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NON-TARIFF BARRIERS IN EAC CUSTOMS UNION: IMPLICATIONS FOR TRADE BETWEEN UGANDA AND OTHER EAC COUNTRIES

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ABSTRACT

A key objective for the adoption of East African Community (EAC) Customs Union was to enhance economic gains through elimination of tariffs and non-tariff barriers (NTBs) within the member states. This study has established that several NTBs continue to exist, and some have persisted. The NTBs that have persisted for more than three years include a long list of customs documentation requirements, cumbersome formalities, and limited testing and certification arrangements. Other NTBs that still exist include: un-standardized weighbridges; several road blocks; lack of recognition of individual country's standards; and the existence of several un-harmonised standards.

The simulation results of spatial equilibrium model of maize trade with and without NTBs show that at the EAC level there are positive production, trade and welfare implications attributable to elimination of NTBs in intra-regional maize trade. The gains are greatest in trade and production in Uganda compared to Kenya and Tanzania. To eliminate the existing NTBs and to reduce the possibility of new ones being created, first and foremost, the EAC countries need to design effective mechanisms for identifying and verifying information about NTBs and ensuring their elimination. This will require giving the EAC Secretariat the mandate to compel individual countries to eliminate any identified NTB and to ensure that no new ones are created. Second, policy and legislative decisions made by, for example, Council of Ministers should be communicated in time for effective implementation.

Broadly, the Government of Uganda (GoU) needs to examine the trade barriers identified in this study and remove those that are internally instituted while working with the rest of the member states to remove those externally imposed. In the specific and medium term, standards should be harmonized and enforcement of compliance be transferred to one regional body, such as EAC Bureau of Standards. In the short run, the EAC countries should develop a mutual recognition of standards across member countries. Furthermore, EAC member states and other key stakeholders such as private sector associations need to launch public awareness campaigns to disseminate information about customs union and its economic opportunities. There is also a need for full commitment to the implementation of customs union protocol by all the member states**.**

Keywords: Non-tariff barriers, East African Community, Uganda

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ACRONYMS/ABBREVIATIONS

ASEAN	Association of Asian Nations
COMESA	Common Market for Eastern and Southern Africa
EABC	East African Business Council (EABC)
EAC	East African Community
EPRC	Economic Policy Research Centre
EU	European Community
MT	Metric Tonne
MTTI	Ministry of Tourism, Trade and Industry
NTB	Non-Tariff Barriers
NTM	Non-Tariff Measures
OECD	Organization of Economic Cooperation and Development
OTB	Other Trade Barriers
SADC	Southern Africa Development Community
SEM	Spatial Equilibrium Model
TB	Trade Barrier
UEPB	Uganda Export Promotion Board
UNCCI	Uganda National Chamber of Commerce and Industry
URA	Uganda Revenue Authority
US	United States
WTO	World Trade Organization

1.0 INTRODUCTION

Accelerated economic development through free trade has been one of the central drivers for economic integration. In East Africa, economic integration involving Uganda, Kenya and Tanzania was established in 1967, but collapsed in 1977. In 1993, the initiative was revived with the signing of a Declaration on Closer East African Cooperation. The overall objective of East African Community (EAC) is to develop policies and programmes aimed at widening and deepening cooperation among the Partner States in political, economic, social and cultural fields, research and technology, defence, security, and legal and judicial affairs for their benefits. Currently membership to EAC includes Uganda, Kenya, Tanzania, Burundi and Rwanda.

As part of the process of realizing full benefits of economic integration, in 2005 the EAC became a customs union, a free trade area with common external tariffs, but allowing member countries to use different import quotas. The main instrument for trade liberalization provided under the customs union is the elimination of tariffs and non-tariff barriers (NTB)[1], within the partner states in order to increase economic efficiency and create political and cultural relationships among the partner states.

Globally, tariffs have been declining as a result of multilateral, regional and bilateral trade liberalization. At the same time though, many countries have instituted alternative protectionist mechanisms, NTBs, which are ever changing and are threatening international free flow of goods and services.

Significant progress has been made in the EAC economic integration process. For example, the Community has succeeded in abolishing intra-community tariffs and adopting a Common External Tariff (CET). However, partner states may not realize the full trade and welfare benefits of a customs union in the presence of NTBs. Trade between the partner states is still being hampered by the existence of NTBs (Karugia *et al*. 2009), which is currently of concern to many countries including Uganda. This is happening in spite of the signing of the Customs Union Protocol in 2005 committing the EAC countries to eliminate

[1] Definition of non-tariff barriers is surveyed in section 3.0.

the NTBs. In the last ten years, media reports and trade publications have highlighted the issue of NTBs in East Africa and several studies have identified NTBs facing member states of the EAC (EABC, 2008; Ihiga, 2007; Mmasi and Ihiga, 2007; Tumuhimbise and Ihiga, 2007; World Bank, 2008; Osere, 2009; and Tralac.org, 2009).

In a study of Non-Tariff Measures (NTMs)[2] in EAC region, the World Bank (2008) found that the stock of the prevailing NTMs within EAC has been far from comprehensive and other measures identified as NTMs in the member states were not specific to regional or international trade and included national shortfalls in physical infrastructure, as well as supply constraints that affect the overall business environment for private enterprises. Thus information gap in the NTB inventory and an apparent uncertainty about the nature of NTBs require a status update. In addition, the dynamic nature of NTBs poses a policy formulation problem of contemporaneous nature, identity and impact of NTBs. These needed to be established.

To identify and eliminate NTBs, the EAC states have put in place national monitoring committees (NMC) and EAC regional forum and time-bound programmes for elimination of NTBs. Through the relevant national government institutions, such the Ministry of Tourism, Trade and Industry (MTTI) in the case of Uganda, the NMCs track the NTBs and prepare monthly reports on their status. These reports are presented to EAC Regional Forum and also disseminated to national stakeholders for information and action. The degree of the effectiveness of these mechanisms has not been fully assessed, and only limited attempt has been made to do it in this study. Further research is proposed for a detailed study on the effectiveness of the existing monitoring mechanisms for NTBs in the EAC region.

This paper provides insights into the NTBs associated with Uganda's exports to the EAC region. Specifically, the paper sought to:

- Identify NTBs facing Ugandan exports to the EAC member states and examine their dynamics;

[2] The distinction between NTB and NTM is surveyed in section 4.0.

- Establish why the existing NTBs continue to prevail and the extent to which the existing monitoring mechanisms have been effective;
- Examine the impact of non tariff barriers on Ugandan exports within the EAC; and
- Suggest hybrid strategies to eliminate the existing NTBs.

The findings of the study indicate that various NTBs face Uganda's exports to the EAC region. These are both domestic in nature, and include several non-standardized weighbridges and many internal road blocks, and the traditional NTBs such as sanitary and phytosanitary requirements. Significant NTBs found by the study include a long list of documentation requirements, cumbersome customs formalities, too many and unharmonised standards requirements, arbitrary use of Rules of Origin requirement, many weighbridges, several road blocks, burdensome testing and certification requirements, and limiting sanitary and phytosanitary requirements. Major trade barriers that have persisted over the last three to five years are cumbersome customs formalities and limiting testing and certification arrangements.

The simulation results of spatial equilibrium model of the East African maize trade with and without NTBs show that at the EAC level there are positive market (production and prices) as well as welfare changes attributable to elimination of NTBs in intra regional maize trade. Production, price and welfare changes are positive, showing gains in the EAC region arising from elimination of NTBs. The gains are greatest in trade compared to production and welfare especially for Uganda which has the highest maize production and trade gains as well as prices while Kenya and Tanzania are subject to production decline, trade losses and price decline.

Arising from these findings, it is evident that the existing frameworks for elimination of NTBs may not be effective as these NTBs continue to exist in spite of having in place the mechanisms for monitoring and eliminating them and time-bound programmes for their elimination. Therefore, going forward, one of the key steps is to take effective mechanisms for identifying and verifying information about NTBs and ensuring their elimination. This will require giving the EAC Secretariat the mandate to compel individual countries to eliminate

any identified NTB and to ensure that no new ones are created. Second, policy and legislative decisions made by, for example, Council of Ministers should be communicated in time for effective implementation. In the medium term, standards should be harmonized and enforcement of compliance be transferred to one regional body, such as EAC Bureau of Standards. In the short run, the EAC countries should develop a mutual recognition of standards across member countries.

With full involvement of the private sector associations and civil society organizations, the EAC Secretariat should intensify public awareness campaigns about customs union and its economic opportunities. Every effort should be made to reach out to the entire population of the EAC countries.

Government of Uganda (GoU) should remove those trade barriers that are internally instituted while working with the rest of the member states to remove those externally imposed. For example, the laws between the central and local governments of Uganda should be harmonized, so that they are mutually reinforcing.

Uganda Export Promotion Board (UEPB) should be strengthened to provide up-to-date market information to exporters.

Finally, the EAC countries should demonstrate full commitment to the implementation of customs union protocol by ensuring that NTBs such as several road blocks that continue to exist along the highways and interfere with trade are removed.

The rest of the paper is structured as follows: Section 2 presents a discussion on trade flows within EAC region. The review of related literature is presented in Section 3 prior to the methodology in Section 4. Section 5 presents and discusses the empirical results. Section 6 concludes with a highlight of the emerging policy implications.

2.0 TRADE FLOWS WITHIN THE EAC REGION

The analysis of trade flows within the EAC region provides the context within which to situate this NTB study. Uganda's trade with the EAC countries before and after customs union is presented in. As shown in the Table 1, Uganda's total value of exports and imports to the rest of the EAC countries has been rising, which indicates an increasing trade among the EAC countries. As further illustrated in Figures 1 - 4 in Appendix A, within the EAC region, Kenya is Uganda's main trading partner both in terms of the value of exports and imports. In 2004, Uganda's exports to Kenya amounted to US$76 million compared to the rest of the other EAC countries (a total for Tanzania, Rwanda and Burundi put together was only US$55 million). While Uganda exports to Kenya continued to increase several folds compared to exports to the other EAC countries, it rose by 140[3] percent in 2006 and 47 percent in 2008. Uganda's exports to Tanzania, Rwanda and Burundi continued to rise *albeit* from a low base.

In 2006, Uganda's exports value to Tanzania, Rwanda and Burundi was about US$111.3 million and to Kenya was US$185 million, indicating that compared to 2004, the proportion of Uganda's exports value to Tanzania, Rwanda and Burundi was less in 2006 compared to Uganda's exports to Kenya during the same period. However, the situation significantly changed in 2008 when Uganda's exports value to Kenya was US$273 million and to Tanzania, Rwanda and Burundi put together was US$325 million.

As can also be seen from Table1, over the period 2004 – 2008, Uganda's exports to the EAC has been rising, but Kenya still dominates the EAC export market although its share is declining. Also see Figure 3 in Appendix A. Uganda's share of exports to the EAC region was about 20 percent of total exports in 2004, it rose to 25 percent in 2006 and stagnated at 26 percent in 2007 and 2008. This, however, underpins the argument made earlier that in the last five years, Uganda has been trading more with the EAC countries, which rising trade value is partly attributed to the signing of the Customs Union Protocol in 2005.

[3] The figure for 2004 excludes informal exports

A similar scenario is depicted in the case of imports. Kenya continues to dominate Uganda's market compared to the rest of the other EAC countries, but the proportion is declining. In 2004, 96 percent of Uganda's imports from the EAC region were from Kenya while less than five percent were from Tanzania. However, trade between Tanzania and Uganda is growing appreciably. Imports from Rwanda and Burundi were negligible, but also growing in proportion. However, Uganda is importing more from the non-EAC regions compared to the EAC region, and this trend is growing (Table 1).

Comparing Uganda's exports to Kenya with imports from Kenya, the ratio has been rising from 20 percent in 2004, to 40 percent in 2006 and to 49 percent in 2008. This implies that the balance of trade between Kenya and Uganda is improving.

The relationship between increasing prevalence of NTBs and increasing trade flows among the EAC countries is, however, not apparent and could be contradictory. In theory, increased trade is positively associated with lower or zero tariffs and non-tariff barriers. In general, tariffs and NTBs lead to higher product price. The analysis above shows that while tariffs within the EAC region has been significantly reduced, non-tariff barriers still exist, and yet, trade within the EAC region is growing appreciably. This, perhaps, indicates that the NTBs are not effective in affecting trade within the EAC region, or traders are finding alternative ways of dealing with NTBs. It is also resulting into increased cross-border informal trade between Uganda and the rest of the EAC countries.

Table 1: Uganda's exports and imports to the rest of the EAC and Non-EAC countries ('000 US$)

Country	Exports				Imports		
	2004	**2006**	**2008**		**2004**	**2006**	**2008**
Kenya	76,903	184,884	272,510		399,198	464,846	551,954
Tanzania	12,155	35,267	87,899		15,779	32,964	61,364
Rwanda	24,683	55,571	192,141		637	1,182	4,044
Burundi	18,111	20,554	45,383		71	17	909
Total EAC	131,852	296,276	597,933		415,685	499,008	618,271
Non-EAC countries	533,238	896,924	2,475,267		1,310,443	2,138,893	3,985,729

Source: Uganda Bureau of Statistics, 2009; 2010

3.0 REVIEW OF LITERATURE

Interest in NTBs has gained considerable momentum recently. One school of thought argues that this follows the global move to eliminate tariffs and subsequent realization that many countries had adopted a wide variety of restrictive trade policy interventions that were nearly perfect substitutes for tariffs. On the other hand, it is argued that this could be due to NTBs just becoming more visible because of international scrutiny (Beghin and Bureau 2001).

While the debate about the origin of NTBs continues, there is also the question of what NTBs actually mean. In some literature, there is preference to use non-tariff measures (NTMs) in place of NTBs (World Bank 2008), perhaps to avoid the confusion surrounding the meaning of NTBs. Attempts have also been made to distinguish NTBs from other barriers to trade. In the first part of this literature survey (section 3.1), the various definitions of NTBs are presented to illuminate the various perspectives of this concept. Part two of the literature survey (section 3.3) presents identification of NTBs and related studies done with emphasis on EAC region.

3.1 Definitions of Non Tariff Barriers

The term 'Non-Tariff Barriers' apparently originated in connection with the recognition that tariffs were being replaced by restrictive trade policy and other interventions, now widely called NTBs. Many NTBs are often justified on four main reasons: (1) safeguarding health, safety, and security of human beings, animals and plants, and against environmental pollution; (2) safeguarding national security; (3) safeguarding revenue loss and (4) protecting home industries and consumers. The precautionary principle, or foresight planning, has recently been proposed as a justification for government restrictions on trade in the context of environmental and health concerns, often regardless of cost or scientific evidence. These measures only become genuine NTBs when they are implemented in such a manner as to unnecessarily add to costs of or inhibit trade, or are applied in an illegitimate manner (Beghin and Bureau 2001).

NTBs appear in the form of practices, rules, regulations, laws and policies that have negative impact on trade. The EAC has adopted a broad guideline to define NTBs as "quantitative restrictions and specific limitations that act as obstacles to trade." Most taxonomy of NTBs include market-specific trade and domestic policies such as import quotas, voluntary export restraints, restrictive state-trading interventions, export subsidies, countervailing duties, technical barriers to trade, sanitary and phytosanitary policies, rules of origin, and domestic content requirement schemes (Carbaugh 2004).

The following are annotated list of definitions of NTBs:

- NTB is any measure that impedes international trade other than tariffs (SADC 2006). Similarly, Baldwin (1970) defines NTBs as any measure (public or private) that causes internationally traded goods and services, or resources devoted to the production of these goods and services, to be allocated in such a way as to reduce potential real world income.
- An NTB is a restriction other than a tariff that leads to a decrease in world welfare (Mahé 1997).
- Any governmental device or practice other than a tariff which directly impedes the entry of imports into a country and which discriminates against imports, but does not apply with equal force on domestic production or distribution (Hillman 1991; Beghin and Bureau 2001). Similarly, Nakra (2006), defines NTBs as government laws, regulations, policies or practices that either protect domestic industry or products from foreign competition or artificially stimulate export of particular domestic products.
- NTBs refer to all barriers to trade that are not tariffs (OECD, 2001). Similarly, EU defines NTB as anything that is not a tariff or quota. See http://www.rieti.go.jp/en/events/bb1/09012201.html.
- NTBs are defined as instruments that are in violation of WTO law. This constitutes a legal definition of NTBs.
- NTBs are administered protection known as Non-Tariff Measures (NTM) - Quantitative restrictions, tariff quota, voluntary export restraints, orderly marketing

arrangements, export subsidy, export credit subsidy, import licensing, antidumping/countervailing duties, technical barriers to trade, etc (Mehta 2005).

- NTBS are measures, other than tariffs, that are tightly connected with state (administrative) activity and influence prices, quantity, structure and/or direction of international flows of goods and services, as well as resources used to produce these goods and services (Movchan and Eremenko 2003).
- NTBs are non-tariff measures that have a protectionist impact (SICE Foreign Trade Information System, 2009).
- NTBs include all measures, other than tariffs, that are used to protect domestic industry and discourage imports (Bajwa, 2000).
- NTBs mean measures other than tariffs which effectively prohibit or restrict import or export of products (ASEAN, 1995).
- NTBs are obstacles to imports (other than quotas or tariffs). An example is safety or construction and use regulations which favour domestic over imported products (UC Davis International Relations, 2001).
- Quantitative restrictions and specific limitations that acts as obstacles to trade" (Ihiga, 2007).
- NTB is defined as "any regulation of trade other than a tariff or other discretionary policy that restrict(s) international trade", for example export prohibitions; export quotas; export licensing; export duties and levies; and minimum export prices (Beghin and Bureau, 2001).

Given the history and evolution of NTBs, a criteria-based definition of an NTB emphasizing its legislative origin and objective(s) is presented in **Table 2**. An NTB is an import targeted public policy intervention intended to protect domestic industries, national health, safety and security. This definition is consistent with the WTO classification of NTBs, which consists of seven categories that include Government Participation in Trade, Customs and Administrative Entry Procedures, Technical Barriers to Trade, Sanitary and Phytosanitary Measures, Charges on Imports Specific Limitations and Other.

Table 2: WTO classification of NTBs

WTO Category	WTO Code	Description
Part I		**Government participation in trade**
	A	Government aids, including subsidies and tax benefits
	B	Countervailing duties
	C	Government procurement
	D	Restrictive practices tolerated by governments
	E	State trading, government monopoly practices, etc.
Part II		**Customs and administration entry procedures**
	A	Anti-dumping duties
	B	Customs valuation
	C	Customs classification
	D	Consular formalities and documentation
	E	Samples
	F	Rules of origin
	G	Customs formalities
	H	Import licensing
	I	Pre-shipment inspection
Part III		**Technical barriers to trade**
	A	General
	B	Technical regulations and standards
	C	Testing and certification arrangements
Part IV		**Sanitary and Phytosanitary Measures**
	A	General
	B	SPS measures including chemical residue limits, disease freedom, specified product treatment, etc.
	C	Testing, certification and other conformity assessment
Part V		**Specific Limitations**
	A	Quantitative restrictions
	B	Embargoes and other restrictions of similar effect
	C	Screen-time quotas and other mixing regulations
	D	Exchange controls
	E	Discrimination resulting from bilateral agreements
	F	Discriminatory sourcing
	G	Export restraints
	H	Measures to regulate domestic prices
	I	Tariff quotas
	J	Export taxes
	K	Requirements concerning marking, labelling and packaging
	L	Others
Part VI		**Charges on Imports**
	A	Prior import deposits
	B	Surcharges, port taxes, Statistical taxes, etc.
	C	Discriminatory film taxes, use taxes, etc.
	D	Discriminatory credit restrictions
	E	Border tax adjustments
Part VII		**Other**
	A	Intellectual property issues
	B	Safeguard measures, emergency actions
	C	Distribution constraints
	D	Business practices or restrictions in the market
	E	Other

The East African Business Council's (EABC) classification of NTBs consists of six categories as presented in Table 3. The first classification of the EABC is the same as Part II of the WTO

Classification and the third EABC classification is related to the Technical Barriers to Trade and Sanitary and Phytosanitary Measures of the WTO. Transiting procedures, Police road blocks and Business licensing and registration which are the last three categories of the EABC classification are not adequately reflected in the WTO Classification, making them rather peculiar to the EAC region.

Table 3: The East African Business Council of NTBs

#	Category
1	Customs documentation and administrative procedures
2	Immigration procedures
3	Quality inspection procedures
4	Transiting procedures
5	Police road blocks
6	Business licensing and registration

3.2 Adopted NTB Definition

The common features in many of the definitions of NTBs reviewed in section 3.1 are measures, restrictions, obstacles or restraints on exports of a country by the importing country. These interventions are either originated and/or practised by the government or private sector and have the effect of negatively influencing the level of trade, welfare, goods price and related aspects. The potential effect of NTBs makes them different from NTMs as NTMs may not necessarily lead to negative impact on trade and related outcomes, but some authors equate NTBs to NTMs. NTBs are NTMs but not all NTMs are NTBs. NTMs that eventually have restrictive implications on goods traded in the world market are NTBs, but such NTMs tend to be government actions.

In this report, NTB is defined as an import targeted public policy intervention intended to protect domestic industries, national health, safety and security, as well as revenue sources. It is, however, useful to note that this definition is restrictive as any other measure or practice not targeting import or not public policy is excluded. The definition views NTBs as the other side of tariffs. In this regard, this research has investigated other trade barriers - domestic and international and non-public policy trade barriers that have the potential to

increase the price or cost of exports, thereby affecting the demand and supply of goods, efficiency of operations and the welfare of the population. Such actions include delays at road blocks, at weighbridges, rent extraction, etc. Thus this approach constitutes an important addition to the literature on NTB study.

3.3 Identification of NTBs and Related Studies

In practice, the identification of an NTB is subjective as what appears as an NTB to one person is a legitimate activity to another (Tand 2003). However, there have been several approaches to NTB identification. These include notification, surveys (Fliess 2002; Wilson 2006); web based database (SADC 2006), meta analysis (Centre d'Etudes Economiques et Institutionnelles, 1999; 2002; PricewaterhouseCoopers 2001; EU Commission 2003; Dale et al. 2004; Fliess and Busquets 2006), complaints (Walkenhorst and Fliess 2003), submissions by countries, the GATT Trade Policy Review, WTO Trade Policy Reviews (Massimo 2002; Czaga and Fliess 2004; Fliess 2002); submissions by trade groups, the UNCTAD's Trade Analysis and Information System (TRAINS) database (ASEAN), Business surveys and records relating to trade disputes brought before the World Trade Organization (WTO) and regional settlement mechanisms (Fliess and Lejarraga 2005).

A survey of companies trading in Eastern and Southern Africa confirms that tariffs play a much less important role as a barrier to cross-border trade in Sub-Saharan Africa, than NTBs (Stahl, 2005). A report by the East African Business Council (EABC) ranked Kenya as the "worst offender when it comes to non-tariff barriers" (Xinhua, 2005; Tralac.org. 2009) and Ugandan exporters of dairy products to Kenya accusing "their bigger neighbour of imposing non-tariff trade barriers to block their produce from entering markets in Kenya and elsewhere" (Xinhua 2005; afrika.no., 2009; IPS/GIN 2009).

Other incidences of Kenyan NTBs include holding Uganda milk at the border for prolonged period (up to weeks), a-34 percent protein level requirement for full cream powder milk yet the protein levels for cow milk are in the range of 25 to 26 percent, harassment of Ugandan transporters, blocking Ugandan chicks and excessive customs and administrative entry (Wambi 2008), advocacy for policy reforms to eliminate non-tariff barriers (Xinhua 2005;

2007; State House, Kenya. 2008; TCCIA, 2009; Mbogo 2009), excessive number of roadblocks (47) between Mombasa and Ugandan eastern border entry points (Osere 2009).

A series of EAC trade studies (Ihiga 2007; Mmasi and Ihiga 2007; Tumuhimbise and Ihiga 2007) reported some major NTBs that included customs and administrative entry procedures barriers; sanitary and phytosanitary measures; technical barriers to trade, standards, inspection time spent, un-harmonized procedures for issuance of certification and other distribution related obstacles.

Arising from identification of NTBs, EAC time-bound programmes for their elimination have been prepared (EAC Secretariat 2009b). These include abolishing charges, corruption, discriminatory charges, landing fees, entry requirements; application of non-discriminatory excise duty regime, EAC Rules of Origin, WTO valuation rules; adherence to EAC Rules of Origin Criteria of 30 percent local value added; modernization including computerization of procedures to ensure faster clearance, systems interfacing, and weigh-in-motion systems. **Table 4** provides insight into some aspects of NTBs in selected countries.

A report by the East African Business Council (EABC) ranked Kenya as the "worst offender when it comes to non-tariff barriers" (Xinhua, 2005; Tralac.org. 2009) and Ugandan exporters of dairy products to Kenya accusing "their bigger neighbour of imposing non-tariff trade barriers to block their produce from entering markets in Kenya and elsewhere" (Xinhua 2005; afrika.no., 2009; IPS/GIN 2009).

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Table 4: Customs and trade regulations and days for exports and imports to clear at customs in selected counties

Country	**Exporters Reporting Severity of Trade and Customs Regulations Problems**	**Days for Exports and Imports to Clear Customs (Average)**	
	(%)	**Exports**	**Imports**
Africa	40.1	6.1	9.9
Ethiopia	44.0	5.6	14.7
Kenya	47.0	4.5	9.6
Mali	28.0	5.4	8.5
Mozambique	55.6	9.4	10.8
Senegal	37.9	6.4	7.3
Tanzania	41.2	11.7	18.5
Uganda	36.4	3.5	5.1
Zambia	30.7	2.2	4.8
Asia	27.9	3.8	5.4
China	32.3	5.4	7.5
India	16.9	0.5	1.3
Philippines	34.6	2.3	3.3

Source: Investment Climate Surveys cited in Clarke (2005, p.28)

In addition, the following measures have been instituted: harmonization of EAC standards, business registration and licensing procedures, methods for business names search and

payment of fees/charges, axle load, export/import documentation, implementation of community based systems to ensure information flow between ports and customs along corridors, one-stop documentation centres to speed up clearance of containerized cargo, mutual recognition of quality marks issued by Partner States National Standard Bureau, SPS certificates, and standards marks.

The effectiveness of such programmes has not been fully assessed, but from the findings of this study discussed in section 5, several NTBs continue to exist which casts doubt on the effectiveness of programmes that have been put in place to eliminate them in the EAC region.

A World Bank (2008) study on NTMs on Goods Trade in the EAC states identified several NTMs and classified them according to the WTO classification. Those identified fall under customs and administrative entry and passage procedures, government participation in trade and restrictive practices tolerated by it, distribution restrictions, specific limitations, technical barriers to trade, and sanitary and phytosanitary measures. In addition, other constraints on goods trade in EAC were also identified.

Low *et al*. (2009) observe that goods in Africa take 45 days to export and 59 days to import; typical regulations require 18 signatures to export and 28 to import compared to 3 signatures required to export from OECD countries; in Central Africa Republic, it requires 116 days and 45 signatures to export; Zambia requires the most documents to export and import – 16 and 19 respectively; DRC requires 80 signatures to import; it is estimated that a 10percent increase in transport cost may reduce trade volumes by more than 20percent; and in Cameroon, due to poor quality roads, a trip of 500 km can take up to 4 days.

A study of maize and beef trade in the EAC identified several NTBs, including payments (cess and excise duties, fees to local councils, trading and transport licenses), corruption at clearance points, especially road blocks and high transport costs, and numerous road blocks (Karugia *et al*. 2009). Other barriers identified include poor road infrastructure, discrimination and harassment, many regulatory requirements, non-uniform trade regulations, poor quality of maize and cumbersome administrative requirements.

In Karugia *et al.* (2009), the results of the spatial equilibrium model of the study of maize and beef trade in the EAC show definite market, trade and welfare effects. Market effects consist of changes in producer and consumer prices, as well as supply and demand quantities, trade effects are reflected in the levels and direction of commodity flows while welfare effects are indicated by changes in consumer and producer surpluses (In the beef industry, there were producer and consumer price increases in Tanzania and decreases in Kenya and Uganda, demand quantity increases in Kenya and Tanzania and a decrease in Uganda, as well as an increase in supply quantity in Tanzania and decreases in Kenya and Uganda). The trade effect was characterized by increases in Kenyan imports from Tanzania and Uganda but decrease in Tanzanian imports from Uganda and Uganda import from Tanzania. The welfare effect was an increase in consumer surplus in Kenya and Uganda but a decrease in Tanzania, decreases in producer surplus in Kenya and Uganda but an increase in Tanzania, increases in social surplus in all the three countries (Table 5).

Producer and consumer prices rose in Uganda but fell in Kenya and Tanzania; quantity demanded rose in Kenya, but declined in Tanzania and Uganda while quantity supplied fell in Kenya but rose in Tanzania and Uganda (Table 5).

The trade effects exhibited a decline in domestic maize supply in Kenya, increases in Kenyan imports from Tanzania and Uganda but decreases in Tanzanian exports to Uganda and Ugandan exports to Tanzania. The welfare effects were observed in increased consumer surplus in Kenya and decreases in Tanzania and Uganda, a decrease in producer price in Kenya but increases in Tanzania and Uganda while the social surplus increases in all the three countries.

In the beef industry, there were producer and consumer price increases in Tanzania and decreases in Kenya and Uganda, demand quantity increases in Kenya and Tanzania and a decrease in Uganda, as well as an increase in supply quantity in Tanzania and decreases in Kenya and Uganda. The trade effect was characterized by increases in Kenyan imports from Tanzania and Uganda but decrease in Tanzanian imports from Uganda and Uganda import from Tanzania. The welfare effect was an increase in consumer surplus in Kenya and Uganda

but a decrease in Tanzania, decreases in producer surplus in Kenya and Uganda but an increase in Tanzania, increases in social surplus in all the three countries.

Table 5: Impact of a complete elimination on NTBs, %

Maize	**Unit**	**Kenya**	**Uganda**	**Tanzania**
Producer price	($/MT)	-8.86	19.55	-34.59
Consumer price	($/MT)	-2.96	24.31	-4.79
Quantity demanded	('000)	3.61	-2.34	-1.56
Quantity supplied	('000)	-6.49	3.25	4.69
Quantity Traded	**('000)**			
Kenya		-3.69	0	0
Uganda		99.25	-5.4	0
Tanzania		33.72	0	-0.27
Consumer surplus	($)	7.43	-4.69	-0.6
Producer surplus	($)	-2.77	12.31	0.64
Social surplus	($)	4.66	7.62	0.04
Beef				
Producer price	($/MT)	-15.51	34.92	-14.95
Consumer price	($/MT)	-15.22	38.82	-15.41
Quantity demanded	('000)	19.3	-35.54	16.36
Quantity supplied	('000)	-19.66	12.65	-16.88
Quantity traded	**('000)**			
Kenya		0.19	0	0
Uganda		9.70	-1.8	19.23
Tanzania		1.50	0	-0.5
Consumer surplus	($)	1.51	-3.36	1.65
Producer surplus	($)	-0.18	6.46	-0.84
Social surplus	($	1.33	3.10	0.81
Total surplus	**($)**	0.09	0.56	0.11

Source: Karugia *et al.* (2009)

3.4 Experiences of other trade blocks with elimination/reduction of NTBs.

This section provides some experiences of other countries with elimination of NTBs. The ASEAN strategy involved establishing a modality for eliminating NTBs including harmonizing product standards and developing mutual recognition of standards across member countries. The general features of the process for eliminating NTBs consists of verification of information on NTBs, prioritization of products, developing specific work programme and obtaining a mandate from the ASEAN Economic Ministers to implement a work programme (ASEAN Secretariat, 2008).

In the European Union (EU), elimination of NTBs was the task of the common market programme. In 1985, the Community's White Paper identified NTBs and proposed 282 measures to be eliminated with a detailed timetable for completion by the end of 1992 (Sarfati 1998). Most of the proposals were adopted and became part of national laws of the various member countries. The programme for elimination of the NTBs abolished a series of technical, physical and fiscal barriers to regional trade through institution of single standards and regulation, the simplification of the fiscal structure and border related controls, and the institution of new rules for public procurement.

While the EU has significantly reduced NTBs, complete elimination has not been achieved. Ongoing activities for elimination of NTBs include a review of national NTBs reports, national procedures for inter-ministry co-operation on NTBs, exchange of information and views on a range of active NTB elimination programmes/projects and establishing a communication network between NTB focal points. Besides, there are ongoing negotiations and reforms as well measures to strengthen the process in various ways such as seeking support of political authorities to support for continued work on NTBs within the established, directed effort to continue and intensify the work to identify and eliminate NTBs in the region, establishing appropriate procedures for identifying and eliminating NTBs, and procedures to have high-level commitment and support and visibility.

The member states commitment to provide the framework for continued work on NTBs, meet a couple of times per year, otherwise communicating by telephone and e-mail, identify NTBs on a continuous basis, prepare the respective annual reports on NTBs,

consider the formation in each country of a national inter-ministry/agency communication network chaired by a high-level official from EU Secretariat.

Furthermore, the programme includes investment in One-Stop-Centres and electronic single window systems at border stations, review of port charges to international levels, political goodwill to facilitate cross-border movement of people while waiting for finalization of relevant protocol, mutually recognize inspection procedures, and inspection reports and certificates, clear guidelines for stopping commercial vehicles, a daily record of vehicles stopped, reasons and measures taken, joint verification of goods at border posts, infrastructure improvement, cancellation of transit bonds, investment in parking sheds and parking yards, lifting restrictions of truck haulage, expand working hours.

4.0 DATA AND METHODS

4.1 Data

Primary data and information on NTBs affecting Uganda's recent exports to the rest of EAC members were collected using structured questionnaires administered to customs and immigration officials in all the five EAC countries, exporters and truck drivers. Structured interviews were held with clearing agents and shipping lines, relevant government ministries, departments and agencies (MDAs) in Uganda, as well as trade associations using questionnaire and question guides. The list of respondents appears in appendix B. Due to the nature and complexity of NTBs and reliability of data on them, much of the data collected was qualitative.

In total, 119 respondents were interviewed and consulted as follows:

1. **Customs border posts purposively selected:** Four Uganda customs border posts (Malaba, Busia, Mutukula and Katuna), two Kenya customs border posts (Malaba and Busia) and one customs border post each in Tanzania, Rwanda and Burundi (Mutukula, Gatuna and Nemba respectively);
2. **Exporters** (30) all randomly selected from Uganda from a list obtained from the Uganda Export Promotion Board (UEPB);
3. **Truck drivers** (26) randomly selected from Kenya, Uganda, Tanzania and Rwanda, mainly at the border points visited;
4. **Trade Associations** (8) purposively selected from Uganda;
5. **Clearing Agents** (15) randomly selected from Malaba, Busia, and Mutukula border points;
6. **Shipping lines** (8) randomly selected from Malaba, Busia and Katuna border points; and
7. **Government institutions purposively selected:** 14 from Uganda and one each from Tanzania and Rwanda.

Different questionnaires were used for different sets of respondents. Data collected were on the characteristics, quantity, value, and transportation mode of exports. The study

assumed that there were no mandatory direct/indirect financial charges on all imports and exports. Additional information, financial charges and unrelated procedural practices were therefore viewed as NTBs to trade. It was not feasible to generate sampling frameworks for each of the targeted respondents due to difficulties associated with compiling such data. However, the number of respondents interviewed is considered large enough for the analysis done and inferences made.

Data used for dynamic analysis were obtained from secondary sources and survey. Data for estimation of spatial equilibrium model (SEM) were obtained from secondary sources: Maize demand and supply and price data for Kenya, Tanzania and Uganda were from the Regional Agricultural Trade Intelligence Network (RATIN), 2006, so were data on the regional transport costs of maize. Maize supply and demand elasticities for Kenya, Tanzania and Uganda were obtained from Karanja (2002), Cutts and Hassan (2003) and Sserunkuuma (2004) respectively.

4.2 Analytical method

Studies on NTBs have employed a variety of analytical methodologies. Ardakani et al. (2009) survey four measures for identifying NTBs and for estimating their impact: frequency and coverage type, price-comparison, quantity-impact and welfare-impact. Anne-Celia et al. (2007) provides a brief survey of different measures that have been suggested in the literature for identifying non-tariff barriers to trade and estimating their impact. They include: frequency and coverage indexes; quantity-impact, price-comparison, price effect using import demand elasticities. **Table 6** provides a selection of Empirical Models for NTB Impact Analysis.

Each of the models summarized in **Table 6** Ardakani et al. (2009) survey four measures for identifying NTBs and for estimating their impact: frequency and coverage type, price-comparison, quantity-impact and welfare-impact. Anne-Celia et al. (2007) provides a brief survey of different measures that have been suggested in the literature for identifying non-tariff barriers to trade and estimating their impact. They include: frequency and coverage

indexes; quantity-impact, price-comparison, price effect using import demand elasticities. **Table 6** has strengths and limitations (see Deardorff and Stern 1985; Beghin and Bureau, 2001 for details). Note that, internationally accepted quantification methodologies for NTBs can best be described as being in their formative stages, and relevant stakeholders will need to take a pragmatic approach on this issue. A further overview of some of the empirical approaches is instructive and is provided below.

Ardakani *et al.* (2009) survey four measures for identifying NTBs and for estimating their impact: frequency and coverage type, price-comparison, quantity-impact and welfare-impact. Anne-Celia *et al*. (2007) provides a brief survey of different measures that have been suggested in the literature for identifying non-tariff barriers to trade and estimating their impact. They include: frequency and coverage indexes; quantity-impact, price-comparison, price effect using import demand elasticities.

Table 6: A selection of empirical models for NTB analysis

#	Model Type	Authors
1	Cost-Benefit Analysis	James and Anderson, 1998; Orden and Romano, 1996; Rodriguez et al, 2000
2	Effective Protection	ASEAN; Sampson and Yeats, 1979
3	Game Theory	Deodhar et al., 2008
4	General Equilibrium Model	de Melo and Tarr, 1992; Deardorff and Stern, 1997; U.S. International Trade Commission, 1993
5	Gravity-Equation Techniques	Ardakani and Gilanpour, 2009; Otsuki et al. 2000
6	Inventory-Based Frequency Measures	UNCTAD, 2005
7	Partial Equilibrium Models	Lloyd, 1996
8	Price-Wedge Method	Calvin and Krissoff, 1998; Beghin and Bureau, 2001
9	Quota-Auction Price Measures	Butler and Neuhoff, 2005
10	Risk Assessment	Bigsby, 2001 ; Griffin, 2000
11	Spatial Equilibrium Models	Karugia et al, 2009; Devadoss et al 2005
12	Tariff Equivalent	Linkins and Arce, 1994

Source: Author's compilation

Beghin and Bureau (2001) and Deb (2006) provide a comprehensive review of the approaches used to assess the implication of NTBs on agricultural trade. They categorize the approaches into eight groups: the price-wedge method, inventory-based approaches, survey-based approaches, gravity-based approaches, risk-assessment-based cost-benefit measures, stylized microeconomic approaches, and the use of sectoral or multimarket models. The authors note that a single analytical method may not be adequate to quantify the cost of the entire spectrum of NTBs. Given the heterogeneous nature of NTBs, the authors concluded that a unifying methodology does not exist. Quantification of the effects of such measures has therefore focused on a particular product and has relied on methods that belong to different fields of economic literature.

Deb (2006) provides a more comprehensive review of the existing approaches to quantify the implications of NTBs. The approaches include those by Beghin and Bureau (2001) in addition to: (a) frequency-type measures; (b) quota-auction price measures; (c) tariff equivalent; (d) trade restrictiveness index (TRI); (e) effective protection; and (f) measure of equivalent of nominal rates of assistance.

In assessment of NTMs on goods trade in EAC, and identifying priorities for practical steps to reduce and eliminate them, the World Bank (2008) uses survey-based and descriptive approaches to analyze its findings. The EABC identifies the nature and extent of NTBs applied within the EAC using descriptive measures.

In the above reviewed methodologies, most of the approaches are for analysis of impact of NTBs/NTMs on trade and welfare. Those focusing on identification of NTBs/NTMs are frequency and coverage type measures, frequency and coverage indexes, and the descriptive approach. The frequency and coverage type measures and the frequency and coverage indexes have substantial similarities. However, as Anne-Celia *et al.* (2007) and Ardakani *et al.* (2009) argue, the frequency index or measure only accounts for the presence or absence of an NTB. The index/measure does not provide any information on the relative value of affected products, which may be established through the coverage index. Thus for purpose of identifying the presence or absence of an NTB, the frequency index/measure is sufficient and can be equated to the descriptive approach although they are not exactly the same in application.

In this study, the frequency index/measure or descriptive approach has been applied to identify NTBs facing Uganda's exports to the EAC member states. The descriptive analysis has been used to examine the dynamics of the non-tariff barriers and to establish the reasons why the existing NTBs continue to prevail. Given the history and evolution of non tariff barriers the dynamic analysis has been guided by the criteria-based definition of an NTB emphasizing its legislative origin and objective(s). The criteria are consistent with the WTO classification of NTBs.

For illustration purposes a single commodity[4] spatial equilibrium model has been specified and estimated to ascertain the effects of NTBs on production, trade and welfare. The spatial equilibrium model-base solution presupposes the existence of NTBs and the simulation solution reflects the effects of elimination of NTBs. In the model the NTBs are a component of the market clearing condition characterized by existence of transport and transaction

[4] Maize because it is a major food crop in the region, it is widely traded among the EAC states and data on it are readily available.

costs among others. The simulation assumes elimination of NTBs by a-15% reduction in the market clearing condition.

4.3 Spatial Equilibrium Model of Maize Trade in the EAC

This section presents the specification and estimation of a single-commodity multi-country spatial equilibrium model (SEM) to evaluate the effects of elimination of NTBs on production, trade and welfare in Kenya, Tanzania and Uganda. Rwanda and Burundi were not studies because they formally joined the community only in 2007. Following Mukwaya (2008) and (Takayama and Judge 1971), the spatial price equilibrium model is characterized by a price dependent regional market demand and supply functions as:

(1) $$y = D(p_i) = \alpha_i - \beta_i p_i, \quad x = S(p^i) = \theta_i + \gamma_i p^i$$

where, *i*, denotes country (*i = 1, 2, …, n*) p_i and p^i are the demand and supply prices, respectively, α_i and β_i are the parameters of the demand function, and θ_i and γ_i are the parameters of the supply function. Excess demand is the difference between the quantity demanded at price p_i and the quantity supplied at price p^i.

(2) $$E(p) = y - x = D(p_i) - S(p^i) = (\alpha_i - \beta_i p_i) - (\theta_i + \gamma_i p^i)$$

Suppose the area under (2) is the quasi welfare function defined as follows:

(3) $$W_i = \int_{p_i}^{\rho_i - w_i} d_i(p_i)dp_i - \int_{p^i}^{\rho_i + v_i} s_i(p^i)dp^i$$

(4) $$W_i = \int_{p_i}^{\rho_i - w_i} (\alpha_i - \beta_i p_i)dp_i - \int_{p_i}^{\rho_i + v_i} (\theta_i + \gamma_i p^i)dp^i$$

(5) $$W_i = K + \alpha_i(\rho_i - w_i) - \frac{1}{2}(\rho_i - w_i)\beta_i(\rho_i - w_i) - \theta_i(\rho^i + v_i) - \frac{1}{2}(\rho^i + v_i)\gamma_i(\rho^i + v_i)$$

p_i and p^i are the pre-trade equilibrium demand and supply prices, where $p_i = p^i$, $w_i \geq 0, \rho_i \geq 0$. The total welfare function over all countries is defined as:

(6) $$\sum_{i=1}^{n} W_i = K + \alpha'(\rho_y - w) - \frac{1}{2}(\rho_y - w)'\beta(\rho_y - w) - \theta'(\rho_x - v) - \frac{1}{2}(\rho_x + v)'\gamma(\rho_x + v)$$

The Lagrangean for the welfare function (6) is defined as:

(7) $$\phi(\rho, \xi_X) = \alpha'(\rho_y - w) - \frac{1}{2}(\rho_y - w)'\beta(\rho_y - w) - \theta'(\rho_x + v) - \frac{1}{2}(\rho_x + v)'\gamma(\rho_x + v) + \xi_X'(T - G'\begin{pmatrix}\rho_y \\ \rho_x\end{pmatrix}),$$

Where $\xi_X = (\xi_{11}\xi_{12}.....\xi_{1n}.....\xi_{n1}\xi_{n2}....\xi_{nn})'$.

The Kuhn-Tucker optimality conditions are:

(8a) $$\frac{\partial \phi}{\partial \rho_i} = \alpha_i - \beta_i(\rho_i - w_i) - \sum_j \xi_{ji} \leq 0 \quad \text{and} \quad \frac{\partial \phi}{\partial \rho_i}\rho_i = 0,$$

(8b) $$\frac{\partial \phi}{\partial \rho^i} = -(\theta_i + \gamma_i(\rho^i + v_i)) + \sum_j \xi_{ij} \leq 0 \text{ and } \frac{\partial \phi}{\partial \rho^i}\rho^i = 0,$$

(8c) $$\frac{\partial \phi}{\partial w_i} = -(\alpha_i - \beta_i(\rho_i - w_i)) \leq 0 \text{ and } \frac{\partial \phi}{\partial w_i} w_i = 0,$$

(8d) $$\frac{\partial \phi}{\partial v_i} = -(\theta_i + \gamma_i(\rho^i + v_i)) \leq 0 \text{ and } \frac{\partial \phi}{\partial v_i} v_i = 0,$$

(8e) $$\frac{\partial \phi}{\partial \xi_{ij}} = -\rho_j + \rho^i + t_{ij} \geq 0 \quad \text{and} \quad \frac{\partial \phi}{\partial \xi_{ij}}\xi_{ij} = 0.$$

By writing

$$y_i = \alpha_i - \beta_i(\rho_i - w_i)$$
$$x_i = \theta_i + \gamma_i(\rho^i + v_i), \qquad \text{for all } i.$$

We finally get

(9a) $y_i - \sum_j \xi_{ji} \le 0$ and $(y_i - \sum_j \xi_{ji})\rho_i = 0$,

(9b) $-x_i + \sum_j \xi_{ij} \le 0$ and $(-x_i + \sum_j \xi_{ij})\rho^i = 0$,

(9c) $-y_i \le 0$ or $y_i \ge 0$ and $y_i w_i = 0$

(9d) $-x_i \le 0$ or $x_i \ge 0$ and $x_i v_i = 0$

(9e) $\rho_j - \rho^i - t_{ij} \le 0$ and $(\rho_j - \rho^i - t_{ij})\xi_{ij} = 0$, for all i and j

The Lagrangean multipliers, ξ_{ij}, are interpreted as the inter-country commodity flows. Equation (9a) describes the optimal consumption condition, it states that when demand price, ρ_i, is positive, the difference between demand in country i and inter-country commodity flows to country i, $y_i - \sum_j \xi_{ji}$, is equal to zero.

Equation (9b) describes the optimal supply condition; it states that when supply price, ρ^i, is positive, the difference between supply in country i and inter-country commodity flows from country i, $-x_i + \sum_j \xi_{ij}$, is equal to zero.

Equation (9e) describes the spatial equilibrium condition; it states that when, ξ_{ij}, is positive, the difference between market demand and supply prices, $\rho_j - \rho^i$, is equal to the unit transportation cost, t_{ij}, and if, ξ_{ij} = 0, the difference between market demand and supply prices, $\rho_j - \rho^i$, is less than or equal to the transportation cost.

The transaction cost, ϕ_{ij}, between countries i and j is treated as exogenous, it is represented as a fraction of transport costs ($0 < \phi$).

The spatial equilibrium condition (9e) can be written as:

(10) $\rho_j - \rho^i - t_{ij}(1+\phi_{ij}) \le 0$ and $(\rho_j - \rho^i - t_{ij}(1+\phi_{ij}))\xi_{ij} = 0$.

The spatial equilibrium model was estimated using GAMS using notations in Appendix C. The results are presented in Section 5.

5.0 RESULTS AND DISCUSSION

5.1 Inventory of NTBs facing Uganda's Exports to the EAC Member States

Table 7 presents self explanatory inventory of NTBs across five EAC countries. As the Table 7 shows, while significant efforts have been made to reduce the documentation requirements at customs, the list of the documents required remains long, and may not even be exhaustive. The World Bank (2008) study identified most of these NTBs.

All the required documents are not obtained from one point, and in one case of the certificate of Rules of Origin, it was not clear who actually issues the certificate. Some respondents, when asked about who issues the certificate of Rules of Origin, said the certificate was issued by the Ministry of Tourism, Trade and Industry (MTTI); others said it was issued by the Uganda Export Promotion Board (UEPB), while some said it was issued by the Uganda Revenue Authority (URA).

Table 7 also shows a number of other NTBs, some of which are customs related, such as use of clearing agents to work with customs authorities of Uganda, Kenya, Rwanda and Tanzania. This presents another layer of bureaucracy, and, as was established during this study, office hours of the clearing agents and of customs authorities have not yet been harmonized. While some of the customs authorities in some border posts such as Katuna in Uganda and Gatuna in Rwanda work for 24 hours, clearing agents still work for less than 24 hours. Interviews with customs authorities also established that some of the clearing agents give false information about the value of goods, and this tends to stall the process of clearance of goods.

In addition to documentation requirements at customs, important NTBs include issues of vehicle registration and licensing, too many and un-harmonized standards, several road blocks, lack of facilities at border posts for carrying out tests, and extra charges imposed on imports from Uganda.

Like documentation requirements at customs, issues of vehicle registration and licensing, as well as standards feature prominently in all the EAC countries. Individual EAC countries have different licensing requirements which make use of say, Uganda registered vehicle, not easy

in Kenya. Road blocks appear as a major issue in Kenya and Tanzania compared to the rest of the EAC countries consistent with findings by Osere (2009) who reports excessive number of roadblocks (47) between Mombasa and Ugandan eastern border entry points.

Lack of facilities at border posts features prominently in Uganda, Tanzania and Burundi and issues of extra charges imposed on imports from Uganda were found to apply in Rwanda and Burundi. Standards requirements and road blocks are being justified as important barriers on account of health, safety and security reasons. Further discussions on this subject are provided in Section 5.3. However, it should be noted that whatever the regulation in terms of NTBs and their justification, they have implications on trade, some of which are negative.

Table 8 presents the inventory of other trade barriers (OTBs) other than NTBs. Like the NTBs, the list of the OTBs is equally long. Important ones include immigration requirements and issues, length of time spent at customs, police road blocks, weighbridges, lack of power, internet failures and a host of other barriers. In many OTBs studies, these barriers are reported as NTBs (EABC 2008; Karugia *et al.* 2009). Most of the OTBs appear in all the five EAC countries. Immigration procedures are not viewed as a barrier in Uganda though, but in the rest of EAC countries. Police road blocks are not issues in Uganda, Rwanda and Burundi. But there are several OTBs that are present in Uganda and Kenya and not in the rest of the EAC countries. These are limited office and parking space for trucks, existence of powerful lobby groups that engineer introduction of trade barriers or resist their elimination, high cost of doing business and weak monitoring systems. See Table **8** for a comprehensive list of these barriers.

Table 7: Non-Tariff Barriers Facing Uganda's Exports to EAC Countries

Non-Tariff Barriers (NTBs) (Import Targeted and not Necessarily Legislative)	Uganda	Kenya	Tanzania	Rwanda	Burundi
Documentation Requirements at Customs for Export of Ugandan Goods: i. Parking List and Invoice ii. Weighbridge iii. Certificate of Rules of Origin; Some not Recognized by Other Countries and interstate or international livestock movement permit is issued only by headquarters of the relevant ministries iv. Sector Specific and Trade Certificates e.g. Phytosanitary Certificate v. Entry Form and Delivery Note vi. Bill of Lading vii. Import Declaration Form from the Importing Country	√[5]	√	√	√	√
Use of Clearing Agents : Burundi does not require clearing agents, some of whom give false information to customs authorities.	√	√	√	√	
Vehicle Registration and Licensing: • Kenya gives three separate categories of licences for trucks • Trucks have to return to Mombasa empty and those licensed to carry transit goods do not carry goods destined to Kenya	√	√			
Standards: • National standards not recognized by other countries • Many standards; some un-harmonized • Some goods do not/said not to meet required standards; • Inspection capacity of national standards bureaus is limited and focuses on finding faults • Standards/codes for some goods are not available • Quality control is weak in Uganda e.g. No animal feed policy, regulation and compliance • Lack of equipment for testing and examination at the border	√	√	√	√	√
Road Blocks Mounted By local governments (District and Town Councils) in Uganda, association of security providers and sector ministries in Uganda	√				
Customs officials focus on revenue collection and not trade promotion	√	√	√	√	√

[5] √ means the NTB is present in the country under which the tick appears.

Non-Tariff Barriers (NTBs) (Import Targeted and not Necessarily Legislative)	Uganda	Kenya	Tanzania	Rwanda	Burundi
EAC certificates are not recognized by some member countries	√	√	√	√	√
Long list of sensitive /restricted goods	√				
Too many agencies interested in trade, and sometimes not coordinated	√	√	√	√	√
Non-uniform working hours e.g. between countries, customs and clearing agents	√	√	√	√	√
Taxes and Subsidies: **Rwanda:** consumption tax, warehouse tax, withholding tax, VAT and subsidies **Burundi:** pre-inspection charges				√	√
Payment for COMESA certificates or certificate of origin: Uganda: UShs 5,000 and Tanzania: TShs 200,000	√		√		
Lengthy and time consuming registration and licensing processes	√	√	√	√	√
Quotas imposed in Tanzania			√		
Road user fee charged by all the EAC countries	√	√	√	√	√
Goods of 1 million Rwanda Francs or less are cleared at Gatuna. The rest at Kigali				√	
Business visa and requirement for yellow fever vaccination in Tanzania			√		
Overlap in trading blocs e.g. EAC, COMESA and SADC	√	√	√	√	√

Source: EPRC NTB Study March/April, 2010.

Table 8: Other trade barriers facing Uganda's exports to EAC countries

Other Trade Barriers (OTBs) (Not Import Targeted and not Necessarily Legislative)	Uganda	Kenya	Tanzania	Rwanda	Burundi
Immigration Requirements: • Valid travel documents • Filling exit/entry forms at crowded places. In Rwanda, exit/entry points are different places done to ease entry/exit. • Regular travellers having their passports stamped frequently		√	√	√	√
Long time Spent for Customs Clearance: • In Uganda, trucks have to be spotted and recorded in a book before clearance • In Kenya, release of goods is done in Nairobi and clearance process is lengthy • Goods may be off-loaded and re-loaded at the border at the cost of exporters • Administrative procedures take between 3-24 hours especially where manual system is used. • Many check points at Busia border post	√	√	√	√	√
Road Blocks • Police Road Blocks Can be up to 40 Between Malaba and Mombasa; Several Between Mutukula and Dar es Salaam		√	√		

Other Trade Barriers (OTBs) (Not Import Targeted and not Necessarily Legislative)	Uganda	Kenya	Tanzania	Rwanda	Burundi
• Police, Revenue Authority and Isolated Harassment of drivers					
Weighbridges/Axle Load: • Many, un-standardized and intra-country and inter-countries • Bribery/corruption at weighbridges • Takes time especially during peak hours due to jams	√	√	√		
Internet Failures at all Border Points Visited Except Nemba (Rwanda/Burundi) which is not computerized	√	√	√	√	√
Lack of interface in software systems, limiting information sharing	√	√	√	√	√
Power Failure/Lack of it		√	√		√
Language: Some drivers know only Swahili; do not know how to read and write, causing delays at customs, immigration and weighbridges.	√	√	√	√	√
Limited public awareness, including by exporters	√	√	√	√	√
Limited office space e.g. at Katuna border post. No shelter for travellers. Inadequate and expensive parking space for trucks	√	√			
Customs staff not available in offices sometimes	√				
Traffic jams of up to 10KMs in Malaba and Busia					
Staff integrity/Corruption e.g. bribery at border posts and along the way: Cases of paying UShs10,000 and KShs4,000 were cited.	√	√			
Powerful lobby groups e.g. ministers and business persons	√	√			
Lack of Security in Kenya and where drivers park on the way		√			
Manpower gap at Uganda Revenue Authority (Malaba)	√				
Delays at the airport for perishables	√				
Poor infrastructure – roads, railways, energy, etc	√	√	√	√	√
High price of inputs e.g. for timber	√				
Fluctuations and unpredictability in exchange rates in Uganda	√				
Weak monitoring mechanism to ensure exported goods are not sold in the exporting country's local market	√				
Delays in communication of policy to implementers			√		
Lack of computerization due to lack of power – Tanzania and Burundi			√		√
Delays caused by drivers.	√	√		√	
Deliberate delays in issuing import permits. In Tanzania, M/S Samona Products paid USD500 for every product plus all other fees, but permit not issued.			√		
Third party insurance requirement				√	

Source: EPRC NTB Study March/April, 2010.

5.2 The Dynamics of Trade Barriers (TBs)

This section presents and discusses the stock of TBs in general, including NTBs and their dynamics over the period 2006-2010. The TBs for 2006, 2007, 2008 and 2009 were identified through literature review. TBs for 2010 were identified through this study. While these approaches may not have identified all the TBs that existed, it gives indication of which TBs could have existed in particular periods. To ease the analysis, the TBs were classified according to the WTO classification. However, following this approach somehow narrows TBs analysis to specific categories. Nevertheless, it is an important addition to the literature.

TBs that have also been a constant feature throughout the period of analysis fall under the category of others and they include visa and yellow fever requirements, local authority check points, revenue authority check points, sector ministries check points, fee charged for each truck entering another country, too many agencies involved in trade activities, payment for COMESA certificates, and registration, licensing and issuance of import permits. This, however, does not mean that all these barriers were present for the entire period of analysis, 2006 to 2010. But all existed at the time of the fieldwork for this study.

Table 9 shows that government aids, including subsidies and tax benefits were present in 2008 and 2010; state trading, government monopoly practices, etc. existed in 2007 and 2008; customs valuation and classification existed in 2006; picking samples for testing was a feature of 2008; Rules of Origin was not cited in 2007; while customs formalities have been a constant feature for the entire period of analysis i.e. from 2006 to 2010.

TBs that have also been a constant feature throughout the period of analysis fall under the category of others and they include visa and yellow fever requirements, local authority check points, revenue authority check points, sector ministries check points, fee charged for each truck entering another country, too many agencies involved in trade activities, payment for COMESA certificates, and registration, licensing and issuance of import permits. This, however, does not mean that all these barriers were present for the entire period of analysis, 2006 to 2010. But all existed at the time of the fieldwork for this study.

Table 9: Dynamics analysis of trade barriers, 2006-2010

Trade barrier	2006	2007	2008	2009	2010*
Part I: Government Participation in Trade					
Government aids, including subsidies and tax benefits (Rwanda reported to offer subsidies to some exporters from Uganda)			✓		✓
State Trading, Government Monopoly Practices, etc.		✓	✓		
Part II: Customs and Administrative Entry Procedures					
Customs valuation (TISCAN the inspection company for Tanzania Revenue Authority has to get approval from a company in South Africa; unloading for physical valuation at exporters expense)	✓				
Customs Classification (malfunctioning customs reform modernization programme, too many documents, some goods do not have codes)	✓				
Samples (inefficiency and limited capacity for inspection)			✓		
Rules of Origin (and non-recognition or arbitrarily used))	✓		✓	✓	✓
Customs Formalities (limited and non-harmonised office hours, too many customs documentations (some complex) and procedures, delays, limitations of SIMBA, Lack of software interface, ASYCUDA not available, assessment of degree of risk and classification under ASYCUDA system, goods without codes, customs insurance bond on transit goods, bureaucracy in clearance, high cost of clearance and payment of demurrages, requirement to use clearing agents in some countries and not others. E.g. clearing agents not required in Burundi, some processes are still manual, clearance of goods at capital city)	✓	✓	✓	✓	✓
Import licensing (Import licenses and permits)	✓				✓
Pre-Shipment Inspection (Destination inspection on dutiable quantity, costly and cumbersome procedures) pre-inspection charge of 5% of export value in Rwanda	✓				✓
Part III: Technical Barriers to Trade					
General: some goods do not have standards, limited inspection capacity, high cost of inspection,					✓
Technical Regulations and Standards (Scientific analysis by SGS of selected goods to Kenya)	✓				✓
Testing and Certification Arrangements (Too many and non-harmonized standards, some not recognized due to lack of trust, too many agencies involved and not coordinated, some of the agencies are located in Nairobi, Kampala, Dar Es Salaam, high cost of off-loading and loading)	✓		✓	✓	✓
Part IV: Sanitary and Phytosanitary Measures					
General: weak quality control and lack of equipment for examination at the border					✓
SPS Measures including Chemical Residue Limits, Disease Freedom,					✓

Trade barrier	2006	2007	2008	2009	2010*
Specified Product Treatment, etc.					
Testing, Certification and Other Conformity Assessment – Information Asymmetry					✓
Part V: Specific Limitations					
Quantitative Restrictions e.g. ban on milk products in Kenya and restriction of one day old chicks in Kenya and samona products in Tanzania, list of sensitive goods, quotas, etc				✓	✓
Export Taxes (disparate tax rates or double taxation applied, and fuel tax)	✓				✓
Requirements Concerning Marking, Labelling and Packaging		✓	✓		
Others (cumbersome procedures for clearance of travel documents, delays in business registration and licensing, limited bonded warehouse storage capacity and operation, requirement for EAC passport, high entry fees, poor administration of bonds, poor facilities at some immigration points, withholding tax, lack of recognition of EAC certificates)	✓	✓			✓
Part VI : Charges on Imports					
Prior import deposits (import declaration fees)	✓				✓
Surcharges, Port Taxes, Statistical Taxes, etc. Payment of Fees and Multiple charges (consumption tax, warehouse tax, withholding tax and VAT)	✓				
Discriminatory film taxes, use of taxes, etc.	✓				
Part VII: Others					
Intellectual property issues (work permit required)	✓		✓		
Distribution Constraints (poor physical and other infrastructure e.g. power, road user fee)		✓		✓	✓
Business Practices or Restrictions in the Market (procedures and requirements for business registration, business licenses and certificates)		✓	✓		
Others (visa and yellow fever requirements, local authority check points, revenue authority check points, sector ministries check points, etc, fee charged for each truck entering another country, too many agencies involved in trade activities, payment for COMESA certificates, registration and licensing and issuance of import permits)	✓	✓	✓	✓	✓

Note: * data shown for 2010 derived from the Research Team's field visits.

Source: Karugia, et al., 2009; EAC Secretariat, 2009a; EABC, 2008; World Bank, 2008; Mmasi and Ihiga, 2007; Tumuhimbise and Ihiga, 2007; Ihiga, 2007; Nakra, 2006.

Technical Barriers to Trade (testing and certification arrangements) has been a constant feature of TB throughout the period of analysis except in 2007. The same applies to distribution constraints (poor physical and other infrastructure e.g. power, road user fee) which, has persisted for the last three or more years. Added to these are a number of other TBs as shown in Table 5.3 which continue to exist and by extension could be having negative implication on free trade. Their elimination would improve trade benefits although this has to be examined in the context of the dangers they could pose especially to health, safety and security. Section 5.3 explains why some of these TBs have persisted over the years in spite of establishment of National Monitoring Committees (NMCs) and EAC regional forum, suggesting that these mechanisms have not been effective in eliminating some of the existing NTBs and curtailing new ones from emerging.

5.3 Reasons Explaining Continued Prevalence of Identified Trade Barriers

Section 5.2 presents and examines the dynamics of trade barriers (TBs). A number of TBs did not only exist as of March/April, 2010 when this survey was conducted, they have also persisted for more than 2-3 years. Grouped by WTO classification, as of March/April, 2010, there were 15 TBs, four of which have persisted for the last three years from 2008 (Table 10).

While it was definitely going to be difficult to establish reasons why TBs exist due to their fluid nature, nevertheless the respondents were asked why some of the TBs exist and why some have actually persisted. The reasons given were: (i) national sovereignty, (ii) existence of powerful lobby groups, (iii) health, safety and security, (iv) time-lag in communication and implementation of pronounced policies and legislations, (v) time-lag in review of legislations, (vi) limited public awareness, and (vii) institutional resistance as a result of the bureaucratic nature of civil service, and the mentality of civil servants built over a long period of time.

Table 10: NTBs existing a by March/April 2010 based on WTO classification

NTBs Existing as by March/April, 2010 as per WTO Classification	2010	2009	2008
1. Government aids, including subsidies and tax benefits, state trading, government monopoly practices, etc.	✓		
2. Rules of Origin	✓	✓	✓
3. Customs Formalities	✓	✓	✓
4. Import Licensing	✓		
5. Pre-shipment Inspection	✓		
6. Technical Barriers to Trade (General)	✓		
7. Technical Barriers to Trade (Testing and Certification Arrangements)	✓	✓	✓
8. Technical Barriers to Trade (Technical Regulations and Standards)	✓		
9. Sanitary and Phytosanitary (General)	✓		
10. Sanitary and Phytosanitary (SPS measures including chemical residue limits, disease freedom, specified product treatment, etc.)	✓		
11. Sanitary and Phytosanitary (Testing, Certification and Other Conformity Assessment – information asymmetry)	✓		
12. Specific limitations such as quantitative restrictions, export taxes and other specific limitations	✓	✓	
13. Import declaration fees	✓		
14. Distribution constraints (poor physical and other infrastructure e.g. power, road user fee)	✓	✓	
15. Other NTBS include visa and yellow fever requirements, local authority check points, revenue authority check points, sector ministries check points, fee charged for each truck entering another country, too many agencies involved in trade activities, payment for COMESA certificates, registration and licensing and issuance of import permits.	✓	✓	✓

Source: EPRC NTB Study March/April, 2010

5.4 Simulation Results of Spatial Equilibrium Model of the East African Maize Trade with and without Non Tariff Barriers

The simulation results of the spatial equilibrium model of the East African maize trade show market, trade and welfare effects of elimination of NTBs in the East African maize industry. At the EAC level, there are positive markets (production and prices) as well as welfare changes attributable to elimination of non tariff barriers in intra regional maize trade (Table 11). Production in volume and value, trade in volume and value, and price and welfare changes are positive, showing gains in the EAC region arising from elimination of NTBs. The gains are greatest in trade compared to production and welfare. However, the market effects of NTBs elimination are not uniformly distributed across countries. Uganda has the

highest maize production and trade gains as well as prices (column 4) while Kenya and Tanzania are subject to production and trade losses and price declines (columns 2 and 3).

The main reason for Uganda's gains from the elimination of NTBs on maize is due to her comparative advantage in the production and trade in maize compared to Kenya and Tanzania. Uganda has more suitable soils and the rain seasons favour maize growing more than once in a year. There is a significant informal cross-border trade between Uganda and Kenya and Uganda and Tanzania. In 2005, the value of Uganda's informal export to Kenya amounted to US$107 million to Tanzania amounted to US$2.8 million and to Rwanda amounted to US$7.3 million. While the value of Uganda's informal exports to these countries declined in 2006 and 2007, it increased in 2008 to US$107.9 million to Kenya, US$57.4 million to Tanzania and US$55.2 million to Rwanda (UBoS 2010). While disaggregated figures on individual exports have not been obtained, maize accounts for a substantial portion of the informal cross-border trade between Uganda and Kenya and between Uganda and Tanzania.

Table 11: Simulation results of spatial equilibrium model of the EA maize trade with or without NTBs

Effects of NTB Elimination on:	Kenya	Tanzania	Uganda	EAC
Production				
Quantity (Tons)	-0.17	-0.07	2.54	0.11
Value (US$)	-0.64	-0.65	10.44	1.79
Trade				
Quantity (Tons)		-26.67	12.03	9.52
Value (US$)		-25.12	11.84	8.03
Prices (US$/Ton)	-0.48	-0.59	7.67	1.68
Welfare (US$)				3.00

Source: Author's analysis based on the field data, Mar/Apr 2010

6.0 CONCLUSION AND POLICY IMPLICATIONS

The results of this study indicate that, broadly defined, various trade barriers, some of which are NTBs face Uganda's exports to the EAC region. These are both domestic in nature such as weighbridges and internal road blocks, and externally imposed, such as sanitary and phytosanitary requirements. Narrowly defined as an import targeted public policy intervention intended to protect domestic industries, national health, safety and security as well as revenue sources, the range and nature of NTBs are restricted. Even with this narrow definition, there exists a long list of NTBs facing Uganda's export to the EAC region. Significant ones include a long list of documentation requirements, varying systems of customs formalities, many and non-harmonized standards requirements and arbitrary use of rules of origin; some of these trade related barriers have persisted over the last three to five years.

Some of these regulations or NTBs, while justified on the basis of health, safety and security, among others, have implications on production, consumption, economic efficiency and trade flows. The simulation results of spatial equilibrium model of the East African maize trade with and without NTBs show that at the EAC level there are positive market (production and prices) as well as welfare changes attributable to elimination of NTBs in intra regional maize trade. Production, price and welfare changes are positive, showing gains in the EAC region arising from elimination of NTBs. The gains are greatest in trade compared to production and welfare. However, the market effects of NTBs elimination are not uniformly distributed across countries. Uganda has the highest maize production and trade gains as well as prices while Kenya and Tanzania are subject to production and trade losses and price declines. The main reason why Uganda gains most from the elimination of NTBs on maize is because it has a comparative advantage in the production and trade in maize compared to Kenya and Tanzania. The volume of cross-border trade between Uganda and Kenya and Uganda and Tanzania indicates that Uganda dominates in the informal export of maize in the three EAC countries.

6.1 Policy implications

NTBs are escalating partly due to lags in policy and legislative implementation. Therefore, going forward, one of the key steps to take is to design effective mechanisms for identifying and verifying information about NTBs, and prioritising and ensuring their elimination. This

will require giving the EAC Secretariat the mandate to compel individual countries to eliminate any identified NTB and to ensure that no new ones are created. In addition, it will require transparency in information gathering and sharing, as well as commitment and willingness to eliminate the NTBs. Second, policy and legislative decisions made by, for example, Council of Ministers should be communicated in time for effective implementation. In the medium term, standards should be harmonized and enforcement of compliance be transferred to one regional body, such as EAC Bureau of Standards. In the short run, the EAC countries should develop a mutual recognition of standards across member countries.

The results of the study indicate that the general public are not fully aware and involved in the process of EAC integration. The EAC states with full involvement of the private sector associations and civil society organizations should intensify public awareness campaigns about customs union and its economic opportunities. Every effort should be made to reach out to the entire population of the EAC countries;

As the results of the study have shown, removal of NTBs has significant rewarding impact for Uganda. The Government of Uganda, therefore, needs to examine the trade barriers identified in this study and remove those that are internally instituted while working with the rest of the member states to remove those externally imposed. For example, the laws between the central and local governments in Uganda should be harmonized so that they are mutually reinforcing. An example is zero tax rates on exports by the central government, but in an attempt to raise revenue at local government level, taxes are imposed on exports.

Uganda Export Promotion Board (UEPB) should be strengthened to provide up-to-date market information to exporters. Finally, the EAC countries should demonstrate full commitment to the implementation of customs union protocol by ensuring that NTBs such as several road blocks that continue to exist along the highways and interfere with trade are removed.

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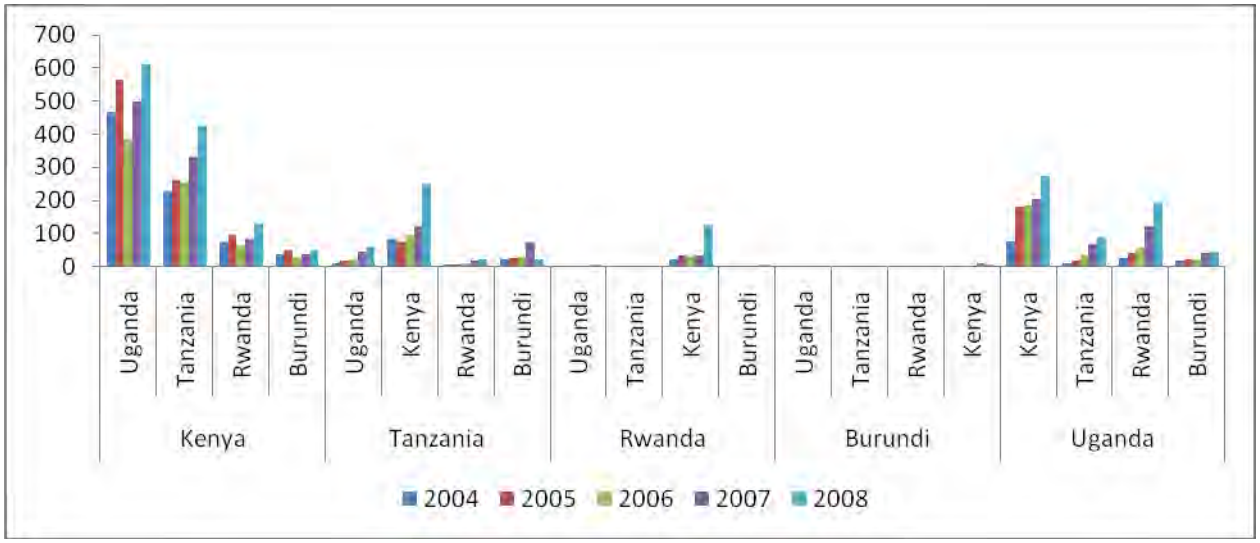
APPENDICES

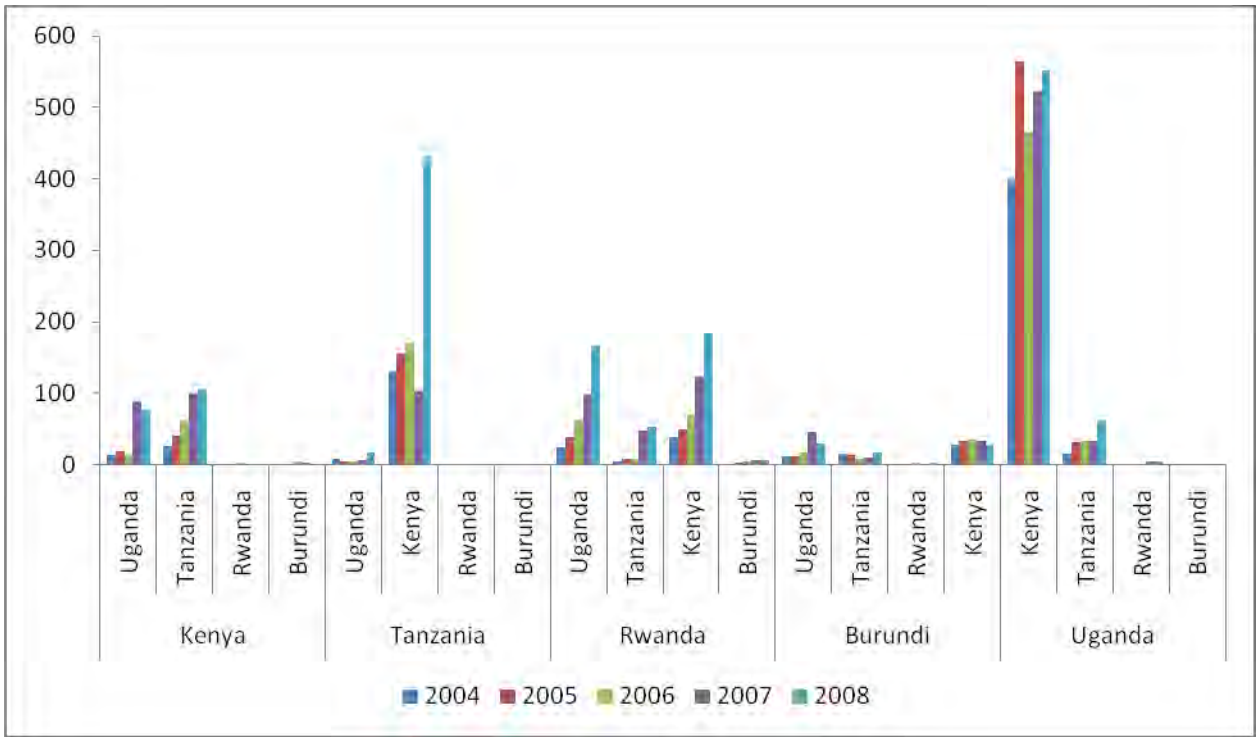
Appendix A:

Figure 1:Bilateral export trade within the EAC, 2004 – 2008 (US$ million)



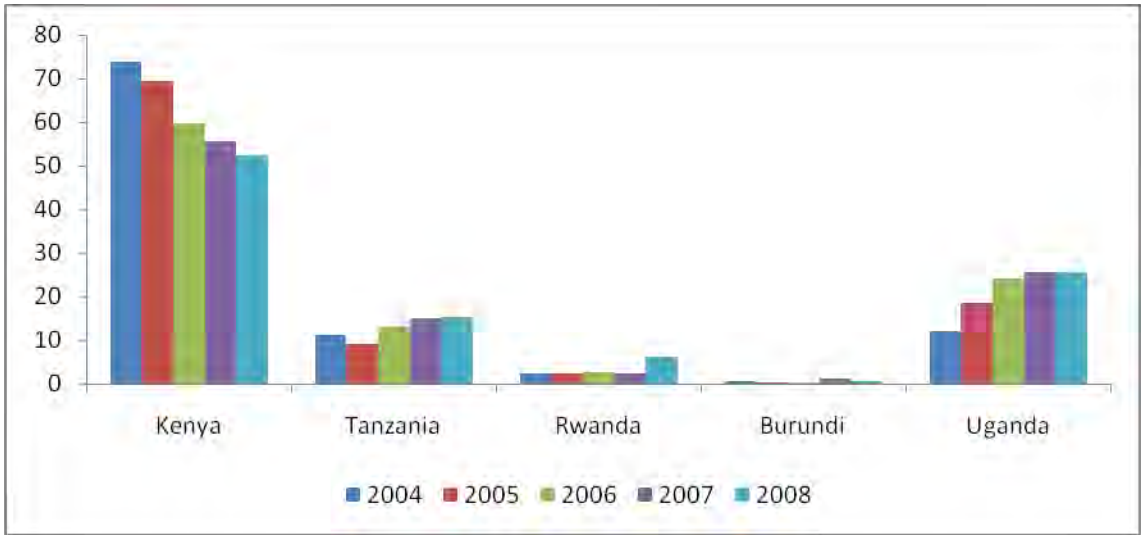
Source: UBoS, 2009

Figure 2:Bilateral import trade within the EAC, 2004 – 2008 (US$ million)



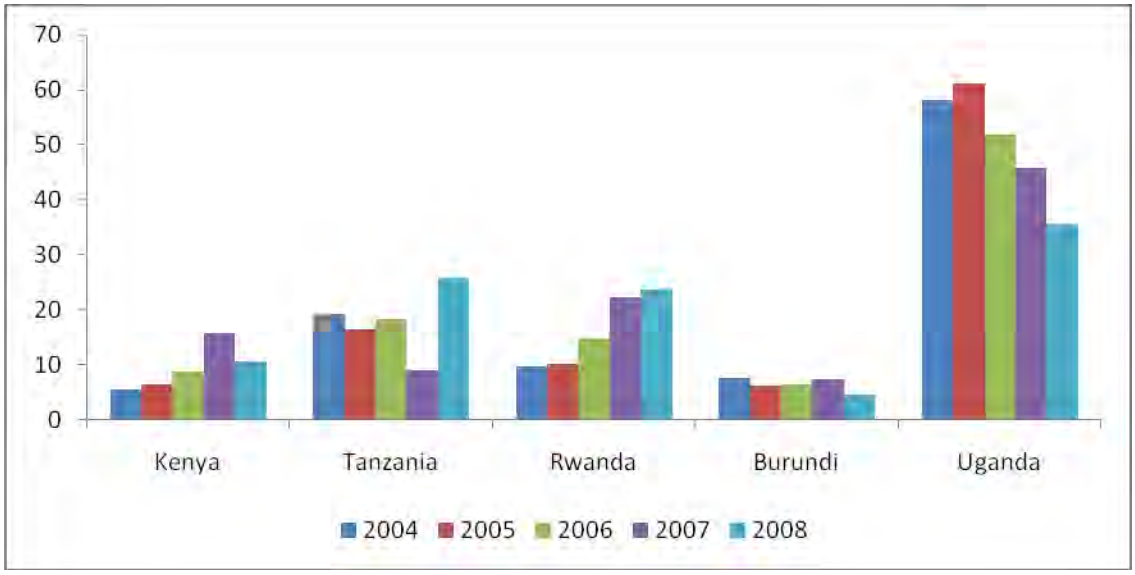
Source: UBoS, 2009

Figure 3:Export shares of total EAC export trade, 2004 – 2008 (%)



Source: UBoS, 2009

Figure 4:Import shares of total EAC import trade, 2004 – 2008 (%)



Source: UBoS, 2009

Appendix B: Respondents Interview during fieldwork

- Truck drivers: 26
- Exporters: 30
- Trade Associations: 8
- Clearing Agents: 15
- Shipping company: 8
- Uganda Revenue Authority: Malaba, Busia, Mutukula and Katuna and H/Q :5
- Uganda Investment Authority: 1
- Uganda Export Promotion Board: 1
- Bank of Uganda: 1
- Uganda National Bureau of Standards: 1
- Uganda Bureau of Statistics: 1
- Ministry of Tourism, Trade and Industry: 1
- Ministry of Finance, Planning and Economic Development: 1
- Ministry of East African Community Affairs: 1
- Ministry of Internal Affairs: Busia, Malaba, Mutukula, Katuna and H/Q and Police: 6
- Kenya: Immigration at Busia and Malaba; Customs at Busia and Malaba and Shipping company: 5
- Tanzania: Immigration at Mutukula; Customs at Mutukula + police: 3
- Rwanda: Immigration at Gatuna; Customs at Gatuna police. Immigration at Nemba/Ruteete and Customs + RRA: 6
- Burundi: Immigration and Customs: 2
- Ministry of Agriculture, Animal Industry and Fisheries at Mutukula x 2 and Katuna: 3
- Ministry of Local Government – H/Q and Rakai District:2

Total Number of Respondents: 119

Appendix C: Notations used in the GAMS model:

SUBJECT:	NOTATION	SUBJECT	NOTATION
Kenya	KEN	Transaction cost:	TRC
Tanzania	TAN	Kenya - Tanzania Transaction cost	TRCKENTZ
Uganda	UG	Kenya - Uganda Transaction cost	TRCKENUG
Price:		Tanzania - Kenya Transaction cost	TRCTZKEN
Demand Price	PD	Tanzania - Uganda Transaction cost	TRCTZUG
Supply Price	PS	Uganda – Kenya Transaction cost	TRCUGKEN
Demand Price in Kenya	PDKEN	Uganda - Tanzania Transaction cost	TRCUGTZ
Demand Price in Tanzania	PDTZ		
Demand Price in Uganda	PDUG	Transport cost:	TC
Supply Price in Kenya	PSKEN	Unit transportation cost - Kenya to Tanzania	TCKENTZ
Supply Price in Kenya	PSTZ	Unit transportation cost - Kenya to Uganda	TCKENUG
Supply Price in Kenya	PSUG	Unit transportation cost – Tanzania to Kenya	TCTZKEN
Quantity:		Unit transportation cost – Tanzania to Uganda	TCTZUG
Demand	D	Unit transportation cost - Kenya to Tanzania	TCKENTZ
Supply	S	Unit transportation cost – Uganda to Kenya	TCUGKEN
Demand Quantity (D):		Unit transportation cost – Uganda to Tanzania	TCUGTZ
Demand Quantity Kenya	DKEN	**Trade:**	
Demand Quantity Tanzania	DTZ	Kenya to Uganda	SKENUG
Demand Quantity Uganda	DUG	Kenya to Tanzania	SKENTZ
Supply Quantity Kenya	SKEN	Tanzania to Kenya	STZKEN
Supply Quantity Tanzania	STZ	Tanzania to Uganda	STZUG
Supply Quantity Uganda	SUG	Uganda to Kenya	SUGKEN
Domestic supply:		Uganda to Tanzania	SUGTZ
Domestic supply - Kenya	SKENKEN	Equal	**E**
Domestic supply - Tanzania	STZTZ	Less Than	L
Domestic supply - Uganda	SUGUG	Objective Function	Z