Policy briefing

The costs of logistical and transport barriers to trade in East Africa

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Key findings

- The costs of transport and logistics barriers range between 1.7% and 2.8% of the gross domestic product of East African Community economies.
- Border delays and weighbridges alone cost 0.4% and 0.2% of Kenyan gross domestic product.
- In Tanzania, the poorest people could see their real income rise by almost 2.8% as a result of a reduction in transport and logistic costs.
- Burundi is expected to be less affected by the removal of these barriers. However, such a removal would facilitate the transmission of the effects of future trade policy changes.

Introduction

Trade increases general economic welfare by reducing prices, raising incomes and providing a better allocation of resources. In addition to tariffs, multiple non-tariff barriers (NTBs) introduce frictions in trade. Some of these barriers, in addition to issues related to the quality and quantity of infrastructure and the market structure of the relevant service providers, increase transport and logistics costs.[1]

Recent trade facilitation efforts in the East African Community (EAC) have led to faster customs clearance and speedier handling of cargo at ports and terminal depots. However, unnecessary en-route delays as a result of the existence of weighbridges, slow border-crossing times and police roadblocks mean that cargo transit times are almost twice as long as without these barriers. Tackling the remaining trade facilitation barriers along the corridors could result in additional cost savings of up to 23% per transported tonne (Eberhard-Ruiz and Calabrese, 2017).
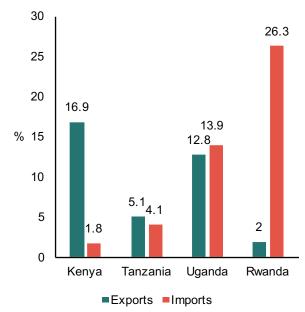
This policy briefing summarises results of the elimination of transport and logistics NTBs and other related measures on the economies of the EAC countries. This includes an assessment using a computable general equilibrium (CGE) model of trade effects, gross domestic product (GDP), welfare, employment and prices. Moreover, using the Bottini et al. (2017) Trade Poverty Constraint Index (TPCI), we analyse how the reduction of relevant NTBs is transmitted to households in terms of their capacity to seize the opportunities generated and protect against negative shocks. This means the provision of a qualitative and quantitative assessment of the effect of the removal of these NTBs on poverty.

Economy-wide effects of the removal of NTBs

The potential economy-wide impacts of eliminating the NTBs considered in this study are assessed using the CGE model GLOBE (McDonald et al., 2007). The analysis simulates seven NTB reduction scenarios related to the intra-EAC road transport of imported goods: elimination of border delays (S1), elimination of weighbridge stops (S2),[2] elimination of other delays related to road transport (S3), road infrastructure improvements (enabling a doubling of travel speeds) (S4), elimination of bribes and fines (S5), elimination of road user charges[3] (S6) and simultaneous implementation of all these measures (SAll).

A first set of scenarios assumes that these measures are applied to intra-EAC imports only. The immediate impact effect is a fall in intra-EAC import prices that stimulates intra-EAC trade flows. In the SAll scenario, the intra-EAC trade volume rises by 13%. However, since the original shares of trade with EAC partners in EAC countries' total exports and imports are generally small (Figure 1), the macroeconomic effects that this trade effect triggers remain moderate for all EAC members (Table 1). The price reductions for imported inputs and final goods of EAC origin reduce average consumer prices across all commodity groups (top panel of Table 2). Consumer prices for unskilled workers drop by 0.6% in Uganda, 0.4% in Rwanda and 0.3% in Kenya and Tanzania under the SAll scenario.

Figure 1: Baseline shares of intra-EAC trade in total trade, 2011 (%)

Source: Authors' own.

The sectoral impacts on domestic production and employment are very small in all EAC member states in this first set of scenarios. The percentage of the total labour force affected by a shift to a different production sector ranges from 0.01% (Rwanda) to 0.06% (Uganda) according to the simulation results for SAll, explained mainly by the low share of intra-EAC in total trade.

A second set of simulations assumes that the NTB reduction measures are extended to the intra-EAC road transport of imports from the rest of the world. Given that imports of non-EAC origin dominate imports in all EAC countries, it is not surprising that the gains from the reduction in trade costs are considerably larger in this case (Table 3). The differences in the welfare gains by country are largely determined by cross-country differences in the original imports/GDP ratio. This ratio is highest for Uganda (55%) and lowest for Rwanda (26%).

Table 1: Macroeconomic effects of NTB reductions on intra-EAC trade (% change)

	S1	S2	S3	S4	S5	S6	SAll
Real GDP							
Kenya	0.07	0.03	0.19	0.13	0.02	0.04	0.51
Tanzania	0.04	0.01	0.09	0.06	0.01	0.02	0.25
Uganda	0.07	0.03	0.18	0.13	0.02	0.04	0.50
Rwanda	0.07	0.02	0.17	0.12	0.02	0.03	0.47
Household welfare (equivalent variation)							
Kenya	0.04	0.01	0.10	0.07	0.01	0.02	0.28
Tanzania	0.02	0.01	0.06	0.04	0.01	0.01	0.16
Uganda	0.06	0.02	0.14	0.10	0.02	0.03	0.37
Rwanda	0.06	0.02	0.14	0.10	0.02	0.03	0.38
Aggregate real imports							
Kenya	0.13	0.04	0.32	0.22	0.04	0.06	0.86
Tanzania	0.05	0.02	0.12	0.08	0.02	0.02	0.32
Uganda	0.24	0.08	0.58	0.41	0.08	0.11	1.57
Rwanda	0.31	0.10	0.75	0.53	0.10	0.15	2.03
Aggregate real exports							
Kenya	0.10	0.03	0.24	0.17	0.03	0.05	0.64
Tanzania	0.00	0.00	0.01	0.01	0.00	0.00	0.01
Uganda	0.04	0.01	0.11	0.08	0.01	0.02	0.27
Rwanda	0.09	0.03	0.21	0.15	0.03	0.04	0.57

Source: Authors' own elaboration.

Table 2: Change in average consumer prices (%)

NTB changes on intra-EAC imports only							
	S1	S2	S3	S4	S5	S6	SAll
Kenya	-0.1	0.0	-0.1	-0.1	0.0	0.0	-0.3
Tanzania	0.0	0.0	-0.1	-0.1	0.0	0.0	-0.3
Uganda	-0.1	0.0	-0.2	-0.1	0.0	0.0	-0.6
Rwanda	-0.1	0.0	-0.2	-0.1	0.0	0.0	-0.4
NTB changes on all EAC imports							
	S1	S2	S3	S4	S5	S6	SAll
Kenya	-0.4	-0.2	-1.1	-0.8	-0.1	-0.2	-2.8
Tanzania	-0.4	-0.2	-1.0	-0.7	-0.1	-0.2	-2.8
Uganda	-0.3	-0.1	-0.8	-0.5	-0.1	-0.2	-2.0
Rwanda	-0.3	-0.1	-0.8	-0.5	-0.1	-0.2	-2.0

Source: Authors' own elaboration.
Note: Changes with respect to unskilled wages.

The general effect of these NTBs on the EAC economies is sizable. These barriers cost the EAC economies between 1.7% (Rwanda) and 2.8% (Kenya) of GDP and reduce the trade potential of the EAC.

Given the more pronounced trade impacts, the inter-sectoral factor reallocation effects are likewise stronger than in the first set of scenarios. In the extended SAllt simulation, around 0.3% (Rwanda) to 0.5% (Kenya) of the labour force would have to shift to a different sector in response to the higher import penetration.

In terms of prioritisation, improving infrastructure will have the largest effects in terms of poverty reduction (Table 2). However, reduction in border delays is expected to have the largest effects with respect to the cost or investment of the reform. This means that the benefits delivered per unit of investment or cost of implementation are higher for the reduction of border delays. This is because the improvement of infrastructure may require important larger investments to duplicate road capacity, bypass urban areas, etc.

Constraints on and opportunities for poverty reduction

The impact of the removal of NTBs on poverty will depend on three factors: the extent of the liberalisation process, the demographic and economic structure of the economy and the size of the constraints on poverty alleviation (see Gasiorek and Martuscelli, 2017 for a more detailed discussion). The greater the reductions in NTBs the larger the degree of liberalisation among the EAC countries, and the greater the economic impact. How this translates into poverty reduction will depend on who the poor are, where they are located, in which sectors they are economically active and the constraints they may face in responding to the reductions in NTBs.

There are constraints involved in seizing the opportunities from the NTB reductions. For example, the reduction in the number of weighbridges may facilitate trade between the EAC countries and give consumers improved access to cheaper goods. This should have a positive impact on poverty reduction. However, this

Table 3: Macroeconomic effects of NTB reductions on all trade (% change)

	S1	S2	S3	S4	S5	S6	SAll
Real GDP							
Kenya	0.4	0.2	1.1	0.8	0.1	0.2	2.8
Tanzania	0.4	0.1	0.9	0.6	0.1	0.2	2.3
Uganda	0.3	0.1	0.7	0.5	0.1	0.1	1.9
Rwanda	0.3	0.1	0.6	0.5	0.1	0.1	1.7
Household welfare (equivalent variation)							
Kenya	0.3	0.1	0.8	0.6	0.1	0.2	2.2
Tanzania	0.3	0.1	0.7	0.5	0.1	0.1	1.9
Uganda	0.3	0.1	0.6	0.4	0.1	0.1	1.7
Rwanda	0.2	0.1	0.6	0.4	0.1	0.1	1.5
Aggregate real imports							
Kenya	0.8	0.3	1.9	1.3	0.3	0.4	5.1
Tanzania	0.6	0.2	1.5	1.1	0.2	0.3	4.0
Uganda	0.8	0.3	2.0	1.4	0.3	0.4	5.4
Rwanda	1.0	0.3	2.5	1.8	0.3	0.5	6.8
Aggregate real exports							
Kenya	0.1	0.0	0.3	0.2	0.0	0.1	0.8
Tanzania	0.0	0.0	0.1	0.1	0.0	0.0	0.2
Uganda	0.0	0.0	-0.1	-0.1	0.0	0.0	-0.3
Rwanda	0.1	0.0	0.3	0.2	0.0	0.1	0.8

Source: Authors' own elaboration.

will depend on the overall quality of the transport infrastructure, and those living far from transport corridors will find it harder to seize opportunities arising from trade liberalisation and removal of NTBS. Similar considerations apply for producers wishing to access EAC markets. Moreover, there are constraints on producers protecting themselves from the negative shocks that liberalisation may bring. Staying with the previous example, cheaper imports may be good for domestic consumers but may represent a negative shock for competing domestic producers. In this case, the poorer the overall quality of the transport infrastructure, the more domestic producers would be protected from import competition.

In the first instance, the impact on poverty will be derived from trade-induced changes in prices and how these then affect producers and consumers. As discussed above, the extent of the impact will depend on the constraints on poverty alleviation. Following on from a related DFID project on regional integration and poverty in the EAC, Bottini et al. (2017) devise a preliminary version of the TPCI from a wide range of international sources that is designed to measure these constraints. It does so by creating an index that separately measures opportunities and shocks. Each version of the index has three dimensions in order to capture the fact that the impact on poverty will have direct effects through changes in prices (D1), medium-run effects arising from structural change (D2) and longer-run growth effects (D3).

Table 4 gives the summary results for the EAC countries across a range of years for which data were available. We give the results for the overall index (TPCI) and for the first dimension (D1). We focus on the first dimension because the greatest impact on poverty is likely to occur as a result of reductions in prices following the reductions in NTBs. In terms of index interpretation:

- **Opportunities:** The smaller the score on the index, the bigger the constraint and the harder it will be to seize the opportunities for any given process of trade liberalisation.
- **Shocks:** The smaller the score on the index the less likely it is that shocks (e.g. lower prices) will be transmitted to producers and consumers and the more likely it is that these will be protected from the negative shock. Hence, the bigger the score on the index the larger the negative impact on poverty.

Looking at the first dimension of the index (D1) and focusing first on the ability of the poor to seize opportunities (left columns), we see that the index score is consistently lowest for Burundi and is highest for Rwanda and Kenya. This suggests that there are greater opportunities for poverty alleviation arising from trade liberalisation in the latter countries than in the other EAC countries, especially Burundi. It is also interesting to note that in all countries these constraints are falling. This reduction is consistent with the fall in transport costs and times found by Eberhard-Ruiz and Calabrese (2017) and TMEA (2017). The converse applies when considering the ability of the poor to protect themselves from shocks. Here, we see that the shocks are likely to be bigger for Rwanda and Kenya, and in good part this draws on the same logic as earlier. For example, the better the quality of transport infrastructure, the more likely it is that the first-order shocks will be bigger.

Table 4: The Trade Poverty Constraint Index

		Opportunities			Shocks		
		2008	2011	2014	2008	2011	2014
Burundi	TPCI	33.2	37.4	35.9	15.9	18.8	19.3
	D1	16.9	21.9	25	29.2	36.8	41.1
Kenya	TPCI	42	44.7	47.9	21.6	24.7	28.1
	D1	24.8	34	39.3	43.3	53.6	59.6
Rwanda	TPCI	N/A	52.5	54.1	N/A	29.4	31.9
	D1	N/A	45.5	50.9	N/A	54.5	62.1
Tanzania	TPCI	39.9	42.6	43.4	22.2	22.3	23.2
	D1	22.5	30.9	29.8	41.8	46.1	46.3
Uganda	TPCI	39.2	44.2	42.5	21.8	23	22.5
	D1	23.1	33.3	32.3	43	44.6	43.5

Source: See Bottini et al. (2017)

To some degree, these trade-induced changes in prices as a result of NTB reductions can be seen in the simulated CGE results, which show, for example, quite marked changes in sugar prices across the EAC countries and reductions in cereals prices in all countries except for Uganda. Note, however, that the CGE results capture the longer-run effects taking into account changes in production, employment and wages across the EAC economies. From the poverty constraint perspective, these medium- and longer-run factors are captured in the overall TPCI, which is given in the first column for each country. Once again, it is Burundi where we see the biggest constraints on seizing the opportunities; conversely, though, the shocks may therefore be smaller.

Conclusions and policy recommendations

Trade and logistics costs limit the benefits of trade on the economies of the EAC. These barriers cost the EAC economies between 1.7% (Rwanda) and 2.8% (Kenya) of GDP and reduce the trade potential of the EAC when both the barriers affecting intra- and extra-regional trade are considered.

In addition, they have direct effects on households. Although employment effects may be small, a significant reduction in the transport and logistics NTBs may reduce the prices paid by the poorest. For example, the elimination of these barriers may reduce the consumer prices in Tanzania by almost 2% in sensitive products for unskilled workers such as textiles.

Based on an assessment of constraints affecting the capacity of households to seize the opportunities arising from trade and to protect themselves from any negative effects, the poor in Kenya and Rwanda are better equipped to benefit from the removal of NTBs but are also among those who could be more negatively affected.

However, the elimination of NTBs is expected to substantially change existing constraints. Consequently, the poor of Burundi or Uganda may see some of these constraints lifted. This will help them benefit from further future trade liberalisation.

Consequently, complementary policies should be designed and implemented to secure the protection of those negatively affected in both the countries that benefit directly from the reduction of NTBs and those where the reduction of NTBs will expose them to future shocks.

The improvement of road infrastructure in order to double travel speeds is expected to have the largest effects in terms of poverty reduction. However, it is very costly. Other policies can be adopted with larger effects relative to the investment made. In this sense, it appears that reducing border delays and the number of weighbridges are more accessible and rapid to implement.

References

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Endnotes

1   In order to make the data collection and analysis more efficient, the project focused exclusively on the transport and logistics NTBs reported in the EAC's regional monitoring system. Moreover, the project also sought to identify additional NTBs belonging to the similar category.

2   Weighbridges aim to reduce the deterioration of roads. Their complete elimination is unlikely and it may also not be recommendable. We cannot identify the optimal number of weighbridges. These results are indicative of the benefits for trade without considering the costs associated with damage to the road infrastructure.

3   Road user charges do not constitute an NTB, as they are applied uniformly to both domestic and foreign transport services. Their inclusion is just to complete the set of simulations and gauge the magnitude of their impact.