It implies that the information required by both administrations needs to be collected only once. Streamlining processes leads to significant reductions in the time it takes to cross borders.

Elimination of the duplication of infrastructure at the border implies a general efficiency improvement in the operation of services in both countries. The existence of a common infrastructure that can be used simultaneously by the authorities of both countries leads to a reduction in the cost of operations and maintenance of the infrastructure and services. This is particularly important in the case of expensive tools (e.g. scanners) with high investment and operation costs. These efficiency gains lead to lower government expenditure in both countries.

However, the most important impact of OSBPs is associated with the reduction in times to cross borders, caused by the reduction in the number of processes and procedures required to cross the border. This leads to a direct reduction in transport costs:

1.   A reduction in parking fees: A reduction in the time needed to perform all control activities is associated with an immediate reduction in the time required for trucks to be parked at the border. This leads to lower operational costs for transporters.

2.   Significant reductions in crossing times are associated with lower costs for accommodation and/or subsistence for drivers.

3.   If the reduction in crossing times is significant, transporters will experience reduced labour input needs.

Transporters are not the only direct beneficiaries of the simplification of procedures brought by OSBPs. Forwarders and other trade operators also face a reduction in costs through a reduction in the time necessary to go through customs and other procedures. Therefore, labour input per export and import operation is lower.

There is a direct impact of OSBPs associated with the time and consequently cost reduction generated in trade and transport activities. These direct effects may trigger additional indirect impacts along the commercialisation and production chain.

4 The performance of OSBPs

This section discusses how the OSBPs in East Africa supported by TMA have performed in three concrete dimensions. The first, time, constitutes the main direct expected measurable impact. The second, trade costs, is related to the reduction in times based on the discussion before.

The analysis is based on the findings of Nick Porée & Associates (2018), who documented these dimensions. Four border crossings are considered:

- Busia, on the border between Kenya and Uganda

- Taveta–Holili, on the border between Kenya and Tanzania

- Mirama Hills–Kagitumba, on the border between Uganda and Rwanda

- Mutukula, on the border between Tanzania and Uganda.

These are the four border crossings for which there is enough information on performance. Moreover, at these border crossings, interventions have been implemented since 2011. Consequently, the interventions have matured, and their impacts have stabilised.

Busia and Mirama Hills–Kagitumba crossings are in the Northern corridor, which goes from Mombasa to Kigali through Nairobi and Kampala. Given the economic and trade importance of the regions that this corridor goes through, its performance is particularly critical. The border crossing at Taveta–Holili is critical to link the Northern and the Central corridors, going from Dar es Salam to Kigali.

4.1 Time performance

A significant component of trade costs is related to the time it takes goods to go from the producer to the consumer or user. For some products, depending on their characteristics or their final use, quick transport links are essential. Excessive transport times may make some products inconvenient to trade. This suggests that short transport times have the potential effect of unlocking additional trade opportunities and contributing to trade diversification.

Beyond this, the main driver of a reduction in transport costs is related to a reduction in time. In 2011, there was a significant variance between the times it took to cross the border at different crossings. Trucks in Busia bound for Kenya would take almost an hour and a half to cross the border from Uganda. In contrast, trucks bound for Holili in Tanzania from Taveta in Kenya would take almost 23 hours. This amounts to three times the driving time between Mombasa and Arusha, the main route using the crossing. There was also significant variance between border crossings in the same country. So, trucks bound for Tanzania in Mutukula would take less than half the time it would take at Taveta–Holili. In 2011, on average, crossing any of these borders in any direction would take more than 10 hours.

Overall, since the introduction of the OSBPs, crossing times have decreased to no more than five hours at the worst-performing crossing. In the case of Mirama Hills, the time has been reduced to just 15 minutes. On average, crossing any of these borders in any direction takes 2 hours and 20 minutes.

The reductions are particularly significant at those crossings that performed particularly badly in 2011, such as Taveta–Holili (to Tanzania), Mutukula (to Uganda) and Busia (to Uganda). These have recorded reductions of more than 1,204 minutes (more than 20 hours) in Holili, 1,032 minutes (more than 17 hours) in Mutukula and 640 minutes (6 hours and 40 minutes) in Busia. But even the best-performing crossings (Busia to Kenya) and Mirama Hills have experienced significant reductions in crossing times in relative terms. It should be noted that these results may be linked not only to OSBPs but also to broader changes in regional trade facilitation, such as the introduction of a single customs territory and associate interventions, as well as to changes in the broader economy that are unrelated to the interventions discussed here.

The analysis of crossing times suggests differences depending on the type of cargo. The reduction in the times needed for containers is lower; in some cases, there have been some small increases observed.

Table 1   Changes in border crossing times

	Time in 2011	Time in 2018	Change in queueing time (minutes)	Change in customs processing (minutes)	Total change in dwelling time (minutes)	% reduction	Driver-day equivalents
				All trucks			
Busia Kenya	01:26	00:39	-22	-25	-47	-62%	-5%
Busia Uganda	14:20	03:40	29	-669	-640	-74%	-67%
Holili	22:59	02:55	-423	-781	-1,204	-87%	-125%
Taveta	07:19	01:41	16	-344	-328	-70%	-34%
Mirama Hills	01:47	00:15	-14	-78	-92	-86%	-10%
Kagitumba	05:00	01:25	-63	-152	-215	-72%	-22%
Mutukula Uganda	21:44	04:37	16	-1,048	-1,032	-79%	-108%
Mutukula Tanzania	10:12	03:24	-119	-289	-408	-67%	-43%
				Containers			
Busia Kenya	01:26	00:43	-38	-5	-43	-57%	-4%
Busia Uganda	14:20	14:25	68	-63	5	1%	1%
Holili	22:59	05:58	-424	-597	-1021	-74%	-106%
Taveta	07:19	01:51	38	-356	-318	-68%	-33%
Mirama Hills	01:47	00:15	-7	-85	-92	-86%	-10%
Kagitumba	05:00	01:18	-65	-157	-222	-74%	-23%
Mutukula Uganda	21:44	05:51	77	-1035	-958	-73%	-100%
Mutukula Tanzania	10:12	11:28	-124	200	76	12%	8%

Source: Own elaboration based on Nick Porée & Associates (2018).

There are at least two reasons for the reduction in the time it takes to cross borders. First, there are reductions in the queue times of trucks and lorries when arriving at the border post. The queue time is associated with the time it takes to formally begin the customs procedures to cross the border. Second, once the procedures have started, the customs processing time is related to all the steps necessary to clear the cargo and continue the trip.

In general, most of the reductions in times are associated with improvements in the times required to effectively comply with the customs procedures. Most of the reduction in the crossing times in Mutukula Tanzania and Busia Kenya (both to Uganda) can be explained by reductions in customs processing times. In general, it is expected that reductions in the times for customs procedures should also lead to a fall in queues. However, this is not the case in general. In Mutukula (to Uganda) and Taveta, there are significant reductions in the times of customs procedures and no reduction in queueing times.

The reduction in crossing times has immediate impacts on costs for transporters. In addition to reductions in direct costs associated with parking, faster crossing times imply less labour input. Assuming a

driving time of 16 hours a day, it is possible to interpret the reductions in crossing times into days of driving. For example, the reduction observed in Holili would imply a reduction of more than a full day of driving. Therefore, the OSBP in Holili would reduce by two-thirds the labour cost associated with taking a cargo from Mombasa to Arusha in Tanzania. On top of this reduction, it is necessary to consider ancillary costs (parking, subsistence, etc.) that the reduction in crossing times has reduced.

However, at this stage of the analysis, the reduction is just observed in the operational costs of the transport companies. Further analysis will be performed to discuss how these reductions will be seen along the value/supply chain.

4.2 Transport costs

The reduction in transport times has direct effects on the operational costs of transport operators. Whilst distance-related costs (e.g. fuel) are not affected, time-sensitive costs are expected to be. First, a reduction in crossing times implies higher turnaround times of vehicles. Consequently, trucks are quicker to become available to take another cargo. This affects the productivity of capital directly. Second, the lower crossing times reduce the labour input for a particular transport operation or, alternatively, drivers become available to take another cargo more quickly. This affects the productivity of labour. Third, many associated costs related to having idled vehicles at the border (e.g. parking) are significantly reduced.

Therefore, the reduction in transport times has a direct effect on the productivity of the main factors of production that should be seen in the costs of the transport companies. Fortunately, given the number of operators and the replicability of the operations, transport operational cost structures tend to be standardised, known or easily computed.

We assume a formula based on Nick Porée & Associates (2018) where the transport costs are related to the time and the distance travelled. While the distance-related component of the cost will not experience any change associated with the OSBPs, reductions are expected in the time-related component.

The time-related component accounts for a wide range of elements including the driver and the capital cost. The lower the time, the lower the necessary labour input and the faster the truck can be free to make another journey. This time-related cost is based on the speed of travel (we assume 50 km/h); other delays en route, including stopping at weighbridges, police checks, etc; the driver resting time (we assume 12 hours of driving time per day); and the time spent crossing the border. This is the time where will see the reduction associated with the OSBPs.

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We adjusted the resting time to account for the fact that the driver would normally rest at the border. This has two effects. First, it increases the incidence of the border crossing time in the total time-related component. This might potentially lead us to overestimate the impact associated with the OSBP. Second, it reduces the total transport cost by reducing the duplication between resting and time stopped at the border. In order to account for this, we reduced by 12 hours the transport time on each route where the baseline time at the border is greater than 12 hours. This assumes that the driver takes his/her rest while queuing or while the cargo is processed. In those cases where the baseline time is lower, we subtracted the time at the border from the resting time.

We identified certain routes that use the selected border posts. We assume that all routes originating in and destined for Mombasa involve the use of the port facilities. In these cases, we added 48 hours to the travel time to account for the time necessary to load and unload cargo in the port. This will not be affected by the reduction in the time at the OSBP, but it will increase the total transport time. Consequently, for these routes, incidence of OSBPs will be reduced in relative terms. The rest of the routes considered are intra-regional routes (including those involving Dar es Salaam).

Figure 1 presents the reduction in operational costs for transporters associated with the introduction of OSBPs on different typical cargo routes in East Africa. Appendix 1 presents calculations of the baseline costs and the costs associated with the introduction of OSBPs for containers and other types of trucks that generate the cost reductions. The reduction in the transport costs associated with the OSBPs would be between 0.3% and 14%.

As is evident, those routes that have experienced significant reductions in times have experienced the greatest reductions in costs. For example, the reduction in crossing times at the Busia border for transport associated with imports into Uganda from Nairobi (representing intra-regional trade) and from Mombasa (for extra-regional trade) is between 11.7% for containers and 14% for other trucks. There are also significant reductions (around 9%) in the cost of transport for goods coming from Dar es Salaam into Kampala using the Mutukula crossing. In contrast, the impact on routes where the original crossing time was low, such as Kampala–Nairobi/Mombasa, is substantially lower (less than 1%).

There are some additional patterns associated with the characteristics of the route and the type of trade. Given that there are no dwelling times at port, incidence of reduction in total transport time at OSBPs is higher in intra-regional trade.

Given that, before the introduction of OSBPs, border crossings into Kenya operated more efficiently than did those in the rest of the countries, there are few gains in times associated with transporting goods either to Nairobi or to Mombasa. However, there are

significant reductions in transport costs associated with the movement of goods from Nairobi and Mombasa into the other countries. In Busia, for example, the reduction of the transport cost for imports into Kenya is slightly above 1% but at 14% for goods transported out of Kenya.

Figure 1 Reduction in transport operational costs owing to OSBPs on selected routes (%)
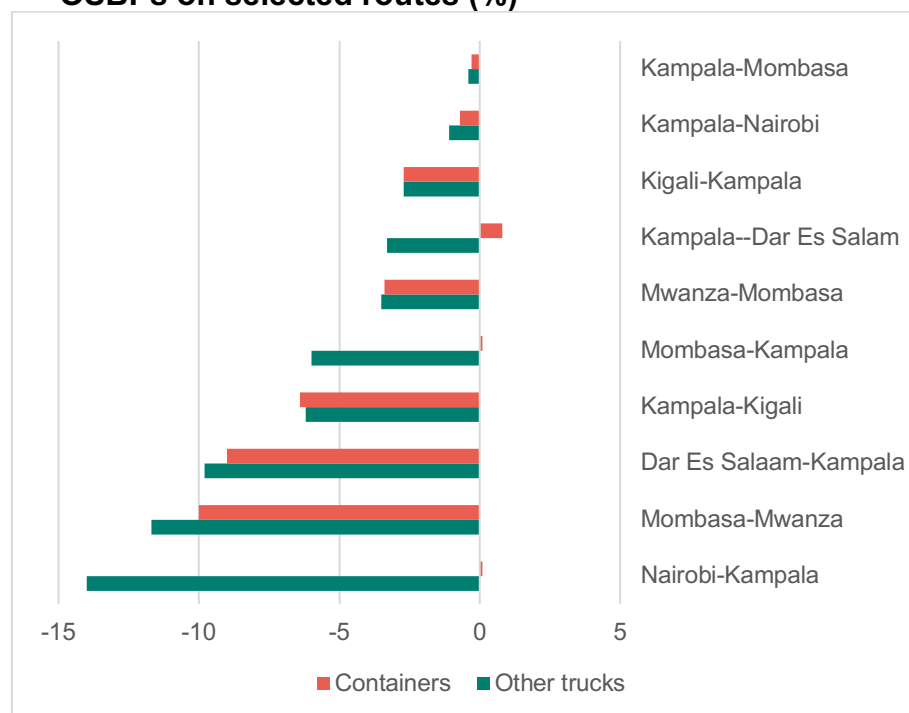
Source: Own calculations based on Nick Porée & Associates (2018).

The analysis suggests that, if all the borders continue to reduce and standardise crossing times (e.g. to match the times observed at the Busia crossing into Kenya), there could be additional reductions in transport costs. For example, the transport costs for goods going into Kampala from Nairobi and Mombasa could go down by an additional 4 and 1.3 percentage points, respectively.

However, further reductions in transport costs will need to come from additional interventions. While the Kampala to Mombasa trip takes around 23 hours of driving, a similar distance between France and Italy will be driven in slightly more than 11 hours. The speed of travel is explained primarily by the state of the vehicle and infrastructure. So, for example, if travel speeds were increased by 50% (to 75 km/h), transport costs could be reduced by up to an additional 8%.

5 The impact of OSBPs on prices

The reduction in transport costs, assuming that it is transmitted fully down the value/supply chain, should affect wholesale and consumer prices. Wholesale prices are based on producer prices, transport costs and other margins. Therefore, a reduction in transport costs is expected to affect such prices.

This report does not examine whether consumer prices are being affected. This will be explored in further research, which will need to deal with the market structure within the region. The analysis on wholesale prices in this section is thus preliminary.

This impact will differ across a range of factors. In addition to the reduction in transport costs associated with the introduction of the OSBPs, there will be an impact depending on the product considered. For instance, seasonal or perishable products may be more affected because of the time sensitivity of their trade.

In this preliminary analysis, we focus on assessing the impact on only four agricultural products (beans, maize, palm oil, rice) that represent a significant share of the trade at the border. These are staples that tend to represent a significant part of household budgets.

Figure 2 presents the maximum potential reduction in wholesale prices (assuming a full transmission of the reduction in transport costs). The reductions are calculated assuming 20 tonne trucks. We calculated the transport cost per tonne before and after the OSBP and thus their impact on wholesale prices.

The maximum reductions are expected to be seen in Uganda and in Tanzania (Mwanza); this is attributed primarily to the reduction observed in the transport costs on the relevant routes. The wholesale price of maize could see a reduction of up to 4.5% and 3.8% in Mwanza and Kampala. These are followed by reductions in the prices of beans, palm oil and rice.

Figure 2   Potential reduction in wholesale prices attributed to OSBPs (%)
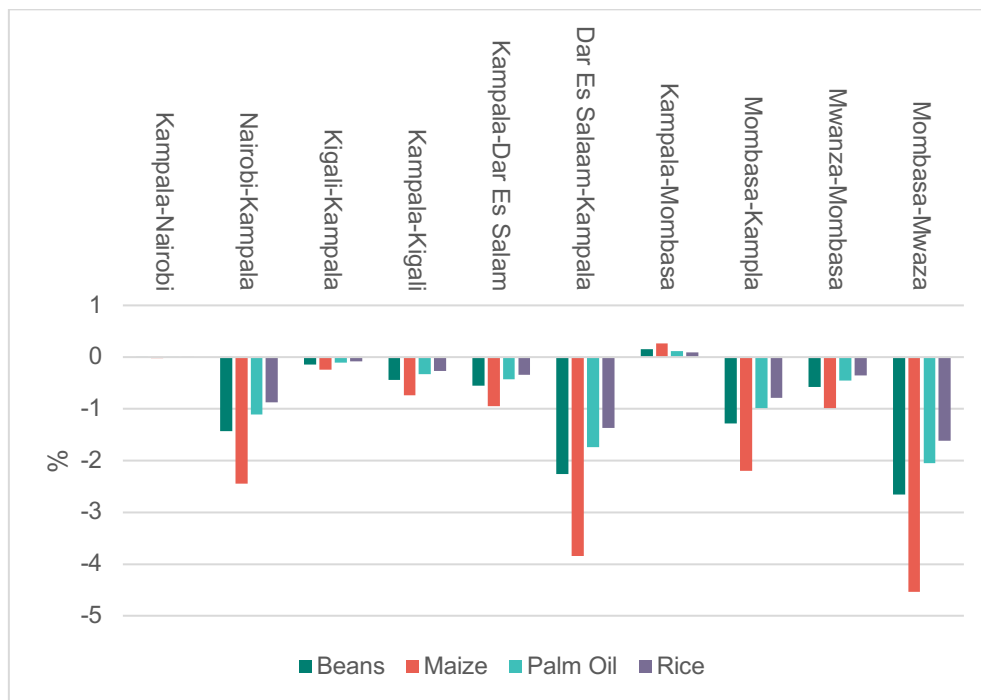
Source: Own calculations based on FAO data.

The analysis needs to be expanded to include other products as well as a full analysis of the market structures of the products. However, the analysis presented here suggests, a priori, some potential important effects in the domestic economies associated with the OSBP.

6 Transmission channels

This section discusses potential transmission channels for the savings generated by the OSBPs.

6.1 Time and costs savings from transporters to consumers

As discussed above, OSBPs can entail multiple savings: time savings, which can be translated into monetary savings, and savings deriving from simplified or harmonised customs procedures. As the latter depends on the final number of documents and fees to be paid, which we do not know, here we focus on the former.

How are the cost savings deriving from faster crossing times distributed? Do they accrue to consumers, or are they appropriated by others along the supply chain? In the presence of perfect competition, the trucking companies saving money would lower their prices to outcompete their rivals. Supposing that the products are destined for retail, the final price paid by the importers or retailers for transport would be lower, and this would mean that the benefits go to the retailers. Again, in the presence of perfect competition, these would lower their retail prices, with a benefit for consumers. However, in reality, perfect competition is hard to find, and East African countries are no exception. One or more actors operating along the chain described above (transporters, traders, retailers) might not reduce their prices, instead appropriating all or part of the savings achieved through lower transport times, and the final consumer might not be able to enjoy any or all the benefits deriving from the time savings. This section examines the supply chain link by link, to assess where the savings could end up.

The **transport companies** are mandated to move the goods from point A to point B. For this service, they charge a price to their customers, which typically includes the costs related to the vehicle and its depreciation, fuel, drivers' salaries and reimbursement, and other costs. These costs are set based on the distance covered and the type of cargo but not on the time it takes to move the goods. Given the time saving generated by the OSBPs, transport companies may be able to employ their resources more efficiently, with each truck in their fleet and each driver undertaking more trips in one year compared with in the pre-OSBP situation. In a perfectly competitive situation, transport companies would use this gain to lower their prices to beat their competitors; all companies would lower their

prices until the saving is exhausted; and the benefits would accrue to the importers or the consumers.

Although the East African trucking sector is relatively competitive, especially compared with in other regions in Africa (Teravaninthorn and Raballand, 2009), we may also expect the companies to retain some of these savings: companies may lower their prices a little but not to the full extent of their cost savings. That is, part of the benefits of the time saving will accrue to the transport companies. There is some evidence that, in recent years, transport companies in East Africa have reduced their costs. Eberhard-Ruiz and Calabrese (2017) document a decrease in transport charges in East Africa over the period 2013–2016. However, this is attributed mostly to a decrease in fuel prices, as noted above, and lower demand for transport services (owing to lower imports) increasing competition among transporters.

Freight forwarders arrange to move goods from point A to point B, for example preparing shipping and export documents, warehousing, booking cargo space, negotiating freight charges and taking care of insurance. However, their tasks are independent of time savings. For these operators, the main concerns relate to the complexity of the documents required to import and export goods – and, while these are part of trade facilitation processes, they are beyond the scope of our review. Larger transport companies and logistics operators also perform freight forwarding functions, so their benefits would be the sum of those deriving from transport and to freight forwarding operations.

In addition to their salary, **truck drivers** receive a fixed amount to drive a truck from point A to point B, which includes personal expenses such as food and accommodation, road usage charges, security expenses and parking fees, but also informal fees, such as bribery. In a previous study, we found that, for a driver covering the Mombasa–Kampala route, this amount was equivalent to around $249, of which 34% was for food and accommodation, 20% to cover road usage charges in Uganda, 13% to pay bribes and 9% to meet security expenses and parking fees; the remaining 23% was a buffer for unforeseen circumstances and minor en route repairs of the truck (Eberhard-Ruiz and Calabrese, 2017). The time saved (almost one full day) through the construction of OSBPs saves some money for the driver, in particular in the form of lower food and accommodation expenses, and potentially parking fees and security expenses, given the shorter time spent on the road. Other expenses (such as road usage charges) are unlikely to change as a result only of the OSBP. Therefore, if the fixed amount received by drivers does not change in response to the shorter travel time, we can assume that a small part of the savings generated by the OSBP can accrue to the driver. There is no reason to think that driver salaries will change.

Next, we consider **importers and retailers** in Burundi, Rwanda and Uganda, who bring in the goods to sell to customers in these

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landlocked countries in the region. Importers may then sell to retailers, or to wholesalers who in turn sell to retailers. If transport companies lower their prices, importers will face a lower price, benefiting from the time saving generated by the OSBP. However, importers may not lower the price when it is their turn to sell their goods, and the same may happen with wholesalers or retailers. If, at any link of this chain, there are low levels of competition, the saving may not be passed on to the following link, or it may not be passed on in full to the consumer. The Poverty and Gender Impact Study of TMA's independent evaluation finds that prices of various items changed differently during the evaluation period, thus confirming the complexity of the link between changes in trade – which would tend to affect wholesale prices more directly – and changes in retail prices. The evaluation found a reduction in costs for traders as a result of the OSBPs but also that traders did not lower their prices in markets unless competition required them to do so. They benefited from higher profit margins, which allowed them to improve standards of living for their families (Allison et al., 2019).

The final link of this supply chain is the **consumers**. Here, the impact differs based on whether the final consumers are families or if they are producers purchasing the goods to use them as inputs in their production processes. We analyse these two situations in turn below. While ideally the benefits of establishing an OSBP should trickle down to consumers, making goods cheaper for them to buy, we have seen that part, or all, of the savings could be appropriated along the chain.

6.2 Benefits to final consumers and poverty reduction

The final benefits to consumers appear in consumer prices. Reduced prices for consumers can positively affect poverty reduction. If the prices of the goods that the poor consume decline, this will save poor families some money that they can use to buy something else. This, of course, holds for the goods that are transported across borders, and in particular those that pass through OSBPs.

Consumption surveys provide an indication of the goods consumed by poor households. These include food products, and staple foods in particular, as well as other household products. In Rwanda, most households consume mainly tubers (potatoes, sweet potatoes, cassava), pulses (beans) and vegetables (Government of Rwanda, 2018).

Let us consider an example of a cargo transported from Mombasa to Kigali. In Rwanda, for example, the latest available Consumer Price Index (CPI) data tells us that, on average, Rwandan families spend 39% of what they consume on food and non-alcoholic beverages. Therefore, the savings in terms of food products estimated above will

allow them to reduce this by 39% and to allocate the money elsewhere.

Table 2   Consumer Price Index composition, Rwanda, December 2020

CPI component	Weight (%)
Food and non-alcoholic beverages	39.04
Bread and cereals	*6.62*
Meat	*1.74*
Milk, cheese and eggs	*1.13*
Vegetables	*18.43*
Non-alcoholic beverages	*1.15*
Alcoholic beverages and tobacco	6.81
Clothing and footwear	5.31
Housing, water, electricity, gas and other fuels	18.28
Furnishing, household equipment and routine household maintenance	3.46
Health	1.21
Transport	7.73
Communication	2.38
Recreation and culture	2.18
Education	2.01
Restaurants and hotels	6.44
Miscellaneous goods and services	5.16

Source: National Institute of Statistics of Rwanda (2021).

Similar effects will be seen in other countries involved in intra-regional trade. In the case of Uganda, supposing the imports are coming in from Kenya, the savings will be smaller, as we need to consider only those deriving from the Busia OSBP. At the same time, if Kenyans are importing products from Uganda or Rwanda, they will also be able to benefit from faster crossing times, as long as the goods are transported via the OSBPs.

The Poverty and Gender Impact Study of TMA's independent evaluation found that, on average, over the period under consideration, food prices increased more than those for other goods and services in all countries (for a range of reasons not necessarily linked to the OSBPs), affecting poorer households disproportionately (Allison et al., 2019).

Other reviews of the impact of transport infrastructure also provide clear evidence that connectivity through transport infrastructure helps decrease poverty and increase welfare in sub-Saharan Africa and elsewhere, especially at the national or subnational level. The evidence on cross-border trade suggests that regional infrastructure needs to be combined with the upgrading of feeder roads, storage facilities and access to credit (Jouanjean et al., 2015).

Faster crossing times and trade flows can have other social benefits for consumers in addition to poverty reduction. For instance, by

reducing trade costs and improving the connection of areas with surplus and deficit of food products, infrastructure can reduce food price volatility and enhance food security through greater market integration (Jouanjean et al., 2015).

6.3   Benefits to producers and exporters

In the examples above, we have considered that time savings reduce the costs of the goods purchased by households, but the buyers of these products can also be **firms** that purchase inputs for production purposes. OSBPs can reduce the prices of all goods transported along the corridors, including those of intermediate inputs that are used for production, such as seeds and fertiliser in agriculture, machinery and intermediate inputs in industry, and also other goods used in the services industry. Lower input prices, therefore, translate into a higher value per unit sold. With these savings, the productive sectors in the country may become more profitable; if the savings are reinvested in the business, they may become more competitive and grow.

Moreover, if the producers who import the goods to process them are exporters, they will reap double benefits – once from importing the inputs at reduced prices and the second time from exporting them in a faster and cheaper manner. In this case, lower input prices and lower export costs mean a higher return per unit sold. Exporters can therefore benefit from higher prices received, and also reinvest these to grow. However, depending on the products, the reduction in transport costs of the intra-regional trade may lead to more intensive trade without increasing output (diversion effect).

In both the case of producers for domestic markets and that of **exporters**, higher returns can translate into two results. The firms either can transmit the savings to consumers to lower their prices and become more competitive in the market, or they can reinvest these to expand their business and grow. In both cases, the final result may be increased competitiveness and growth of the firm in the market, which allows it to employ more people. As firms grow, households benefit as well, as more employment opportunities become available and competition on the market increases. Finally, it should be noted that these benefits accrue if the assumptions of perfect competition hold; otherwise, the benefits may be eroded along the chain.

6.4   Impact on government revenues

The growth in business, related both to the domestic market and to exports, has an impact on government revenues. In fact, many firms in the EAC import inputs for their production from outside the common market. The more businesses expand, the more goods are produced, the more inputs are imported. This means that governments can collect additional revenues from imports. Governments can use the money collected in this way to increase their budget and provide increased levels of services to their citizens.

6.5 Border effects

So far, we have discussed the effects that OSBPs have on the country in general. However, interventions such as OSBPs may have geographically differentiated impacts, meaning they could affect some areas more than others.

In particular, the most immediate effects could be at the border. Shorter crossing times mean that all the activities that used to take place to cater to truck drivers (small restaurants, hotels, petty trade, etc.) suffer, as drivers spend less time and money at the border.

Looking at the OSBP in Busia (Kenya), Tyson (2018) finds a mixed impact for informal workers. In this study, informal traders had seen an increase in their markets and numbers of customers but reported a decline in income owing to diminished numbers of customers who were passengers of long-distance buses. Moreover, some informal workers reported losing income as a result of a decline in hand-sorted trade and tasks like loading and unloading trucks.

Moreover, price changes owing to the OSBPs may have geographic differences. The Poverty and Gender Impact Study conducted as part of TMA's independent evaluation found that, along the corridor in Rwanda, Uganda and, to a lesser extent, Kenya, the reduction in trade costs had served to mitigate price increases occurring in the economy. That is, in these areas, prices grew less along the corridors than they did away from the corridors. Tanzania experienced a different pattern, however: the data shows prices far from the corridor dropping to come into line with the lower price level existing on the trade corridor (Allison et al., 2019).

7 Conclusions

The OSBP programme is a significant component of the EAC single customs territory, being key to facilitating trade flows, and a key element of TMA's strategy, covering 16% of TMA's budget in the first strategy. OSBPs aim to reduce trade costs by increasing the efficiency (time) and capacity (volume) of transport infrastructure.

The programme has created mechanisms to facilitate the coordination of the different services involved in trade within each country and bilaterally. This has contributed to the elimination of the duplication of border checks and streamlined border operations. OSBPs have also contributed to improving essential customs-related infrastructure to increase the productivity of the services provided at the border. The aim of the programme is to reduce transport times and transport costs by cutting the time it takes trucks to cross internal borders between East African countries.

Analysis of the times taken to cross borders before and after the introduction of OSBPs suggests a significant reduction in the times taken to process cargo consignments. The impact has been dramatic, especially at those borders that formerly observed very long crossing times. This suggests a targeted and effective impact in those locations where the interventions were most needed.

The reductions in border crossing times have affected the operational costs of transport services by generating an increase in the productivity of capital (higher turnaround of trucks) and labour (less driver idle time) as well as additional reductions in waiting-related times such as for parking. These reductions in costs are particularly high at those borders that exhibit higher reductions in crossing times and particularly in intra-regional trade. The impact on the transport costs of extra-regional trade is smaller given the higher share of other transport costs (e.g. ports) not affected by OSBPs.

Assuming a full transmission of the savings in transport costs, OSBPs may have contributed significantly to domestic prices. This is true, particularly in the case of low-value products where the incidence of transport is higher. However, the analysis has been limited to a series of products, and it will be necessary to understand the structure of the different markets to assess whether the impact has been transferred to consumers.

A reduction in transport costs can lead to further impacts on domestic economies. For consumers, it may lead to significant reductions in

the prices they face, with consequent reductions in the incidence of poverty. Moreover, the reduction of transport costs could lead to increased competitiveness, in turn leading to increased output and employment. It could also lead to increases in bilateral trade between East African countries and with the rest of the world in both intensive and extensive margins. As a consequence of this, the fiscal position may improve as a result of the increase in the tax collection base and the reduction of certain operational costs in customs.

The precise impact of OSBPs in the economies of East Africa requires further analysis to assess how these reductions in transport times and costs have effectively affected the channels outlined. This constitutes the next part of the research agenda initiated here. The results obtained here are of critical importance to quantify and assess those impacts.

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Appendix 1   Transport cost computations

	Unit	Kampala–Nairobi	Nairobi–Kampala	Kigali–Kampala	Kampala–Kigali	Kampala–Dar es Salam	Dar es Salaam-Kampala	Kampala–Mombasa	Mombasa–Kampala	Mwanza–Mombasa	Mombasa–Mwanza
Via		Busia	Busia	Mirama Hills	Kagitumba	Mutukula	Mutukula	Busia	Busia	Taveta	Holili
Distance	km	656	656	512	512	1,485	1,485	1,130	1,130	997	997
Driving time (assumes 50 km/h)	hours	13	13	10	10	30	30	23	23	20	20
Other delays (weighbridges, etc.)	hours	1	1	1	1	3	3	2	2	2	2
Rest times (assumes 12-hour driving time)	hours	13	13	10	10	30	30	23	23	20	20
Border crossing time (baseline)	hours	1	14	2	5	10	22	1	14	7	23
Adjusting resting times	hours	12	1	8	5	20	18	21	11	13	8
Time at port	hours	-	-	-	-	-	-	48	48	48	48
Total travel time	hours	27	30	21	21	62	72	95	98	90	101
Total transport cost in baseline ($17/hour and $1.2/km)	$	1,253	1,293	978	978	2,836	3,002	2,974	3,014	2,720	2,907
Border crossing time (other trucks)	hours	1	4	0	1	5	4	1	4	2	3
Border crossing time (container)	hours	1	14	0	1	11	6	1	14	2	6
Total transport cost other trucks after OSBP	$	1,240	1,111	952	917	2,742	2,707	2,961	2,833	2,624	2,566
Total transport cost containers after OSBP	$	1,244	1,294	952	915	2,858	2,732	2,965	3,016	2,627	2,618
Transport cost reduction on other trucks	%	-1.1	-14.0	-2.7	-6.2	-3.3	-9.8	-0.4	-6.0	-3.5	-11.7
Transport cost reduction - Containers	%	-0.7	0.1	-2.7	-6.4	0.8	-9.0	-0.3	0.1	-3.4	-10.0

Table A1 presents a computation of the operational costs for certain routes that go through the relevant borders. The operational cost consists of distance- and time-based components. The distance components are invariant to the OSBPs and could be considered in

this context as fixed. The operational cost is explained by this formula:

$$OC = 17h + 1.2kms$$

where h is hours and kms is kilometres. The time component can be further decomposed as:

$$h = driving + otherdelays + rest + timeatport + bordercrossing + adjustingresting$$

Total transport time is built on driving time (assuming a 50km/h speed); other delays include time spent at police checks and other stops en route and the rest time drivers are entitled to periodically; time at port applies only to those routes originating from or destined for Mombasa. The border crossing is the main component affected by OSBPs. Finally, we consider that, while waiting at the border, drivers may effectively be resting. We thus adjust this in the computations.

From the computations, it is possible to obtain a total operational cost for each route before and after the introduction of the OSBP. So, for example, in Busia, before the introduction of the OSBP, a truck transporting cargo from Nairobi to Mombasa would take 30 hours. This includes 14 hours of dwelling at the border. The reduction of this time as a result of the OSBP to 4 hours implies a reduction in the operational cost of around $180 for the trip. This represents a reduction of 14%.