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The KENYA INSTITUTE for PUBLIC POLICY RESEARCH and ANALYSIS

Liberalization of Services and Its Implications on Agricultural Trade in Eastern Africa Region

Christopher Hugh Onyango

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THE KENYA INSTITUTE FOR PUBLIC POLICY RESEARCH AND ANALYSIS (KIPPRA)

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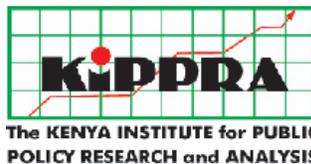
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Abstract

This study analyses the effects of services liberalization on trade in agricultural commodities within the East African Community (EAC). Intra-EAC trade flows in agricultural goods are examined, as the region is frequently affected by food shortages despite its potential to produce enough food for consumption and export. If properly regulated, trade in services can significantly facilitate agricultural production as well as marketing and distribution, hence food security. The gravity model is used to establish the impact of trade in services on intra-EAC trade in maize, beans and rice in the EAC customs union. The rationale is that over and above removal of tariffs and other trade barriers, services are an important component of transaction costs. Thus, they influence patterns and volume of cross-border trade.

Empirical results support the argument that trade in services positively influences agricultural trade in the EAC region. Specifically, an increase in trade in business, insurance, and communication services increases agricultural trade in the region. However, the impact is insignificant in the case of financial services, implying weaknesses in the entrenchment of financial institutions in rural agricultural activities and regulatory restrictions associated with provision of financial services. The study recommends removal of existing restrictions on services supply to complement the gains from liberalization of agricultural trade in the EAC region. This requires, among others, the establishment of a regional framework agreement on services that would guide orderly liberalization of the services sectors, taking into consideration the need to consolidate the envisaged gains of the EAC common market.

Abbreviations and Acronyms

ASARECA	-	Association for Strengthening Agricultural Research in Eastern and Central Africa
CEPII	-	French Research Centre for International Economics
CET	-	Common External Tariff
CMA	-	Customs Management Act
COMESA	-	Common Market for Eastern and Southern Africa
EAC	-	East Africa Community
FEM	-	Fixed Effects Model
GATS	-	General Agreement on Trade in Services
GDP	-	Gross Domestic Product
HTM	-	Hausman Taylor Model
OLS	-	Ordinary Least Squares
PAAP	-	Policy Analysis and Advocacy Programme
REM	-	Random Effects Model
RATIN	-	Regional Agricultural Trade Intelligence Network
RTAs	-	Regional Trade Agreements
SSA	-	Sub-Sahara Africa
UNCTAD	-	United Nations Conference on Trade and Development
WTO	-	World Trade Organization

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1.   Introduction

1.1   Background

Liberalization of trade in services is important for economic growth and development. In East Africa, services make a significant contribution to output and employment, and recent years have seen the expansion of trade in services in the region. If properly regulated, expansion of services can be beneficial to intra-EAC agricultural trade through enhancement of agricultural production, marketing and distribution to final consumers and also in ensuring food security (EAC Secretariat, 2008). At the global level, services have massively transformed agriculture and food economy, while global supply chains strongly influence agricultural production and marketing decisions. For instance, services are the strongest export interests of WTO members such as the EU, India and the USA, which are the focal points of efforts to liberalize agricultural trade (Gootiiz and Mattoo, 2009). However, the linkage between agricultural trade and services is quite often overlooked, especially amongst established regional trade arrangements.

Trade in services affects agricultural trade in several channels, including demand and supply of intermediate inputs, employment of factors of production, marketing and distribution. For instance, business services provide direct inputs into agricultural production; transport, logistics, wholesale and retail trade ease the flow of agricultural products between stages of production and from producers to final consumers; while financial services facilitate agricultural production as well as transactions within and across borders (WTO, 2008). According to Hertel and Martin (2000), trade in services can affect agricultural exports through four main channels: (i) it lowers the cost of intermediate inputs in production; (ii) it tends to increase the availability of labour and capital for food production; (iii) it encourages consumers to move away from agricultural products towards relatively cheaper manufactured and services goods; and (iv) in the absence of increased net capital inflows, it gives rise to a real depreciation in liberalization. In addition, farmers are dependent on efficient and equitable provisions of services that enable them participate effectively in supply chains on affordable terms (World Bank, 2008).

Agriculture and food security is a key area of cooperation as outlined in Chapter 18 (Articles 105-110) of the Treaty for the Establishment of the East African Community, and key among the objectives of EAC is

the achievement of food security and rational agricultural production. Currently, the region is frequently affected by food shortages and hunger. The region remains a net importer of staple food stuff, although it has a huge potential and capacity to produce enough food for regional consumption and a large surplus for export to the world market. For instance, world exports of food from Burundi, Kenya, Rwanda and Uganda was US$ 2.5 billion compared to US$ 2.3 billion worth of imports in 2009 (COMESA, 2009). Besides, during the same year, only US$ 176 million worth of exports from the EAC countries was destined to the EAC market, yet existence of surplus production could be used to cover up the imports from the rest of the world.

So far, a number of strategies, including the East African Community Food Security Action Plan 2010-2015, have been adopted to address food security issues in the region. However, none of these recognizes the potential role of a liberalized services sector in improving food security in the EAC region. Although there is no clear evidence on linkages between intra-EAC trade in agricultural commodities and trade in services, agriculture productivity, distribution and marketing infrastructure is affected in one way or the other by services. Apparently, liberalization of services in individual EAC partner states has been done either unilaterally within the broad framework of structural adjustment programmes, or through the WTO commitments under the GATS framework, with no deliberate effort of linking the consequences to other economy-wide benefits.

This study assessed the impacts of trade in services on cross-border trade in agricultural commodities within the East Africa Community. Intuitively, liberalization of services can enhance cross-border trade in both goods and services by creating greater freedom of operations by domestic and foreign services suppliers. The study used a panel data set of 180 observations on bilateral trade over the period 2004-2008 from Kenya, Rwanda, Tanzania and Uganda.

1.2   Objectives of the Study

The broad objective of this study is to assess the effects of trade in services on intra-EAC trade in agricultural commodities. The specific objectives include:

(a) To review services trade in the EAC and intra-EAC trade in agricultural commodities;

(b)   To analyze the effects of trade in services on intra-EAC agricultural trade; and,

c)   To make appropriate policy recommendations in view of study findings.

1.3   Rationale for the Study

Liberalization of services could be relied upon to enhance intra-regional agricultural trade flows from surplus zones of production to those areas facing persistent challenges of drought and regular food shortages. In particular, business services provide direct inputs into agricultural production; transport, logistics, wholesale and retail trade ease the flow of agricultural products between stages of production and from producers to final consumers; while financial services facilitate agricultural production as well as transactions within and across borders. In the agric-food distribution sector, modern retail stores (supermarkets, large stores and hypermarkets) have emerged and are quickly displacing traditional small shops, public markets and government controlled marketing boards in the sale and distribution of food and agricultural products (Weatherspoon and Reardon, 2003). Prior to liberalization, many agricultural products in Kenya, including maize, tea and coffee were largely sold through marketing boards, which had exclusive rights over production, purchase, distribution and importation (Onyango, 2007). Investment of firms in marketing and distribution services partly explains the dominant role of agricultural exports within the region (Arkell and Michael, 2005).

At the global level, services have massively transformed agriculture and food economy, while global supply chains strongly influence agricultural production and marketing decisions. For instance, services are the strongest export interests of WTO members like the EU, India and the USA that are the focal point of efforts to liberalize agricultural trade (Gootiiz and Mattoo, 2009). However, the linkage between agricultural trade and services is quite often overlooked, especially amongst established regional trade arrangements.

2.   Economic Integration in the East African Community

2.1   Overview of Economies of EAC Partner States

The five EAC[1] countries have a total area of 1.85 million square kilometres, a combined population of approximately 127 million people, and a combined GDP of US$ 60.5 billion (World Bank, 2008). All the five countries are currently pursuing market-oriented economic policies and have implemented structural adjustment reforms. Table 2.1 shows some selected indicators of the EAC member states. Kenya is the largest of the five economies with a GDP of US$ 30.2 billion in 2008, a population of 39 million, and a per capita income of US$ 1,600. It is followed by Tanzania with a GDP of US$ 20.7 billion, a population of 41 million, and a per capita income of US$ 1,300. Uganda takes third place with a GDP of US$ 14.5 billion, a population of 32.4 million and a per capita income of US$ 1,300. The economies of Rwanda and Burundi are the smallest.

Table 2.1: EAC selected economic indicators, 2008

Indicators/ Country	Burundi	Kenya	Rwanda	Tanzania	Uganda
Population, total (millions)	8.9	39.0	10.5	41.0	32.4
Population growth (annual %)	3.28	2.69	2.8	2.0	2.3
GDP (US$ billion)	1.1	30.2	4.5	20.7	14.5
GDP growth (annual %)	4.5	1.7	11.2	7.1	6.9
GDP per capita (current US$)	400.0	1,600	1000	1,300	1,300
Inflation rate	24.1	26.3	15.4	10.3	12.0
Composition of GDP by sector					
Agriculture	33.4	23.8	43.2	27.1	21.5
Industry	21	16.7	22.3	22.5	24.6
Services	45.6	59.5	34.5	50.4	53.9
Labour force by sector					
Agriculture	93.6	75	90	80	82
Industry and services	6.4	25	10	20	18
Services share of total exports	20.4	35.2	41.9	43.8	31.2

Source: CIA, World Fact Book, 2009; World Bank, 2009

[1] Kenya, Uganda, Tanzania, Rwanda and Burundi.

The sectoral distribution of GDP indicates that the agriculture sector contributes an important share of GDP and plays an important role in the livelihood of the EAC partner states. According to the 2008 EAC Trade Report, total intra-EAC[2] trade has been increasing over the years since the launch of the customs union. For instance, total intra-EAC trade increased by 22 per cent, reaching US$ 1.973.2 billion on account of increased exports and imports in 2007. This was mainly attributed to increase in exports and imports from Kenya and Uganda, where total trade increased by 27.1 per cent and 42 per cent, respectively. Overall, Kenya continued to dominate the EAC regional trade, accounting for 51.6 per cent of total volume of trade.

2.2   EAC Integration Agenda

The treaty establishing the East African Community was signed in 1999 and formally launched in 2001, replacing the East Africa Cooperation of 1993 to 1999. The founder members of the Community were Kenya, Uganda and Tanzania. The former cooperation arrangements mainly provided for the delivery of common services such as railways, telecommunications, some research, higher education, harbours, airways and common currency.

The objectives of the community are 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 mutual benefit. In order to realize their objectives, the EAC partner states developed a roadmap for the integration process, with the customs union as the entry point followed by a common market, monetary union and ultimately a political federation (Figure 2.1).

The creation of a customs union in January 2005[3] further deepened economic integration in the East Africa Community (EAC). The pillars of the customs union include adoption of a common external tariff, harmonization of customs procedures, reduction of internal tariffs, application of the rules of origin and commitment for gradual removal of non-tariff barriers to trade, all of which focus on merchandize trade.

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[2] The EAC Heads of State signed the EAC Common Market Protocol on 20 November 2009. The Protocol entered into force on 1 July 2010 entails free movement of goods, labour, services, capital and the right of establishment.

[3] Intra-EAC trade for Kenya, Tanzania and Uganda.

Figure 2.1: Stages of the EAC integration process

CUSTOMS UNION	COMMON MARKET	MONETARY UNION	POLITICAL FEDERATION
2005-2010	July 2010	Timelines not specified	2013
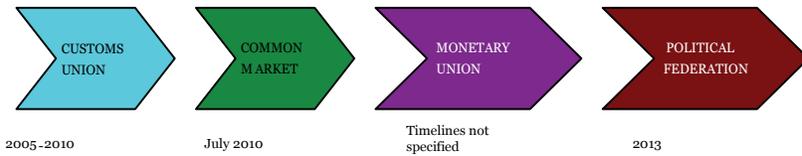
Source: EAC Secretariat, 2008

The EAC customs union came into force in 2005 having initially been signed by the three partner states. Later, Burundi and Rwanda joined in 2007. The main instruments of the EAC Customs Union Protocol include the EAC Customs Management Act (CMA) and the EAC Customs Management Regulations. Together, these provide for the implementation of a number of measures, including but not limited to gradual elimination of internal tariffs, establishment of a common external tariff (CET), introduction of EAC's Rules of Origin (ROO) and other trade-related aspects and legal and institutional arrangements, a customs valuation system and harmonized customs laws, procedures and documentation. The main objectives of the EAC Customs Union are:

(a)   Further liberalization of intra-regional trade in goods, on the basis of mutually beneficial trade agreements among the partner states;

(b)   Promotion of efficiency in production within the Community;

(c)   Enhancement of domestic, cross-border and foreign investment in the Community; and

(d)   Promotion of economic development and diversification in industrialization in the Community.

The EAC adopted a three-band tariff structure, that is 0 per cent for meritorious goods, raw materials and capital goods; 10 per cent for intermediate goods; and 25 per cent for consumer goods. Besides, they agreed on asymmetric 5-year transitional period in implementing the customs union in order to address economic imbalances that existed amongst the partner states. Indeed, there has been a general increase in cross-border merchandise since the launch of the customs union. For instance, total intra-EAC trade increased by 30 per cent from US$ 1,977.9 million to US$ 2,559.4 million between 2005 and 2007, respectively (EAC Secretariat, 2008).

More recently, the EAC Common Market Protocol was signed on 20th November, 2009 and entered into force on 1st July 2010. The overall objective of the Common Market is to widen and deepen cooperation among partner states in the economic and social fields for their benefit. The specific objectives include:

(a)   Accelerate economic growth and development of the partner states through the attainment of the free movement of goods, persons and labour, the rights of establishment and residence, and the free movement of services and capital;

(b)   Strengthen, coordinate and regulate the economic and trade relations among the partner states in order to promote accelerated, harmonious and balanced development within the community;

(c)   Sustain the expansion and integration of economic activities within the Community, the benefits of which shall be equitably distributed among the Partner States;

(d)   Promote a common understanding and cooperation among the national partner states for the economic and social development; and,

(e)   Enhance research and technological advancement to accelerate economic and social development.

In accordance with Article 4(3) of the Common Market Protocol, the partner states commit to cooperate, integrate and harmonize policies in all areas provided for in order to realize and attain its objectives.

2.3   Agriculture Development Policy and Trade in the EAC

The Agriculture and Rural Development Strategy for the East Africa Community (EAC, 2006) spells out the roadmap for agricultural development. The overall objective of cooperation in agriculture in the EAC is the achievement of food security and rational agricultural production. The partner states have therefore undertaken to adopt a scheme for the rationalization, improvement and commercialization of agricultural production and rural development with a view to promoting complementarity and sustainability of rural life.

The strategy seeks to improve both farm and off-farm activities in order to facilitate the process of sustainable rural development.

While recognizing the importance of trade between partner states for economic growth and development, it puts emphasis on liberalization of cross-border trade in agricultural produce and products between partner states, among other strategies, in the bid to ensure availability and access to food in all households, among other interventions (EAC, 2006). Specifically, the strategy states that development of agricultural trade among partner states requires:

• Implementation of the customs regulations, customs union, common external tariffs, import regulations and development of common trade policies;

• Harmonization of standards on sanitary and phytosanitary, farm inputs requirements, food safety and quality assurance, export inspection procedures and certification to facilitate movement of goods and freeing of cross border trade;

• Promotion of value addition through agro-processing, common marketing infrastructure such as those for tea and coffee auctions, commodity markets and air handling facilities. This should include establishing joint marketing efforts for exports of agricultural commodities, livestock and livestock products, etc;

• Freeing the movement of persons, vehicles, goods and boats across borders and issuance of long-term travel documents;

• Development and harmonization of regional standards in conformity with international standards to ensure fair competition and elimination of misuse of standards and labour regulations as a barrier to trade against EAC partner states;

• Developing capacity and fostering close alliances and joint negotiation grounds on global trade issues; and,

• Establishing a monitoring system in order to react to market disturbances.

2.4   Importance of Agriculture to EAC Economies

Agriculture plays a strategic role in the development of the EAC region. For instance, over 80 per cent of the population depends on agriculture for their livelihood. Agriculture substantially contributes to foreign exchange earnings and employment. The 2nd Development Strategy for the East African Community (2001-2005) recognizes that agriculture

will continue to be the base for sustainable economic growth and development in the immediate future. This is because majority of the people of East Africa live in the rural areas and derive their livelihood from agricultural production. In addition, most industries are agro-based and use agricultural raw materials as inputs.

The export trade of partner states is dominated by agro-based commodities, which constitute about 70 per cent of total exports (EAC, 2008). Furthermore, total intra-EAC trade in agricultural commodities increased by about 76 per cent from US$ 26 million to US$ 46 million between 2005 and 2008 (Figure 2.2).

In 2008, most of the exports were from Tanzania and Kenya, while imports were highest in Kenya and Uganda (Figure 2.3). Besides, it is notable that Kenya imported more agricultural products than all the other EAC partner states combined.

Figure 2.2: Intra-EAC trade in agricultural products (2005-2008)
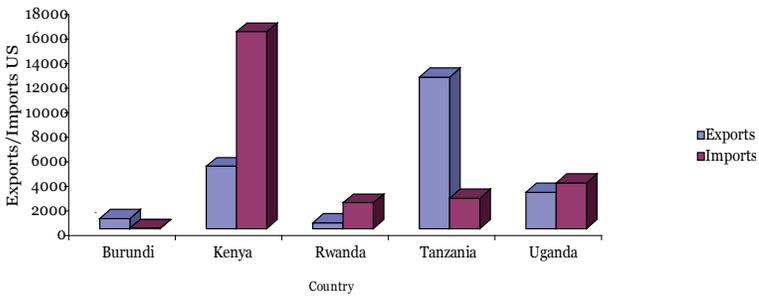
Source: COMSTAT data base

Figure 2.3: Intra-EAC trade in agricultural products, 2008
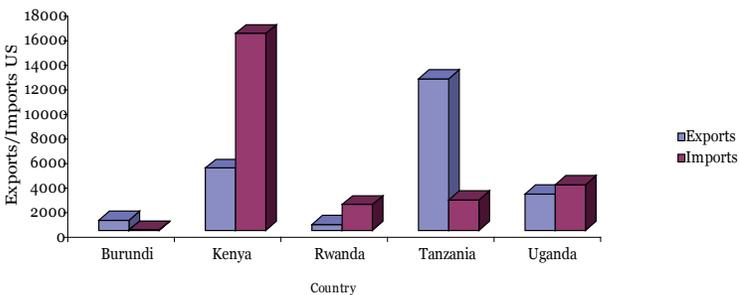
Source: COMSTAT data base

Monitoring surveys indicate that informal agriculture exports constitute a significant share of cross-border trade flows, especially for maize, beans, rice, groundnuts, fish and bananas, among others. According to the Regional Agricultural Trade Intelligence Network (RATIN), cross-border trade in maize, rice and beans increased by 65 per cent between 2004 and 2006, with maize being the most traded commodity. Informal exports were mainly destined to Kenya and the top five exported products included maize, fish, beans, groundnuts and bananas (ASARECA, 2009).

2.5 Importance of the Services Sector in the EAC Partner States

The services sector has been considered a crucial sector in the attainment of economic development goals and targets in the EAC region. Apart from seeking cooperation in harmonization of policies, joint development, standardization and testing, the EAC treaty also seeks harmonization of policies in services sectors such as communication, transport, tourism, financial related education, health, culture and sports, and environmental management. The services sector also stands to play a significant role in fostering trade in staple food commodities, which have a direct impact on regional food security.

For instance, the financial and communication services in Burundi have been recognized as key drivers of the economy. In Kenya, out of the six priority sectors identified as crucial in the attainment of the Vision 2030 objectives, four of them are services sector, including tourism, wholesale and retail trade, business process outsourcing, and financial services. In addition, Kenya aspires to be interconnected through a network of roads, railways, ports, water and sanitation facilities and telecommunications (Government of Kenya, 2008).

In Rwanda, the information communication and technology (ICT) sub-sector is envisaged as crucial in the attainment of the Vision 2020 development goals. Likewise in Tanzania, education services, health and social services, transport and communication, services incidental to utilities (water and energy), environmental services and infrastructure development have been prioritized in various development policies as important sectors in the attainment of Tanzania development policy. In Uganda, communication and transport have been identified as key drivers to economic development.

Globally, the fastest growing sector has been that of services. This has also been the case in the EAC region. The services sector's share to GDP in Kenya, Rwanda, Tanzania and Uganda is over 50 per cent, while in Burundi it is 45 per cent (Figure 2.4).

For the EAC region, services trade[4] accounted for about 30 per cent of the total region's exports in 2007, on average. The value of services exports accounted for over 62 per cent of the total exports of the region in 2007, while the value of services imports accounted for over 16 per cent of the total imports.

Trade in services is an important component of the EAC partner states economies. In 2007, services exports accounted for 33 per cent

Figure 2.4: EAC partner states service sector contribution to GDP (2007)
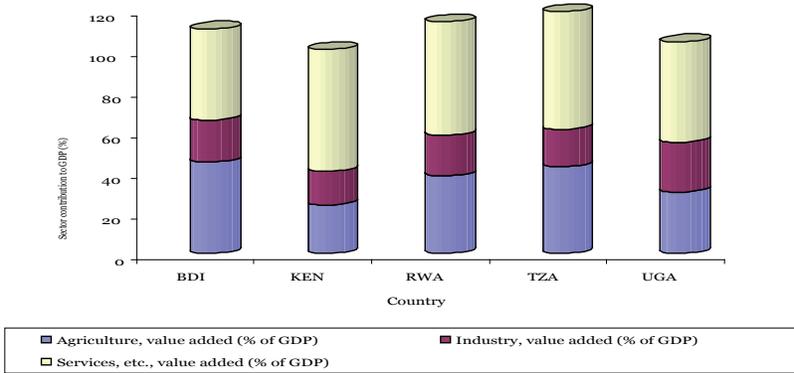
Source: World Fact Book, 2008 and partner states' statistics bureau

Figure 2.5: Services trade as proportion of total trade (%)
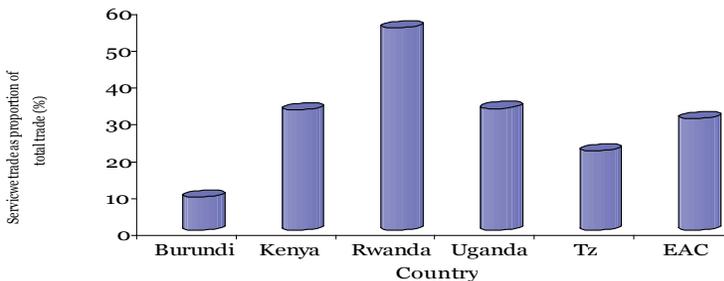
Source: World Fact Book, 2008 and partner states' statistics bureau

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[4] There are no statistics for intra-EAC trade in services.

of the total exports in both Kenya and Uganda, while in Rwanda they accounted for 55 per cent of the total trade, with wholesale and retail trade accounting for 11 per cent (the largest contribution). In Burundi, contribution of services to export trade was 7 per cent. For Tanzania, export of services alone accounted for about 21 per cent of the total trade (Figure 2.5). Figure 2.6 shows the EAC total service exports, while Figure 2.7 shows the EAC total service imports between 2000 and 2007.

The services sector is also important for providing employment in various EAC partner states. In Kenya, for example, the sector accounts for about 10 per cent of total wage employment, while it is still the same sector (particularly the retail trade sector) which is leading in generation of new jobs. In Tanzania, the sector accounts for about 16 per cent of the total employment in the country.

Figure 2.6: EAC total services exports (2000-2007)
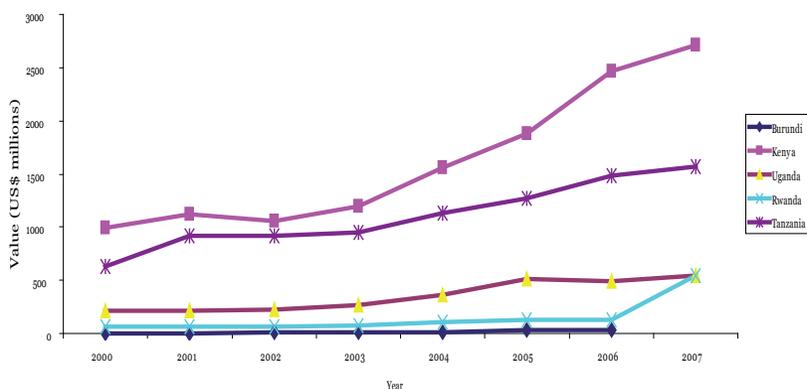
Source: UNCTAD, 2009

Figure 2.7: EAC total services imports (2000-2007)
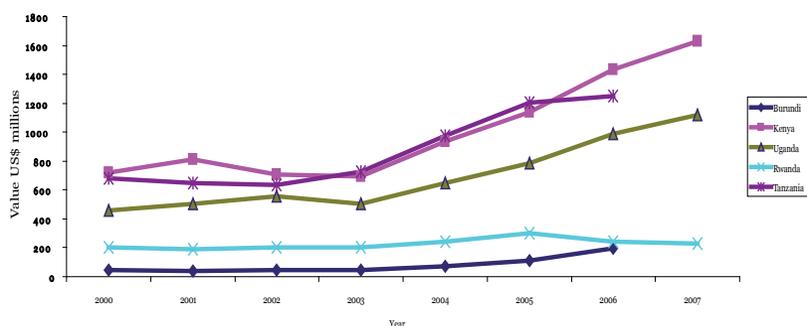
Source: Author's computation, 2009

3. Analytical Background

3.1 Theoretical Literature

International trade is explained by a number of standard theories. In particular, the gravity model laid the theoretical foundation for estimation of the impact of bilateral trade (Tinbergen, 1962; Anderson, 1979; Bergstrand, 1985; and Baldwin and Taglioni, 2006). The model has also been used to establish the link between services trade and trade in goods. In this case, reductions in the cost of traded or trade support services has similar effects as a reduction in tariff protection; that is, an increase in the quantity of goods traded.

In the context of international trade flows, the gravity model states that the size of trade flows between two countries is determined by supply conditions at the origin, the demand conditions at the destination, and stimulating or restraining forces related to the trade flows between the two countries (Serlenga, 2004). In this model, the core variables used to explain the volume of trade across a pair of countries are measures of economic size of trading partners, and the distance between them and other augmented variables. The scope and application of gravity models have also been expanded from goods to cover trade in services as well.

In the case of services, the most distinguishing feature is that their production and consumption occur simultaneously, often requiring direct contact between producers and consumers. Although some services (e.g. "separated" services such as telecommunications) are traded internationally across borders in a manner similar to cross-border trade in goods, other services may require the consumer to move to the location of the producer, as in tourism. In addition, because of the necessary proximity of consumers and producers, factors of production must move across national boundaries to the place of consumption. Barriers to trade in services are typically regulatory in nature. They include measures that restrict market access by foreign firms (e.g. by reserving supply for a public monopoly or through non-recognition of professional qualifications) or that discriminate against them once they are in the market through, for example, different tax treatment or local borrowing limitations for foreign firms. Therefore, liberalization of trade in services involves the reduction of regulatory barriers to market access, and discriminatory national treatment across all four modes of supply.

This study draws largely from Deardorff (2001), which uses a partial equilibrium trade model to illustrate the connection between trade in services and trade in goods. In this model, reduction in the cost of transportation services has similar effects as a reduction in tariff protection; that is, it leads to an increase in the quantity of goods traded. This follows the assumption that trade is not costless and that traders purchase certain trade services such as transport, financial, and communication services, which add to the domestic cost of imported goods.

Deardorff (2001) uses the trucking example in developing the cross-border services trade model. Assuming that prior to liberalization of transportation services, truckers from adjacent countries are not allowed to operate across the border. If a good needs to be shipped by truck between the two countries, first, it has to be carried to the border in one country's trucks, unloaded, reloaded onto the other country's trucks and shipped from the border to its final destination. According to Deardorff (2001), allowing cross-border provision of transportation will bring down the costs of this arrangement for a number of reasons, including comparative advantage associated with replacement of service providers in both countries, with lower-cost providers from either of the two countries or a different country; elimination of fixed costs following the switching from two service providers to one; reductions in regulatory costs, economies of scale and distance; and reductions in time, among others.

The closest antecedent to this paper is Juan and Sinyavskaya (2007) who explored whether liberalization of trade in services is beneficial for international trade in goods. Using a dataset of 62 countries for the period 1980 to 1999, they found that trade in transportation and communication services generate the largest impact on trade in goods. They also investigated the impact of trade in services on the trade of different types of goods, and found that trade in services is important to facilitate trade in goods in all the categories.

3.2   Empirical Model

The purpose of this study is to estimate the effects of international trade in services on agricultural trade in East Africa. In that respect, the conventional gravity model for bilateral trade flows was employed. In this model, bilateral trade flows is given as:

$$X_{ij} = G\frac{Y_i^{\alpha}Y_j^{\beta}}{D_{ij}^{\delta}} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

where X_{ij} represents bilateral trade flows between i and j;

Y_i and Y_j represent countries' masses, usually represented in GDPs;

D_{ij} represents distance between I and j; and,

G represents the gravitational constant.

The basic OLS log-linear gravity model is specified as

$$L_n(X_{ij}) = C + \alpha l_n(Y_i) + \beta l_n(Y_j) + \delta l_n(D_{ij}) + \varepsilon_{ij} \dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

The empirical works are often augmented by extra conditioning variables including monetary and bilateral or multilateral trade costs to account for as many factors as possible (Rose, 2000; Anderson and Van Wincoop, 2003). Thus in addition to the standard gravity models,[5] augmented models take the following general forms:

$$L_n(X_{ij}) = C + \alpha l_n(Y_i) + \beta l_n(Y_j) + \delta l_n(l\tau_{ij} + lMR_i + MR_j) \quad \dots\dots\dots\dots\dots\dots (3)$$

where **τ** represents trade costs and MR (multilateral resistance) of various forms of trade costs, including natural barriers (distance, adjacency, land border, etc), man-made barriers trade costs (trade agreements, common currency, etc), and cultural barriers (common language, religion, etc). Gravity model estimations give consistent results with respect to income and distance as far as trade flows between countries are concerned; that is, the elasticities are positive and negative for the two standard variables, respectively, but mixed for the other variables. Likewise, additional variables including those seeking to measure the impacts of economic integration and trade in services are added into the study model as follows:

$$
\begin{aligned}
Ln(X_{ij})_t = {}& \beta_o + \beta_1 \ln(GDP_iGDP_j)_t + \beta_2 \ln(GDP_iGDP_j / Pop_iPop_j)_t \\
& + \beta_3 \ln(Dist_{ij}) + \beta_4 \ln(Lang_{ij}) + \beta_5 \ln(landlocked_{ij}) \\
& + \beta_6 \ln(Border_{ij}) + \beta_7 \ln(s_is_j)_t + \beta_8 \ln(EACU_{ij})_t + \varepsilon_{ij}
\end{aligned} \quad \dots\dots\dots\dots(4)
$$

where i and j denote countries, t denotes time and the variables are defined as follows:

X_{ij} is the real bilateral total agricultural trade between countries i and j;

GDP is real Gross Domestic Product;

Pop is the population;

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[5] Standard gravity models only include income and distance variables.

Dist$_{ij}$ is the distance between countries i and j;

Lang$_{ij}$ is a dummy variable, which is equal to 1 if i and j have common languages;

Landlocked$_{ij}$ is a binary variable, which is 1 if a country is landlocked and 0 if not;

Border$_{ij}$ is a dummy variable, which is equal to 1 if i and j share a common border;

S is total value services trade; and

EACU$_{ij}$ is a binary variable denoting 1 if i and j are members of the EAC customs union; 0 if not at time t; and,

ε_{ij} represents other influences bilateral trade assumed as well behaved.

The coefficients of interest in this study are β_7 and β_7. These coefficients depict the effects of trade in services and customs union membership on agricultural trade flows, respectively, and have not been previously estimated for the EAC region. Otherwise, the coefficient β_1 is expected to be positive. A higher level of income in the importing country should indicate a higher level of demand for goods either produced domestically or imported, while a higher income level in the exporting country should be positively related to that country's ability to produce more services for export.

Nicoletti *et al*. (2003) show that the supply of services to foreign markets is strongly linked to the availability of inputs in both the domestic and foreign markets. The coefficient β_2 may take a positive or negative sign. Population size may have a negative effect on exports if countries export less since they become larger, or a positive effect if they export more as they become larger and are able to achieve economies of scale. A similar effect may occur in imports. Although distance β_3 between the importer and exporter is typically expected to have a negative impact on trade in goods, this may not necessarily be the case for services. This is because of variations in the nature of the services and their modes of supply; that is, the significance of distance for those that can be transacted electronically may be very low or insignificant. The coefficients β_4, β_5, and β_6 are for dummies for commonality in language, landlocked and common borders, respectively. All the three are expected to be positively related to the level of trade in agricultural commodities.

Impediments to trade in services take the form of regulations or other measures that effectively limit access of foreign services suppliers to the domestic market, rather than tariffs. This measure is, however, difficult to estimate particularly with prevailing data constraints. In that regard, restrictions to trade in services will be proxied by total levels of trade in services. The coefficient β_7 is expected to be positively related to cross-border agricultural trade; that is as barriers to trade in services fall, services trade will increase and in turn agricultural trade is expected to rise. Finally, the adoption of a common external tariff and elimination of trade restrictions within the EAC aimed at increasing intra-EAC agriculture trade flows, hence β_8, is expected to be positive.

3.3   Specification Testing

A number of estimation techniques, including ordinary least squares (OLS), fixed effects model (FEM), random effects model (REM) and Hausman and Taylor Model (HTM) are applied to the gravity model. First, observations are pooled over five years, that is 2004 to 2008 in the data set and the model estimated using OLS. Bilateral trade between any pair of countries is, however, likely to suffer from heterogeneity or influenced by certain unobserved individual effects, which if correlated with explanatory variables result in biased estimates.

In order to control for the unobserved effects that may be correlated with regressors, the FEM and REM are employed. The latter are used to capture the relationships between variables over the period of the sample and control for the possibility of unobserved effects that have been described as the most robust econometric specification of the gravity model of international trade (Hausman and Taylor, 1981; Laura and Shin, 2004; Cheng and Wall, 2005; and Walsh, 2006). Thus, both REM and FEM are estimated and their efficiency compared using the Hausman test. The test statistic of 3.08 is greater than the chi-squared critical value of 0.38, hence the null hypothesis that REM is consistent or there is no correlation among variables is rejected and the FEM considered a better estimator. Further, in order to deal with the problem of multi-collinearity of explanatory variables; that is the possible influence of bilateral trade on incomes and trade in services, the two stage least squares (2sls) method is used, whereby total trade in services is instrumented by GDP per capita and population, and the time invariant variable distance. The Sargan and Basman over-identification tests are applied to the instrumental variable regression

and both test statistics (Sargan 5.17338 and Basman 5.10813) are higher than the critical p-values, thus the null hypothesis that the instrumental variables are uncorrelated to residuals is accepted.

3.4   Data

The equation is estimated using a dataset of 180 observations on bilateral agricultural trade and trade in services in the five EAC partner states for the period 2004-2008. This involves bilateral trade in three commodities, namely beans, maize and rice for four EAC countries whose data was available. The statistics on services trade comprised total aggregated as well as specific services trade; that is business services, insurance services, financial services and communication services for which data was available. This was obtained from the UN Services Trade Statistics Database, while the data on common border, language and distance was obtained from the CEPII data bank. The remaining statistics were obtained from the National Bureaus of Statistics, and the EAC Secretariat data base.

4. Research Findings

4.1 Descriptive Statistics

The descriptive statistics for the study variables are presented in Tables 4.1 and 4.2, as well as the annex tables. In terms of services trade, Kenya recorded highest means of trade in all categories of services, except in business services, while Tanzania recorded the highest mean for total trade in business services during the period.

On agricultural trade, maize was the most commonly traded commodity across EAC boundaries, reflecting its importance as a staple food followed by beans and rice. In addition, Uganda accounted for the highest value of trade in agricultural products within East Africa. This is closely followed by Tanzania, while Rwanda and Kenya accounted for the least trade. Uganda and Tanzania have better agricultural productivity potentials compared to the other EAC partner states.

Table 4.1: Mean for services trade by categories (2004-2008)

Variable	Kenya	Rwanda	Tanzania	Uganda
Business services	36.61	36.14	37.09	36.52
Insurance services	34.94	33.24	35.11	34.99
Financial services	34.24	33.37	33.48	32.46
Communication services	36.21	33.29	35.04	34.82

Source: Own estimations

Table 4.2: Mean for intra-EAC trade on agricultural products (2004-2008)

Product/ Country	Kenya	Rwanda	Tanzania	Uganda	Total
Beans	6.91 (0)	7.31 (1.57)	10.98 (3.64)	12.45 (4.63)	9.41 (3.81)
Maize	8.34 (3.09)	6.91 (0)	10.25 (3.64)	13.94 (3.82)	9.87 (4.3)
Rice	6.91 (0)	6.91 (0)	11.91 (3.97)	6.91 (0)	(2.91) 8.16
Total	7.40 (1.89)	7.04 (0.91)	11.05 (4.17)	11.09 (4.56)	9.15 (3.77)

Source: Own estimations
Standard deviations are in parenthesis

4.2 Pooled Panel Estimates

The econometric results for estimating the basic gravity model are contained in Table 4.3. The model explains 22 per cent of the variations in bilateral agricultural trade flows within the EAC countries. The correlation test indicates high positive correlation between trade in services and GDP, GDP per capita, distance and landlocked variables (Annex Table 1). In the pooled regression, all coefficients have the expected signs; per cent GDP per capita, total services trade, language, common border and membership to customs union positively influence bilateral trade in agricultural commodities, while distance is negatively related to it.

From the table, improvements in GDP per capita result in increased bilateral agricultural trade among EAC partner states. This implies that with higher incomes, the purchasing power of consumers' increases, thereby enhancing the level of bilateral trade.

The results also indicate that there is more likelihood of bilateral trade facilitated by trade in services. For instance, a 1 per cent increase

Table 4.3: Pooled panel estimates (2004-2008)

GDP per capita	3.52 (1.52)
Population	3.07 (1.94)
Total services trade	1.98 (1.63)
EACU	1.71 (2.12)
Dist	-1.04 (-1.01)
Language	2.43 (3.42)
Landlocked	1.14 (1.86)
Common border	1.03 37.14
Cons	(0.82) (0.49)
R_2=0.264 Adj R_2=0.222	

Source: Own estimations
t-statistics in parentheses

in total trade in services results into a 2 per cent increase in cross-border trade in the identified agricultural products. This holds true, assuming that removal of services restrictions reduces transaction costs, thereby leading to increased trade in services. This also signifies the importance of services liberalization in facilitating agriculture trade beyond the traditional trade facilitation instruments.

The coefficient on membership to the EAC customs union is also positive as expected. Intuitively, this confirms the argument that removal of non-tariff barriers and harmonization of trade policies and regulations enhances regional trade (in this case trade in agricultural products). In addition, this may also be attributed to simplification of customs clearance procedures, including the rules of origin requirements.

The results also indicate that language is a critical factor in facilitating intra-EAC trade. Apart from common understanding of the EAC official languages, English and Kiswahili,[6] communities along border points share common languages, culture and traditions making it easier to transact cross-border businesses. On the other hand, population is apparently positively related to agricultural trade. This implies that as population grows among trading partners, demand increases, thereby enhancing cross-border trade to meet the demand.

Finally, the intensity of cross-border trade depends on physical distance between trading partners. In other words, there is likely to be more trade between countries which border each other as opposed to those far away from each other. This result also corroborate earlier findings which reported high levels of informal cross-border trade, particularly on agricultural products where small quantities of merchandise are carried across border points using bicycles or simply persons implying short distances between suppliers and buyers.

4.3   Two Stage Least Square Estimates

(a)   Results from aggregated services

In this case, the potential influence of income on the measure of services trade are controlled through application of the 2 stage least square estimation method by instrumenting the trade in services variable using GDP, GDP per capita, population and existence of common borders.

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[6] Burundi and Rwanda also use French as an official language.

This allows for elimination of differences in trade in services due to differences in each of these variables across countries. The results for the 2sls are presented in Table 4.4. The table also presents sensitivity analysis performed to confirm that the results do not necessarily depend on the exact way the equation is specified and the instruments used. Tests for over-identification and endogeneity are carried out on various specifications and the results in column 5 pass the tests.[7] In both cases, the null hypotheses are accepted; that is the instrumental variables are uncorrelated to residuals, and all the variables used are exogenous.

The results in Table 4.4 are robust and indicate a positive relationship between total trade in services and trade in agricultural products in the EAC countries. All the results are significant at 5 per cent. This is consistent with previous findings, and confirms the fact that services facilitate trade in goods within the EAC trading block.

Table 4.4: Instrumental variable regressions (2004-2008)

	1	2	3	4	5
Total Services	1.42 (3.80)	1.45 (3.90)	1.58 (3.97)	1.38 (4.21)	1.02 (3.18)
EACCU	0.59 (0.84)	0.56 (0.80)	0.44 (0.62)	0.81 (1.24)	0.29 (0.42)
Distance	- 0.78 (-0.90)	-0.81 (-0.94)	-0.95 (-1.08)	-	-
Language	1.77 (2.65)	1.76 (2.64)	1.74 (2.60)	2.21 (3.76)	1.73 (2.63)
Landlocked	1.07 (1.60)	1.07 (1.61)	1.11 (1.65)	1.39 (2.23)	-
Border	2.12 (1.36)	2.16 (1.38)	2.33 (1.48)	-	1.26 (1.62)
Cons	-48.88 (-3.48)	-49.95 (-3.57)	-54.65 (-3.67)	-51.03 (-3.70)	-35.69 (-2.68)
R^2	0.219	0.219	0.215	0.208	0.203
Adj R-squared	0.187	0.186	0.182	0.186	0.181

t-statistics in parentheses

Sargan (score) = 5.17338 (p = 0.0753)

Basman chi^2 = 5.10813 (p = 0.0778)

Durban (score) chi^2 = 2.37657 (p = 0.1232)

Wu-Hausman F (1,144)=2.31823 (P=0.1301)

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[7] See Sargan, Basman, Durban and Wu-Hausman test statistics below Table 4.4.

Referring to results presented in column 5, the coefficient of the variable on total trade in services is positive as expected. Thus, a 1 per cent increase in total trade in services leads to 1.02 per cent change in EAC cross-border agricultural trade. In this case, all the services under consideration, that is business, insurance, financial and communication services facilitate business transactions, thereby reducing costs or making it easier and cheaper for traders to transact businesses.

The results, however, show that the customs union variable, though positive, is insignificant and does not influence trade in agricultural commodities. This could be attributed to several factors. First, it could be a pointer to the fact that tariff reduction does not affect intra-EAC trade for the three agricultural commodities. By and large, these statistics are not captured or recorded by customs authorities. Previous surveys have established lack or poor recording of cross-border transactions, particularly for the three commodities in various border points. This is because many traders under-declare their cargo to avoid complying with customs procedures, including completion of rules of origin certificates. In addition, it could be as a result of traders resorting to informal transactions due to high transaction costs associated with customs clearance and other necessary documents.

Further, the existence of common languages strongly supports cross-border trade in maize, beans and rice. This is explained by the fact that trade is often conducted among people of the same clan or ethnic group. The communities spread along territorial boundaries, and share cultural and social norms that provide an incentive to engage in trade in the bid to exploit available opportunities. This is similarly the case in the EAC region where communities share local languages including speaking swahili language. The remaining variables also exhibit expected results.

(b)   Results by services sectors

The study explores whether the general result that trade in services facilitates bilateral trade in agricultural products applies to any type of services. The study differentiates the types of services and uses four types of services separately. Table 4.5 indicates the empirical results for selected services sectors, namely communication services, financial services, insurance services and other business services. The results in columns 1, 2, 3 and 4 show the effects of each of the four services

introduced separately into the model. Overall, all the coefficients are positive and significant, with the exception of the financial services coefficient, which is not significant.

From the results, other business services and insurance services have the greatest impact on agricultural trade in East Africa. The former includes merchanting, professional and other trade-related services, all of which are pertinent in business transactions. In this case, a 1 per cent increase in business services provision would result in 2.93 per cent increase in agricultural trade in East Africa. Business services are important determinants of trade transaction costs and can determine the extent of productivity, efficiency of clearance procedures, and capacities to internalize costs. Professional services, especially with regard to agricultural extension have a bearing on agriculture productivity and trade. Besides, many small scale traders do not have

Table 4.5: Regressions for specific services sectors (2004-2008)

	1	2	3	4
Business services	2.93 (2.94)	-	-	-
Insurance services	-	1.26 (4.10)	-	-
Financial services	-	-	0.88 (1.83)	-
Communication services	-	-	-	0.69 (3.95)
EACCU	0.43 (0.39)	1.19 (1.82)	1.49 (1.31)	1.14 (1.74)
Distance	- 1.52 (-1.62)	-0.16 (-0.31)	-0.95 (-1.16)	-0.58 (-1.24)
Language	1.31 (1.59)	2.22 (3.27)	1.31 (1.11)	1.67 (2.55)
Landlocked	1.07 (1.41)	1.34 (2.19)	2.66 (2.06)	1.76 (2.78)
Border	2.49 (2.45)	0.33 (0.34)	0.06 (0.03)	0.93 (1.07)
Cons	-90.85 (-2.85)	35.09 (-3.67)	-36.92 (-1.67)	-21.35 (-3.22)
R_2	0.197	0.263	0.194	0.276
Adj R-squared	0.168	0.231	0.170	0.244

Source: Own estimations

track records with customs authorities, neither do they have capacities to comply with standards and other related requirements.

Similarly, insurance services have significant influence on cross-border agricultural trade. The implication is that insurance increases confidence of traders to get compensations should they incur losses in the course of conducting their businesses. The bulk of selected agricultural products are produced on small scale and on a seasonal basis, hence subject to a number of risks, including the vagaries of weather.

There is a positive coefficient for communication services such as mobile telephones and the internet, implying that they make it easier for both traders and consumers to exchange market information including demand, supply, prices and other market requirements.

The coefficient for financial services, though positive, is not significant.

Another interesting feature of the results is that the variable on membership to the EAC customs union, though positive, does not significantly affect cross-border trade in agricultural commodities, when specific services variables are separately introduced into the model.

5.   Conclusion and Recommendations

5.1   Conclusion

This study assessed the impacts of trade in services on trade in selected agricultural commodities within the East Africa Community. Intuitively, liberalization of services can enhance cross-border trade in both goods and services, by creating greater freedom of operations by suppliers of domestic and foreign services. Specifically, it stands to play a significant role in fostering trade of staple food commodities, which have a direct impact on regional food security.

During the period 2004-2008, maize was the most commonly traded commodity across the EAC region, reflecting its importance among the staple foods, followed by beans and rice. In addition, Uganda accounted for the highest value of trade in agricultural products within East Africa. This was closely followed by Tanzania, while Rwanda and Kenya accounted for the least trade. Generally, Uganda and Tanzania have better agricultural productivity potentials compared to the other EAC partner states. Nevertheless, the EAC region is frequently affected by food shortages, although the region has potential and capacity to produce food for regional consumption and surplus for export to the world market.

Empirical results support the argument that trade in services positively influences agricultural trade in the EAC region. Overall, other business services and insurance services have the greatest impact on agricultural trade in East Africa. Business services are important determinants of trade transaction costs and can determine the extent of productivity, efficiency of clearance procedures, and capacities to internalize costs, while professional services, especially with regard to agricultural extension, bear agriculture productivity and trade. On the other hand, insurance is one of the means for mitigating the financial effects of risks associated with variability of weather, prices and facilitating credit availability for agricultural production. In addition, communication services such as mobile telephones and the internet make it easier for both traders and consumers to exchange market information including demand, supply, prices and other market requirements.

Recent developments in the communications sectors, particularly in the mobile telephony in East Africa, should therefore be expected to open up greater opportunities for cross-border trade. However,

though positive, financial services do not have a significant effect on EAC agricultural trade. This may be attributed to the fact that rural finance institutions are not deeply entrenched in providing rural credit to farmers. The latter, especially small scale farmers are often considered unattractive to clients of commercial banks due to low volumes of loans and high transaction costs. Apart from high risks associated with agriculture productivity, farmers tend to borrow at the same time, during pre-harvest season and lack sufficient collaterals. Thus, there could be a weak link between the financial and agricultural sector within the EAC region, and the constraints in access to credit by farmers and traders in agricultural products.

From the study findings, it can be concluded that liberalization of services can complement efforts to address food security issues in the EAC region. Apparently, liberalization of services in individual EAC partner states has been done unilaterally within the broad framework of structural adjustment programmes, and through the WTO commitments under the GATS framework. As the EAC integration process deepens, the establishment of a clear framework for liberalization of trade in services over and above the process of policy harmonization in selected sectors in conformity with the GATS is necessary. From the regression results, harmonization of services regulations can boost benefits of increased trade in services and facilitate enhancement of agriculture production, distribution and marketing.

5.2   Recommendations

1. *Removal of restrictions on trade in services within the EAC region*: The removal of restrictions on trade in business, insurance, communications and financial services will enable provision of such services across borders and reduce costs, thereby facilitating increased cross-border flow of agricultural commodities. An expanded services industry is likely to support, promote and facilitate the development, production and marketing of agricultural produce and products to ensure food security, poverty eradication and sustainable economic development.

2. *Reform rural credit institutions and provide incentives to support agricultural credit*: There seems to be very limited incentives to encourage and support the provision of credit for agricultural production. This is mainly attributed to commercial banks' client focus on 'high end consumers/clients', thereby segmenting financial

markets and channelling investments away from agriculture.

3. *Development of a regional framework agreement on trade in services to facilitate harmonization and removal of existing restrictions*: Such an agreement would also support effective services negotiations between the EAC partner states and other agreements, including COMESA, European Union and WTO.

4. *Development of mechanisms for collecting or reporting of services and services-related information and data at national and regional levels*: Currently, data on trade in services is either un-recorded, or the reported information is inaccurate. Besides, quantification of barriers to services are even more challenging, particularly in sectors that do not have appropriate regulatory regimes.

5.3   Study Limitations

This study has been carried out against a backdrop of some constraints and challenges. First, services data are of low quality as compared to data on merchandise trade. In fact, the intangible nature of services makes it impossible to capture data for cross-border trade in services within the EAC. Secondly, impediments to trade in services normally take the form of regulations or other measures that effectively limit access of foreign services suppliers to the domestic market. Quantitative measures of impediments are equally not readily available, especially given the time constraints. Third, the scope of services trade is wide and requires substantial resources to effectively collect information/ data and analyze. Finally, much of the cross-border trade in agricultural commodities still remains unrecorded, either due to perceived unfriendly customs procedures or reluctance by traders to declare true quantities and values of trade commodities. However, despite the shortcomings, the empirical results are a pointer to the general status, and better results can always be estimated with better quality data.

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Annex

Annex Table 1: Kenya's trade performance (US$ millions)

		Before the Customs Union			After the Customs Union		
		2002	2003	2004	2005	2006	2007
Exports (Domestic and re-exports)	Burundi	22.83	36.24	37.54	30.95	32.23	39.9
	Rwanda	54.77	79.17	78.18	89.34	110.4	137.01
	Tanzania	180.079	192.11	226.35	258.62	319.64	396.67
	Uganda	397.21	403.87	468.08	534.82	661.00	820.3
	Total EAC	654.89	711.39	810.15	913.73	1,123.27	1,393.88
	ROW	2,143.97	2,403.73	2,702.77	3,544.7	4,102.77	4,845.58
Imports	Burundi	0.008	0.032	0.036	0.410	1.304	1.619
	Rwanda	0.073	0.062	0.206	0.236	0.291	0.362
	Tanzania	10.19	18.01	25.39	29.00	35.84	44.49
	Uganda	8.437	13.66	12.77	14.59	18.03	22.37
	Total EAC	18.71	31.76	38.41	44.24	55.47	68.84
	ROW	3,770.23	3,709.68	4,591.2	6,826.62	8,227.45	10,324.6
Trade Balance	Total EAC	636.18	679.63	771.74	869.49	1,067.8	1,320.04

Source: IMF statistics

Annex Table 2: Uganda's trade performance (US$ million)

		Before Customs Union			After Customs Union		
Exports (Domestic and re-exports)	Country of Destination	2002	2003	2004	2005	2006	2007
	Burundi	6.3	10.1	18.1	20.8	20.6	42.8
	Kenya	61.5	78.4	76.9	72.4	88.0	118.2
	Rwanda	12.9	20.8	24.7	36.1	30.5	83.3
	Tanzania	5.8	5.8	12.2	15.5	13.8	30.6
	Total	86.4	115.1	131.9	144.8	152.8	274.8
	ROW	381.2	419.0	553.2	668.1	809.4	1,061.9
Imports	Burundi	0.01	0.03	0.07	0.2	0.2	0.7
	Kenya	312.9	357.3	400.0	521.0	400.6	494.9
	Rwanda	1.4	0.5	0.6	0.5	0.5	3.8
	Tanzania	7.5	10.8	15.8	30.1	28.7	30.8
	Total	321.8	368.6	416.4	551.8	430.0	530.2
	ROW	751.5	1,006.5	1,309.8	1,502.3	2,127.3	2,965.2
Trade Balance		-235.4	-253.5	-271.6	-407.0	-277.2	-255.4

Source: Uganda Bureau of Statistics

Annex Table 3: Tanzania's trade performance (US$ million)

		Before Customs Union			After Customs Union		
		2003	2004	2005	2006	2007	2008
Total exports	Kenya	84.5	90.1	93.3	103.9	126.5	231.5
	Uganda	48.7	55.7	48.9	44.0	46.1	53.8
	EAC	133.2	145.8	142.2	147.9	172.6	285.3
	ROW	1,025.7	1,196.0	1,444.8	1,593.7	1,859.4	2,416.9
Imports	Kenya	117.8	131.5	174.7	156.9	113.6	197.9
	Uganda	8.3	7.7	6.5	5.4	6.5	6.4
	EAC	126.1	139.2	181.2	162.3	120.1	204.3
	ROW	1,808.3	2,240.0	2,856.0	3,801.0	5,140.2	6,048.9
Trade balance		7.1	6.6	-39.0	-14.4	52.5	81.0

Source: National Bureau of Statistics

Annex Table 4: Correlation matrix

	Ltrade	Ltt	Lgdp	Lpop	Ldist	Lry	border	language	landlocked
Ltrade	1.000								
Ltt	0.3263	1.000							
Lgdp	0.3186	0.7967	1.000						
Lpop	0.3670	0.9229	0.7108	1.000					
Ldist	0.2037	0.4679	-0.0379	0.5942	1.000				
Lry	0.3754	0.9422	0.8778	0.9609	0.3898	1.000			
Border	0.2608	0.2085	-0.0335	0.3949	0.7915	0.2558	1.000		
Language	0.2627	-0.0307	-0.0100	-0.0344	0.0496	-0.0238	0.2994	1.000	
Land-locked	-0.0306	-0.4457	-0.2878	-0.4037	-0.2628	-0.3882	-0.000	0.000	1.000

No. of observations=180

Annex Table 5: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Trade	180	9.14	3.76	6.91	19.45
GDP per capita	180	16.25	0.40	16.92	15.51
Population	180	34.03	0.67	33.09	35.01
Total trade in services	150	42.12	1.08	39.85	44.03
EACCU	180	0.6	0.49	0	1
Distance	180	6.43	0.69	5.19	7.06
Language	180	0.33	0.47	0	1
Landlocked	180	0.5	0.5	0	1
Common border	180	0.75	0.43	0	1

Source: Own estimations