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THE IMPACT OF FDI, FOREIGN AID AND REMITTANCES ON THE EAST AFRICAN COMMUNITY'S INTRA-REGIONAL TRADE: A GRAVITY OF MODEL ANALYSIS

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Abstract

Free trade agreements or regional integrations implying a deeper form of integration play an important role in trade promotion. Being part of an integration can improve bargaining power as compared to third countries; the elimination of internal tariffs and barriers to trade can boost trade within the integration, which can eventually contribute to a decrease in the external dependency of integration members. As far as Africa is concerned, initiatives of integration already appeared after the colonial era; one example is the East African Community, which primarily aimed at increasing trade among members. The present study analyses the factors affecting the internal trade among members of the East African Community. External sources such as foreign direct investment, aid and remittances play an important role. The literature review and the statistical analysis based on the gravity model imply that the internal export and import of the members were affected by the size of the market, the common colonial partner and external sources; however, the direction of their impact is not identical.

Keywords: East African Community, gravity model, trade

1. Introduction

The growth of the Sub-Saharan region has slowed down in recent years. While the growth rate was registered at 3.1 percent in 2015, it only reached 1.5 percent in 2016, according to the estimates of the World Bank. However, a more dynamic growth is forecast for 2017. The slowdown in 2016 mostly affected the South African Republic, Nigeria – the two countries producing half of Africa’s GDP – along with other oil exporting countries, because of the fall in the price of oil/barrel and other internal shocks. The slow recovery of Europe after the crisis and the change in structure in the Chinese economy relying mainly on internal consumption have also been factors that subdued the import-based external demand of the African region. This, in turn, underpins the importance of trade among African countries (World Bank, 2017).

International organisations and development programmes, among others, that of the United Nations Economic Committee for Africa and the New Partnership for Africa’s Development – (NEPAD), emphasise that trade agreements can play an important role in the development of Africa and can contribute to the creation of regional integrations. Belonging to an integration can improve the bargaining power of members towards third parties; furthermore, the elimination of tariffs and trade barriers can promote trade within the integration and decrease the external dependence of members (UNCTAD, 2009). Analysing the impacts of free trade agreements, Hannan (2016) pointed out that the average annual export growth of parties reached 3.8 percent because of the agreement, and the positive effect was even more characteristic in the case of smaller and developing countries.

Plenty of regional integrations exist in Africa, whose operations go back long decades. The increase in internal trade as an objective is always treated as a priority; therefore, it is important to examine which factors influence the trade among members. The present paper focuses on the analysis of the East African Community (EAC). Compared with other African integrations, it is the East African Community parties where the highest proportion of export flows to another partner within the integration (UNCTADStat, 2016). In addition, a study by UNECA (2016) found that the level of integration and level of trade integration of the East African Community exceeds that of other African regional integrations.

2. Factors determining the trade of regional integrations

At present, the World Trade Organisation (WTO) registers 445 bilateral or plurilateral reciprocal Regional Trade Agreements (RTAs) in force (WTO, 2017). The classic grouping of regional integrations by Balassa also devotes

significant attention to trade among partners; however, recently, there are other approaches regarding the grouping of integrations (Kang 2016). Furthermore, the Jacob Viner theory on customs unions (1950) also examined integrations from a trade perspective, making a difference between trade creation and trade diversion, the balance of which represents the profit arising from the integration (Kocziszky, 2000; MacPhee–Sattayanuwat, 2014).

Trade creation means that the trade flow increases between members of the integration, thanks to the dismantling of trade barriers. As far as trade diversion is concerned, members of the integration substitute the (more efficient) trade with external partners with more expensive internal products (MacPhee–Sattayanuwat, 2014). After the turn of the millennium, but especially after the crisis in 2008, the reappearance of protectionism and the slowdown of globalisation further strengthened the role of regional integrations, whose main objective continued to be trade promotion (Bernek, 2010). The positive correlation between trade openness and economic growth – also in the case of Africa – is widely recognised and empirically substantiated (Kim et al., 2016; Manwa–Wijeweera, 2016); therefore, it is worth analysing which factors influence the trade of integrations. At the same time, certain studies underscore that the correlation is not evident and the impact of trade on economic growth is decreasing in the long term (Hur–Park, 2012; Menyah et al., 2014).

In the international literature, several authors have already analysed the factors effecting the trade of regional integrations (for instance: Geda–Seid, (2015) or Udvari–Kis, (2014), but in the case of certain factors, the results are fairly heterogeneous.

The impact of the market size (expressed by the sum of the GDP) and the income level (expressed by the GDP per capita) on trade is generally considered similarly. In the above studies, the variables were either analysed separately or as multiplication, showing their positive effect on the trade of integrations (Head et al., 2010 Udvari–Kis, 2014). However, the analysis of Iwanow–Kirkpatrick (2009) did not find the impact of the market size significant.

The distance between trading partners also effects trade. This refers to the distance between the capitals or major trade centers of the two countries, which has a negative impact on the volume of trade (Quaresi–Tsangarides, 2013; Shepard–Wilson, 2009). Inversely, having a common border increased the trade in goods among trading partners (according to Iwanow–Kirkpatrick, 2009), or had no remarkable impact (Head et al., 2010; Shepard–Wilson, 2009). On the other hand, the geographical distance as the indicator expressing transport costs is likely to lose its importance, given that the

geographic space in the classical sense has narrowed down with the dynamic development of information and communication technology and transport infrastructure (Csizmadia, 2016). However, the lack of transport infrastructure is still a major obstacle to trade (Erdősi, 2012b), and thus, a landlocked location may play a negative role as well (Quaresi-Tsangarides, 2013).

2.1. The impact of external financial assistance in Sub-Saharan Africa

The Sub-Saharan region is in need of substantial development in several areas, such as in agriculture, health, education and energy sectors (Kis, 2017, World Bank, 2017). Due to the low capital concentration of the national and regional banking system, the financing needed for the African continent is still to be resolved (EIB, 2015). Given the lack of national resources, external sources play an important role in the economy of African countries (Erdősi, 2012a). The relevance of the latter is emphasised by several analyses (Hühne et al., 2014; Okodua-Olayiwola, 2013, Udvari-Kis, 2014). Among external sources, foreign direct investment (FDI), aid, remittances are often mentioned. The relation between these factors and trade is generally highlighted; therefore, the present paper will also review their impact on trade (Fuchs et al., 2014).

In the case of African countries, FDI is usually considered as the most efficient source. The incoming technological transfer can contribute to the improvement of productivity, while the presence of foreign companies can increase the competition, which in turn might lead to the improvement of domestic companies' productivity (Amighini-Sanfilippo, 2014; Szent-Iványi-Vigvári, 2012). In the past few decades the FDI directed to the Sub-Saharan region has grown dynamically until 2015, when a slowdown was registered in investment dynamics, which was further deepened by the unfavourable business conditions, serious structural problems, political and economic risks as well as the steep deterioration of the exchange rate (Okafor et al., 2015; World Bank, 2017).

In addition, the slowdown of investments can be attributed to external factors, since most FDI comes from China, the European Union and the United States. The present American administration is a severe element of uncertainty for the region, while China, the biggest investor is also facing structural problems. In addition, the distribution of FDI flowing into Africa is not uniform, given that Asian investment is generally directed towards countries that are rich in mineral resources. This is also emphasised by Asiedu (2006), who claims that large local markets, the available resources, suitable infrastructure, low inflation rate, predictable legal and investor environment all have a positive impact on the flow of FDI, while corruption and political

instability have the opposite effect, thereby also influencing exports negatively (Moussa et al., 2016). The existence of regional integrations may impact the flow of FDI positively. Common rules can strengthen political stability, by encouraging the organisation of democratic elections (Asiedu, 2006). Regional integrations represent bigger markets and the inward FDI can extend the range of export products, especially in low-tech industries such as the processing of agricultural products and the textile industry, thereby contributing to the increase of internal trade (Amighini–Sanfilippo, 2014; Moussa et al., 2016). The bigger openness to trade and the inward FDI can boost economic growth (Tahir et al., 2015). On the other hand, according to the difference in the level of development, the impact can be bigger in certain member states, since the better qualified workforce and the more stable financial environment can attract more FDI, to the detriment of other member countries (Longo–Sekkat, 2004).

In addition to FDI, it is aid programmes that are used for the achievement of trade objectives as well, and this form of support accounts for the majority of external sources arriving in Africa. Official Development Aid (ODA), which are aids provided to low and medium income countries, represents a special type of aid programme. According to the ranking by the World Bank, low income countries have a per capita GNI of 0-1 025 USD; lower - medium income countries 1 026 – 4 035 USD, while upper-medium countries have a per capita GNI of 4 036 – 12 475 USD (World Bank, 2016). In addition, today the so-called emerging donors (China, India, Brasil, Saudi-Arabia, United Arab Emirates) also play an important role in the provision of aid (Udvari, 2014b; Udvari et al., 2017).

China plays a major role in aid programmes. African countries can even favour Chinese capital as opposed to Western capital, due to the basic principles of Chinese aid programmes such as the non-interference in internal affairs and the respect for sovereignty of the recipient countries (Vári, 2016). On the other hand, Swedlund (2017) underlines that the Chinese presence is merely regarded as an alternative by African countries and does not entail the reduction of the engagement of traditional DAC donors in Africa, since DAC donor countries in areas such as the development of health and education systems continue to play a particular role. Hailu (2011) analysed the impact of ODA on Sub-Saharan countries and found that ODA had a positive influence on imports and a negative on exports, which underscore the fact that aid serves the purpose of supply, not the development of production capacities

Within ODA, the details of Aid for Trade (AfT) programme had been specified by 2006 in the framework of the World Trade Organisation (WTO). The main objective of the programme is to support the export growth of least developed countries (LDCs) by integrating them in the multilateral trading system. In

order to achieve the above-mentioned objectives, it supports the development of trading infrastructure and production capacities, also encouraging trade development and the efficient solving of disputes (Udvari, 2013). Examining the period between 1995 and 2005, Vijil (2014) showed that the incoming AfT support has a favourable impact on the trade of regional integrations, whether they are developing-developing countries or developing-developed countries groupings. If we differentiate the support according to the specific objectives of the AfT, we can conclude that aid targeting the development of trading infrastructure had the biggest impact on trade, income and prosperity. Udvari-Kis (2014) analysed the impact of AfT on the internal trade of a specific integration. Their results show that the AfT flowing into ECOWAS further diminishes the trade among members of the integration; moreover, aid can set obligations for donor countries.

In addition to FDI and aid, remittances are often considered as a potential source of financing. (Erdősi, 2012a). Remittances add to the disposable income of households, which, via rising consumption, can contribute to economic growth. Furthermore, the increase in the demand of households based on imports can drive a recovery in foreign trade (Tahir et al., 2015). Globalisation and the aging society of developed countries creates a demand for immigrant labour force; therefore, home transfers play an increasing role in the economic development of the sending country. In comparison with FDI and aid, the distribution of remittances is more regular and stable. Their inflow is not sensitive either to political instability or the level of financial development and business environment, as opposed to FDI (Okodua-Olayiwola, 2013). For that reason, the Sub-Saharan region also considers remittances as an important source of income. This is reflected by the dynamic rise in home transfers directed towards the region: between 2000 and 2015, their number increased ninefold, almost approaching the value of aid (WDI, 2017).

Based on the review of literature, FDI can prove the most efficient source of trade facilitation, whereas the importance of remittances is justified by their relative stability. On the other hand, the impact of aid on trade is not clear cut, although they do represent a significant source for the Sub-Saharan region. Therefore, it is worth analysing the external sources flowing into the East-African Community.

3. Intra-trade of East African Community

African countries which became independent after the colonial era considered forming regional integrations as an integral part of their development policy. Consequently, several integrations are in force in Africa today, and all African countries are members of at least one integration. The importance of

regionalism has already been highlighted by many international institutions as well as by the European Union's development policy, since integrations can have many positive effects (Kis, 2016). A larger market means better bargaining power over its external members, it can result in economies of scale and even attract more FDI. Landlocked countries can more effectively engage in trade, the resource allocation can improve, common interests can prevail better, and it can contribute to structural transition (Geda-Seid, 2015; Tarrósy, 2007; UNECA, 2016). However, several factors hinder the effective functioning of integrations in Africa, such as frequent military conflicts, infrastructure deficiencies, overlaps between integrations, insufficient financial resources or lack of political will (Erdősi, 2012a; Longo-Sekkat, 2004; Marsai, 2016; Szent-Iványi, 2010).

Nonetheless, regional integrations in Africa put an emphasis on encouraging internal trade and the East African Community (EAC) is one of the integrations where significant progress can be seen. The development of internal trade shows different images in each integration. Examining the internal exports of the integrations in the ratio of total exports, it is mainly the integrations in the south and east of the continent that show greater activity in internal trade. These integrations are the East African Community (EAC), the Southern African Development Community (SADC) and the Southern African Customs Union (SACU). In addition, it is the West African Economic and Monetary Union (UEMOA) where exports between member states exceeds 10% of the total export, to which the common currency also contributes (Udvari, 2014a; Udvari-Kis, 2014). In the meantime, the internal trade is negligible in the Central African relation, as shown by ECCAS data (Figure 1).

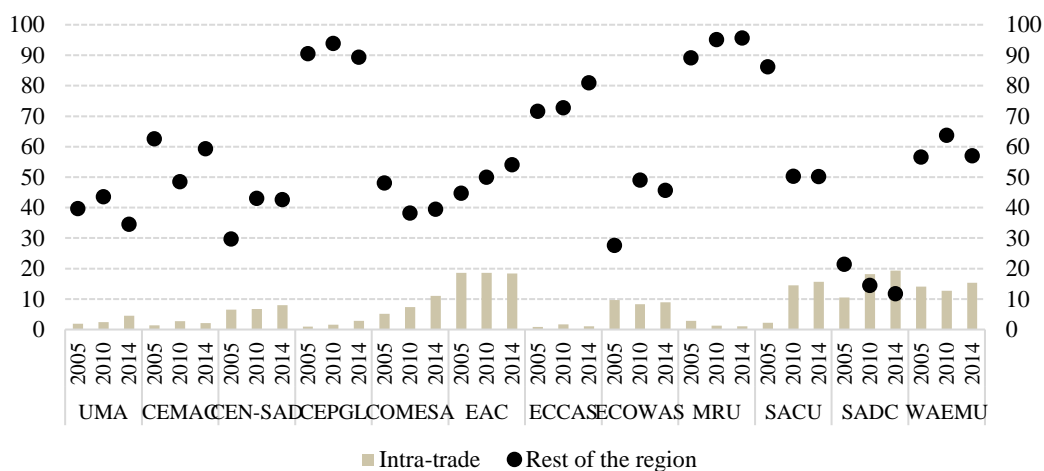


Figure 1. The export share of African regional integrations (percent), 2005, 2010, 2014

Note: Intra-trade: the trade between all members of the group; Rest of the region: the trade of the geographical region the group belongs to (Africa), minus the intra-trade of the group.

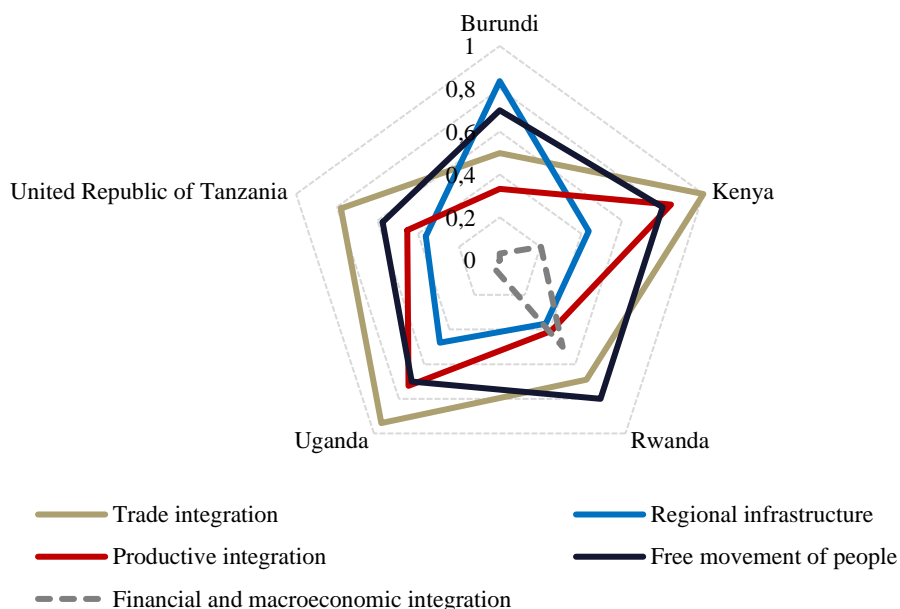
UMA – Arab Maghreb Union, CEN-SAD – Community of Sahel-Saharan States, MRU – Mano River Union, ECOWAS – Economic Community of West African States, WAEMU – West African Economic and Monetary Union, CEMAC – Economic and Monetary Community of Central Africa, CEPGL – Economic Community of the Great Lakes Countries, ECCAS – Economic Community of Central African States, COMESA – Common Market for Eastern and Southern Africa, EAC – East African Community, SADC – Southern African Development Community, SACU – Southern African Customs Union

Source: UNCTADStat (2016).

The treaty establishing the East African Community was signed on 30 November 1999 by the three founding states - Kenya, Tanzania and Uganda - and it entered into force on 7 July 2000. Two further member states - Rwanda and Burundi - are, as of 1 July 2007, full members of the group headquartered in Arusha, Tanzania. Finally, the Republic of South Sudan joined EAC in September 2016, becoming the sixth member of the Community. The East African Community was first established in 1967, but then it only operated for 10 years (EAC, 2017). Tarrósy (2007) identified the reasons for the decline as the different political ideologies, the unfair distribution policy, the lack of a common economic strategy, and the armed conflicts between the countries of the region in the 1970s. In September 2016, the East African Community (EAC) signed an accession treaty with Africa's youngest state, South Sudan and devised a special programme to assist South Sudan's integration process. Among the objectives of integration, special attention is paid to the promotion of internal trade and action against external members, which resulted in the integration reaching the level of customs union in 2005 and it has been operating as a common market ever since 2010 (Debrun et al., 2010, EAC, 2017). The EAC has already requested guidance from the European Central Bank in 2010 in relation to the institutional framework to be set up (East African Central Bank) and the convergence criteria required to create a monetary union being the next step forward (Debrun et al., 2010). Moreover, Tarrósy (2011) also raises the idea of building a federal political system. Analyzing the integration of the members of the East African Community, we can see that member states show the closest cooperation, which is also required by the common market. Cooperation is weaker in the areas of

infrastructure and productive integration among the countries, the integration of the financial system is the weakest, which shows that successful monetary integration is still to come. Out of the member states, Kenya is the most cooperative, while Tanzania is the least integrated country (Figure 2).

Figure 2. Regional integration scores of East African Community, 2016



Note: The analysis was prepared before the accession of South Sudan to EAC, therefore it only includes the five former member states. Regional integration scores are calculated on scale of 0 (low) and 1 (high).

Source: UNECA (2016).

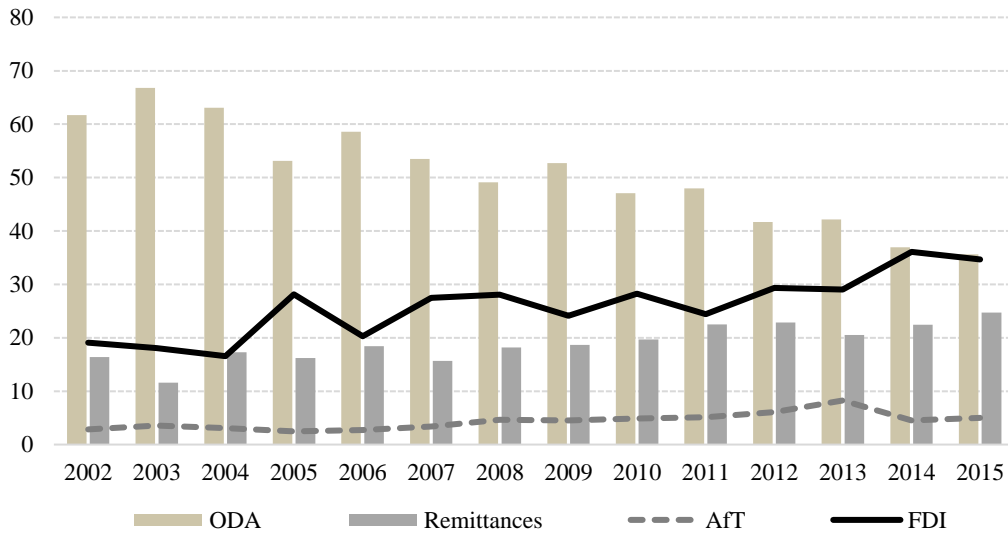
At the same time, if we compare the East African Community with other regional integrations in Africa, the EAC emerges from the integrations in terms of trade integration and the average of the dimensions as well (UNECA, 2016). This is also underpinned by the development of intra-community trade as its internal trade is growing and the dynamics of growth has been further strengthened with the introduction of the customs union since 2005 (UNCTADStat, 2016). The establishment of integration has had a positive effect on internal trade, which is also underpinned by the analysis of MacPhee-Sattayanuwat (2014). In their study they analyzed the impact of the existence of regional integrations on the internal trade of integrations and on exports

and imports with third countries between 1981 and 2008, using a statistical model. On the basis of their results, the 226% increase in trade between the members of the East African Community is due to the establishment of integration.

The East African Community has also recognized that internal resources are not sufficient to accomplish the necessary investments and has already signed partnership agreements with several organisations outside Africa such as the World Bank, the European Union, the European Central Bank, the Swedish International Development Cooperation Agency and the Norwegian Agency for Development Cooperation. Indeed, several countries have developed a specific development program for the development of the African region, such as the Tokyo International Conference of Africa's Development or the China – Africa Cooperation Forum (EAC, 2017, Kis, 2016; Tarrósy, 2011; Tarrósy, 2016; Tarrósy, 2017).

The European Union considers the East African Community as a separate region in the framework of the Economic Partnership Agreements (EPA), and in the negotiations completed in 2014, members of the Community have been granted tariff and quota free access to the EU market, which enters into force after the ratification. The European Union also attaches great importance to the promotion of regional integrations, which is emphasized by the EPA's rule system. Hence external resources can also serve this purpose, as European countries have a prominent place among DAC donors (Kis, 2016). After the turn of the millennium, the external resources flowing into the East African Community nearly quadrupled, showing continuous growth. The official development aids and Aid for Trade subsidies have declined in terms of their volume and in terms of their proportion to external sources, while the share of direct capital investments has been growing steadily (Figure 3).

Figure 3. The share of external financial assistance inflows of East African Community (in percentage), 2002-2015



Source: OECD-CRS (2016), UNCTADStat (2016) and WDI (2017)

East Africa embodies a major investment target in regard to the incoming FDI. The East African economies are among the most prosperous countries in the continent, and the recently discovered crude oil and natural gas stocks have further improved their prospects. In Tanzania, investment in the former infrastructure and service sector further strengthened economic growth (EY, 2017). In Kenya, which is regarded as the key economy of the East African region, a record of \$ 1.4 billion FDI flowed in during the course of the year 2015. The investments were motivated by the increased internal demand and the increased investor confidence driven by the improving business environment (UNCTAD, 2016). Nevertheless, in 2016 both the number and volume of FDI investments decreased compared to the previous year, as the uncertainties surrounding the announcement of Brexit had a strong impact on them. At the same time, Kenya's investment prospects remain favorable and it has the second best outlook in the field of investments in Africa (EY, 2017). The growth dynamics of remittances similarly did not decline after the turn of the millennium, which could support the analysis of Okodua-Olayiwola (2013) in the East African Community, which emphasize the lower volatility of remittances.

3.1. Data and methodology

With the help of the statistics, we examine which factors may affect the intra-community trade of the East African Community and how the inflow of external resources impact trade among member states. In the analysis, trade of the member states is broken down and factors affecting exports and imports are analyzed separately to determine whether the factors significantly influence exports or imports. Examination of trade between the member states of the East African Community is accomplished by the help of the gravity model, based on linear regression calculation. The gravity model is the most commonly used method for modeling foreign trade, as it is suited to estimate potential trade between two countries, incorporating trade facilitation and barriers to trade into the model (Székelyhídi, 2017). Factors affecting trade have already been approached from several aspects, and are also widely used in the analysis of trade in regional integrations. Table 1 provides a more detailed overview of the relevant literature.

Table 1. Literature review of determining factors of trade based on gravity model

Author(s)	Empirical findings
Amighini – Sanfilippo (2014)	The inflows of foreign direct investments positively impact the ability of African economies to upgrade their export baskets. FDI from developing countries enhance diversification in key low-tech industries and raise the quality of manufacturing exports.
Erdey – Pöstényi (2017)	One-percent increase in the distance from a trading partner decreases the trade of Hungary by 1.4-1.5 percent. The increase in the national income of Hungary, sharing a common border and trade agreements with the trading partner have a positive effect on trade.
Geldi (2012)	The impact of regional integration agreements on trade is not unambiguous. The EU has a positive effect on intra-union trade. On the other hand, the agreements that involve only less developed or developing members follow a slow pace on trade liberalization and they are still depended on external countries.
Martínez-Zarzoso et al. (2009)	

Glick – Rose (2016)	The use of a common currency in the framework of the European Monetary Union has boosted intra-regional trade by around 50 percent.
Hühne et al. (2014)	Aid for Trade granted by DAC donors increase South-South exports, strengthening the trade relations between developing countries.
Longo – Sekkat (2004)	Insufficient infrastructures, ineffective economic policy and internal political tensions have a significant eroding impact on intra-African trade. On the other hand, these obstacles do not affect African trade with developed countries except for internal conflicts.
Narayan – Nguyen (2016)	Vietnam’s trade with rich nations is more sensitive to distance, economic size, openness of trading partners and exchange rate than trade with low income nations. During an economic shock, Vietnam experiences lower trade decline against lower income countries (African and low income Asian nations) than high income countries.
Udvari (2014a)	Aid for Trade provided by the United States and European Union does not show significant impact on intra-trade of ECOWAS, which may imply a trade diversion effect.
Viorica (2015)	Trade partnerships of European Union countries are more efficient for partners with common borders and that are not landlocked. GDP and distance between EU member countries are also significant variables in bilateral trade flows.
Yu (2010)	Democratization in the exporting country can improve product quality and reduce trade costs, enhancing bilateral trade. At the same time, democratization in the importing country may increase trade barriers and thus reduce imports.

Source: the authors’ own analysis

The basic gravity model includes the logarithm of import, export, or total trade as a dependent variable. Among the independent variables, the market size is illustrated by the logarithm of the GDP value, the countries' income position is approximated with the logarithm of GDP per capita, while the proxy of transport costs includes the logarithm of the distance of countries (Dusek, 2003; Pöstényi, 2017). In addition to the basic indicators, several other factors can be added to the statistical model (Dusek, 2016). In the course of our analysis, we also incorporate factors influencing the trade disclosed in the literature review into the model. During the study, we take the distance between the capitals of the countries into consideration, so the common border dummy variable is no longer used in the model. To capture the impact of common past on trade, we use the common colonizer dummy. In the absence of historical data with multiple indicators, the analysis was carried out on data between 1995 and 2015, while the model including AfT was used to analyze the period between 2002 and 2015 as AfT data has been available since 2002. The study includes five members of the East African Community (Burundi, Rwanda, Uganda, Kenya and Tanzania), while South Sudan, which joined in 2016, is not yet included, as it was not a member in the analysis period.

The equation (1), (2) of the models used for the examination of bilateral trade and the content of the indicators used in the model is the following:

$$\ln EX_{ij} = \beta_0 + \beta_1 \ln (Y_i * Y_j) + \beta_2 \ln (Y_{c_i} * Y_{c_j}) + \beta_3 \ln Dist_{ij} + \beta_4 \ln FDI_i + \beta_5 \ln ODA_i + \beta_6 \ln Remit_i + \beta_7 \ln AfT + \beta_8 comcol + \varepsilon,$$

(1)

$$\ln IM_{ij} = \beta_0 + \beta_1 \ln (Y_i * Y_j) + \beta_2 \ln (Y_{c_i} * Y_{c_j}) + \beta_3 \ln Dist_{ij} + \beta_4 \ln FDI_i + \beta_5 \ln ODA_i + \beta_6 \ln Remit_i + \beta_7 \ln AfT + \beta_8 comcol_{ij} + \varepsilon,$$

(2)

where

- EX_{ij} is the export from i to j country (intra-export);
- IM_{ij} is the import from i to j country (intra-import);
- $Y_i * Y_j$ is the multiple of GDP of i and j country, as a proxy of market size;

- $Y_{ci} * Y_{cj}$ is the multiple of GDP per capita of i and j country, as the proxy of income level
- $Dist_{ij}$ is the distance of the capital of i and j country, as a proxy of transport costs;
- FDI_i shows the amount of Foreign Direct Investment inflows of i country;
- ODA_i shows the amount of Official Development Assistance of i country;
- AfT_i shows the amount of Aid for Trade of i country;
- $Remit_i$ shows the amount of Remittances of i country;
- $Comcol_{ij}$ the value 1 of the dummy shows that the two countries have common colonial history, otherwise its value is 0;
- ε is error term.

GDP, GDP per capita, export and import, and foreign direct investment data included in the analysis in current prices come from UNCTADStat (2016), while official development assistance and Aid for Trade data come from the OECD-CRS (2016) database. The value of remittances can be found in the World Development Indicators (WDI) (2017) database. The common colonizer and the distance can be found in the datasheets of CEPII (2017). With regard to the data used, the constant price has come up, but the OECD and World Development Indicators and UNCTAD databases only provide data at current prices for variables and AfT data is only available in the OECD database.

As expected, the variables included in the regression model were tested for the stationarity of the variables with the augmented Dicky-Fuller (ADF) test. The test showed stationary processes. Furthermore, according to the recommendations by Kovács (2008) we have checked that multicollinearity does not exist between the variables and the results of the White test show homoscedasticity time series. In the model, we had to take into account the problem of endogeneity, when there could be an opposite relationship between the dependent and independent variables (Gács, 2007). Looking at the current empirical study, it is unclear whether incoming external sources have an impact on the volume of trade or that improving trading performance encourages inflow of external resources. To eliminate endogeneity, lagged data is often used, but there is no consensus on the extent of the lag.

This results in the lag of some explanatory variables, similarly to the analysis of Gábor et al. (2012), we have estimated it using an optimization process, which resulted in a lower Schwarz criterion (SIC) value, i.e. a better model fitting, having improved the explanatory power of the model. Indeed, with delays, the autocorrelation of error terms was also managed.

3.2. Empirical analysis and results

Before presenting the results of the regression model, it is worth examining the correlation to be found between the two dependent variables (export and import) and the independent variables in the model (Table 2). Based on the results, we found significant co-movement with all eight explanatory variables. In line with the literature review, we can see that distance and trade move in the opposite directions, while with the other indicators the co-movement with trade is positive. However, it should be noted that in the case of exports, closer co-movement with independent variables can be observed.

Table 2. Correlation between the dependent and independent variables (and p-values)

Indicators	Export	Import
Market size	0.66*** (0,00)	0.53*** (0,00)
GDP/capita	0.61*** (0,00)	0.54*** (0,00)
Distance	-0.14** (0,02)	-0.13** (0,03)
Common colonizer	0.42*** (0,00)	0.34*** (0,00)
Foreign Direct Investment	0.23*** (0,00)	0.23*** (0,00)
Official Development Assistance	0.46*** (0,00)	0.16*** (0,00)
Aid for Trade	0.46*** (0,00)	0.24*** (0,00)
Remittances	0.65*** (0,00)	0.26*** (0,00)

Note: *** significant at 1%, ** significant at 5%

Source: own calculation

The results of the regression models are shown in Tables 3 and 4. Thanks to the use of lagged variables, all eight explanatory variables showed significant correlation with exports and imports. The number of the lag of independent variables differs. It is because of the optimization process where only the same period appears, while there are places where the model analyses the effects of four-year-old values; in other words, the model shows the best fit.

Table 3. Results of the gravity models on the intra-export

	Model 1. (1995-2015)		Model 2. (2002-2015)	
	Coefficie	p-valu	Coefficie	p-value
Market size	0.62***	0.00	1.45***	0.00
Market size (-1)	-0.37***	0.00	-1.32***	0.00
Market size (-2)	-0.25***	0.00	-	-
Market size (-3)	0.29***	0.00	-	-
Market size (-4)	-0.23***	0.00	-	-
GDP/capita	-0.03	0.82	-1.21***	0.00
GDP/capita (-1)	-	-	1.03**	0.01
Distance	-0.86***	0,00	-2.60***	0.00
Distance (-1)	-0.14***	0.00	-	-
Common colonizer	-0,03	0,82	-0,84***	0,00
Foreign Direct Investment	-0,01	0,76	0,12***	0,00
Foreign Direct Investment	0,09**	0,02	0,17***	0,00
Foreign Direct Investment	0,10**	0,01	0,19***	0,00
Foreign Direct Investment	0,06*	0,05	0,08**	0,05
Foreign Direct Investment	-	-	0,08**	0,01
Remittances	0,01	0,11	-0,01	0,91
Remittances (-1)	-0,02*	0,09	-0,03*	0,06
Remittances (-2)	0,03***	0,00	-	-
Official Development Assistance	0,52***	0,00	0,05	0,77
Official Development Assistance (-1)	0,13	0,42	-	-

Official Development Assistance (-2)	-0,44***	0,00	-	-
Aid for Trade	-	-	0,27***	0,00
Constant	-0,18	0,84	0,42	0,52
R ²		0,92		0,93
Adj. R ²		0,92		0,92
SIC		2,36		2,21
Durbin-Watson		2,02		2,09

Note: *** significant at 1%, ** significant at 5%, * significant at 10%

Source: own calculation

The explanatory power (R^2) of the models is high, 0.92 and 0.93 in case of the exports, 0.88 and 0.90 in case of the imports, and the values close to two of Durbin-Watson indicate the autocorrelation of the error terms. Analyzing the results, we obtained a result in line with the literature concerning the distance, as it reduced both exports and imports. The common colonial past encouraged trade relations from the import side, while on exports it had a negative impact or no significant impact. The level of development and income of the countries did not affect the import and the impact on internal export is also unclear as the impact of market size can not be identified in a consistent manner.

Table 4. Results of the gravity models on the intra-import

	Model 1. (1995-2015)		Model 2. (2002-2015)	
	Coefficient	p-value	Coefficient	p-value
Market size	1.13***	0.00	1.49***	0.00
Market size (-1)	-0.67***	0.00	-1.12***	0.00
Market size (-2)	0.16	0.18	-0.09	0.47
Market size (-3)	0.07	0.53	0.28**	0.02
Market size (-4)	-0.50***	0.00	-0.48***	0.00
GDP/capita	-0.20	0.28	-0.21	0.16

Distance	-0.25	0.15	-0.90**	0.01
Common colonizer	1.29***	0.00	0.82***	0.00
Foreign Direct Investment	-0.12***	0.00	-0.14***	0.00
Foreign Direct Investment (-1)	-0.14**	0.01	-0.08*	0.06
Foreign Direct Investment (-2)	-0.12**	0.01	-	-
Foreign Direct Investment (-3)	-0.09**	0.02	-	-
Remittances	-0.00	0.97	-0.04	0.06
Remittances (-1)	0.03**	0.02	0.03	0.11
Remittances (-2)	0.03*	0.06	-	-
Official Development Assistance	-0.07	0.73	-0.75***	0.00
Official Development Assistance (-1)	-0.11	0.59	-0.30	0.12
Official Development Assistance (-2)	-0.64***	0.00	-0.32*	0.09
Official Development Assistance (-3)	-0.30	0.10	-0.37**	0.04
Aid for Trade	-	-	-0.13*	0.05
Constant	1,75	0,11	1,71**	0,02
R ²	0,88		0,90	
Adj. R ²	0,87		0,89	
SIC	2,78		2,50	
Durbin–Watson	2,10		2,02	

Note: *** significant at 1%, ** significant at 5%, * significant at 10%

Source: own calculation

Concerning external resources, a more consistent result can be observed. FDI and Aid for Trade subsidies also have a positive effect on internal exports, while in the case of imports, an opposite result can be seen. On the one hand, it can be assumed that trading capacities are also increased from FDI and AfT sources, which also has an impact on internal export. On the other hand, it may have a negative impact on internal import that the country imports from the donor country providing external sources. In addition, member states are also developing the industrial sector that generates an ever higher added value from external sources, which is one of the key objectives of FDI, and this enables domestic production of previously imported products. Official development aids are also reducing the value of internal exports and imports, although this predicts the serving of interests of donor countries allocating the aid. However, remittances also have a positive effect on internal export and import, but their effect only can be seen after one or two years.

Overall, the present study gave the same results as the literature, taken into consideration that FDI, remittances, and Aid for Trade in the East African Community also stimulated internal exports, while official development assistance often follow the interests of donor countries. The distance has a negative effect on internal trade as well, whereas the size of the market, the income situation and the direction of the impact of the common colonial past cannot be clearly identified.

4. Conclusion

The main motivation of writing the present article and preparing the statistical analysis was to examine the impact of external resources flowing into the member countries of the East African Community on the internal trade of the integration, separately analyzing the factors affecting internal export and internal import. The actuality of the analysis is that regional integrations play an increasingly important role in the world economy. The protectionist economic policies following the crisis in 2008, the slowdown of world trade and the uncertainties affecting the main trading partners of African countries outside the continent (China, European Union) could turn the attention of African country leaders to intra-continental trade. Encouraging internal trade on the level of an integration can be enforced more easily because of common regulation. Internal trade of the East African Community shows steady growth, which was further helped by the introduction of the customs union. However, in the absence of domestic capital, external resources play a prominent role in promoting trade.

Belonging to integrations implies a bigger potential market, which can promote trade against external members, while the statistical analysis of the study has shown, that it is not a clear incentive for internal trade. Internal trade is encouraged by earlier colonial relations, while distance has a negative effect. The impact of external resources flowing into the countries of the East African Community is also unclear. Official Development Assistance may have a binding effect on donor countries due to their impact, which is reducing domestic trade. Remittances, Aid for Trade subsidies, but mainly FDI have a positive impact on internal exports, so special attention needs to be paid to the development of the business environment in the East African region as well. Finally, reducing corruption, increasing political stability and improving the regulatory environment can further increase FDI inflows, helping the region's economic growth as well.

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