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# An Optimal East African Monetary Union?

*Optimum Currency Area Theory and Policy Recommendations for a Sustainable Monetary Union*

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# Abstract

This thesis examines the feasibility of the proposed East African Community Monetary Union.

First, a framework is built by outlining the integration initiative in the region and synthesising the various strands of traditional and modern Optimum Currency Area theory. Alongside a descriptive evaluation of convergence and Optimum Currency Area criteria, the comprehensive analysis is centred around two models assessing the symmetry of shocks and synchronisation of business cycles. Contributions are made by updating the time horizon of underlying data as well as including the latest member of the East African Community, South Sudan, and potential candidates for future enlargements where data was available.

Overall, little evidence is found in favour of a monetary union mainly due to the prevalence of asymmetric shocks, structural differences, and limited convergence. However, as the results suggest core-periphery patterns, a perspective is offered in the form of two-speed East Africa where the single currency is first introduced by Kenya, Tanzania, and Uganda and later expanded.

The derived policy recommendations are split into two parts: crucial preparatory actions in the short-term, and far-reaching measures to complete the Monetary Union to ultimately decrease the fragility in the long-run.

***JEL Classification*** – E32, E42, F15, F33, F45, O55

***Keywords*** – East African Community, Economic and Monetary Integration, Macroeconomic Convergence, Monetary Union, Optimum Currency Area, Policy Coordination

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# List of Acronyms

| | |
|---|---|
| **AD-AS Model** | Aggregate Demand and Supply Model. 72, 74, 76, 83 |
| **AEC** | African Economic Community. 3 |
| **AIC** | Akaike's Information Criterion. 78 |
| **AMU** | Arab Maghreb Union. 3 |
| **ANOVA** | Analysis of Variance. 39 |
| **AU** | African Union. 3 |
| **BDI** | Republic of Burundi. 15 |
| **BP Filter** | Band Pass Filter. 39, 85 |
| **CEN-SAD** | Community of Sahel–Saharan States. 3 |
| **CMA** | Common Monetary Area. 3, 102 |
| **COD** | Democratic Republic of the Congo. 15 |
| **COMESA** | Common Market for Eastern and Southern Africa. 3, 14, 40 |
| **CPI** | Consumer Price Index. 50, 77 |
| **EAC** | East African Community. 1–3, 5–15, 19, 26, 33, 37–63, 65–72, 76–80, 83, 84, 86–90, 92–94, 96–101, 103–111 |
| **EACB** | East African Central Bank. 10, 105–108, 111 |
| **EACSF** | East African Community Stabilisation Facility. 109 |
| **EACSO** | East African Common Services Organisation. 4 |
| **EAHC** | East Africa High Commission. 4 |
| **EAMI** | East African Monetary Institute. 10, 99 |
| **EAMU** | East African Monetary Union. 2, 13, 21, 38–42, 44–46, 57, 58, 70, 84, 96, 100–106, 108–110 |
| **ECB** | European Central Bank. 106 |
| **ECCAS** | Economic Community of Central African States. 3 |
| **ECCU** | Easter Caribbean Currency Union. 47 |
| **ECOWAS** | Economic Community of West African States. 3, 92 |
| **EMU** | European Monetary Union. 1, 2, 32, 43, 47, 48, 50, 55, 58, 65, 72, 77, 84, 91, 93–95, 98–100, 103–106, 108, 111 |
| **ETH** | Federal Democratic Republic of Ethiopia. 15 |
| **EU** | European Union. 58, 59, 93, 97, 107 |
| **FDI** | Foreign Direct Investment. 5, 32, 70, 71 |
| **G-PPP** | Generalised Purchasing Power Parity. 37–39 |
| **GDP** | Gross Domestic Product. 1, 10, 12, 38–40, 42–45, 47, 50–54, 64, 65, 67, 68, 73, 76–78, 84–88, 91, 96, 107 |

**GMM** Generalised Method of Moments. 37, 43, 44

**HHI** Herfindahl-Hirschmann Index. 67
**HP Filter** Hodrick-Prescott Filter. 2, 38, 39, 85, 88

**IGAD** Intergovernmental Authority on Development. 3, 14
**IMF** International Monetary Fund. 43, 55, 70

**KEN** Republic of Kenya. 15

**MAC** Monetary Affairs Committee. 9, 99
**MTM** Monetary Transmission Mechanism. 40, 41

**OCA** Optimum Currency Area. 1, 2, 16, 19–21, 25, 29–37, 43, 72, 91, 94, 100

**PPP** Purchasing Power Parity. 28, 51

**REC** Regional Economic Community. 3
**RWA** Republic of Rwanda. 15

**SACU** Southern African Customs Union. 94
**SADC** Southern African Development Community. 3, 14, 40, 56, 90
**SDN** Republic of the Sudan. 15
**SSA** Sub-Saharan Africa. 60, 62, 92
**SSD** Republic of South Sudan. 15
**SVAR** Structural Vector Auto Regression. 2, 38, 40–42, 72

**TZA** United Republic of Tanzania. 15

**UGA** Republic of Uganda. 15

**VAR** Vector Auto Regression. 37, 38, 40, 42, 72, 73, 76, 78

**WAEMU** West African Economic and Monetary Union. 92, 107
**WAMZ** West African Monetary Zone. 40

# 1 Introduction

Development on the African continent is lacking behind. Especially when compared in terms of economic variables such as Gross Domestic Product (GDP) per capita, productivity, and international trade, African countries tend to be of rather small size and remain insignificant on the global stage. Consequently, the need for close cooperation was identified in order to promote social and macroeconomic development and gain global clout (Uzodike, 2009; Honohan and Lane, 2000). Of the many integration initiatives that have been launched over recent decades, six East African countries distinguish themselves as they committed to deeper integration beyond simple currency pegs predominant in Africa.

In late 2013, the East African Community (EAC) comprising of Burundi, Kenya, Rwanda, Tanzania, and Uganda signed the Protocol for the Establishment of the East African Community Monetary Union with the goal of introducing a single currency by 2024 (EAC, 2013a). This represents the third pillar of economic integration after having established a customs union and common market in 2005 and 2010, respectively. The ultimate goal of integration in East Africa is the establishment of a political federation (EAC, 1999). By these means, the East African countries envision a successful revival of integration initiatives of the previous century, ending the artificial separation of peoples in East Africa as a consequence of colonial engagement, and boosting economic development in the region.

It remains without doubt that deeper economic and monetary integration can lead to accelerated economic growth, development, and welfare of its participating countries. However, recent experiences from the euro zone, which is the most prominent example of an economic and monetary union today, cast doubt on the stability without forms of deeper integration. Especially since the financial crisis, the conditions under which the European Monetary Union (EMU) was formed have been questioned as core-periphery patterns became apparent, also affecting the political union as a whole. Since then, strategies to alleviate flaws in the design of proposed monetary unions to enhance sustainability have been subject to increased attention in academic research.

Since the first contributions by Mundell, McKinnon, and Kenen in the 1960s, Optimum Currency Area (OCA) theory has been modified, updated, and operationalised as framework to assess the feasibility of monetary unification. While these concepts have been widely applied in

the context of the European Monetary Union, East Africa has been subject to limited, rather fragmented applications of OCA theory, finding little evidence in favour of the proposed Monetary Union. Due to frequent developments in the area, this thesis will contribute by updating the time horizon of underlying data and by including South Sudan as well as candidates for a potential EAC enlargement. By pursuing a comprehensive approach to OCA analysis, the following questions will be answered:

1. Based on the implications of Optimum Currency Area theory, can the proposed East African Monetary Union be optimal?

2. How should insights after two decades of monetary integration in Europe be reflected in the design of the proposed East African Monetary Union, to mitigate apparent risks of fragile monetary unions?

Rather than focusing on purely political implications, increased weight is given to comprehensively analyse the economic aspects of the monetary unification process in East Africa. From here, the thesis proceeds as follows. After establishing a common understanding of the history and past integration initiatives in East Africa in Section 2, the general concept, as well as costs and benefits of monetary unions are outlined in Section 3. Section 4 then summarises and evaluates the various strains of traditional and modern OCA theory, providing a theoretical framework for the economic analyses. Findings of previous studies undertaken in the region are reviewed in Section 5. As first part of the analysis in this thesis, compliance with the convergence criteria set out in the Protocol for the Establishment of the East African Community Monetary Union is evaluated in Section 6, before implications of traditional OCA theory is assessed in Section 7 using mainly descriptive statistics. Section 8 is concerned with modern OCA theory, applying sophisticated econometric analyses such as a Structural Vector Auto Regression (SVAR) model and HP Filter to examine symmetry of shocks and synchronisation of business cycles, respectively. From the results, policy recommendations are derived in Section 9 covering both, crucial short-term implications and ways to mitigate long-term risks of the proposed East African Monetary Union (EAMU). Finally, Section 10 concludes and offers implications for future research.

# 2 The East African Community

Since the 1960s, several Regional Economic Communities (RECs) have been established as part of a greater integration initiative across the African continent, often based on colonial roots (Cobham and Robson, 1994). Simultaneously, the African Union (AU), which replaced the Organisation of African Unity existing from 1963 to 2002, is the continental institution to promote greater unity, cohesion and solidarity among African countries by aiming to advance political and socio-economic integration, among others (Murithi, 2017). More specifically, the sub-organisation the African Economic Community (AEC), established by the Abuja Treaty in 1991, promotes mutual economic development, i.e. aiming for customs unions, free trade areas, common markets, and ultimately economic and monetary union among the African nations (OAU, 1991).[1]

Currently, eight RECs have been identified and accepted by the African Union as building blocs of the African Economic Community.[2] Most of these regional communities have the creation of a monetary union as one of the objectives of their broader integration agenda. However, the economic integration varies widely among these RECs as they have developed independently, incorporating different structures and policies (Masson, 2008; Hartzenberg, 2011). Only a small number have implemented specific steps for establishing their own monetary union. Within the ECOWAS two monetary unions are in progress, which have previously been pegged to the French franc and now to the euro, and are often referred to as CFA franc zones. Within the SADC, Namibia, Lesotho, and Swaziland have pegged their currencies to the South African rand, forming the Common Monetary Area (CMA) (Masson, 2008; Lopes, 2016). In addition, the member states of the EAC signed a protocol in 2013 that lays out the groundwork for an independent monetary union. This union is unique in a sense that it has made considerable achievements towards monetary and economic integration, such as sequentially establishing a customs union and a common market over recent years (Sheikh et al., 2013).

[1] Even an overarching African Monetary Union, providing a single currency for the entire continent, is in discussion (Masson, 2008).

[2] Aside from the East African Community, the African Economic Community comprises of the Arab Maghreb Union (AMU), the Common Market for Eastern and Southern Africa (COMESA), the Community of Sahel–Saharan States (CEN-SAD), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Intergovernmental Authority on Development (IGAD), and the Southern African Development Community (SADC) (Hartzenberg, 2011).

## 2.1 History of the EAC

Cooperation and regional integration in East Africa have a long history and can be traced back to the late 1800s. According to Mshomba (2017), one of the earliest instances of economic cooperation was the establishment of inter-territorial railroad services between Kenya and Uganda, which was completed in 1902 after several years of construction. As intended by the British colonial rulers, the Kenya-Uganda Railway had significant impact on capital and labour mobility as well as on intra-regional trade relations and thus, advance development in the region. Soon after, the economic integration continued with the creation of the East African Currency Board which introduced the East African rupee as a single currency for the two territories in 1905. Subsequently, a postal union and a customs union were established in 1911 and 1917, respectively. Tanganyika, the predecessor of present-day Tanzania, joined the union in 1927 despite still being under German rule at the time. Furthermore, the Court of Appeal for Eastern Africa, the East African Governors' Conference, the East African Income Tax Board, and the Joint Economic Council were installed, additionally formalising the economic integration of the East African countries (Maxon, 2009). However, Wright (1961) claims, it was not until World War II that the East African territories realised the significance of their cooperation when they were obliged to pool resources in order to withstand the turmoil of war.

Even though the outcome of World War II also had implications for Colonial East Africa,[3] the local governments managed to reinstate their cooperation in form of the East Africa High Commission (EAHC) in 1948. In addition to providing a customs union, a common external tariff, currency, and postage, the EAHC also dealt with common services in transport and communications, research, and education (Maxon, 2009). In subsequent years, growing prosperity and international pressure fuelled the desire for political independence from Great Britain, which Tanganyika achieved in 1961, as the first country among the East African territories. Following the independence of Kenya and Uganda, the EAHC was replaced by the East African Common Services Organisation (EACSO), possessing the same responsibilities as the EAHC previously. At this point, many international observers believed that the ultimate goal of political federation would be achieved in the near future. However, a lack of joint planning and fiscal policy, differing

[3] As Great Britain emerged victorious from the war, colonial rule over entire East Africa was established. However, the Second World War strengthened the sense of nationalism, freedom and self-determination, ultimately reducing the power and capacity of Britain to rule the colonies (Maxon, 2009).

political objectives, and Kenya's dominant economic position made it impossible for the new organisation to build on previous achievements (Wright, 1961; Maxon, 2009).

In reaction to these set-backs, the East African Community (EAC) was established with the signing of the Treaty for East African Cooperation by Kenya, Tanzania, and Uganda in 1967 (Maxon, 2009). Its objective was to achieve balanced economic growth within the region by the means of a common market, a common customs tariff, and a range of public services. Adding to the previously founded public enterprises, the airline East African Airways and the East African Development Bank were established. At this point, a monetary union with a currency board and a parity currency was also set up.[4] For the first several years of its existence, the economic bloc was a success story, with citizens moving and working across the region, and fostering growth by attracting Foreign Direct Investment (FDI). However, soon after its establishment, the community faced hardship (Hazlewood, 1979). First, after failing to agree on a suitable East Africa-wide central banking system, the monetary union collapsed in 1968, diminishing hopes for accelerating economic growth through integration. Second, after seizing power through a military coup in 1971, General Idi Amin started to dismantle the democratic system in Uganda. Due to clashing ideologies, the tripartite relationship suffered and eventually cooperation in the region significantly decreased. Third, the three countries were not able to coordinate a joint reaction to the oil shock in 1973, entrenching the already severe differences in economic policies. Combined with growing resentment about imbalances among the members,[5] the first East African Community was doomed to fail in 1977 (Maxon, 2009).

The countries not only lost 60 years of cooperation and the hopes for economic development attached to it, but also faced a prolonged period of war and mediation. After General Amin was overthrown by Tanzanian forces in 1981, the path for the Mediation Agreement of 1984 was cleared, governing the division of joint assets and liabilities (Lofchie, 2014). In the agreement, the countries also expressed commitment towards economic cooperation in the future, which lead to establishing a tripartite working group with the task of developing the modalities of renewed cooperation in 1986. As outlined by Ogola et al. (2015), several small steps during the 1990s such as heads of state summits, the signing of additional cooperation commitments, and

[4] One Ugandan shilling was set equal to one Kenyan shilling and one Tanzanian shilling (Lofchie, 2014).

[5] Tanzania and Uganda claimed that Kenya was the main beneficiary of the common market and public enterprises due to its strong economic position. The breaking point was when Kenya demanded more seats than Uganda and Tanzania in decision-making organs of the EAC (EAC, 1999).

the establishing of a preferential trade area, eventually lead to the rebirth of the East African Community when the Treaty for the Establishment of the East African Community was signed in November 1999 and ratified in July 2000. The accession of Burundi and Rwanda as well as South Sudan in 2007 and 2016, respectively, led to today's composition of the East African Community.

## 2.2 Governance and Economic Integration

Underpinned by their historical links, Kenya, Tanzania, and Uganda wanted to return to previously successful economic cooperation and lay the groundwork for further economic, political, and social integration in the region. With the ratification of the Treaty for the Establishment of the East African Community, the three founding members set out with the goal of "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" (EAC, 1999, pp. 12–13). Deriving lessons from previous failures due to lack of political will and involvement of the private sector and the public, continued disproportionate sharing of benefits among the Community's members, and inadequate policies to address differences in their development, a new framework for the second EAC was developed.

As outlined in the Treaty for the Establishment of the East African Community, the following organs are considered in order to achieve the objectives of the EAC (EAC, 1999). The Summit, consisting of the partner countries' Heads of State, determines the general direction and gives strategic guidance regarding the development of the Community. To counter previous imbalances among members, all decision must be made in consensus. The Summit meets at least once per year with the possibility of additional extraordinary meetings, where the progress and future objectives are evaluated based on reports submitted by the Council of Ministers. The Council represents the policy organ with the partner states' ministers for EAC affairs as well as attorney generals as members. Jointly, they "promote, monitor and keep under constant review the implementation of the programmes and ensure the proper functioning and development of the Community" (EAC, 1999, p. 20). The Council's responsibilities range from setting the policy agenda to reviewing the budget and overseeing appointed sectoral committees required to guarantee successful implementation of objectives.

The EAC's governing body is designed to have a threefold horizontal separation of powers. The East African Court of Justice is the judicial branch, which ensures "the adherence to law in the interpretation and application of and compliance with" the Treaty for the Establishment of the East African Community (EAC, 1999, p. 26). A minimum of 15 judges is appointed by the Summit following recommendations of the partner states for a tenure of seven years – ten on the First Instance Division and five on the Appellate Division. The judges are replaced in thirds and no country may appoint more than two judges to the First Instance Division and one judge to the Appellate Division. Furthermore, the legislative branch is the East African Legislative Assembly, functioning as a liaison to national assemblies and advisor to the Council. Further, it approves the annual budget and draws authority to establish standing committees such as the Committee on Communication, Trade, and Investment. The membership is comprised of 54 elected representatives from each member state, seven ex-officio members responsible for EAC affairs in the member states, as well as the Secretary General and the Counsel to the Community. Finally, the Secretary General with its four deputies and the Counsel to the Community form the Secretariat, the executive branch of the EAC. Together, they ensure that regulations and directives adopted by the Council are properly implemented. Serving as the principal executive and accounting officer to the Community, the Secretary General is appointed by the Summit for five years, whereas the Counsel operates as the principal legal advisor without fixed tenure (EAC, 1999).

In addition to the institutional framework, the Treaty for the Establishment of the East African Community also provides for a vision for the gradual economic integration of the EAC. In order to not repeat previously made mistakes and risk failure due to rushed processes, a scheme building on four pillars of integration was conceived. First, a customs union should be established, followed by a common market and a monetary union with the ultimate goal of a political federation (EAC, 1999).

**Figure 2.1:** Four Pillars of Integration in the EAC

### 2.2.1 Customs Union

After establishing a free trade area in 1996, the Protocol for the Establishment of the East African Customs Union was signed in November 2004 and came into force in 2005 (EAC, 2004). By eliminating all import duties as well as non-tariff trade barriers among the member states and levying a common external tariff for foreign countries, the Customs Union aims to further liberalise the intra-regional trade, promote efficiency in production, and enhance domestic, cross-border, and foreign investment. The overarching goal is to "promote economic development and diversification in industrialisation in the Community" (EAC, 2004, p. 9). After an initial five-year transition period, where Kenya, the region's largest exporter, continued to pay duties on goods entering the other four countries on a declining scale, the Customs Union became fully operational in 2010. While the institutional framework alongside strategies to establish common external tariffs and remove non-tariff trade barriers were implemented quickly, the EAC was challenged by its dependency on customs taxes as source of revenue. Additional difficulties remain with regard to harmonising tax and trade related regimes as well as policies, potentially creating trade deflection (Bagamuhunda, 2012).[6] In addition, the consolidation of national customs agencies and full digitisation of processes to increase the operational efficiency represent an ongoing challenge (Montagnat-Rentier et al., 2017). However, key achievements such as economic diversification, improved market access and business activity, as well as increased investment activity, both cross-border and foreign, have since been realised. Intra-regional trade relations between the partner states have continuously increased from USD 2.30 billion in 2005 to USD 5.92 billion in 2018. Exports have increased from USD 1.32 billion to USD 3.02 billion, while imports increased from USD 0.98 billion to USD 2.90 billion over the same period of time.[7]

### 2.2.2 Common Market

The second pillar of economic integration was commenced with the signing of the Protocol on the Establishment of the East African Community Common Market in 2009 (EAC, 2009). With its ratification in July 2010, the Common Market became operational, providing for free movement of capital, labour, and persons including the rights of establishment and residence.

[6] These difficulties resurfaced with the accession of the latest member South Sudan in 2016, hence, represent an ongoing process (EAC, 2017).

[7] For more information on EAC trade statistics, see Table A2.15.

Initially, the partner states aimed to complete the agenda by 2015. However, they are still in the process of amending their respective national policies, laws, and regulations to conform to the Common Market Protocol (EAC, 2016). Currently, the most significant achievements are the full implementation of the EAC tariff schedule, eliminating tariffs on each other's goods, as well as the adoption of the EAC Rules of Origin (Kotschwar, 2016). However, progress to eliminate restrictions has been sluggish, and some partner states have even introduced new measures that hinder regional trade and investment despite their obligations under the Protocol, significantly slowing down the development of the Common Market. Member states remain hesitant to reduce barriers for the free movement of labour, as they fear domestic markets being flooded by highly skilled labour from Kenya. In addition, the mutual recognition of professional and academic qualifications as well as implementing unbureaucratic procedures for obtaining work permits prove to be more difficult than initially anticipated (Alper et al., 2016). Once these challenges are resolved, the members hope for accelerated growth, strengthened trade relations, and sustained expansion of economic activities (EAC, 2009).

### 2.2.3 Monetary Union

Even before the second pillar of integration was formally completed, the EAC members' Heads of State decided to fast-track the establishment of a monetary union in 2007 (Ruzuhuzwa, 2012). In order to meet the ambitious goal of a fully functioning monetary union by 2012, negotiations of the terms and design commenced in January 2011. However, as Ruzuhuzwa (2012) notes, the process proved to be too challenging, due to the institutional and structural transformation required to ensure adequate pre-conditions regarding economic, political, and institutional requirements. Consequently, the initial timeline was rejected. Despite this set back, the Protocol on the Establishment of the East African Community Monetary Union was signed in November 2013 and came into force the following year. Often compared to the European Maastricht treaty, the Protocol lays important groundwork with regard to timeline, pre-requisites, and design for establishing the Monetary Union by 2024 (EAC, 2013a, 2017). Among others, member states commit themselves to coordinate fiscal policies, implement single monetary and exchange rate policies, and integrate their respective financial systems, to achieve the objective of promoting and maintaining monetary and financial stability. So far, important milestones have been reached, such as creating a Monetary Affairs Committee (MAC), responsible for coordinating

the harmonisation process of monetary policies and implementing regulatory frameworks for financial sectors in the region. Also, the East African Monetary Institute (EAMI), leading the work on the realisation of the Monetary Union, resulting in the establishment of the East African Central Bank (EACB) and introduction of a single currency (Mathieu et al., 2016). The current schedule includes the fulfilment of convergence requirements at least three years prior to monetary unification, i.e. from 2021 onward (Drummond et al., 2015). The members agreed to immediately monitor the indicative criteria of a ceiling on core inflation of 5.0 percent, a ceiling on fiscal deficit, excluding grants, of 6.0 percent of GDP, and a tax to GDP ratio of 25.0 percent as well as fulfilling the performance convergence criteria of a ceiling on headline inflation of 8.0 percent, a ceiling on fiscal deficit, including grants, of 3.0 percent of GDP, a ceiling on gross public debt of 50.0 percent of GDP, and a reserve cover of 4.5 months of imports three years prior to forming the monetary union (EAC, 2013a). Retrospectively, postponing the establishment of a monetary union was sensible, and allowed leaders to derive lessons from the recent euro zone debt crisis, which is often thought to be the result of weakly enforced rules and inadequate policy coordination. Other achievements include the progressing harmonisation of payment systems and formulation of monetary policy frameworks, exchange rate policies, and rules and practices governing bank supervision (Kigabo, 2018). Contrarily, delays in the process, e.g. establishing the EAMI three years after the initial goal of 2015, and profound development differences of the partner states' financial sectors, i.e. banking, insurance, pension, and capital market systems, could potentially impede the full implementation of the Protocol on the Establishment of the East African Community Monetary Union by 2024 (EAC, 2018; Mathieu et al., 2016).

### 2.2.4 Political Federation

As stated in the Treaty for the Establishment of the East African Community, the ultimate goal of integration remains establishing a political federation (EAC, 1999). Upon completion of the East African Federation, the newly formed country would be the largest in Africa and among the ten largest in the world, both in size and population (CIA, 2018). While this hinges on the preceding completion of the third pillar monetary union, the partner states have successfully negotiated the Protocol on Cooperation in Defence, the Protocol on Peace and Security, and the Protocol on Foreign Policy Coordination, representing significant steps towards political

unification. Currently, discussions regarding terms and timing of implementation are underway, and in September 2018, a committee was formed to begin the process of drafting a regional constitution (EAC, 2016; Havyarimana, 2018).

## 2.3 Challenges with the Current Agenda

Guillaume and Stasavage (2000, p. 1391) argue that "African countries have generally lacked the political institutions necessary for governments to commit credibly on an individual basis to financial stability" and therefore, monetary unions might provide an alternative to achieve this credibility. However, several economic and monetary integration initiatives, especially in Eastern and Southern Africa, are still overlapping and pose a serious burden to deeper integration (Buigut, 2006). In addition, several challenges within the East African Community arise. First, weaknesses in operational coordination are hampering the process of convergence among the EAC countries (Muwanga, 2016). Second, though making progress in harmonisation across the member states, monetary policy frameworks and goals still differ significantly and EAC partner states expect to maintain considerable sovereignty in some economic areas including taxation and government spending in the near future. Third, the first two integration pillars – Customs Union and Common Market – have been signed and launched, but cannot be considered fully completed yet. Also, the macroeconomic convergence criteria laid out in the protocol for the establishment of a monetary union in the EAC are ambitious (EAC, 2013b; Drummond et al., 2015). Despite political will for a deeper economic and monetary integration in East Africa remaining strong, concern about the economic foundations behind the establishment of the East African Monetary Union has been raised (Kishor and Ssozi, 2009).

## 2.4 General Characteristics of EAC

In order to lay the ground for assessing the readiness and feasibility of East African countries to form a common currency area, an overview of current social and economic structures and features should be considered. For example, similarities in economic structures of the potential member states would suggest that these economies are exposed to similar disturbances (Drummond et al., 2015). Thus, the following section explores some properties of the six individual EAC member states and the EAC region as a whole. A detailed overview can be found in Table A2.1.

Located in the South East of Africa and inhabiting more than 170 million people, the EAC is one of the largest economic blocs on the continent with an overall GDP of around USD 190 billion in 2018. The average GDP growth rate remained fairly stable between 5.0 and 6.0 percent on the regional level from 2013 to 2018 with agriculture and the construction industry being the main sources of growth (EAC, 2016; CIA, 2018). However, the individual EAC countries are generally diverse in terms of size, structures, as well as economic and social indicators. Despite a rather volatile economic environment, Kenya, Rwanda, and Tanzania recorded average GDP growth rates above 5.0 percent in the period from 2013 to 2018, followed by Uganda (4.7 percent), South Sudan (1.6 percent), and Burundi (0.9 percent). The low levels of the latter two are mainly due to political instabilities, which led to economic recessions in recent years (EAC, 2017). The two countries have also experienced relatively high volatility of GDP growth over the past five years with standard deviations of 14.7 and 3.7, respectively. Furthermore, the EAC countries differ significantly in GDP per capita. Kenya has the largest GDP per capita with USD 1865.21, followed by Tanzania (USD 1090.10), Rwanda (USD 800.21), Uganda (USD 717.50), Burundi (USD 306.97), and South Sudan (USD 306.70).

All EAC member states import more goods and services than they export, which represent less than 20.0 percent of GDP in every economy, except for South Sudan. However, trade linkages between the partner states are growing gradually and are expected to grow further due to the establishment of the EAC Customs Union, EAC Common Market and finally, due to monetary unification (Drummond et al., 2015).[8] Additionally, unemployment rates remained fairly stable over the last five years with a weighted average of 5.8 percent on the regional level. Individually, Kenya and South Sudan face the highest unemployment with 11.4 percent and 11.5 percent in 2018, respectively. The remaining members have significantly lower records ranging from 1.4 percent in Rwanda to 2.3 percent in Tanzania.

The six countries do not only differ in a purely economic dimension, but also vary significantly when applying social indicators. With respect to human capital, the employment to population ratio remains fairly low with the exception of Rwanda (84.9 percent) and Tanzania (81.4 percent). This reflects the member states' lack of an adequately skilled labour force, creating a gap in human capital that is critical for the economic and social transformation

[8] A comprehensive discussion of the state and development of trade linkages, diversification of production and consumption, among others, will follow in Sections 6 through 8.

towards monetary unification (EAC, 2017). Looking at poverty and inequality indicators such as the GINI index and the poverty gap at USD 1.90 a day, one should note that all EAC partner states score low when compared to developing or advanced economies. With the exception of Kenya (0.59), all remaining EAC economies score below 0.55 on the Human Development Index, reflecting low human development, which translates into low life expectancy at birth, low gross national income per capita, and only few expected years of schooling, among others (Jahan and Palanivel, 2018).

On a political level, none of the EAC countries scores high enough on The Economist Intelligence Unit's Democracy Index to be considered a democracy; Burundi even categorises as authoritarian regime (The EIU, 2018). Accordingly, with the exception of Rwanda (scoring 56 out of 100 and ranking 48$^{\text{th}}$ out of 180), all EAC countries are ranked low in the Transparency International's Corruption Perception Index 2018; Burundi and South Sudan being the poorest performers at rank 170 and 178 out of 180, respectively (Transparency International, 2018). Similar observations are made when comparing the six partner states globally on indicators such as the Human Freedom Index (Vásquez and Porčnik, 2018), the Index of Economic Freedom (Heritage, 2019) and the Global Competitive Index (Schwab, 2018).

Some progress has been made towards social, political, and economic development and convergence, especially due to the second wave of integration programmes initiated by the East African Community Treaty. However, all six countries need to continue their efforts for transforming to monetary unification.

## 2.5 Potential Candidates for EAC Enlargement

As of now, most assessments of the feasibility and future prospects of the proposed East African Monetary Union have focused on all EAC member states, excluding South Sudan (Asongu, 2014). The country was eventually approved for membership in early 2016 and gained accession in April 2016 (Kigabo, 2018). By including South Sudan, this study will significantly contribute to the research on the feasibility of monetary unification for all six member states.

In addition, potential further expansions of the EAC, and consequently of the EAMU, have been discussed in recent years. Bordering countries, as well as economies that share partnership in other regional African integration initiatives are of interest. For example, the Treaty of the

Common Market for Eastern and Southern Africa, comprising of 20 member states in the East and South African region,[9] aims for further economic integration as a basis for the eventual future establishment of a monetary union (COMESA, 1993).

Sudan, already sharing partnership in the integration initiative COMESA with five of the EAC partner states, and being part of the eight-country trade bloc IGAD with Kenya, South Sudan, and Uganda, applied to join the EAC in 2011 (Agutamba, 2011). The application was rejected not only due to security and human rights issues, but mainly because of Sudan's lack of a shared border with the EAC (Kasuka, 2013). However, South Sudan's accession in 2016 creates the geographical proximity required in Article 3 of the EAC Treaty and hence, Sudan will be considered a potential future candidate for EAC membership in this thesis (EAC, 1999).[10] In addition, Ethiopia as well as DR Congo, both being part of the COMESA, have expressed interest in joining the EAC. In addition to sharing borders with Kenya and South Sudan, Ethiopia is also part of the IGAD. DR Congo even shares borders with all EAC member states except Kenya (Maiyo, 2012; Kafeero, 2019). The former is currently building stronger ties with Kenya by developing regional electricity and railway infrastructure in the East African region and has already been identified close to core EAC countries in a cluster analysis on Eastern and Southern African countries (Buigut, 2006; Monnie, 2018). The latter already expressed interest in joining the EAC in 2012 (Olukya, 2012). On a meeting between the newly elected President Felix Tshisekedi and Kenya's President Uhuru Kenyatta in February 2019, DR Congo has once again expressed intentions for deeper economic and political integration by joining the EAC (Kafeero, 2019; Quartz, 2019). Therefore, their applications for membership in the EAC are likely to be submitted in the near future, and hence, DR Congo as well as Ethiopia will be considered in this thesis.

In contrast, Somalia, despite being part of the initiatives COMESA and IGAD and having expressed interest in joining the EAC recently, will not be considered in the analysis for various reasons (Olukya, 2012). Most importantly, Somalia still does not fulfil the required "adherence to universally acceptable principles of good governance, democracy, the rule of law, observance

[9] Five of the six EAC member states are currently part of COMESA. Solely Tanzania seeks further integration with the SADC instead.

[10] In April 2019, Sudan's President Omar Hassan al-Bashir was forced out of office after 30 years in power. The country's transition to democracy is expected to be difficult with prolonged periods of turmoil, rendering an accession to the EAC in the near future unlikely (De Waal, 2019). Nevertheless, as a large share of the analyses were conducted prior to the military coup, Sudan will be considered a potential candidate in this thesis.

of human rights and social justice" (EAC, 1999, p. 11).[11] It seems unlikely that Somalia will be a suitable candidate for EAC membership in the short-term. In addition, neighbouring countries in the South of the EAC – like Zambia, Malawi, and Mozambique – do not show significant efforts to deepen integration with the EAC and hence, will also not be part of this analysis (Kasuka, 2013).

Going forward, the assessment of the feasibility of monetary unification in the East African region will comprise of the current six EAC partner states Republic of Burundi (BDI), Republic of Kenya (KEN), Republic of Rwanda (RWA), Republic of South Sudan (SSD), United Republic of Tanzania (TZA), and Republic of Uganda (UGA) as well as the potential future candidates Democratic Republic of the Congo (COD), Federal Democratic Republic of Ethiopia (ETH), and Republic of the Sudan (SDN). These nine countries will be referred to as the East African region.[12]

[11] Somalia already applied for membership in 2012 and was rejected 2015 for similar reasons (Hiiraan, 2016).
[12] A detailed map of the East African region can be seen in Figure A1.1 in the Appendix.

# 3 The Concept of Monetary Union

## 3.1 Definition of Currency Area and Currency Union

Mongelli (2002, p. 7) defines a currency area as "geographic domain of a single currency, or of several currencies, whose exchange rates are irrevocably pegged and might be unified. The single currency, or the pegged currencies, can fluctuate only in unison against the rest of the world." Similar definitions have been made by Ricci (2008); Baldwin and Wyplosz (2015); Obstfeld and Rogoff (1996). It is important to note, that according to Mundell (1961), the borders of a currency area may coincide with those of states, however, this is not a set requirement. Instead, fractions of states, exhibiting similar properties can also form a currency area. In case only sovereign countries merge into a currency area, this is considered a currency union (Rosa, 2004). In academic literature, the terms currency union and monetary union are used interchangeably and also will be treated as equivalent in this thesis. From these definitions it follows that the upper bound for a monetary union would be a single world currency as frictions, such as costs of currency conversion, would be eliminated. However, as Mundell (1961) outlines, this cannot be an optimal currency area due to the loss of autonomy and policy tools to react to asymmetric and exogenous shocks. Mundell further argues, that optimal currency areas should be of rather small size to allow for perfect factor mobility. Nonetheless, a lower bound for the size of optimal currency areas is suggested by several political and economic factors: the lack of willingness to split up the geographic regions of existing countries, diminishing convenience of forming monetary unions as the overall number of currencies increases, and the requirement of resilience against single speculators on foreign exchange markets to avoid excessive volatility. We will further explore these properties with our review of OCA theory in Section 4.

## 3.2 Institutional Integration

According to De Grauwe (2018), the fragility of monetary unions arises from their incompleteness. In order to resolve this, various measures of formal integration are proposed, so that a transfer of sovereignty from national to supra-national institutions has to take place. As outlined by De Grauwe (1996), the members of a monetary union commit themselves towards aligning their

economic policies such that their monetary policy requirements are assimilated and hence, giving up their monetary independence becomes less of a burden. This relationship is formalised in a central bank's key tasks and responsibilities. First, money supply and inflation are indirectly controlled by setting interest rates at which commercial banks within the currency area can borrow from the central bank. Second, the central bank aims to stabilise the common currency towards the outside, managing foreign currency reserves by purchasing and selling foreign currencies to balance exchange rates. Third, it oversees and authorises the production of the common currency. In addition, various monitoring functions might be within the scope of responsibilities, such as tracking price trends and assessing risks to price stability (Baldwin and Wyplosz, 2015).

## 3.3 Costs and Benefits of Monetary Unification

While certainly costs arise from establishing a common currency area, countries are mainly motivated by the associated benefits. Both, costs and benefits, as well as their relative significance are subject to frequent debate in academia. According to De Grauwe (2018), most costs arising from the formation of a monetary union derive from giving up its national autonomy for monetary policy. That means countries lose their ability to adjust their nominal exchange rate to external economic disturbances. As a result, they will have an increased sensitivity to idiosyncratic shocks to their relative price levels, prolonged adjustment periods for wages and prices, as well as negative welfare effects when adjusting the nominal exchange rate through alternative policy tools such as the mobility of capital and labour (Ricci, 2008). In addition, by outsourcing monetary policy to a supra-national institution, there are implications for a country's economic policy, that might result in significant expenses. First, a set of countries working towards a monetary union will have to harmonise their policy requirements with regard to their preferred combination of inflation and level of unemployment. During this transition process, members are likely to face temporary costs of integration (Ishiyama, 1975). Second, as money supply is centrally governed, the tool of inflation to lessen the real burden of national debt is no longer available, which means that countries might have to settle for fiscal tightening instead (Obstfeld and Rogoff, 1996). However, these costs resulting from monetary integration ultimately depend on the characteristics of the prospective members of a union; the higher the

degree of homogeneity, the lower the expected costs of integration. It follows, that gains from seigniorage, the difference between the value of money and the cost to produce it, will represent another opportunity cost, or at least gives rise to political and strategic issues in determining how to distribute revenues among member states (De Grauwe, 2018). Obstfeld and Rogoff (1996) add that over the course of the transition towards monetary unification, individual currencies might be subject to speculative attacks. From a more practical perspective, direct and indirect costs will arise from a monetary reform for both, the public and the private sector. These range from establishing required institutions to adjusting computer systems, but also marketing and advertising expenses (Willms, 1997).

On the benefits side, Obstfeld and Rogoff (1996) note that a common currency area will significantly decrease the transaction costs of currency conversion, which is likely the most visible gain from a monetary union. The expected savings will increase with the degree of integration of prospective member states prior to establishing the union. A side effect of this is increased price transparency since consumers are better able to make price comparisons, leading to higher competition and hence, benefits consumers (Baldwin and Wyplosz, 2015; De Grauwe, 2018). Related to this, by consolidating their many individual flexible exchange rate regimes, members of a monetary union increase the proportion of transactions on the inside to the outside of the single currency. As a consequence, the required foreign currency reserves to stabilise the single currency on a supra-national level are expected to be substantially lower than the foreign currency exchange reserves held previously under flexible exchange rate regimes. These usually highly liquid reserves will be freed up and may be allocated towards investments with higher returns without increasing the exposure to third party risks. Other scaling effects of having a currency with international relevance include higher potential revenues for the central bank from more frequent use globally,[13] and boosting domestic financial markets due to higher activity in bond and debt markets (De Grauwe, 2018). Additionally, as outlined by Guillaume and Stasavage (2000); Baldwin and Wyplosz (2015), the credibility and quality of monetary policy within a currency union is likely to be improved. On one hand, establishing a politically independent central bank will undermine individual countries' incentives to raise false expectations regarding inflation targets and thus, increase the credibility of central bank

[13]For example, in 1999 more than half of the dollars issued by the Federal Reserve were used outside the USA, resulting in its balance sheet being more than doubled. Consequently, the Federal Reserve's potential profits were also doubled, solely because of the global use of the dollar (De Grauwe, 2018).

announcements. On the other hand, by joining resources into a collectively run institution, a monetary union can significantly increase the economic soundness of its policies and hence, the confidence in its central bank, which is crucial in the context of the East African Community. De Grauwe (2018) sees an additional opportunity for societal welfare gains. Generally speaking, risk-averse agents such as firms operating in the private sector will always prefer a more certain payoff in the future over a less certain, at least if the value is the same. If one source of uncertainty is eliminated through high quality institutions and monetary policies, it follows that welfare will increase. Obstfeld and Rogoff (1996) also note the increased protection from monetary disturbances and speculative bubbles, which might lead to undesired temporary variations in real exchange rates on the scale of individual countries.

The aforementioned costs and benefits are generally evaluated by consulting criteria of traditional and modern OCA theory. In the following Section 4, we will review the theories, which are most relevant in the context of a potential currency union in the EAC region.

# 4 Theory of Optimum Currency Areas

Emerging from the discussion of flexible versus fixed exchange rate systems in the 1950s and 1960s, OCA theory started the debate on monetary integration between countries, including the evaluation of benefits and costs arising from it. There exists no standard theory of Optimum Currency Areas for this analysis, but rather a collection of OCA criteria, properties, and pre-requisites which are inspired by Mundell's (1961) paper "A Theory of Optimum Currency Areas". As the formation of a currency union involves loss of the national monetary and exchange rate policy as adjustment mechanism for economic disturbances, currency areas need to provide a certain degree of optimality for a long-run success (Mongelli, 2005). In this context, optimality can be defined as fulfilling the various OCA criteria such that current and future benefits of joining a currency union exceed the costs arising from it. Sharing the properties and pre-requisites defined in the OCA literature reduces the usefulness of and need for nominal exchange rates and independent monetary policies as adjustment mechanisms in response to asymmetric shocks in the currency union (Mongelli, 2002).

In the 1960s, the contributions of factor mobility by Robert Mundell (1961), degree of openness by Ronald McKinnon (1963), and diversification in production and consumption by Peter Kenen (1969) paved the way for a comprehensive discussion of optimum currency areas. These criteria have been developed and supplemented over the last decades, including similarity of inflation rates (i.a. Fleming, 1971), fiscal integration (i.a. Kenen, 1969), and political integration (i.a. Mintz, 1970; Haberler, 1970; Tower and Willett, 1976). These pioneering theories primarily focus on assessing the cost side of forming a currency union and thus, costs arising from the loss of autonomous monetary and exchange rate policies as response to asymmetric disturbances (Peters, 2006). While the criteria degree of openness, diversification of production and consumption, and the similarity of inflation rates primarily aim to assess the likelihood and severity of asymmetric disturbances, factor mobility, and fiscal integration outline alternative adjustment mechanisms to these shocks (Baldwin and Wyplosz, 2015).

During the 1970s and 1980s, the debate on the optimum currency area theory shifted towards a more structured approach that included a joint interpretation of the OCA properties as well as the development of meta-properties like the similarity of shocks and synchronisation of business cycles (Mongelli, 2005). After losing momentum during the 1980s, empirical advancements and

various approaches to operationalise these properties led to the OCA theory emerging into a comprehensive assessment of currency unions (Mongelli, 2002). In addition, a new view on the formation of currency areas gained popularity over the last two decades. While most studies utilising the OCA properties analyse currency areas from a static, backward-looking perspective, the discussion surrounding specialisation versus endogeneity effects of the OCA criteria within a currency union promote a dynamic, forward-looking approach. Representatives of the latter effect believe that OCA properties could be fulfilled ex-post, even if they are not fully satisfied prior to forming the currency union (Mongelli, 2002).

In Sections 4.1 and 4.2, the most relevant OCA properties for the assessment of the proposed EAMU will be presented and critically reviewed. These will include factor mobility, price and wage flexibility, fiscal integration, degree of openness, and diversification of production and consumption, as well as additional considerations with regards to inflation, and financial market integration. Furthermore, recent and more comprehensive developments of the OCA theory will be considered. After a presentation of the meta-properties of symmetry of shocks and synchronisation of business cycles, various views on endogeneity versus specialisation effects will be introduced. Finally, contributions including effectiveness and credibility of monetary policy, differences in labour market institutions, and effectiveness of exchange rate adjustments will be briefly outlined. This section concludes with limitations and a critical review of the OCA criteria as tool for evaluating the feasibility of currency areas in a given region.

## 4.1 Traditional OCA Theory

### 4.1.1 Factor Mobility

The seminal paper "A Theory of Optimum Currency Areas" by Mundell (1961) initiated the discussion on the properties currency areas should exhibit in order to be considered optimal. According to Mundell, an optimal currency area is a geographic area in which the internal economic goals – such as low inflation and unemployment – and a sustainable long-term balance of payments can be achieved as simply as possible (Dellas and Tavlas, 2009). He emphasises factor, and especially labour mobility as crucial variables to achieve this objective, as the cost of sharing the same currency can be partly eliminated if the main production factors are fully mobile across borders (Baldwin and Wyplosz, 2015).

The higher the degree of labour mobility within the East African region, the less costly will be the loss of independent monetary policy as compensation mechanism for asymmetric shocks (Mundell, 1961). Mundell further argues, that a fixed exchange rate regime is unfeasible if it causes unemployment in one region or enforces high levels of inflation to combat the unemployment in another. To illustrate the effects of asymmetric shocks in a geographic area, two regions A and B shall be considered. If there is an asymmetric demand shock in favour of region A, i.e. a shift in demand for products produced predominantly in region A, a current account surplus and inflation pressure occur in A, while unemployment tends to rise in region B. If both regions have national currencies and their monetary policy allows prices to rise in A, the change in terms of trade will at least partly relieve B from some adjustment. Instead, if region A and B have formed a monetary union prior to this shock, then this asymmetric demand shock cannot be mitigated by exchange rate adjustments. However, if the factors of production (especially labour) of both regions are sufficiently mobile, workers from region B can move to region A and thus, restore the economic equilibrium between the two regions by reducing unemployment in region B and mitigating inflation in region A. It follows, there would be no need for independent exchange rate regimes (Mundell, 1961; Broz, 2005).

Although factor mobility has its legitimacy and is still widely used in the assessment of currency unions in the academic community, it does have some noteworthy limitations. First, McKinnon (1963) distinguishes between factor mobility among regions and among industries. Especially the latter is crucial for an efficient response to asymmetric demand shocks and therefore, should be included in the analysis of adequate factor mobility. Second, factor mobility that is sufficient to absorb asymmetric shocks is rather unlikely in the short-run. While the factor capital is limited by how fast direct investments can be generated, labour mobility is limited by costs and burdens related to migration and re-training (Mongelli, 2002). However, factor mobility has potential for responses in the medium and long-run in form of adjustment mechanism to permanent shocks (Corden, 1972).

### 4.1.2 Price and Wage Flexibility

Mundell (1961); Friedman (1953) further emphasise the importance of flexibility of prices and wages as adjustment mechanism that will automatically bring back equilibrium in two regions facing an asymmetric disturbance. Referring to the above example of region A and B forming a

monetary union, full flexibility of wages would imply a reduction of wage claims in region B and a rise in wages due to the excess demand for labour in region A. The induced wage and price increases in region A as well as the wage and price decreases in region B make products and services in region B more competitive, restoring the initial equilibrium within the area (De Grauwe, 2018). Therefore, flexible prices and wages between and within regions of a currency area can act as alternative adjustment mechanism when countries face idiosyncratic disturbances and prevent subsequent unemployment and inflation, diminishing the need for adjustments of the nominal exchange rate. In contrast, (downward) rigid prices and wages are not suitable as adjustment mechanisms, making flexible exchange rates more desirable. However, prices and wages are solely levers for short-term adjustment as permanent shocks tend to lead to a permanent rise of those variables (Mongelli, 2002).

### 4.1.3 Fiscal Integration and Risk-sharing Mechanisms

Not only monetary policy, but also fiscal policy has to be considered as a lever to maintain external and internal balance, when facing economic disturbances in the East African region (McKinnon, 1963). If a country within a monetary union is affected by an asymmetric shock, countries sharing a supra-national fiscal transfer system to redistribute funds would have an alternative adjustment and insurance mechanism, requiring fewer exchange rate adjustments (Kenen, 1969; Mongelli, 2008). Referring to the above example, region A might find it appealing to help alleviate the impact of the shock as region A is consequently facing some inflationary pressure when sharing a common currency with region B. Aside from labour mobility and wage and price flexibility, region A could compensate region B financially. Such a transfer would mitigate both the boom in region A and the recession in region B (Baldwin and Wyplosz, 2015). However, this insurance scheme works only if shocks are random; if the same region continuously suffers from asymmetric disturbances, the remaining part of the monetary union might find it costly to undertake such fiscal transfer mechanism (Baldwin and Wyplosz, 2015).

Fiscal integration within a currency area can be assessed in light of different dimensions. First, fiscal convergence, including public indebtedness and fiscal structures, has to be analysed to understand the degree of fiscal integration within a region (see De Bandt and Mongelli, 2000). Second, a facility for public risk sharing, e.g. provided by a supranational budget, can reduce the impact of an asymmetric shock within a specific region by absorbing a share of

this shock (see Sala-I-Martin and Sachs, 1991; Mongelli, 2002). Third, fiscal stabilisation, such as the Stability and Growth Pact in the Euro Area, can reduce the need for adjustments via international risk sharing or supranational transfers. In addition, De Grauwe (2018) argues that monetary unions lacking a budgetary union should be viewed as incomplete as the existence of independent national government budgets and debts make the currency union fragile and might put the efforts of monetary unification in East Africa at risk. A budgetary union implies that partner states should take collective action and consolidate significant parts of their national debt and budgets into one central governed component. However, partner states must be willing to give up their sovereignity not only over monetary and exchange rate policy, but also over fiscal policy including spending and taxation, such that the necessity of a political union for long-run sustainability of the monetary union is often required in the academic literature (see e.g. De Grauwe, 2018; Arestis and Sawyer, 2004).

### 4.1.4 Degree of Openness

In response to Mundell's seminal paper, Ronald McKinnon (1963) suggested the degree of openness of an economy as crucial criterion when assessing optimum currency areas. According to McKinnon (1963), an area can be seen as optimal, where the partly conflicting objectives of full employment, balanced international payments and price level stability are best met. Taking these objectives into account, the degree of openness assists in determining the ideal exchange rate regime within a geographic area. In this context, the degree of openness is defined as the ratio of tradable to non-tradable goods. In an open economy, tradable goods would exceed non-tradable goods significantly.

The higher the degree of openness, the more should a fixed exchange rate regime between the countries within the East African region be favoured, whereas rather close economies will find flexible exchange rates more advantageous. This can be explained by the following dynamics. The higher the degree of openness of an economy, the more changes in international prices of tradable goods are likely to be transmitted to the domestic cost of living. The following reduction of money illusion leads to domestic wages and prices to be significantly influenced by exchange rate changes towards main trading partners. In addition, devaluations have greater impact on open economies, as they are more rapidly transferred to the domestic cost of living and price of tradable goods (Mongelli, 2002). As a result, the adjustment costs of flexible

exchange rates increase with the degree of openness of an economy and make this adjustment mechanism less efficient. However, with fixed exchange rates, the external imbalances arising from asymmetric disturbances can be countered by monetary and fiscal policies without an excessive increase in the domestic price level (Broz, 2005; McKinnon, 1963).

Two observations arise. First, "if we move across the spectrum from closed to open economies, flexible exchange rates become both less effective as a control device and more damaging to internal price-level stability" (McKinnon, 1963, p. 719). Second, small economies tend to be more open than large economies. The reason being that small economies must increasingly participate in international trade, as it is often inefficient for them to meet domestic demand with domestic production. Therefore, small economies tend to specialise in the production of those goods in which they experience a comparative advantage. For this reason, small, open economies should benefit from joining a single currency area more than large economies (Broz, 2005). This dynamic is enforced when the potential candidates for a currency area intensively trade and interact (Dellas and Tavlas, 2009).

Adding to the traditional contributions of OCA theory, some noteworthy limitations and additional considerations have come up in the academic literature throughout the last decades. First, McKinnon postulates a relationship between the openness of an economy with its size; the smaller the country, the higher the degree of openness (McKinnon, 1963). However, this correlation between openness and size of an economy is questionable and a controversial topic among academics and empirical observers (Revelas, 1980). Second, as a strict differentiation between tradable and non-tradable goods is ambiguous, Mongelli (2008) suggests, that the degree of economic openness should be assessed along several, partly overlapping variables and dimensions. These include the share of tradable versus non-tradable goods, the marginal propensity to import and export, as well as the overall openness of a country to trade with the rest of the world. Additionally, the evolution of the degree of openness over time is emphasised by later contributors (see e.g. Frankel and Rose, 1997; De Grauwe and Mongelli, 2005).

### 4.1.5 Diversification in Production and Consumption

Peter Kenen (1969), continuing the debate on traditional OCA properties, focused his analysis on the effects of asymmetric shocks to particular industries of economies with different degrees of diversification to delineate optimum currency areas. Referring to Mundell (1961), he stresses

that perfect labour mobility rarely exists and therefore, argues that the "diversity in a nation's product mix, the number of single-product regions contained in a single country, may be more relevant than labour mobility" (Kenen, 1969, p. 49).

An economy, characterised by a high diversification of production, consumption, and its corresponding exports and imports, will only face diluted effects of disturbances specific to any particular industry (Mongelli, 2002). The mechanics behind this argument can be illustrated as follows: In an economy facing asymmetric demand shocks in different industries, the severity will crucially depend on the economy's degree of diversification, as long as these disturbances are largely uncorrelated. If the economy is relatively little diversified and produces only a small number of export goods, a negative industry-specific disturbance will have a great impact on aggregate production and consumption. Under a flexible exchange rate regime, the resulting decline in export revenues can be counteracted by a depreciation of the domestic currency. Instead, if a fixed exchange rate regime is in place, the domestic currency cannot depreciate, resulting in the reduction of wages and prices or significant unemployment. However, if the economy is highly diversified, the effect of uncorrelated, industry-specific disturbances on domestic variables are attenuated. Any negative shock in one industry can be offset by any positive shock in another industry, at least to some degree. Since these disturbances only affect a fraction of total products and exports, their overall impact on the economy will be relatively low, resulting in fewer changes in terms of trade via the exchange rate (Kenen, 1969; Broz, 2005; Mongelli, 2008).[14]

A high degree of diversification in an economy can act as insulator from asymmetric shocks, as it reduces the need and usefulness of changes in the terms of trade via exchange rate adjustments (Kenen, 1969). It follows, the more the EAC region countries are diversified, the more likely they are to tolerate the relatively small costs arising from loss of flexible exchange rates as adjustment mechanism and therefore, the more they would favour a common currency (Mongelli, 2008). This argument gets reinforced if the candidates for the common currency area exhibit similarities in their economic structure (Dellas and Tavlas, 2009; Kenen, 1969). Kenen (1969), like his predecessors Mundell (1961); McKinnon (1963), considers only the impact

[14]The decline in employment caused by these industry-specific disturbances will be relatively low considering the wide range of goods in production and export. However, unemployment in one industry can be absorbed by a surplus in demand for labour in the industry which is facing positive demand shocks. Thus, given a sufficiently high degree of inter-sectoral mobility of labour, the disturbance will cause solely temporary, frictional unemployment (Revelas, 1980).

of microeconomic disturbances when evaluating the feasibility of fixed exchange rate regimes between countries. Instead, if the economy faces macroeconomic disturbances leading to an increase of the aggregate domestic price level, all industries are affected likewise and the exchange rate would be a necessary adjustment mechanism, no matter how diversified the economies are (Kenen, 1969). In addition, a high degree of diversification is a necessary condition for ensuring full employment in the currency area, but it is not a sufficient one. Inter-sectoral mobility will vary greatly between industries. While it is presumably high for industries with similar products and production processes, it will be relatively low between different industries building on specific knowledge (Revelas, 1980).

### 4.1.6 Additional Considerations

#### Similarity of Inflation Rates

The criteria presented so far have mainly focused on the formation of currency areas in light of the occurrence of microeconomic disturbances. Concerning macroeconomic disturbances, Fleming (1971) stresses the importance of similarity in inflation rates with regards to optimum currency areas.

Considering the effect of different disequilibria on the aggregate inflation-unemployment relationship, he concludes external imbalances can arise from persistent differences in the domestic rates of inflation. "Among countries in the group whose rates of price inflation differ, those with the lower rates of inflation are more likely to develop payments surpluses under conditions of fixed exchange rates and those with higher rates of inflation, deficits" (Fleming, 1971, p. 470). These differences in inflation rates may result from diversities in labour market institutions, differences in economic policies and social preferences as well as disparities in structural developments (Mongelli, 2008). However, if inflation rates and preferences are similar over time, the terms of trade and hence, current account transactions remain fairly stable. Additionally, the nominal exchange rate will be less useful as adjustment mechanism (Mongelli, 2002; Fleming, 1971).

In contrast, in existing monetary unions significant regional differences in inflation rates often prevail (De Grauwe, 2018). However, these inflation differentials can still be an equilibrium outcome under certain conditions. This can be explained by the Balassa-Samuelson model which

identifies productivity-growth differentials between the tradable and non-tradable sectors as crucial components of a country's internal price structure and systematic biases of the PPP-exchange rate relationship (Asea and Corden, 1994). According to Balassa (1964); Samuelson (1964), competition between regions ensures that price changes of tradable goods are equalised, but not in the non-tradable sector, which is lacking international competition. For the well-functioning of a monetary union, differences in wage increases must result from differences in productivity growth of the regions. "The greater are productivity differentials in the production of traded goods between two countries, the larger will be differences in wages and in the prices of services and, correspondingly, the greater will be the gap between purchasing-power parity and the equilibrium exchange rate" Balassa (1964, p. 586). Therefore, if differentials in productivity growth between the partner states of the monetary union exist, inflation rates must also differ in equilibrium; higher productivity growth in one partner state will result in higher inflation in that country. However, crucial for this result is the assumption that wage increases are always solely a result of productivity growth. Inflation differentials, which are not based on differences in productivity growth, are not part of an equilibrium mechanism and can create a significant burden to the competitive position of the partner states (De Grauwe, 2018).

**Financial Market Integration and International Risk-sharing**

Financial integration may be another lever to reduce the need of the exchange rate as adjustment mechanism within the East African region. According to Ingram (1973, p. 10), in an area with full monetary integration, "payments imbalances among member nations can be financed in the short run through the financial markets, without need for interventions by a monetary authority". Solely temporary asymmetric disturbances can be cushioned by capital inflows.[15] A sufficient degree of financial market integration would induce capital movements across member countries as response to differences in interest rates, promoting the efficient allocation of capital. However, one must take into account that temporary financial flows are no substitute for permanent adjustment and may even postpone real adjustment, leading to adverse capital movements and destabilisation of the system (Mongelli, 2008).

In addition, financial markets within a currency union can provide a substantial source of insurance to mitigate asymmetric disturbances as fixed exchange rates might facilitate

[15] An example of this is borrowing from surplus areas (Mongelli, 2002).

international risk-sharing via portfolio diversification, cross-country asset holding, and reserve pooling. When sharing a common currency, a country facing an asymmetric shock has better possibilities to share the loss with its partner countries as the member states hold claims to each others' output, such as dividends, interest payments, and revenues (McKinnon, 2004; Mundell, 1973; Mongelli, 2008).[16] Therefore, the similarity and symmetry of shocks is not a strict pre-requisite as long as the financial market is used as insurance against these disturbances. However, long-term effects of further financial integration induced by monetary unification are disputed in the literature. While it can improve insurance against disturbances in the East African region, it is argued that financial integration may lead to specialisation of certain regions resulting in member states becoming less synchronised (Mongelli, 2008).

**Concluding Remarks**

Contributions in the 1970s were the first to approach the question of optimum currency areas by jointly interpreting the various properties (Mongelli, 2002). Ishiyama (1975, p. 345) points out that the analysis is significantly enhanced when evaluating "costs and benefits of participating in a currency union from the point of view of the self-interest of a particular region or country". Further, Tower and Willett (1976, p. 3) argue that "joining a currency area will generally enhance the usefulness of money" with regards to efficient allocation of resources and the different functions of money. In addition, the role of similarity of shocks has to be considered. "Economies that share similar characteristics (e.g., factor mobility, production structures) should respond symmetrically to external disturbances, forestalling the need for exchange-rate adjustments between them" (Tavlas, 1994, p. 216).

## 4.2 Modern OCA Theory

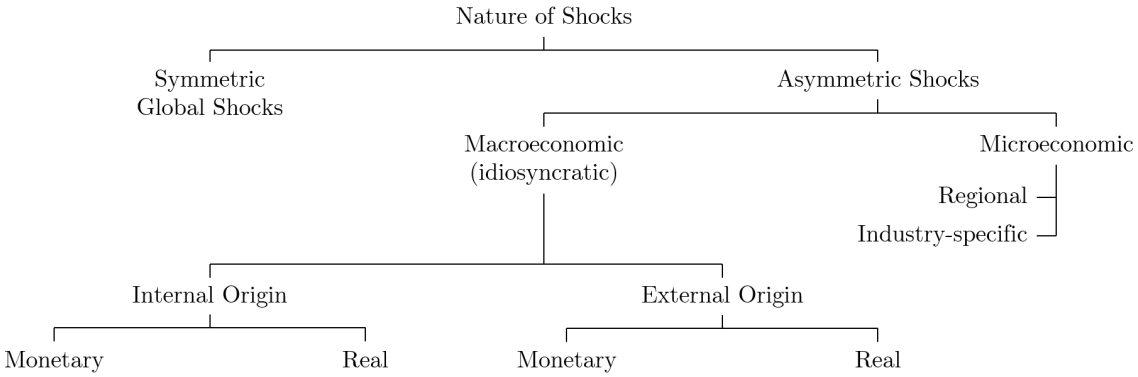
### 4.2.1 Symmetry and Nature of Shocks

As outlined before, the traditional OCA theory assumes the occurrence of asymmetric shocks and explores a fixed exchange rate regime's ability to adjust and compensate these shocks through alternative measures such as factor mobility and economic integration. However, currency areas

[16] This argument for the smoothing of disturbances holds as long as the output sources are imperfectly correlated (Mongelli, 2008).

often do not exhibit these alternative adjustment mechanisms to a sufficient degree, which renders them not optimal – at least when judged by traditional OCA criteria. In response to this, De Grauwe and Vanhaverbeke (1991) question the underlying assumption and investigate the likelihood of asymmetric shocks to currency areas. Alesina et al. (2002) consider a relationship between an anchor and a client, i.e. a potential member of a currency area, and argue that the costs of losing monetary autonomy are lower, the higher the associations of shocks between the agents. That means, the more the shocks are related, the more the policies selected by the anchor will be considered appropriate by the client. Here, it is not only important to consider the correlation of shocks, but also the client country's output variance as ratio to the anchor country's output. Alesina et al. (2002) note, that policy requirements can still be significantly different when variance differs, despite shocks being highly correlated.[17]

**Figure 4.1:** Nature of Shocks




Horvath and Rátfai (2004) add to the discussion by noting that the nature of shocks should be also considered. The literature distinguishes into symmetric global shocks and asymmetric shocks that can be of microeconomic nature and specific to regions or industries or alternatively, of macroeconomic nature affecting entire countries or currency areas. Furthermore, these macroeconomic shocks are differentiated into internal or external causes and whether they are of monetary or real origin. Tower and Willett (1976, p. 51) conclude that "floating rates tend to insulate a country from disturbances abroad but make it bear more fully the effects of disturbances that originate at home, while fixed rates make a country more susceptible to

[17]For example, shall be considered a small country with output highly dependent on the output of the United States. It follows that shocks are highly correlated, but if the small country's variance in output is much larger, the monetary policies selected by the U.S. will still remain inappropriate for the small country (Alesina et al., 2002).

disturbances abroad but also give it greater scope to pass along to others the effects of domestic disturbances". Buiter (1995) further investigates the different effects of monetary versus real shocks by establishing a model of several semi-small open economies with perfect capital mobility forming a common currency area. He finds that nominal exchange rate flexibility plays an important role when adjusting to real shocks, but is undesirable in the presence of financial shocks. It follows that fixed exchange rate regimes provide more stability when monetary shocks dominate, while flexible exchange rate regimes are preferred when real shocks prevail.

Related to the symmetry of shocks is also the synchronisation of business cycles, which plays a central role in the modern phase of OCA theory. If the business cycles of members of a currency union are synchronised, losing monetary autonomy to counter economic disturbances becomes less of a burden (Broz, 2005). Frankel and Rose (1996) derive an impact on the intensity of bilateral trade integration, while Buti and Suardi (2000) argue that synchronised business cycles have a significant disciplinary effect and hence, play an important role in the economic and monetary integration of member countries of a monetary union (Mongelli, 2002). The synchronisation of business cycles also feeds into the discussion surrounding endogeneity (i.a. Frankel and Rose, 1997) versus specialisation hypothesis (i.a. Krugman, 1993) in the following section.

### 4.2.2 Endogeneity versus Specialisation Hypothesis

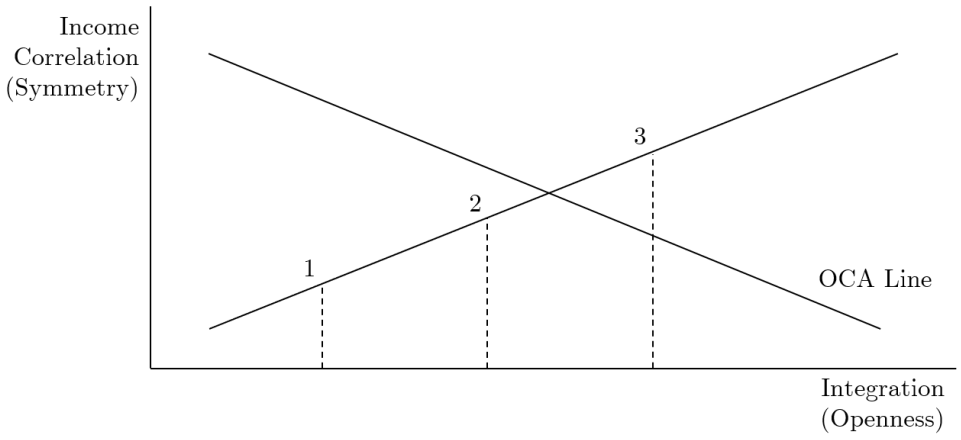
The aforementioned criteria for optimal currency areas under traditional views have been derived from a backward-looking perspective, focusing mainly on the costs of monetary unification. This rather static comparison between the actual and desired state determined by the individual OCA theories hardly take into account integration policies and temporal developments of the national economies (Spahn, 2013; Broz, 2005). However, medium and long-term effects caused by the formation of and participation in a currency union may have a significant impact on the optimality of currency areas.[18]

Frankel (1999) narrows the analysis of the optimality of currency areas down to two crucial properties: The degree of economic openness and the correlation of incomes. While the

[18]This consideration of possible endogenous effects for currency unions is an application of the eminent 'Lucas Critique'. Accordingly, predictions based on historical data might be misleading or even invalid if policy changes have a significant effect on the relationship between variables that are used for the analysis (Lucas, 1976; Broz, 2005).

degree of economic openness is focusing on the extend of reciprocal trade between countries, the correlation of incomes can capture a variety of OCA properties such as diversification in production and consumption and similarity of shocks (Mongelli, 2005). The relationship between these two variables is illustrated in Figure 4.2. The OCA Line is the geometric location for which costs and benefits of adopting of a common currency for the countries considered correspond. The advantages of forming a common currency area are positively dependent on the degree of openness and income correlation making the OCA Line downwards sloping. While country pairs allocated below the OCA Line should choose flexible exchange rate regimes, pairs allocated above the OCA Line should find it beneficial to adopt a common currency. In addition, both properties evolve over time, making a dynamic analysis of the degree of openness and income correlation necessary (Frankel, 1999). However, the literature questions whether a common currency leads to increased industrial specialisation and divergence (specialisation hypothesis) or to an increased synchronisation of business cycles (endogeneity hypothesis).

**Figure 4.2:** Endogeneity Hypothesis




The endogeneity hypothesis states that the individual properties of optimum currency areas are not irrevocably fixed, but can develop over time as a result of the circumstances created by the adoption of a common currency.[19] In the context of the developments in Europe in the 1990s, Frankel and Rose (1997, p. 754) state, that "countries which join EMU, no matter what their motivation may be, may satisfy OCA properties ex-post even if they do not ex-ante". They postulate that a common currency between countries facilitates economic and monetary integration, Foreign Direct Investment, and the building of long-term relationships,

[19]This view is represented by Frankel and Rose (1997); Frankel (1999); De Grauwe and Mongelli (2005), among others.

among others. In turn, this promotes inter-regional trade resulting in highly correlated business cycles among countries sharing a single currency. With reference to Figure 4.2, a group of countries initially located below the OCA Line at Point 1 shall be considered. Though not sufficiently fulfilling the OCA properties ex-ante, adopting a common currency would induce income correlation and trade integration and thus, the group will gradually move above the OCA Line to Point 3. Consequently, by adopting a single currency, these economies can fulfill the properties of OCA ex-post, even if they were not sufficiently fulfilled ex-ante (Frankel, 1999; Frankel and Rose, 1997; Mongelli, 2005).

In contrast, increased economic and monetary integration and the resulting increase in reciprocal trade may lead to divergence within the common currency area.[20] The intuition is that closer trade relations and a common market can promote specialisation in the production of goods and services in which countries experience a comparative advantage (Bayoumi and Eichengreen, 1996). In turn, this would lead to member states becoming less diversified over time, increasing their vulnerability to asymmetric disturbances. Such specialisation effects would lead to diverging tendencies within the currency area and consequently, increase the cost of monetary unification (Mongelli, 2005). Graphically, this means the group of countries forming the currency area would move away from the OCA Line (see Figure A1.2).

So far, the introduced endogeneity hypothesis has mainly focused on two of the OCA properties only. Mongelli (2002, p. 31), among others, noted that "the 'endogeneity of OCA' paradigm should be interpreted in a broader sense". With regards to this, De Grauwe and Mongelli (2005) propose a more systematic division of several strands of literature on endogenous effects within currency unions. The endogeneity of optimum currency areas is therefore divided in the endogeneity of economic integration, the endogeneity of financial integration, the endogeneity of symmetry of shocks and synchronisation of outputs, as well as the endogeneity of product and labour market flexibility. Additionally, the endogeneity of labour market institutions as well as endogeneity of political integration were proposed (see Blanchard and Wolfers, 1999; Issing, 2001). In conclusion, if endogenous effects outweigh possible developments of regional specialisation and divergence in the long-term, the EAC region countries might find adopting a common currency favourable even if they did not satisfy the OCA criteria ex-ante (Bąk and Maciejewski, 2015).

[20] This view is represented by Krugman (1993); Bayoumi and Eichengreen (1992, 1996), among others.

### 4.2.3 Credibility and Effectiveness of Monetary Policy

The traditional contributions to the OCA theory determined the loss of direct control over the monetary and exchange rate policy as one of the major costs arising from monetary unification, resulting in the requirement to achieve and maintain low and stable inflation rates (Corden, 1972; Mongelli, 2002). This can be illustrated as follows: "Current decisions of economic agents depend upon expected future policy, and these expectations are not invariant to the plans selected" by the monetary authority (Kydland and Prescott, 1977, p. 486). Governments have an incentive to refrain from a low inflation commitment to reduce unemployment in the short-term and might decide to increase inflation to a level which is not anticipated by individuals. However, individuals understand and learn from the authorities' incentives and "adjust their inflationary expectations in order to eliminate a consistent pattern of surprises" (Barro and Gordon, 1983, p. 101). Consequently, these discretionary decisions by policy makers lead to a higher rate of inflation in the future at the same level of unemployment, and to a potential loss of reputation and credibility of the monetary policy (Broz, 2005; Barro and Gordon, 1983). Countries with track records of high inflation combined with a reputation for neglecting low inflation commitments may restore credibility by joining a common currency area. Forsaking the sovereignty of national monetary and exchange rate policy to form a currency union with a country of sustainable low inflation commitments helps to eliminate the inflation bias problem. However, a crucial pre-requisite for this mechanism to work is that there exists a country in the East African region, which can provide the nominal anchor for the currency union (Mongelli, 2002; Rogoff, 1996; Giavazzi and Giovannini, 1989). If such country exists, similarity in rates of inflation do not necessarily need to prevail ex-ante, but could be a feasible outcome from joining a common currency area (Gandolfo, 1992).

The effectiveness of monetary policy remains questionable and expands on the discussion around credibility of monetary authorities. Calvo and Reinhart (2002) emphasise that the loss of direct control over the monetary policy might not be a significant cost, if the monetary policy is not adequately used as stabilisation mechanism by the current authorities. They observe that countries, which postulate flexible exchange rates often do not let their currency float freely, especially for countries in emerging markets (Calvo and Reinhart, 2002; Mongelli, 2002).[21] in

[21] This observation is often known as fear of floating.

the academic literature. Additionally, as outlined before, Alesina and Barro (2002) argue that the costs from a loss of sovereignty in monetary policy is significantly influenced by the level of synchronisation of shocks between the respective economy and the anchor country. However, other authors state, that even with identical shocks, the aforementioned arguments for the ineffectiveness of monetary policy might not hold. On one hand, De Grauwe (2018) argues that countries might have different preferences with regards to inflation and therefore, would be worse off by entering a common currency area. On the other hand, Mélitz (1991) notes that economies might still need different policy responses, even if they exhibit rather identical shocks, due to differences in their initial economic position, preferences, trade structures, and wage and price flexibility.

### 4.2.4 Additional Considerations

Aside from the presented criterion of labour market mobility originating from Mundell (1961), differences in labour market institutions have been emphasised in modern OCA theory. These differences might have a significant impact on the developments of wages and prices, even in the presence of identical shocks (Mongelli, 2002). De Grauwe (2018) argues that shocks can have different economic implications depending on the type and degree of labour market centralisation. While markets with centralised and decentralised unions have incentives to forgo excessive wage bargaining when faced with a supply shock, labour markets with intermediate union centralisation might end up with higher inflation, higher nominal wages, but real wages at the level before the shock. Therefore, if the countries in the East African region experience significant differences in labour market institutions, they might find it more costly to adopt a common currency (De Grauwe, 2018; Mongelli, 2002).

Another question raised in the academic literature is whether nominal exchange rate adjustments are actually effective. Traditionally, the loss of the exchange rate as adjustment mechanism is seen as one of the major costs of joining a common currency area. If nominal exchange rate adjustments were in fact not effective, this cost might be less significant as anticipated (Mongelli, 2002). However, this issue is highly disputed.[22]

[22]Supporters of this view are Krugman (1993) and Tavlas (1993), among others. In contrast, Sachs and Wyplosz (1986); De Grauwe (2018) argue that nominal exchange rate adjustments are effective and have real effects.

## 4.3 Limitations and Concluding Remarks

The early contributions to traditional OCA theory are facing limitations in their usefulness for assessing a monetary union in the East African region. Among others, Robson (2002) notes the general problem of measuring and evaluating several properties unambiguously. In addition, Tavlas (1994) points out problems of inconsistency and inconclusiveness. The latter recognises that various criteria of optimum currency areas may not necessarily point in the same direction, but rather be inconclusive about the issue of optimality within a geographic area.[23] Furthermore, the different criteria may lead to inconsistent results, especially the degree of openness and diversification of production and consumption.[24] Ultimately, most of the OCA properties are interdependent and hard to evaluate efficiently in isolation (Ishiyama, 1975).

To assess the feasibility of a currency union in the East African region, a more comprehensive approach will be adopted. Instead of relying on the traditional properties only, more recent contributions and the overarching properties of similarity of shocks and synchronisation of business cycles will be included, which capture important interactions between several OCA criteria (see Alesina et al., 2002; Bayoumi and Eichengreen, 1996). The rather backward-looking properties of optimum currency areas will be complemented by the analysis of possible endogenous effects resulting from sharing a common currency and additional monetary integration in the East African region. Furthermore, the OCA properties will be operationalised by using the most recent developments in econometric techniques and statistical models to provide a thorough economic analysis and draw important conclusions for sound policy recommendations.

[23] Tavlas (1994) argues that an economy facing a very low degree of labour and capital mobility with its partner countries should favour flexible exchange rates. However, this economy might still be open and trade heavily with adjoining countries, making fixed exchange rates and a single currency more desirable.

[24] For example, small economies tend to have a higher degree of openness and thus, might find joining a common currency area with their main trading partners desirable. Conversely, small economies are likely to be less diversified in production, which speaks in favor of a fixed exchange rate regime (Tavlas, 1994).

# 5 Empirical Literature Review

Since the rebirth of the East African Community in 2000, the feasibility of the proposed East African Monetary Union has received some attention in academic research. The increased interest may be derived from the sequential four pillars of integration outlined in the Treaty for the Establishment of the East African Community, i.e. a perspective for increased convergence due to gradually stronger integration of the six member states. In addition, the improved availability of relevant macroeconomic data on the candidate countries allows for better insights and hence, enables increasingly accurate inference. Therefore, a range of methodologies were applied by various researches over the past two decades in order to assess the readiness of the EAC for monetary unification. Four strands in the literature were identified, namely Generalised Purchasing Power Parity (G-PPP) approaches, Vector Auto Regression (VAR) and similar Symmetry of Shocks approaches, Generalised Method of Moments (GMM) and similar convergence approaches, and a set of alternative approaches deviating from conventional methods to assess the feasibility of currency unions. In the following, the research undertaken in these areas will be explored to provide a sound foundation for the analysis in the subsequent section.[25]

## 5.1 G-PPP Approaches

As one of the earliest analyses of the proposed East African Monetary Union, Mkenda (2001) lays important groundwork. Implementing the method of G-PPP developed by Enders and Hum (1994), cointegration between the real exchange rates of the then member states Kenya, Tanzania, and Uganda was found over both, the period from 1981 to 1998 and 1990 to 1998. Therefore, significant similarity of the shocks among the three economies is assumed, indicating successful initiatives to align macroeconomic policies. Despite a separate analysis of calculated indices based on traditional OCA criteria giving mixed verdicts,[26] Mkenda (2001) still concludes conditional optimality of the currency area and an overall promising outlook for the East African Community.

[25] A detailed overview of the reviewed papers can be found in Table A2.2 in the Appendix.

[26] Mkenda (2001) analyses the degree of product diversification, the degree of openness, business cycle synchronisation, similarity of industry structure, and similarity of inflation rates.

Also looking at G-PPP and business cycle synchronisation,[27] Caporale et al. (2018) aim to assess the prospects for a monetary union in the East African Community by 2024. Despite limited data availability for the latest member South Sudan, the univariate fractional integration analysis finds unit roots and high persistence for the individual time series. Fractional bivariate cointegration tests in accordance with Marinucci and Robinson (2001) suggest the existence of several bivariate fractional cointegrating relationships among the currencies in the region,[28] and the fractionally cointegrated vector auto regression approach based on Johansen and Nielsen (2012) imply a single cointegrating relationship between the exchange rates. In addition, a high degree of business cycle synchronisation between the economies was found. Stressing the requirement for fiscal convergence, Caporale et al. (2018) conclude feasibility of the proposed monetary union.

However, the G-PPP approach has received significant criticism due to its limitation of not distinguishing between shocks and the corresponding responses, i.e. movements in macroeconomic variables reflect the combined effects of both (Buigut and Valev, 2005; Kishor and Ssozi, 2011). Therefore, results must be interpreted with caution, while also suggesting a requirement of more sophisticated models.

## 5.2 VAR and Other Symmetry of Shocks Approaches

Buigut and Valev (2005) assess whether the proposed EAMU has economic basis in addition to the political force driving the process by testing for symmetry of the underlying structural shocks. Building on SVAR analyses pioneered by Blanchard and Quah (1989), Buigut and Valev (2005) aim to address limitations of the G-PPP model with movements in macroeconomic variables only reflecting the combined effects of shocks and responses (Angeloni and Dedola, 1999). The correlation results of the two variable VAR model, after identifying supply and demand shocks for EAMU candidates, indicate that contemporaneous shocks are mostly asymmetric, i.e. no support for a currency union is found under the current regime. However, the speed and magnitude of adjustments to shocks are symmetric across countries, therefore "the effect of

[27] The Hodrick-Prescott Filter (HP Filter) was implemented to decompose GDP into trend and cyclical components before (Hodrick and Prescott, 1997; Caporale et al., 2018).

[28] The findings suggest "that there exist bivariate fractional cointegrating relationships between the exchange rate of the Tanzanian shilling and those of the other EAC countries, and also between the exchange rates of the Rwandan franc, the Burundian franc and the Ugandan shilling" (Caporale et al., 2018, p. 12).

further trade integration as envisioned by the EAC treaty could result in more or less symmetry in national business cycles", providing a perspective for a favourable framework for a monetary union in the EAC (Buigut and Valev, 2005, p. 2129).

Similar to Caporale et al. (2018), Sheikh et al. (2011) apply HP Filter and Band Pass Filter (BP Filter) to annual GDP data of EAC member countries in order to extract business cycles. However, in addition to the customary approach of using simple correlation analysis to determine the feasibility of monetary union, a more sophisticated approach of one-way Analysis of Variance (ANOVA) is applied. The findings indicate positive correlation and homogeneous business cycles for Burundi, Kenya, Tanzania, and Uganda since the re-establishment of the EAC in 2000, i.e. suggest similar patterns of business cycles and trends. In contrast, Rwanda represents an exemption as the country differs significantly in transitory and cycle components due to low and even negative correlation coefficients with the other EAC members, indicating that costs associated with Rwanda's participation in the EAMU would outweigh the benefits. Therefore, Sheikh et al. (2011) conclude that it might be beneficial to re-think the design of the proposed monetary union in East Africa.

Rusuhuzwa and Masson (2012) take a more holistic approach to assess the design and implementation of a common currency area in the EAC, combining the methodologies by Mkenda (2001); Buigut and Valev (2005); Sheikh et al. (2011). Based on recent data, macroeconomic convergence,[29] economic structures,[30], as well as flexibility of factor prices, mobility of factors, and political factors are analysed. In order to examine business cycles and shock asymmetries, correlations of cyclical GDP components were considered following Hodrick and Prescott (1997) and supply shocks were isolated implementing the approach developed by Blanchard and Quah (1989). Then, a G-PPP model was applied to test cointegration relationships among real exchange rates. While business cycles exhibit similar patterns especially for the period from 2000 to 2010, considerable asymmetries in supply shocks and large differences in trends of real exchange rates over the entire sample period were found. Combined with observations from descriptive data, Rusuhuzwa and Masson (2012) conclude limited optimality of the proposed currency area and recommend increased policy coordination and harmonisation to minimise costs arising from monetary unification.

[29] These include fiscal convergence and similarity of inflation rates, among others.

[30] These include level and sectoral composition of output, degree of openness, and intra-regional trade, among others.

Focusing on business cycle synchronisation and its development since the ratification of the Treaty for the Establishment of the East African Community, Kishor and Ssozi (2011) apply a dynamic factor model to decompose shocks identified by a SVAR model into common and country-specific components. Business cycle synchronisation is measured as proportion of structural shocks affecting the candidate countries. This is building on the notion by Stock and Watson (1991), that unobserved components model possess the ability to capture the common element of co-movements in macroeconomic variables representing the general state of an economy in a single variable. Finally, a time-varying parameter model is implemented to examine the evolution of synchronisation over time. Although the degree of business cycle synchronisation has been positively affected by measures introduced in the EAC Treaty – especially in Tanzania and Kenya, the share of common shocks in the region remains low. Overall, the findings cast doubts on the feasibility of a monetary union in East Africa (Kishor and Ssozi, 2011).

Also examining the symmetry of shocks affecting the EAC, Sheikh et al. (2013) assess the suitability of a monetary union between Burundi, Kenya, Rwanda, Tanzania, and Uganda. Four types of shocks, i.e. global supply shocks, domestic supply shocks, monetary supply shocks, and domestic demand shocks were identified using a four-variable SVAR model. Then, the nature of these shocks was assessed applying correlation analysis, variance decomposition, and impulse response functions, giving indication of co-movements among the East African countries. The analyses suggest "that domestic demand shocks and external supply shocks were dominant in the EAC, while domestic supply shocks and monetary shocks were less correlated and asymmetric", and when compared to the COMESA, the SADC and the WAMZ exhibit overall relatively higher correlation (Sheikh et al., 2013, p. 245). While this does not represent strong support for the formation of an East African currency union at present, a perspective for future feasibility is provided nonetheless.

According to Davoodi et al. (2013), the successful launch of the EAMU depends mainly on the harmonisation of the members' monetary policies and operations in transition to a common monetary policy in the future. Further, the Monetary Transmission Mechanism (MTM) plays an essential role, i.e. what policy instruments are used and how they translate to changes in real GDP and inflation. Therefore, a recursive SVAR model is used to assess these effects, complemented by Bayesian estimation techniques (Litterman, 1986) and factor-augmented VAR

estimation (Bernanke et al., 2005) to address some of the shortfalls. The MTM tends to be generally weak across the EAC members, with the precise transmission channels and magnitude of effects differing widely among the individual countries. Furthermore, there are often opposing effects from reserve money and policy rate adjustments, imposing additional challenges on the harmonisation of monetary policy across the EAC. Consequently, Davoodi et al. (2013) recommend a number of measures to strengthen the MTM that have to be implemented before a monetary union becomes feasible.

After evaluating the structural similarities of EAC countries in terms of similarity of production and exports on a descriptive level, Mafusire and Brixiova (2013) also examine the similarity of shocks by implementing a two-variable SVAR framework. The model differentiates between supply and demand shocks, which exhibit a limited degree of shock synchronisation due to correlation coefficients being low in both, magnitude and significance. Further, an impulse response analysis indicates alarmingly slow adjustment to demand shocks in several partner states, pointing to significant rigidities in the economic environments and high costs associated with a monetary union. While the subsequent variance decomposition reveals that supply shocks, e.g. changes in commodity prices, are responsible for most fluctuations in real output across all countries, demand shocks cause most variability in inflation rates. Ultimately, Mafusire and Brixiova (2013) point out the complexity of the monetary integration process involving many factors and stakeholders. Nonetheless, concerns are being raised regarding the benefit of a monetary union due to the lack of macroeconomic convergence, fiscal prudence, and structural reforms.

Drummond et al. (2015) examine the feasibility of the EAMU based on the premise that costs of relinquishing national monetary policy in favour of EAC-wide coordination mainly arise from the size, nature, and frequency of asymmetric shocks (susceptibility), as well as the adjustment to asymmetric shock through fiscal policy, labour mobility, and wage and price flexibility (adaptability). Following a similar auto regressive approach as Allard et al. (2013) to estimate country-specific shocks explained by neither area-wide nor cyclical components, Drummond et al. (2015, p. 16) find that "despite some economic similarities, the EAC economies have been susceptible to asymmetric shocks and country-specific output drops". However, the findings also suggest that the dispersion of growth rates has recently been declining, indicating a move toward economic convergence. In order to assess whether exchange rates function as

shock absorbers or contributed to fluctuations in output across EAC members, a SVAR analysis is carried out, indicating that exchange rates mostly absorb real asymmetric shocks. Hence, highlighting the need for additional stabilisation tools once exchange rate adjustments are relinquished. In conclusion, despite favourable developments, Drummond et al. (2015) do not find strong evidence in support of the proposed EAMU.

Like Drummond et al. (2015), Kigabo (2018) also finds that prior monetary unification, a period of monetary policy coordination is required, as EAC members remain susceptible to asymmetric, country-specific shocks. First, also building on Blanchard and Quah (1989), a three step auto regressive procedure in combination with a bivariate VAR model is utilised to analyse the correlation of shocks. Subsequently, a multivariate cointegration framework, first implemented by Johansen (1994), is applied to test for the existence of long-run relationships among several variables across EAC members, i.e. testing for co-movements implying economic convergence. While correlations of demand shocks are very low and insignificant, supply shocks are significant between Kenya and all other EAC countries, posing a greater threat for a monetary union since they are not expected to diminish post-integration. Furthermore, only partial convergence in inflation and exchange rates is found, likely inadequate for a sustainable currency union. Consequently, Kigabo (2018) advises against an EAMU, at least until the Customs Union and Common Market have been fully implemented.

## 5.3 GMM and Other Convergence Approaches

At the time when the East African Heads of State wanted to fast-track the monetary union by 2012, Buigut (2011) focuses on the potential for long-run success by assessing the multivariate cointegration of nominal and real exchange rates, monetary base, and real GDP. To analyse co-movement of the four variables among the member countries a vector error correction model including several sub-models is implemented, following the approach by Haug et al. (2000); Koukouritakis and Michelis (2008). Considering the empirical results for all four variables, evidence for partial convergence is found, i.e. limited feasibility of a monetary union. Consequently, Buigut (2011, p. 259) points out the need for significant adjustments to align monetary policies, and recommends a period of policy coordination to "promote further convergence and improve the chances of a credible and sustainable monetary union".

Employing Bayoumi and Eichengreen's (1997) OCA Index methodology, Bagumhe (2013) constructs a GMM model that relates the deviation of the nominal exchange rate with several independent variables such as export composition, trade linkages, and size to assess the costs of monetary union by capturing asymmetric shocks. The findings suggest that business cycles are divergent, trade linkages between partner states are relatively weak, and that there is only minor potential for small countries, i.e. Burundi and Rwanda, to benefit from the increased stability of a single currency area. However, due to symmetry in national outputs and the likelihood of macroeconomic convergence, Bagumhe (2013) sees an opportunity for a monetary union between Kenya, Tanzania, and Uganda. Potentially, the union could then be extended to the remaining EAC members in the medium-to-long run, contingent on the successful implementation of integration measures such as the common market. The applied methodology and results obtained by Bagumhe (2013) are similar to Bangaké's (2008) earlier analysis.

As Willett (2010) sees the origin of the European Monetary Union Crisis in lacking robustness due to serious disequilibria resulting from regional arrangements, Asongu (2014) assesses real, monetary, and fiscal policy convergence as well as the speed of convergence in the East African Community. A dynamic panel GMM estimation is conducted with inflation and financial dynamics as indicators for monetary policy convergence, GDP growth at macro and micro levels for real sector policy convergence, and debt-to-GDP and deficit-to-GDP ratios for fiscal policy convergence. Ultimately, an "overwhelming lack of convergence" is found (Asongu, 2014, p. 23). According to the analysis, despite efforts in form of structural reform programmes by the IMF and the World Bank, the candidate countries continue to have fundamental differences in macroeconomic policies, indicating that cross-country differences in structural and institutional characteristics must be decreased before a monetary union can be successfully implemented.

Muwanga (2016) criticises the Johansen approach to cointegration taken by previous studies for not catering for gradual changes occurring during the adjustment period and addresses the issue by applying a rolling multivariate cointegration approach to assess exchange rate convergence within the EAC. In addition, impulse response and dynamic multiplier analyses are used to explore the relationships within the cointegrated system following Lütkepohl and Reimer (1992). Throughout the 19 sub-samples, evidence for cointegration implying a long-run equilibrium was found, i.e. convergence existed among the five EAC countries over the sample

period. However, this does not mean complete convergence as many sub-samples only exhibit evidence for partial stochastic convergence and even a period of divergence after the EAC expansion in 2007 was found. Therefore, Muwanga (2016, p. 36) concludes that "there has been limited convergence of the exchange rate variable for the different EAC member countries, with uni-directional causality for most of the pairs",[31] pointing towards required efforts to additionally harmonise exchange rate regimes and monetary policies in general.

In response to criticism by Lubik and Surico (2010) that conventional analyses failed to detect structural breaks after changes in monetary policy, Siele (2018) chooses to apply a theoretically more suitable dynamic stochastic general equilibrium model. Following a GMM approach like Asongu (2014), the inputs synchronisation of monetary shocks, inflation, fiscal deficit, public debt, and degree of openness were considered. Siele (2018) finds statistically significant evidence for achieved macroeconomic convergence in real exchange rates and openness, and hence, concludes feasibility of the proposed East African Monetary Union. However, the results also indicate a significant reduction of combined GDP for an increase in real exchange rates, i.e. forming a monetary union would be costly. Also considering the less favourable findings for the remaining variables, Siele (2018, p. 19) questions the purpose of a monetary union among the five countries and recommends to concentrate on "adapting unfulfilled macroeconomic convergence criteria and strengthening cooperation in monetary policy co-ordinations".

## 5.4 Alternative Approaches

Adding to their previously undertaken analyses, Buigut and Valev (2009) consider a new angle on the proposed East African Monetary Union. By simulating EAC output with stochastic inputs for deviations from inflation targets and output shocks, they analyse the welfare effects for member states post monetary unification, i.e. whether or not the monetary union would enhance price stability. This is especially relevant since none of the partner countries is able to showcase a long history of stable prices and credible monetary policy. The findings emphasise the role of mutual restraint in monetary policy, determining the expected benefits of a monetary union. However, Buigut and Valev (2009) do not provide a clear conclusion regarding the feasibility of a monetary union in East Africa. Further, they point towards additional factors

[31] While shocks arising from Kenya had major effects on most countries, those from Rwanda mainly affected exchange rates of Burundi. Shocks arising elsewhere had neglectable effects (Muwanga, 2016).

that have been neglected in their analysis such as fiscal policy coordination and macroeconomic convergence, hence, additionally restricting the applicability of the findings.

Asongu (2012) aims to examine the presence of positive spill overs of growth in financial services on real economic growth in the East African Community. Seven performance indicators for financial development and three growth indicators for economic development are considered and analysed for Granger causality, i.e. testing the short-run effect of financial variables on economic activity. The procedure developed by Engle and Granger (1987) is supplemented by impulse response functions to additionally assess the tendencies of significant Granger causality results. While the results indicate that only some of the financial variables Granger-cause real economic development, the computed impulse responses show significant positive short-run impact on temporary components of the growth dynamics, giving a promising outlook for the EAMU. As Asongu (2012) outlines, the results are in line with the traditional discretionary monetary policy approach, providing a rationale for credible, effective monetary policy in the East African Community facilitated by a monetary union.

By developing a stylised model of the policy makers' decision problem, Lepetit et al. (2015) take an alternative approach to assess the viability of the proposed East African Monetary Union. Essentially modelling the real options implicit in the decision process of joining a monetary union, the stochastic nature of monetary, financial and fiscal stability become key drivers in the analysis. After calibrating the model using various proxies of respective monetary, financial and fiscal stability measures,[32] they conclude that when policy makers properly allow for the uncertainty surrounding the decision drivers none of the countries wants to engage in a monetary union based on either monetary or financial stability grounds; net benefits derived from being in the monetary union might later prove less advantageous. Especially in light of hardship faced in the euro zone, Lepetit et al. (2015) stress the importance of setting up credible and robust institutional frameworks that guarantee monetary, financial and fiscal stability for the countries participating in the monetary union.

Umulisa and Habimana (2018) apply the alternative tool of wavelet decomposition to analyse co-movements in the candidate countries' business cycles. According to Aguiar-Conraria and Soares (2011), wavelet analysis is a suitable tool to analyse signals with changing frequencies

[32]These measure include the realised inflation rates, debt to GDP ratios, bank non-performing loans to gross loans ratios, budget deficit to GDP ratios (excluding and including grants), among others (Lepetit et al., 2015).

over time as it provides time-frequency localisation allowing to decompose non-stationary time series and uncover structural changes. The findings suggest that volatility in growth cycles over the sample period mainly originated from conflicts particularly in Rwanda and Burundi as well as post-election violence in Kenya. Further, "Kenya typically leads all countries in its business cycle [...], Uganda leads Tanzania, Tanzania leads Rwanda, and Rwanda leads Burundi" (Umulisa and Habimana, 2018, p. 651). Subsequent to the establishment of the East African Customs Union in 2005, evidence for improved business cycle synchronisation among Kenya, Tanzania, and Uganda was found, forming a core EAMU cluster with Rwanda and Burundi in the periphery. While this supports a monetary union consisting of the three core economies, it casts doubt on the viability of the EAMU under the current agenda.

## 5.5 Concluding Remarks

It must be noted that empirical results and corresponding recommendations differ by authors, periodicity, sampled countries, and methodology. However, predominant evidence against the feasibility of the proposed East African Monetary Union is found. Bagumhe (2013); Umulisa and Habimana (2018) see a potential for a monetary union among economically stronger and more similar EAC members, i.e. Kenya, Tanzania, and Uganda, that might later be expanded to the remaining countries in the periphery. In contrast, most other papers conclude with indispensable policy recommendations in order to enable a complete monetary union integrating all six member states from the beginning (see e.g. Mafusire and Brixiova, 2013; Muwanga, 2016; Kigabo, 2018). Given that no matter the conclusion, most papers find some sort of convergence and other favourable developments over recent years, and also considering that effects from the established Customs Union and Common Market, as well as preparatory initiatives for the monetary unification take time to translate into the real economy, a rationale for an updated analysis with potentially changed results can be derived.

# 6 East Africa in Light of Convergence Criteria

To deepen political and socio-economic integration in East Africa, the EAC committed to establish a monetary union by 2024. The Protocol on the Establishment of the East African Community Monetary Union, signed in 2013, envisions the attainment of specific macroeconomic convergence criteria and their maintenance for at least three consecutive years as one of the main pre-requisites for the process of monetary unification in the region (EAC, 2013a). Convergence, is often seen as a necessity to facilitate closer economic integration in the run-up to a common currency. Hence, various monetary blocs such as the European Monetary Union (EMU), have incorporated convergence criteria as one pillar of sustainable monetary unification (Ltaifa et al., 2014; Kigabo, 2018). However, it is important to mention that macroeconomic convergence criteria are not sufficient when considered stand-alone. Ltaifa et al. (2014) note that broader surveillance of macroeconomic sustainability as well as institutional frameworks to ensure sound macroeconomic policies and thus, a sustainable formation of a monetary union in East Africa.

Specifically, the Protocol on the Establishment of the East African Community Monetary Union stipulates two sets of convergence criteria which focus primarily on nominal rather than real convergence (Ltaifa et al., 2014). According to Article 6 of the Protocol, the four primary convergence criteria shall be used to assess the macroeconomic convergence of the EAC member states. These binding criteria comprise of a ceiling on headline inflation of 8.0 percent, a ceiling on fiscal deficit, including grants of 3.0 percent of GDP, a ceiling on gross public debt of 50.0 percent of GDP, and a reserve cover of 4.5 months of imports. These criteria, which will be the focus of the following analysis, are accompanied by a set of indicative, non-binding criteria. Partner states should accordingly monitor criteria on a ceiling on core inflation of 5.0 percent, a ceiling on fiscal deficit, excluding grants, of 6.0 percent of GDP and a tax to GDP ratio of 25.0 percent (EAC, 2013a).

Compared to other currency unions, e.g. EMU, the Easter Caribbean Currency Union (ECCU) or other African monetary union projects, the EAC convergence criteria share features, probably due to the role model of the EMU, but also some significant differences exist. First, while the EAC chose to set a ceiling on inflation, the EMU and ECCU decided to not exceed the unions inflation average by certain percentage points, reflecting a relative comparison of inflation convergence within a region. Second, the EAC lacks explicit constraints on currency flexibility

prior to the establishment of monetary unification. Both EMU and other African monetary unions chose exchange rate mechanisms prior to accession to limit deviations. Nevertheless, almost all prospective monetary unions require a reserve cover of imports as well as limitations to central bank financing of fiscal deficits (Ltaifa et al., 2014).

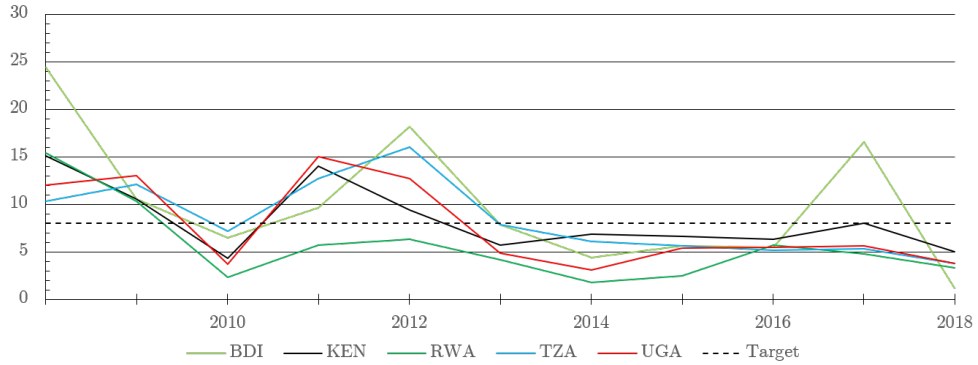
Compliance with the above mentioned macroeconomic convergence criteria can help to establish sound macroeconomic policies in East Africa. However, for the less developed countries of the region it might be more difficult to meet the strict criteria within the relatively short time frame. Pressure arising from the strong political commitment to further economic integration might constitute a challenge to sustainably adhere to the outlined performance criteria. If the monetary union is established with only limited convergence, larger and economically stronger countries will have to face the burden of supporting smaller and weaker countries to achieve balance in the union (Ltaifa et al., 2014; Kigabo, 2018). Hence, it is critical to examine how the EAC member states are currently converging and analyse whether it is realistic for the potential candidates Democratic Republic of the Congo, Ethiopia, and Sudan to meet the EAC performance criteria in a timely manner.

## 6.1 Ceiling on Headline Inflation

The EAC partner states agreed to comply with the convergence criteria of a ceiling of 8.0 percent headline inflation at least three consecutive years prior to the establishment of monetary unification. Headline inflation is calculated from an all-item index. In contrast, core inflation, used as an indicative requirement in the EAC, is typically based on a price index which excludes high volatile food and energy components (Bullard, 2011). Establishing of the convergence criterion of inflation might be relatively demanding due to the fact that less developed countries in Africa and Asia tend to have inflation rates which are rather volatile and of higher magnitude than in advanced economies (Ltaifa et al., 2014).

As seen in Figure 6.1, from 2013 until 2018, four of the six current EAC members achieved a headline inflation of 8.0 percent or lower, with Rwanda (3.7 percent) and Uganda (4.7 percent) recording the lowest average inflation rate over that period. Burundi failed to comply with this criterion solely in 2017 when it experienced an unusual shock to its inflation rate. Conversely, South Sudan has been facing inflation rates in the triple digits since its accession to the EAC in

**Figure 6.1:** Headline Inflation of EAMU Candidates (in percent, 2008–2018)




*Source: IMF (2019c)*

2016 with a current rate of 106.4 percent.[33] As of 2018, all other member states record inflation rates below the macroeconomic convergence criterion with rates ranging from 1.2 percent in Burundi to 5.0 percent in Kenya.

On a regional level, some trends of convergence can be seen. The weighted average inflation rate of the EAC clearly decreased to levels below the convergence goal after reaching magnitudes of over 10.0 percent in 2011 and 2012, see Table A2.3. This trend of convergence is almost exclusively distorted by the accession of South Sudan and its hyper-inflationary tendencies.

In addition, standard deviations allow for insights regarding the variation of cross-sectional inflation rates, i.e. within the country and the whole region. Increased integration between the six EAC members is likely to result in a decrease of dispersion of inflation rates over time. In contrast, if significant differences in inflation among member states persist, it may indicate divergence of real exchange rates and real interest rates which would, in turn, affect the competitiveness of each member state (Kigabo, 2018). Looking at standard deviations of inflation rates on a country level, all current EAC member states, except South Sudan, show a reduction of dispersion when comparing the period 2013 until 2018 with the preceding years as can be seen in Table A2.3. While Kenya, Rwanda, Tanzania, and Uganda recorded standard deviations between 1.0 and 1.5, Burundi scored significantly higher with a standard deviation of 5.2 between 2013 and 2018. Also, the cross-country standard deviations display a reduction of dispersion across EAC countries since 2012, with the exception of South Sudan's and Burundi's comparably high volatility. However, even without South Sudan, cross-country standard deviations remain high relatively volatile.

[33]For better readability, South Sudan was excluded in Figure 6.1.

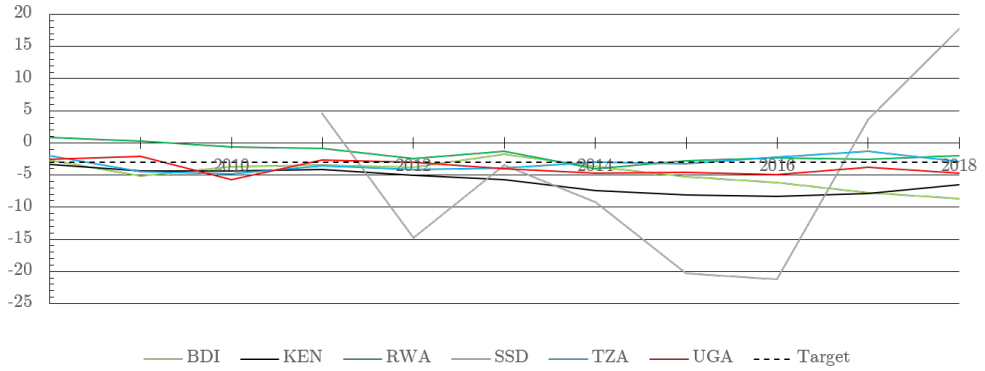
As long as shocks are external to the whole EAC region and intra-regional competitiveness is not affected, the present inflation differentials are not necessarily worrisome. Ltaifa et al. (2014) suggest that a relative inflation criterion might be favourable, as e.g. employed by the EMU, stating that inflation should not be greater than 1.5 percentage points relative to the three EMU countries with the lowest inflation rates. This adjusted criterion would allow for a region-wide increase in inflation when shocks are external, while still preventing individual exceptional variation. In addition, as mentioned in Section 4.1.6, inflation differentials can be an equilibrium outcome as long as these differentials result from differences in productivity growth between the partner states (Balassa, 1964). However, the present volatility of inflation rates primarily reflects to which extent each EAC member state was differently affected by large food and fuel shocks over the past years. In most EAC countries, energy, food, and fuel represent a part of the Consumer Price Index (CPI) basket larger than in advanced economies, making them more exposed to shocks in these industries. Further, the East African Community has little experience with sustaining low inflation rates when compared to developed countries (Ltaifa et al., 2014; Kigabo, 2018).

The performance of potential candidates for an EAC enlargement in light of inflation convergence presents a troubled picture. First, none of the three potential candidates were able to record average inflation in line with the convergence criterion, with average rates ranging from 9.3 percent in Ethiopia to 33.7 percent in Sudan between 2013 and 2018. Second, inflation dispersion on a country level was significantly higher than of the EAC members. Only Ethiopia recorded a relatively stable inflation rate over this period.

## 6.2 Ceiling on Fiscal Deficit

The ceiling on fiscal deficit, including grants of 3.0 percent of GDP should demonstrate strong fiscal balance positions of EAC member states prior to the monetary unification. Fiscal convergence is extremely important in light of monetary unification as after the adoption of a single, supra-national monetary policy, the national fiscal policy remains one of the main tools to respond to adverse disturbances. If large differences in fiscal policies and deficits remain in the monetary union, extensive borrowing within the region might indicate structural problems and would be on the expense of productive investments within the union (Kigabo, 2018).

**Figure 6.2:** Fiscal Balance, incl. Grants of EAMU Candidates (in percent of GDP, 2008–2018)




*Source: IMF (2019e)*

As indicated in Figure 6.2, only Rwanda, with the exception of 2014 (4.0 percent), and Tanzania, with the exception of 2013 (3.9 percent) and 2015 (3.3 percent), complied with the criterion of low fiscal deficit from 2013 until 2018. For the remaining EAC member states, the fiscal performance was mixed over past years. On one hand, Burundi, Kenya, and Uganda recorded fiscal deficits significantly above the 3.0 percent threshold with average deficits amounting to 5.6 percent, 7.3 percent and 4.4 percent of GDP, respectively. However, the overall fiscal balance including grants was relatively stable for these three countries as well as for Rwanda and Tanzania with standard deviations ranging from 0.4 in Uganda to 2.5 in Burundi. On the other hand, since its accession in 2016, South Sudan recorded a highly volatile fiscal balance with deficits significantly above the 3.0 percent threshold from 2012 to 2016 and a fiscal surplus in 2017 and 2018, indicating strong support in forms of foreign grants. However, fiscal deficits have increased in most of the EAC member states over the past five years when compared to the period from 2008 until 2012. On a regional level, the weighted average fiscal deficit of the EAC only reached levels below 3.0 percent of GDP in 2011. This is mainly due to high deficits in South Sudan and Kenya, the latter representing a major share of the EAC's PPP GDP. However, cross-country standard deviations remained fairly low with values ranging from 1.7 (2014) to 3.0 (2017) as shown in Table A2.4.

As most of the economies in Africa receive significant amount of grants, one should consider briefly the indicative convergence criterion concerning fiscal deficit, excluding grants of 6.0 percent of GDP. The fiscal deficit including grants can be a distorted indicator for fiscal convergence as the funding tends to strengthen the countries overall fiscal balance measure,

while the underlying actual fiscal performance of the country is deteriorating. Excluding grants, the ceiling for fiscal deficit can be useful for fiscal surveillance, as it provides a measure for domestic revenue mobilisation over time (Ltaifa et al., 2014). However, only Tanzania and Uganda were able to meet the target of less than 6.0 fiscal deficit excluding grants, with few exceptions in the period from 2013 until 2018, see Table A2.5. The remaining four member states lie significantly above the target, Burundi having an average fiscal deficit of 13.7 percent of GDP in that period. The relative large differences between fiscal deficits including and when excluding grants, which were observed in Burundi and Rwanda, can be traced back to significant aid inflows in recent years due to development needs. Contrarily, Kenya received very limited grants (Ltaifa et al., 2014). The generally high dependency on grants and aids from foreign countries entails risks for economic development in the region as it is not a sustainable source for financing government expenditures (Kigabo, 2018).

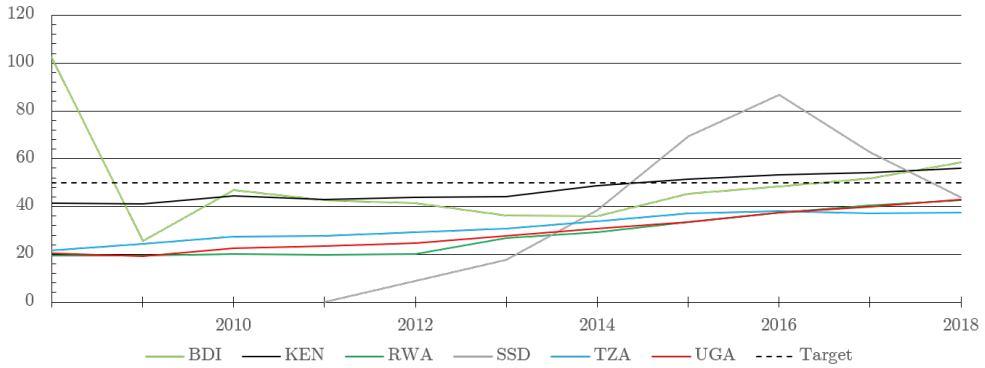
Fiscal convergence with regard to overall fiscal balance remains a challenge for most EAC members in the context of their macroeconomic development. One of the main reasons being the need for structural development in the region, i.e. public investments to address infrastructure gaps and regional shocks (Ltaifa et al., 2014). Therefore, Kigabo (2018) demands the establishment of independent institutions and mechanisms to ensure the enforcement and surveillance of regulations by all countries.

The potential candidates for a future enlargement of the EAC are currently performing reasonably well and even better than some of the current EAC member states. The Democratic Republic of the Congo records a very stable fiscal balance, reaching the target for a low fiscal deficit both, including and excluding grants. The same holds true for Ethiopia with the exception of the past two years, when the economy recorded fiscal deficits including grants slightly above the 3.0 percent of GDP threshold. Sudan fails to comply with the convergence target over the past six years by a low margin, but still records lower deficits than Burundi and Uganda. Therefore, all three countries, especially DR Congo and Ethiopia, have great potential for joining the EAC with regard to fiscal convergence.

## 6.3 Ceiling on Gross Public Debt

The ceiling on gross public debt of 50.0 percent of GDP constitutes another indicator for fiscal convergence prior to the establishment of a single currency in the East African region. In contrast to the criterion of fiscal deficit discussed above, the ratio of gross public debt to GDP can provide useful insight on the long-term fiscal sustainability of a country – stable or declining debt to GDP ratios are preferred. Thus, fiscal deficits and debt ratios should be monitored together to assess fiscal convergence in the EAC (Kigabo, 2018).

**Figure 6.3:** Gross Public Debt of EAMU Candidates (in percent of GDP, 2008–2018)




*Source: IMF (2019a)*

All EAC member countries were able to comply with the ceiling on public debt in the financial crisis aftermath up to 2014, as shown in Figure 6.3. However, in the period from 2013 to 2018, only Rwanda, Tanzania, and Uganda were able to meet the convergence criterion continuously. Burundi is failing to keep public debt below the 50.0 percent of GDP threshold since 2017 and Kenya since 2015, while South Sudan records highly varying debt to GDP ratios since its independence in 2011. In 2018, gross public debt was sizeable in all EAC countries, with values ranging from 37.4 percent in Tanzania to 58.4 percent in Burundi; only Kenya and Burundi missed the target debt to GDP ratio. On a regional level, though increasing the weighted average public debt to GDP ratios lie below the 50.0 percent threshold over the past decade, mostly due to low ratios in Rwanda, Tanzania, and Uganda. Also, cross-country standard deviations have been declining since 2011, which indicates trends of convergence, as shown in Table A2.6.

However, gross public debt as percentage of GDP has been increasing in all EAC countries over the past years. This places additional pressure on government budgets, cost of debt, and

growth perspectives. This trend reflects the large infrastructure spending in the region to meet development needs for further integration (Kigabo, 2018). In addition, public debt in the EAC region has consisted to a large extent of favourable concessionary loans and debt, with a share of more than 50.0 percent in almost all countries over the past years (World Bank, 2018). This might change in the near future as most of the EAC member states are scaling up public investment, shifting towards non-concessional borrowing (Ltaifa et al., 2014).

The main challenge for EAC member states remains to align the required public investments in the region's infrastructure with medium and long-term maintenance of sustainable debt levels. Avoiding unsustainable debt levels is key in the run-up to the monetary unification as it can have negative effects on economic activity, i.e. negative effects on GDP growth due to crowding out of investments by budget deficits. In addition, high rates of public debt to GDP requires financing through higher taxes, putting additional pressure on economic activity in the region. Therefore, EAC countries should adopt debt reduction strategies to address the current trend of increasing public debt (Babu et al., 2014; Ltaifa et al., 2014).[34]

The potential candidates for a future enlargement of the EAC have mixed performances with regards to this convergence criterion. On one hand, the DR Congo records stable public debt to GDP ratios since 2010 below 30.0 percent. Especially in the period from 2013 to 2018, Congo performed better than the EAC member states with an average rate of 17.7 percent of GDP. On the other hand, Sudan records gross public debt as a percentage of GDP that has not only been varying highly in the last decade but was also significantly higher than the convergence threshold with values ranging from 82.3 percent (2015) to 167.5 percent (2018). In addition, Ethiopia was complying with the convergence criterion up until 2014, but is currently facing increasing public debt to GDP ratios similar to the EAC member states. This leaves the DR Congo most suitable for an EAC enlargement in light of this indicator.

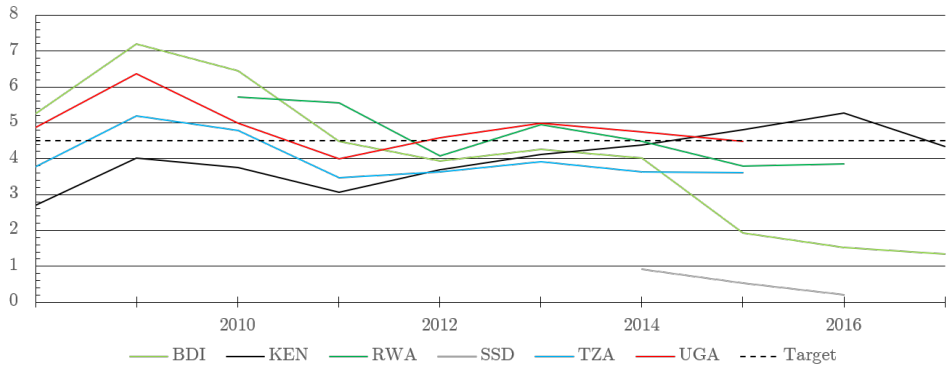
## 6.4 Reserve Cover

According to Moghadam et al. (2011, p. 11), reserves are "external assets that are readily available to and controlled by monetary authorities for meeting balance of payments financing needs, for intervention in exchange markets to affect the currency exchange rate, and for other

[34]This could consist of debt rescheduling, reduced debt servicing, debt restructuring, and negotiations for write-offs (Babu et al., 2014; Ltaifa et al., 2014).

related purposes (such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing)". In general, a sufficient international reserve cover provides resources that can be used to cushion the effects of temporal external shocks on output and consumption. Therefore, hen coupled with sound policies, a solid foreign reserve cover can ensure economic and financial stability. The IMF currently considers a reserve cover of three to four months as a minimum for low-income countries, higher targets might be advisable to cushion economic volatility in the region Ltaifa et al. (2014); Kigabo (2018). While the EMU did not employ a convergence criterion on reserve cover, the EAC member states agreed upon a reserve cover of 4.5 months of imports.

**Figure 6.4:** Reserve Cover of EAMU Candidates (in months of imports, 2008–2017)




*Source: World Bank (2019c)*

As indicated in Figure 6.4 and Table A2.7, over past years, only Uganda was able to maintain a level of reserve cover complying with the EAC convergence requirement. Burundi, being close to recording the required amount of reserves, faced a significant drop in 2015, resulting in a cover below 2 months of imports since then. Also Rwanda and Tanzania are facing declining reserve cover over past years, while South Sudan currently owns foreign reserves to an extend that is unable to cover one month of imports. Only Kenya records a slight increase in reserve cover from 2011 to 2017.

The overall policy framework plays a crucial role in the determination of optimal reserve levels. Lower levels of reserves might be reasonable, but only in countries with good institutions and policies (Moghadam et al., 2011). However, the inability to retain sufficient levels of reserves might be an indication of regional economic difficulties, which might involve payments imbalances and a low degree of diversification in production and consumption (Kigabo, 2018).

Achieving higher levels of reserve cover might be quite demanding and costly for the East African countries. The required adoption of restrictive domestic demand policies, e.g. increased government spending financed by government borrowing in the domestic private sector, would likely entail repercussions for economic growth and development in the region. Moreover, higher integration in East Africa tends to make the economies less vulnerable to external shocks, implying less reserve cover needed. In addition, international reserves are only a temporary vehicle to cushion external shocks when weak institutional frameworks and policies are employed in low-income countries (Dabla-Norris et al., 2012; Ltaifa et al., 2014). Therefore, EAC partner states should aim for further diversification to generate foreign reserves and implement efficient policies and institutional frameworks to manage their reserves (Kigabo, 2018).

Taking a look at the three selected potential candidates for a future enlargement of the EAC, the performance in light of the requirement of reserve cover is equally unpleasant. Not only do all three countries display low levels of cover, but the have also been declining recently. While Ethiopia currently possesses reserves covering around two months of its imports, both the Democratic Republic of the Congo as well as Sudan cannot cover one month of their imports. This exposes all three countries to significant risks arising from the inability to cushion external shocks with international reserves and making them less feasible for an EAC enlargement.

## 6.5 Concluding Remarks

Almost 20 years after the EAC Treaty has been signed and six years after committing to the establishment of a common currency in East Africa, it can be said that compliance with the outlined performance criteria is rather mixed and that EAC partner states still have to improve their economic convergence by 2024. However, Bass et al. (2018) note that the EAC, based on formal membership criteria, is currently not significantly less prepared for a single currency than the eleven founding members of the euro area in the run-up to 1999. Also, when compared to the SADC's efforts for economic convergence, the EAC tends to shows better fiscal discipline and seems to achieve similarities in inflation rates more consistently and with less dispersion (Redda and Muzindutsi, 2016). Finally, one should consider that the three founding countries of the EAC – Kenya, Tanzania, and Uganda – tend to comply with the four performance criteria more consistently than the whole EAC, with the exception of fiscal deficits.

A few final remarks with regards to the EAC convergence criteria have to be made. Some weaknesses of the above mentioned criteria make a sound and reliable evaluation challenging. First, some concepts lack concrete definitions, e.g. which price index should be used in measuring the headline and core inflation between countries. Second, a sound measurement of the variables in question to make the criteria both comparable and operational is not entirely guaranteed (Durevall, 2011). Third, one may label the choice of ceilings for fiscal deficit and public debt ratios as arbitrary or even inappropriate since they are not taking into account for cyclical conditions or individual circumstances of individual countries in their absolute manner. Fourth, the selected convergence criteria can be manipulated in the short-term, i.e. in the three year run-up to monetary unification in 2024, to achieve membership (Masson, 2015).[35] Therefore, Adam et al. (2016) propose to adjust the current performance criteria for current account balance, real exchange rate indicators and private non-guaranteed external debt as explicit convergence criteria.

In any case, the EAC should improve the quality of information of specific indicators to monitor convergence in the region, establish a surveillance mechanism or institution to ensure adherence to the defined criteria, and push its member states to forgo further contradictory monetary integration with other African communities. For a successful transition towards monetary unification, the EAMU will finally require an institutional framework to enforce sound macroeconomic and fiscal policies (Kuteesa, 2012; Ltaifa et al., 2014).

[35]For example, fiscal deficits can be manipulated by postponing expenditures or bringing forward revenues in the period 2021 until 2024 (Masson, 2015).

# 7 East Africa in Light of Traditional OCA Theory

## 7.1 Labour Mobility

The loss of exchange rate flexibility and independent monetary policy requires alternative channels of adjustment in the presence of asymmetric shocks within the proposed EAMU. Labour mobility can constitute such such alternative adjustment mechanism in East Africa.

Traditionally, labour mobility in East Africa is considered to be relatively high, though comprising mostly of mobility in the informal sector (Buigut, 2006). According to Durevall (2011), it is common in the East African region that ethnic groups live across borders, such that many people speak the same language and have relatives in the neighbouring countries. In addition, many people in the region speak Swahili, and English is an official language in almost all countries, including the three potential candidates for an EAC enlargement. A common language, shared colonial experience, and cultural affinity create potential for high level of labour mobility, especially for the core EAC countries Kenya, Tanzania, and Uganda. When compared to the EMU, where different languages and cultures constitute a significant burden to intra-European migration, labour mobility in East Africa might have the potential to absorb the impact of adverse disturbances, at least to a certain extent (Riso et al., 2014).

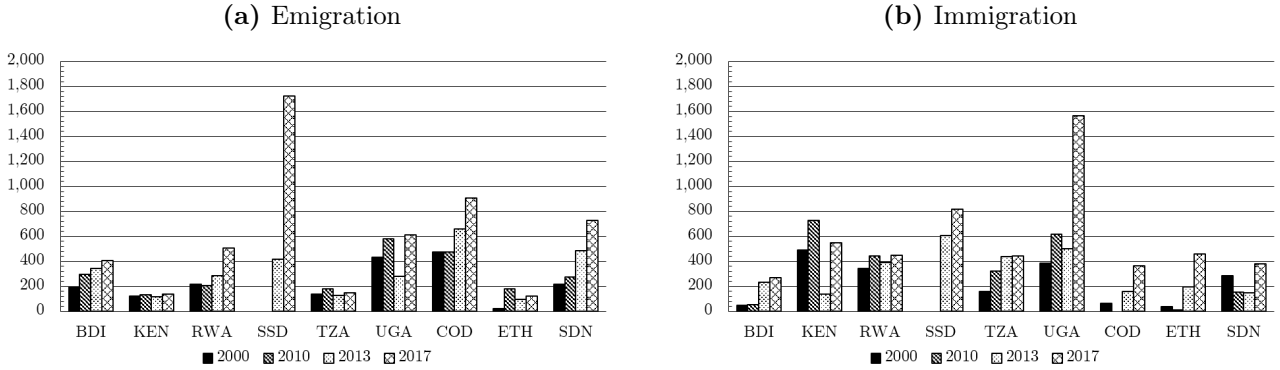
In the East African region, migration flows have increased significantly over past years, with only few exemptions as shown in Figures 7.1a and 7.1b. Intra-East African emigration in absolute terms has especially risen from 2013 to 2017 with the largest increases in the DR Congo, Rwanda, South Sudan, and Sudan. In contrast, emigration remained fairly stable in Ethiopia, Kenya, and Tanzania.[36] With regards to intra-East African immigration, Uganda and South Sudan have currently the highest number of immigrants, amounting to roughly 1.56 million and 0.82 million, respectively.

However, migration flows to and from the East African countries as a whole remain relatively low.[37] Intra-EAC and intra-East African migration has only reached 1.0 and 1.3 percent of the total population in 2017, respectively, lying well below the world average migration rate of roughly 3.5 percent (Alper et al., 2016). In comparison, 4.1 percent of the EU citizens of

[36] Unfortunately, the analysis is constrained by data unavailability and quality issues as the underlying national surveys are irregular and often incomplete.

[37] For more details, see Table A2.8.

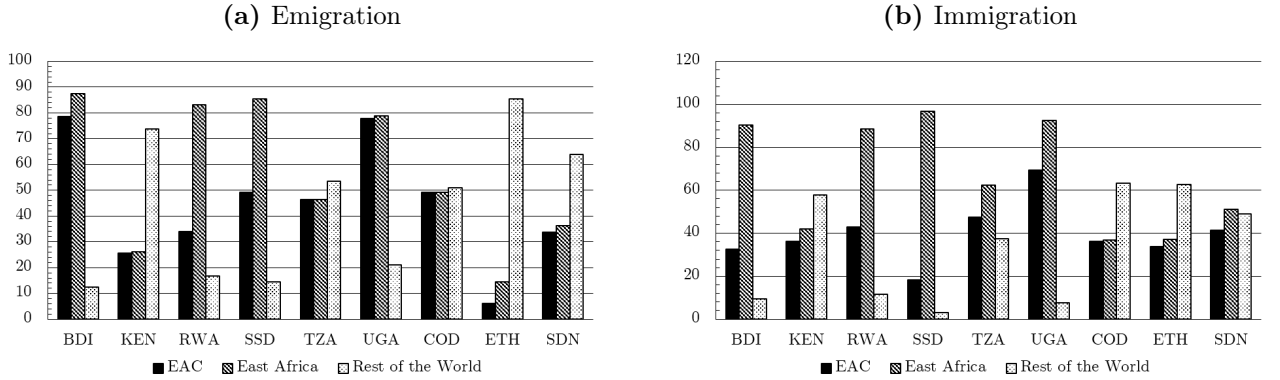
**Figure 7.1:** Migration Trends in East Africa (in thousands, 2000–2017)




*Source: World Bank (2019b) and own calculations*

working age have worked and lived in another EU country in 2018 (Paul et al., 2018). Although being three to four times higher than the comparable East African statistic, this level is likely to be too low to work as an alternative channel for adjustment in the presence of asymmetric shocks. In addition, the magnitude of migration varies significantly between the countries in the region. The small landlocked countries of the EAC – Burundi, Rwanda, and Uganda – have higher emigration rates than the large ones, with rates ranging from 1.4 percent in Uganda to 3.4 percent in Burundi, while South Sudan has the highest emigration rate of 7.9 percent. The same can be observed for the immigration patterns. While citizens of Burundi, Rwanda, Uganda, and South Sudan mainly migrate to other member states of the East African region, Kenya and Tanzania are mainly exposed to emigration to and immigration form countries outside the region. The same holds for the three candidates for an EAC enlargement, with Ethiopia facing least emigration to the region and receiving almost solely immigrants from South Sudan.

**Figure 7.2:** Migration Patterns in East Africa (in percent, 2017)




*Source: World Bank (2019b) and own calculations*

While migration flows within the region often display a significant share of overall migration, the economies present substantially different migration patterns as shown in Figure 7.2a, and 7.2b, as well as Table A2.8. First, citizens of Burundi, Rwanda, Tanzania, and Uganda mainly migrate to and receive citizens from other countries of the East African region. For these countries, geographic proximity seems to be an important factor, reflecting cultural and ethnic similarities. For example, top destination and source countries for Burundi's citizens are Rwanda, Tanzania, and Uganda, as well as the DR Congo. Rwanda and Uganda display similar migration patterns with closest ties to DR Congo, Kenya, Rwanda, and South Sudan. Furthermore, Ethiopia, Kenya, and Sudan record most migration outside the region. While Kenya's top destination countries are outside Africa, i.e. to the United Kingdom and the United States, the largest sourcing country is Somalia, followed by Tanzania and Uganda. In addition, Ethiopia has its strongest migration ties with the United Kingdom, Saudi Arabia, and Somalia, whereas Sudanese people mostly migrate to the Arabian Peninsula and South Sudan. However, for the whole region, most migration flows are towards or from the Sub-Saharan African countries.[38]

In addition to being relatively low, migration in East Africa is mostly not in response to asymmetric disturbances, but rather caused by poverty, violent conflict, and environmental issues (Flahaux and De Haas, 2016; Adepoju, 2001). Predominant migration towards richer countries causes further issues as the source countries are suffering from brain drain, which has a significant impact on sustainable growth of those countries. This holds especially true for Burundi as it is currently the country which is least able to hold on to its relatively small pool of talented and skilled workers (Andersen, 2018; Adepoju, 2001).

However, the EAC's Common Market Protocol seeks to promote the free movement of workers within the Community. Article 10 of the Protocol guarantees the free movement of labour, non-discrimination, and entitles workers to apply for employment, move freely within territories of the partner states, and stay in the respective partner state for the purpose of employment, among others (EAC, 2009). When fully implemented, the Common Market has the potential to significantly increase labour mobility within the region by removing current barriers to cross-border employment. Yet, there exist some major unresolved issues and concerns. Annex II of the Protocol reduces the scope of free movement of labour to highly skilled workers only. Semi-skilled and unskilled workers as well as public sector employees are therefore, not covered

[38] For more information on top destination and source countries, see Ratha et al. (2016).

by the commitments of the EAC partner states (Alper et al., 2016). In addition, as per Article 10 (3), national labour laws will remain relevant, which entails the potential for contradictions and conflicts.[39] Further obstacles include predominantly complex procedures for obtaining work permits, weak provisions for mutual recognition of education, professional qualifications and experience, as well as language barriers, among others. Countries which have a relatively low share of skilled and educated workers when compared to the rest of the region, are expressing another issue. They are concerned that lifting all barriers to intra-East African labour mobility would allow more skilled and educated workers, e.g. from Kenya, to drive out local citizens from the few formal and relatively well-paid jobs (Alper et al., 2016; Basnett, 2013).

The progress of eliminating the remaining legislative restrictions on the movement of labour in East Africa is slow. First, the current EAC member states have not yet fully aligned their national laws with the Common Market Protocol. While Kenya and Rwanda have made some improvements,[40] Burundi, Tanzania, and Uganda have not repealed national legislative restrictions and even added further restrictions after the Common Market Protocol has been signed. Second, the harmonisation and mutual recognition of professional and educational qualifications, especially for engineers, architects, and medical doctors, is advancing at a slow pace (Alper et al., 2016; Basnett, 2013).

To conclude, reported labour mobility remains fairly low in the East African region when compared internationally. Moreover, the establishment of the Common Market, including the removal of restrictions on the free movement of labour, has not been entirely successful yet. Therefore, it is unlikely that labour mobility constitutes a sufficient alternative adjustment mechanism to the national monetary policies when faced with asymmetric disturbances.

## 7.2 Price and Wage Flexibility

The flexibility of prices and wages can constitute an alternative adjustment mechanism to independent exchange rate and monetary policy for countries facing asymmetric shock. Therefore, the adjustment costs following an asymmetric disturbance in the form of unemployment and reduction in production tend to be smaller with flexible prices and wages (Mongelli, 2002;

[39] For example, unlike Uganda, Kenya requires employers to provide three notices prior to terminating an employee's contract (Basnett, 2013).

[40] For example, Kenya and Rwanda have waived the work permit fees for EAC citizens (Alper et al., 2016).

Durevall, 2011). Unfortunately, there is a lack of data and studies on labour markets in East Africa, including labour mobility and flexibility of prices and wages, making a generalisation about the feasibility of these variables as an alternative adjustment mechanism a difficult task, especially due to the dual nature of labour markets (Buigut, 2006). Nevertheless, there are a few indications dealing with the flexibility of prices and wages.

Most of the East African countries have minimum wages in place, though with high dispersion and with varying degrees of enforceability. Of the current EAC member states, Burundi, Rwanda, and Uganda have the lowest monthly minimum wages, with USD 1.60 to USD 2.40 in Burundi rural and urban areas, respectively, USD 2.70 in Uganda, and USD 3.30 in Rwanda.[41] In these countries, minimum wages lie significantly below the average, making them mildly downward rigid. In contrast, Tanzania raised its minimum wage to USD 152.00 in 2015. Additionally, Kenya has one of the highest minimum wages in the region ranging from USD 73.00 for agricultural workers to USD 251.00 for cashier and salesmen-drivers. Together with a strong union structure, this might indicate that wages in Tanzania and especially Kenya have less potential to act as flexible adjustment mechanisms in case of asymmetric disturbances (Andersen, 2016a,b, 2018; Andersen and Lybæk, 2018a,b; WageIndicator, 2019). Looking at potential candidates for an EAC enlargement, the Democratic Republic of the Congo compares to Burundi, Rwanda, and Uganda with a minimum wage of USD 4.34. Contrarily, Ethiopia has a rather sophisticated wage law with minimum wages roughly ranging from USD 26.00 for labourers to USD 67.00 for professionals (WageIndicator, 2019).

However, most workers in East Africa are employed in the informal sector, which is mostly not covered by unions or minimum wage laws (Buigut and Valev, 2005). The informal sector refers to a large range of activities from rural or urban self-employment to household enterprises and wage employment in small firms and is considered to be highly flexible (Kingdon et al., 2006; Buigut, 2006). As in many Sub-Saharan African countries, the informal economy provides the vast majority of employment in the region – a majority of people being self-employed or small-scale farmers (Durevall, 2011). In Burundi, estimations suggest that the informal sector dominates in all sectors and is accounting for 96.0 percent of the overall amount of jobs, in Uganda for around 94.0 percent, and slightly lower for Kenya (83.0 percent), Rwanda (78.0 percent), and Tanzania (85.0 percent). In addition, this high share has been increasing

[41] For a better comparison, minimum wages have been converted from local currencies to USD.

over the past few years in almost all member states. This trend is related to the fact that education levels in most East African countries are low, keeping many workers in the informal sector. Furthermore, the formal sector does not create sufficient new jobs in the region to meet the increasing labour supply induced by relatively high population growth rates.[42] An earlier study by Kingdon et al. (2006) suggests, that especially in Tanzania and Uganda a large self-employment sector exists, absorbing most of the increases in labour supply. In addition, they find a negative relationship between unemployment rates and the size of the informal sector, suggesting that low unemployment rates in East Africa are due to the significant size of the informal sector, which tends to absorb employment shocks in the region due to downward flexible wages. Similarly, Durevall (2011) suggests that wages respond strongly to unemployment. However, there seems to be only limited flexibility across sectors.

**Table 7.1:** Flexibility of Wage Determination in East Africa (2007–2017)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 5.7 | 5.78 | 5.43 | 5.74 | 5.94 | 5.72 | 5.14 | 5.14 | 5.14 | 5.75 | 5.44 |
| **Kenya** | 5.18 | 5.13 | 4.97 | 4.98 | 4.99 | 5.01 | 5.14 | 5.03 | 5.22 | 5.32 | 4.96 |
| **Rwanda** | | | | 5.8 | 5.45 | 5.2 | 5.23 | 5.25 | 5.37 | 5.49 | 5.39 |
| **Tanzania** | 5.25 | 4.47 | 4.03 | 4.08 | 4.13 | 4.44 | 4.7 | 4.58 | 4.66 | 4.83 | 4.58 |
| **Uganda** | 6.15 | 6.25 | 6.19 | 6.05 | 6.13 | 6.26 | 6.24 | 6.15 | 6.11 | 5.96 | |
| **DR Congo** | | | | | | | | | | 5.18 | 5.16 |
| **Ethiopia** | 5.34 | 5.09 | 5.06 | 5.36 | 5.18 | 4.76 | 4.69 | 4.98 | 4.83 | 4.2 | 4.32 |
| **World Median** | 5.19 | 5.17 | 5.15 | 5.1 | 5.16 | 5.08 | 5.11 | 5.03 | 4.98 | 5.04 | 4.88 |

Note: Data for South Sudan and Sudan were unavailable.
*Source: World Bank (2019a) and own calculations*

The seventh pillar of the World Economic Forum's Global Competitiveness Index ranks countries by their labour market efficiency using flexibility of wages as one measure (Schwab, 2018). This individual indicator was established as an executive opinion survey at the World Economic Forum, dealing with the question of how wages are generally set in the respective country. On a scale from one, i.e. wages are generally set by a centralised bargaining process, to seven, i.e. wages are generally set by each individual company, all EAC member states and potential candidates score relatively high.[43] Four of the six current EAC members score above the world median over past few years with values ranging from 4.96 (Kenya) to 5.44 (Burundi)

[42] For additional details see the individual country profiles (Andersen, 2016a,b, 2018; Andersen and Lybæk, 2018a,b).

[43] Values for South Sudan and Sudan, as well as for the DR Congo before 2016 are not available.

in 2017, as shown in Table 7.1. Uganda, even though no score was reported in 2017, scored highest in the past 10 years with values up to 6.26 (2012). These high values indicate that wages in East Africa are quite flexible. As wages are generally set by each individual company, employers can react to supply and demand shocks by lowering wages instead of increasing unemployment in the region. The same holds true for survey results from the DR Congo for 2016 and 2017. However, Ethiopia records a decreasing trend in flexibility of wages since 2010, making it currently score lowest among the analysed East African countries.

Overall, low and often weakly enforced minimum wages, combined with the dual nature of the labour market as well as the World Economic Forum's survey on global competitiveness indicate that the East African countries face rather flexible wages with only low downward rigidity. Therefore, wages have the potential to absorb at least some of the costs induced by asymmetric disturbances in the region.

## 7.3 Degree of Openness

According to McKinnon (1963), the degree of openness of an economy – measured by the ratio of export plus import of goods and services to GDP – is crucial in assessing a region's feasibility for monetary unification. An open economy, which abandons its sovereign monetary and exchange rate policy, especially with its main trading partners, "would be 'losing' an instrument of adjustment that in fact has never existed" (Schelkle, 2001, p. 12).

**Table 7.2:** Degree of Openness in East Africa (in percent, 1999–2017)

| | 1999 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 23.5 | 39.5 | 43.0 | 43.7 | 46.6 | 43.0 | 22.9 | 23.1 | |
| **Kenya** | 48.2 | 54.2 | 60.4 | 57.8 | 53.1 | 51.3 | 44.2 | 36.8 | 37.3 |
| **Rwanda** | 30.7 | 42.0 | 43.9 | 44.6 | 46.0 | 47.6 | 52.5 | 48.0 | 51.0 |
| **South Sudan** | | | 100.9 | 43.4 | 58.0 | 65.7 | 49.9 | 116.7 | |
| **Tanzania** | 35.4 | 47.9 | 56.8 | 54.4 | 48.7 | 49.2 | 46.4 | 42.3 | 32.6 |
| **Uganda** | 36.0 | 45.7 | 52.9 | 53.3 | 50.9 | 46.3 | 47.7 | 47.1 | 43.5 |
| **DR Congo** | 41.2 | 90.7 | 85.2 | 68.4 | 77.5 | 78.7 | 59.3 | 59.6 | 75.0 |
| **Ethiopia** | | | 48.2 | 45.4 | 41.5 | 40.7 | 39.7 | 35.5 | 31.5 |
| **Sudan** | 24.7 | 37.0 | 33.1 | 24.7 | 23.7 | 19.5 | 19.1 | 22.4 | 21.5 |
| **Weighted Avg. EAC** | 40.6 | 49.3 | 61.1 | 54.1 | 51.1 | 50.2 | 46.0 | 44.8 | 35.3 |
| **Weighted Avg. East Africa** | 30.9 | 40.6 | 53.3 | 47.0 | 45.3 | 44.0 | 40.2 | 39.5 | 34.8 |

Note: Weighted Average is based on GDP in purchasing power parity.
*Source: World Bank (2019d) and own calculations*

Table 7.2 and Table A2.9 display the trade as percentage of GDP for the East African countries over recent years and the original eleven EMU countries in the run-up to the establishment of the euro zone.[44] Examining available data, all current member states of the EAC display a relatively low degree of openness currently ranging from 23.1 percent in Burundi to 51.0 percent in Rwanda. The same holds for the potential candidates for an EAC enlargement with DR Congo displaying the highest degree of openness in 2017 at 75.0 percent. The exception in the region is South Sudan with currently trade as percent of GDP of 116.7. However, South Sudan's degree of openness has been very volatile since its independence in 2011. These observations partially contradict McKinnon's suggestion that small countries should exhibit a relatively degree of openness higher than their large counterparts.[45] Compared on a regional level, the weighted average of the East African countries lies with 35.3 percent in 2017 significantly lower than it did for the eleven EMU founding members in 2000 at 60.9 percent. While currently degrees of openness only reach more than 50.0 percent in three out of the nine East African countries in scope, almost all European countries scored significantly higher in the run up to the euro with values ranging from 44.7 percent in Italy to 239.2 percent in Luxembourg in 1999. In addition, the overall as well as the individual degrees of openness have significantly increased in the first years of integration from 1999 to 2010. However, most countries in the East African region exhibit downward trends in the degree of openness since 2011, while the European countries displayed a continuous increase in trade as percentage of GDP in their process of integration.

These rather low degrees of openness might have various reasons. First, most East African countries only have a poorly developed industrial sector, the only exception being DR Congo.[46] This limits the extent of trade of manufactured goods in the region. Second, trade among the East African countries remains fairly low and is recently even decreasing. This is mainly due to the high amount of remaining non-tariff barriers and lack of well-developed infrastructure (Mugisha, 2019). Third, when accounting for unofficial trade in the agricultural sector, especially between the East African countries, the above stated numbers might significantly increase.

[44] The share of intra-regional trade in the East African region will be analysed comprehensively in Section 8.3 in the context of possible endogenous effects of economic integration.

[45] The reasoning behind this is that small economies must increasingly participate in international trade, as it is often inefficient for them to meet domestic demand with domestic production. Therefore, small economies tend to specialise in the production of goods for which they experience a comparative advantage.

[46] For details on sectoral components of GDP see Section 7.4.

Though no threshold was defined by McKinnon to determine the degree of openness required to answer the question concerning the feasibility of monetary unification, the countries in the region display a low degree of openness, especially when compared to more advanced economies. This reflects the need for a full implementation of the EAC Customs Union and Common Market, as well as infrastructure developments with potential for significantly increasing intra-regional trade in the future.

## 7.4 Diversification of Production and Consumption

High economic diversification in consumption and production protects countries from the possible impact of shocks specific to a particular sector, at least to a certain degree. As diversification reduces the need for the nominal exchange rate to act as an adjustment mechanism in case of asymmetric disturbances, highly diversified partner countries might find it less costly to forsake national monetary policy and nominal exchange rate changes amongst them and hence, the adoption of a common currency may be promising (Kenen, 1969; Mongelli, 2002).

**Table 7.3:** Diversification of Exports in East Africa (2013–2017)

| | **2013** | | **2015** | | **2017** | |
|---|---|---|---|---|---|---|
| | **# of Products** | **HHI** | **# of Products** | **HHI** | **# of Products** | **HHI** |
| **Burundi** | 27 | 0.619 | 30 | 0.465 | 36 | 0.395 |
| **Kenya** | 232 | 0.217 | 240 | 0.234 | 228 | 0.244 |
| **Rwanda** | 95 | 0.425 | 115 | 0.296 | 152 | 0.341 |
| **Tanzania** | 209 | 0.332 | 195 | 0.264 | 184 | 0.290 |
| **Uganda** | 204 | 0.184 | 187 | 0.177 | 185 | 0.210 |
| **DR Congo** | 120 | 0.437 | 111 | 0.485 | 100 | 0.373 |
| **Ethiopia** | 132 | 0.306 | 125 | 0.300 | 163 | 0.294 |
| **Sudan** | 125 | 0.670 | 84 | 0.423 | 106 | 0.478 |

Note: Data for South Sudan are unavailable.
*Source: UNCTAD (2019b)*

Unfortunately, there exists neither a common definition of diversification nor agreement on how to measure it. However, most theories usually measure diversification in terms of income, employment, or exports. In particular the measurement of export concentration is considered a reliable proxy to provide insides about an economy's degree of diversification (Chen, 2016). With regards to the number of products exported,[47] most East African countries display a low

[47]Number of products exported at the three-digit standard international trade classification at revision 3 level is the international trade classification published by the United Nations and comprises of 261 product groups.

variety of products, especially Burundi (36 in 2017), DR Congo (100 in 2017) and Sudan (106 in 2017). Kenya is the only country exporting over 200 out of the 261 classified product groups. In the region, raw materials such as coffee, gold, and crude petroleum take a major share of exports, especially in Burundi, Rwanda, Tanzania, Uganda, and Sudan, as seen in Table A2.11. Two special cases exist. First, crude petroleum account for 99.2 percent of South Sudan's exports and second, the raw materials cobalt and copper in their various forms comprise the major share of DR Congo's exported products. Even though the number of product groups exported tend to have increased over past years, the eleven founding countries of the euro area had significantly higher numbers of products in their export basket, as seen in Table A2.10.

In addition, the concentration index or Herfindahl-Hirschmann Index (HHI), an indicator of a country's absolute specialisation, measures the extend to which a particular economy is dominated by a few sectors only. It is calculated as follows:

$$HHI_j = \frac{\sqrt{\sum_{i=1}^{N}(\frac{x_{ij}}{X_j})^2} - \sqrt{1/n}}{1 - \sqrt{1/n}} \tag{7.1}$$

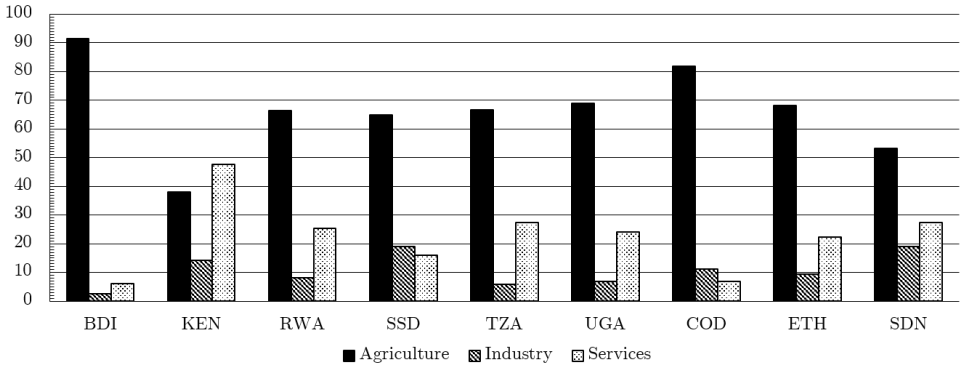
where $x_{ij}$ is equal to the value of country j and product i and $X_j = \sum_{i=1}^{n} x_{ij}$.

Values close to zero reflect exports being homogeneously distributed, while high index values indicate increased concentration (Chen, 2016). All six EAC members display relatively high values on the concentration index when compared to the eleven founding countries of the euro area, as seen in Table A2.10. While the latter group scored between 0.054 (Italy) and 0.220 (Finland) in 1999, the former reaches values ranging from 0.210 (Uganda) to 0.395 (Burundi) in 2017. In addition, the three candidates DR Congo, Ethiopia, and Sudan display rather high values of 0.373, 0.294, and 0.479 in 2017, respectively. This indicates greater concentration of the countries' exports on few products, making the East African economies relatively vulnerable to sector specific disturbances.[48] However, at least for Burundi, Rwanda, Tanzania, and Sudan the export concentrations have decreased over past years.

Moreover, though declining in value added to total GDP, the agricultural sector still employs most workers in East Africa, with Burundi (91.4 percent) and DR Congo (81.9 percent) representing the largest share. But, with the exception of Kenya (38.0 percent) and Sudan

[48]Recent discoveries of natural resources in Kenya, Tanzania, and Uganda may further fuel the already high export concentration of these countries. In addition, balance of trade dynamics might move in opposite direction to the rest of the region, which are to some extent natural resource importers(Drummond et al., 2015).

**Figure 7.3:** Employment Share per Sector in East Africa (2017)

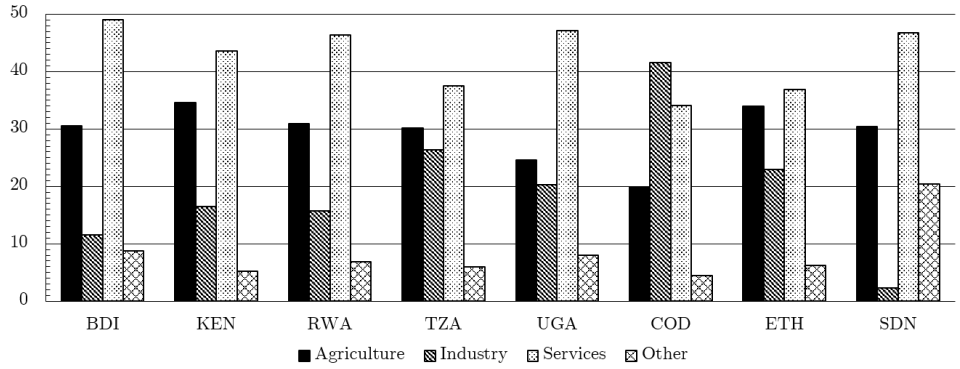



*Source: World Bank (2019e) and own calculations*

(53.3 percent), also the remaining countries employ at least two-thirds of their workers in the agricultural sector, as seen in Figure 7.3. This leaves the economies highly exposed to shocks in this sector, i.e. droughts evoked by water shortages, can possibly have strong effects on the economies' overall performance.

In addition, the more similar the potential candidates for monetary unification in East Africa in terms of their economic structures, the more similar will be the impact of sector-specific disturbances on their economies. Hence, less sovereign monetary and exchange rate policies are needed (Kigabo, 2018). Figure 7.4 portraits structural characteristics of the East African countries. On one hand, the agricultural sector still remains a major part for the current EAC members, accounting for 24.6 percent in Uganda to 34.6 percent in Kenya. However, this share of agriculture in overall GDP has been declining over past years. The Kenya remains the exception with a significant increase in the agricultural sector from 2010 to 2017. On the other hand, the value added by services has increased in the last two decades, which can be a sign of progressive diversification in the region. In contrast, the share of industrial products remains on a low level and is only slightly increasing in Tanzania and Uganda. Low activity in this sector limits intra-regional trade of industrial products and increases the dependence of imports of those products in the whole region (Kigabo, 2018). The candidates for an EAC enlargement differ in two aspects. First, while Ethiopia displays very similar economic structures, especially with Tanzania and Uganda, Sudan has the smallest industry sector in the region with only 2.3 percent of total GDP in 2017. Second, DR Congo has the lowest share of agriculture in the region, while the industrial sector accounts for more than 40.0 percent of total GDP.

**Figure 7.4:** Value Added to GDP by Sector in East Africa (2017)




*Source: World Bank (2019e) and own calculations*

Overall, diversification remains low among East African countries, leaving countries vulnerable to sector-specific disturbances and hence, suggesting high costs for monetary unification. However, they display a rather similar economic structure with high shares of value added and employment in the agricultural sector and an increase in services offered, which makes common policy reactions among the East African countries feasible.[49]

## 7.5 Financial Market Integration

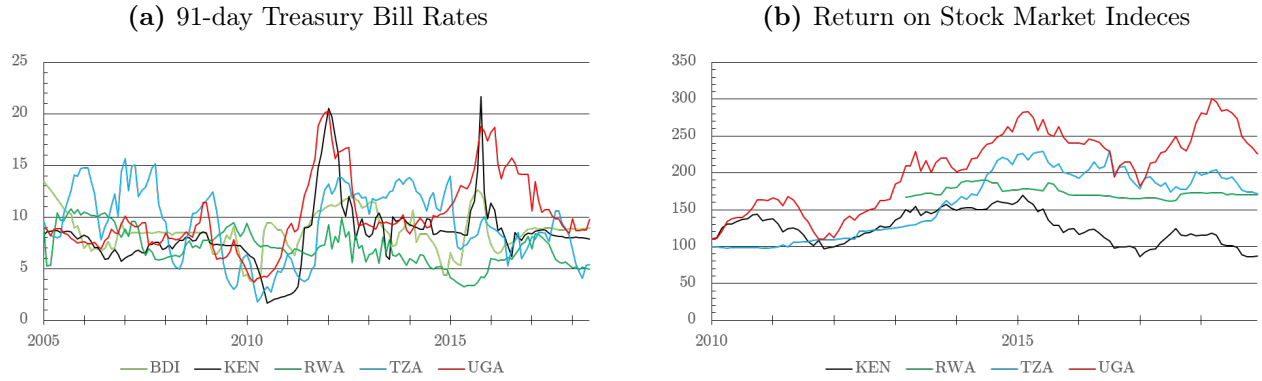
Financial market integration can significantly contribute towards the stability of a monetary union as steering tool to react to short-run disturbances by temporary capital movements (Ingram, 1973). According to Mongelli (2008), this also implies an efficient allocation of capital and risk mitigation through international risk-sharing, which provides a basis for formally assessing the progress of financial market integration. However, as Alper et al. (2016) point out, the absence of comprehensive and reliable information on capital flows in the EAC represents a significant obstacle.

The Protocol on the Establishment of the East African Community Common Market provides a framework for free movement of capital in the EAC. However, the Common Market Scorecard by Kotschwar (2016) reveals that overall progress to eliminate legal restrictions has been sluggish, hindering the development of the Common Market. While it remains out of question that the process outlined in the Protocol has yet to be completed, it is worthwhile

[49]However, most worrying in this regard is the newest member South Sudan, which is nearly wholly dependent on oil exports and thus, displays significant structural differences to the rest of the region.

to examine the progress made in order to assess the contribution towards the feasibility of the EAMU. Two approaches are suggested by the literature. First, Fratzscher (2002) hypothesises that if the law of one price holds, increased integration of financial markets should lead to convergence of returns in both, equity and debt markets of the respective countries. Second, based on the notion of international risk-sharing, Albuquerque (2003) argues that the risk perceived by international investors is lower for integrated markets. Hence, this should be reflected in a higher inflow of Foreign Direct Investment (FDI) in the region.

**Figure 7.5:** Debt and Equity Market Performance in East Africa (2005–2018)




*Source: EAC (2019a) and Bloomberg*

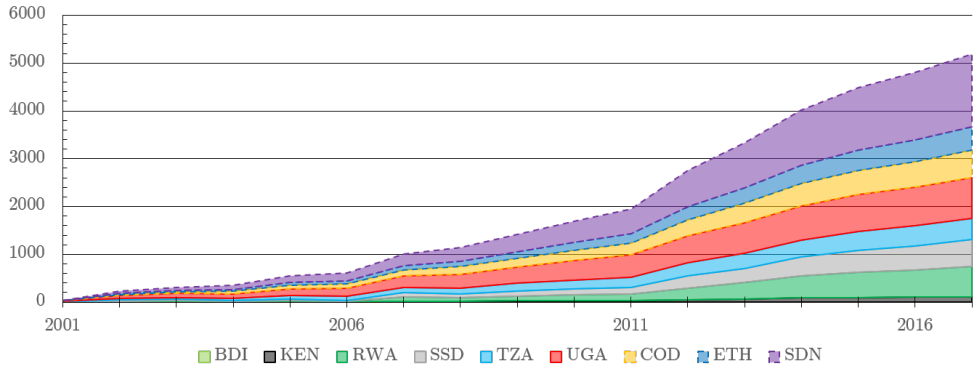
For debt markets, monthly data on 91-day treasury bill rates for Burundi, Kenya, Rwanda, Tanzania, and Uganda from the EAC Monetary and Financial Statistics Report 2016 supplemented by IMF data were considered. Due to data unavailability, South Sudan as well as DR Congo, Ethiopia, and Sudan had to be dropped from the analysis. For equity markets, monthly averages of the Kenyan NSE20 Index and All Share Indices for the Tanzanian Dar es Salaam Stock Exchange and Uganda Stock Exchange have been retrieved from Bloomberg. As the Rwanda Stock Exchange was founded in 2008 with only three listed companies, meaningful data was available from 2013 onward. While some countries do not have an independent securities exchange (DR Congo and South Sudan), the Sudanese Khartoum Stock Exchange had very limited data availability. The calculated monthly returns were normalised to a base value of 100 at the beginning of the series. Both time series, treasury bill rates and stock market returns, are plotted in Figure 7.5.

After a rather volatile period from 2012 to 2015, the treasury bill rates exhibit some degree of convergence over recent years. However, clear patterns of co-movements are absent. Despite

equity market returns diverging since the establishment of the common market, all indices with the exception of the Rwanda Stock Exchange display similar dynamics. Yabara (2012) follows a more comprehensive approach, employing beta and sigma convergence and cointegration analyses. Some degree of beta convergence (catch-up effect) in debt and equity markets is found for the core EAC. However, the sigma convergence (reduction in dispersion) indicates that financial integration has not deepened despite the efforts of the partner states.

The United Nations Council for Trade and Development provides FDI statistics by country for all current EAC partners as well as potential future members. In order to adjust for differences in size, the FDI stock, i.e. the cumulative net FDI inflows, was calculated per capita for the nine countries. The results are shown in Figure 7.6.

**Figure 7.6:** Cumulative Net FDI Activity per Capita in East Africa (in US dollar, 2001–2017)




*Source: UNCTAD (2019a)*

The structural break in form of an increase in the rate of FDI accumulation shortly after 2010 coincides with the implementation of the Protocol on the Establishment of the East African Community Common Market. However, as DR Congo, Ethiopia, and Sudan also experienced this steep increase, which might point at overall favourable developments in the region rather than a direct effect of the EAC Common Market.

Considering the limited evidence of convergence in financial market returns and the increase in FDI activity being not clearly attributable to effects stemming from the EAC Common Market, the progress made regarding the third pillar of economic integration in East Africa remains questionable. Therefore, a clear need for policy action has been identified, which will be addressed in Section 9.

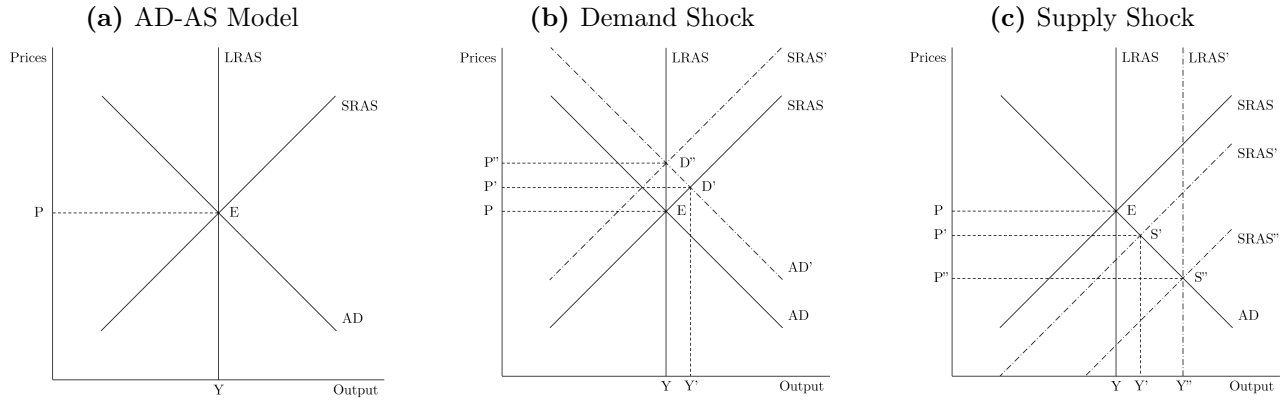
# 8 East Africa in Light of Modern OCA Theory

## 8.1 Symmetry of Shocks

In order to assess the prevalence of symmetric shocks in the EAC region, a SVAR analysis was carried out, following the methodology first developed by Blanchard and Quah (1989) and applied by Bayoumi and Eichengreen (1992) in the context of the EMU. This represents a popular approach in OCA research as the Blanchard-Quah Decomposition of Variance allows for differentiation of temporary and permanent shocks in a VAR model, giving better insight into the underlying nature of supply and demand shocks.

### 8.1.1 Methodology

**Figure 8.1:** Aggregate Demand and Supply Model




*Source: Bayoumi and Eichengreen (1992))*

The Aggregate Demand and Supply Model (AD-AS Model) provides the underlying reasoning to the decomposition into temporary and permanent shocks. In Figure 8.1, the aggregate demand curve (AD) is downward sloping in the price-output space based on the assumption that lower prices increase demand. The upward sloping short-run aggregate supply curve (SRAS) reflects sticky wages and therefore, implies that higher prices lead to lower real wages in the short-run. In contrast, wages will adjust to changes in prices in the long-run, making the long-run aggregate supply curve (LRAS) vertical at full level of employment at a given level of output. Figure 8.1b illustrates the effect of a positive aggregate demand shock. The shift

of the AD curve to AD' moves the equilibrium from the initial point E to a new intersection with the SRAS curve at D' characterised by both, higher prices and output. Over time, wages adjust to the new price level, gradually moving the economy to the new long-run equilibrium D". While output returns to its initial level, prices permanently remain at a higher level. Figure 8.1c illustrates the effect of an aggregate supply shock, e.g. an increase in productivity due to a favourable advancement in technology. In response, the short-run and long-run supply curves shift to the right by the same amount, i.e. to SRAS' and LRAS'. The short-run effect results in an increase in output and decreased prices with a new equilibrium at S'. In the long-run, the economy moves from S' to S", implying additionally increased output and decreased prices. When comparing the effects of positive demand and supply shocks, it can be observed that supply shocks result in a permanent change in output, while demand shocks have only transitory impact. Accordingly, prices are also affected differently: While positive demand shocks raise prices, positive supply shocks reduce them. This means both types of shocks only temporarily affect inflation until the new price level is reached; demand shocks have a temporary inflationary effect and supply shocks have a temporary deflationary effect.

Based on these assumptions, Blanchard and Quah (1989) propose a procedure to decompose permanent and temporary shocks to a variable using a VAR model, which was subsequently applied by various researchers. For example, Buigut and Valev (2005) implement a bivariate VAR model with the inputs of real GDP growth and inflation, as these are arguably the two most important macroeconomic indicators across Africa. In this setup, structural shocks to the GDP variable can be considered supply shocks and structural shocks to the inflation variable demand shocks in line with the above discussion. This analysis will follow a similar approach.

When

$$X_t \equiv \begin{bmatrix} \Delta y_t \\ \Delta p_t \end{bmatrix}$$

has no unit root, i.e. is stationary, where $\Delta y_t$ is the change in the log of real GDP and $\Delta p_t$ is the change in the log of the implicit GDP deflator, this process can be represented by an infinite moving average representation

$$X_t = A_0\varepsilon_t + A_1\varepsilon_{t-1} + A_2\varepsilon_{t-2} + \cdots \quad = \sum_{i=0}^{\infty} L^i A_i \varepsilon_{t-i} \tag{8.1}$$

where $L$ is the lag operator and $A_i$ are $2 \times 2$ matrices representing the impulse response functions of the shocks to the elements of the vector $X_t$. Furthermore, $\varepsilon_t$ is the the vector of demand and supply shocks $\varepsilon_{dt}$ and $\varepsilon_{st}$ which are independent white noise demand and supply disturbances, normalised so that $VAR(\varepsilon_t) = I$. Because $\varepsilon_{dt}$ and $\varepsilon_{st}$ are unobserved, a finite version $VAR(p)$ with lag length $(p)$ chosen such that the residuals approximate white noise is estimated in order to correctly identify the model.

$$X_t = \Phi_0 + \Phi_1 X_{t-1} + \Phi_2 X_{t-2} \quad + \cdots + \Phi_p X_{t-p} + e_t \tag{8.2}$$

$\Phi_0$ denotes a vector of constants and $\Phi_{is}$ are the coefficients from the estimating equation. The composite vector of residuals $e_t$ contains both, demand and supply shocks $\varepsilon_{dt}$ and $\varepsilon_{st}$. In order to extract the pure structural demand and supply shocks $\varepsilon_{dt}$ and $\varepsilon_{st}$, the residuals need to be decomposed applying the Blanchard and Quah (1989) methodology.

First, the bivariate moving average of $X_t$ in Equation 8.1 can be rewritten as

$$X_t \equiv \begin{bmatrix} \Delta y_t \\ \Delta p_t \end{bmatrix} = \sum_{i=0}^{\infty} L^{\mathrm{i}} \begin{bmatrix} a_{11i} & a_{12i} \\ a_{21i} & a_{22i} \end{bmatrix} \begin{bmatrix} \varepsilon_{dt} \\ \varepsilon_{st} \end{bmatrix} = \sum_{i=0}^{\infty} L^i A_i \varepsilon_{t-i} \tag{8.3}$$

As outlined above, the AD-AS Model assumes that demand shocks do not have any effect on output in the long-run. Therefore, the cumulative effect of demand shocks on the change of the log of output $(\Delta y_t)$ must be equal to zero:

$$\sum_{i=0}^{\infty} a_{11i} = 0 \tag{8.4}$$

.

In case the process is covariance stationary, the mean $\mu$ can be calculated by taking expectations of 8.2:

$$\mu = \Phi_0 + \Phi_1 \mu + \Phi_2 \mu + \cdots + \Phi_p \mu \tag{8.5}$$

By subtracting 8.5 from 8.2, 8.2 in terms of deviations from the mean is obtained:

$$X_t - \mu = \Phi_1 (X_{t-1} - \mu) + \Phi_2 (X_{t-2} - \mu) \quad + \cdots + \Phi_p (X_{t-p} - \mu) + e_t \tag{8.6}$$

The $VAR(p)$ in 8.6 can then be rewritten as $VAR(1)$ process. First, define:

$$\xi_t \equiv \begin{bmatrix} X_t - \mu \\ X_{t-1} - \mu \\ \vdots \\ X_{t-p+1} - \mu \end{bmatrix}, F \equiv \begin{bmatrix} \Phi_1 & \Phi_2 & \cdots & \Phi_p \\ I_2 & 0 & \cdots & \\ \vdots & & & \\ 0 & \cdots & I_2 & 0 \end{bmatrix}, V_t \equiv \begin{bmatrix} e_t \\ 0 \\ \vdots \\ 0 \end{bmatrix}$$

Accordingly, 8.6 can be represented as $VAR(1)$:

$$\xi_t = F\xi_{t-1} + V_t \tag{8.7}$$

with the recursive substitution of 8.7 implying that:

$$\xi_{t+s} = V_{t+s} + FV_{t+s-1} + F^2V_{t+s-2} \quad + \cdots + F^{s-1}V_{t+1} + F^s\xi_t \tag{8.8}$$

As outlined by Enders (2015), if the eigenvalues of $F$ all lie within the unit root circle, then $F^s \to 0$ as $s \to \infty$ and the $VAR$ is covariance stationary. The first two rows of 8.8 indicate the vector moving average $(\infty)$ representation of $X_t$:

$$X_t = \mu + e_t + C_1e_{t-1} + C_2e_{t-2} + C_3e_{t-3} + C_3e_{t-3} + C_4e_{t-4} + \cdots \tag{8.9}$$

where $C_j = F_{11}^{(j)}$ and $F_{11}^{(j)}$ denote the upper left block of $F^j$ which is the matrix $F$ raised to the $j^{\text{th}}$ power. Formally, 8.3 and 8.9 give the relationship between the estimated residuals $e_t$ and the structural shocks $\varepsilon_t$:

$$e_t = A_0\varepsilon_t \tag{8.10}$$

It follows that the elements of $A_0$ are required in order to calculate the underlying structural supply and demand shocks. From estimation, the variance-covariance matrix of residuals $E(e_te_t') = A_0E(\varepsilon_t\varepsilon_t')A_0'$ and the $C_j$s are known. To recover the four elements of $A_0$ in the bivariate case, four restrictions are necessary. Two simply normalise the variances of $\varepsilon_{dt}$ and $\varepsilon_{st}$ to one. Since it is assumed that $\varepsilon_{dt}$ and $\varepsilon_{st}$ are pure shocks, the third restriction defines demand and supply shocks as orthogonal such that $E(\varepsilon_{dt}\varepsilon_{st}) = 0$. $E(\varepsilon_t\varepsilon_t')$ then drops out as $I_2$, giving $E(e_te_t') = \Omega = A_0A_0'$.

The variance-covariance matrix of residuals $\Omega$ is a known symmetric matrix. Accordingly, the following restrictions can be derived:

$$\begin{aligned} VAR\left(e_{yt}\right) &= a_{11}(0)^2 + a_{12}(0)^2, \\ VAR\left(e_{pt}\right) &= a_{21}(0)^2 + a_{22}(0)^2, \\ \operatorname{cov}\left(e_{yt}e_{pt}\right) &= E\left(e_{yt}e_{pt}\right) \\ &= a_{11}(0)a_{21}(0) + a_{12}(0)a_{22}(0) \end{aligned} \tag{8.11}$$

As reasoned in the AD-AS Model, the final restriction is given by the assumption that demand shocks do not have any long-term effects on output. In terms of the VAR, the combined restrictions imply

$$\sum_{i=0}^{\infty} \begin{bmatrix} c_{11i} & c_{12i} \\ c_{21i} & c_{22i} \end{bmatrix} \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} = \begin{bmatrix} 0 & * \\ * & * \end{bmatrix} \tag{8.12}$$

allowing the matrix $A_0$ to be uniquely defined and hence, the demand and supply shocks to be identified. However, as Bayoumi and Eichengreen (1992) note, the specified restriction only affect the response of output, and does not impact the shocks' effects on prices. The AD-AS Model reasons that demand shocks should permanently increase prices, while supply shocks should permanently decrease them. Since these responses are not reflected in the imposed restrictions, they should be considered over-identifying restrictions for testing the interpretation of results.

### 8.1.2 Data

The data source used in the analysis is the World Bank's national accounts data base. Annual real GDP data per country denoted in constant 2010 US dollars was retrieved and the implicit GDP deflator was calculated also using annual nominal GDP data in current US dollars. South Sudan had to be dropped from the analysis due to data unavailability. Although sufficient GDP data is recorded for the remaining five EAC countries and three potential candidate countries, the quality remains questionable. The time frame from 1995 to 2017 was chosen for two reasons. First, to avoid structural breaks in the early 1990s resulting from the Rwandan genocide against the Tutsi and the Burundian Civil War (Njoroge et al., 2011; Yanagizawa-Drott, 2014). Second,

to capture effects associated with the economic integration in the EAC which formally began with the signing of the Treaty for the Establishment of the East African Community in 1999.

For each country, growth and inflation were calculated as the first differences of the logarithm of real GDP and the implicit GDP deflator. The GDP deflator was favoured over conventional measures of inflation as it reflects the price of output rather than the price of consumption.[50] Table 8.1 contains descriptive statistics for the unprocessed data.

**Table 8.1:** Descriptive Statistics of East African Country Data (in percent, 1995–2017)

| | **Growth** | | | **Inflation** | | |
|---|---|---|---|---|---|---|
| | **St.Dev** | **Min** | **Max** | **St.Dev** | **Min** | **Max** |
| **Burundi** | 3.56 | -8.3 | 5.3 | 8.80 | -13.1 | 19.0 |
| **Kenya** | 2.21 | 0.2 | 8.1 | 8.70 | -11.2 | 25.8 |
| **Rwanda** | 2.62 | 2.2 | 13.0 | 8.91 | -13.2 | 16.3 |
| **Tanzania** | 1.36 | 3.5 | 8.1 | 8.23 | -12.3 | 19.9 |
| **Uganda** | 2.01 | 3.1 | 10.2 | 9.30 | -17.1 | 17.8 |
| **DR Congo** | 4.73 | -7.2 | 9.0 | 38.53 | -92.1 | 147.1 |
| **Ethiopia** | 4.45 | -3.5 | 12.7 | 9.98 | -19.9 | 22.1 |
| **Sudan** | 3.01 | -2.0 | 10.9 | 14.72 | -48.5 | 20.5 |

The standard deviations indicate that output growth fluctuations tend to be small for EAC countries, with Burundi representing an exception at a standard deviation of 3.56 significantly higher than its direct peers. While none of the other EAC members experienced negative growth, Rwanda and Uganda even had maximum growth rates above 10.0 percent over the sample period. Candidate countries tend to exhibit more extreme values for both, minimum and maximum growth. For example, DR Congo had minimum and maximum growth rates of -7.2 percent and 9.0 percent, respectively at a standard deviation of 4.73. A similar picture is drawn for the inflation period. Standard deviations are generally much higher than for growth, however, EAC members all lie within 8.23 (Tanzania) and 9.30 (Uganda). As for growth, DR Congo experienced the highest fluctuations in inflation with a standard deviation of 38.53. In contrast, Ethiopia exhibits more similar characteristics to EAC countries with minimum and maximum inflation rates of -19.9 percent and 22.1 percent, and a standard deviation of 9.98. However, when comparing the statistics with findings by Bayoumi and Eichengreen (1992) for the EMU, it must be noted that the East African countries show much more volatile growth and inflation rates across the entire sample.

[50] This distinction is important as it can be assumed that differences in regional CPIs diminish with progressing integration of domestic goods markets (Eichengreen, 1992).

### 8.1.3 Results and Interpretation

Before engaging with the analysis, stationarity of the first differences of the logarithm of both, real GDP and the implicit GDP deflator was confirmed applying Augmented Dickey-Fuller and KPSS tests. For the estimation of the bivariate VAR models, a lag length of one was chosen for all countries. This was determined by considering the Akaike's Information Criterion (AIC) in conjunction with a subsequent Breusch-Godfrey LM test for serial correlation, indicating a VAR order of $p = 1$ in all cases. The robustness of the estimated models was validated by carrying out Johansen tests for cointegration. No meaningful cointegrating relationships were found, which is in line with expectations due to the relatively short sample period and the bivariate nature of the models.

**Figure 8.2:** Demand and Supply Shocks in East Africa (1997–2017)


The underlying demand and supply shocks are graphed in Figure 8.2. The shocks vary largely in magnitude from country to country, with DR Congo having experienced the widest swings in demand shocks, while Ethiopia accounts for the widest range in supply shocks. Except for DR Congo, demand shocks appear to be relatively equally distributed with a slight tendency for positive shocks. While supply shocks show more frequent and more pronounced peaks, they seem to be more balanced between positive and negative disturbances. Generally, shocks appear to be rather volatile, which might lead to difficulties when determining coordinated policies among the countries (Buigut and Valev, 2005).

Tables 8.2 and 8.3 illustrate the correlation coefficients of the identified demand and supply shocks among the East African Community and candidate countries. As Buigut and Valev (2005) note, the more symmetric shocks are (indicated by high positive correlation coefficients),

**Table 8.2:** Correlations of Demand Shocks

| | Burundi | Kenya | Rwanda | Tanzania | Uganda | DR Congo | Ethiopia | Sudan |
|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1 | | | | | | | |
| **Kenya** | 0.025 | 1 | | | | | | |
| **Rwanda** | 0.609 | 0.380 | 1 | | | | | |
| **Tanzania** | 0.046 | 0.274 | 0.347 | 1 | | | | |
| **Uganda** | 0.211 | 0.157 | -0.022 | 0.117 | 1 | | | |
| **DR Congo** | 0.432 | 0.209 | 0.207 | 0.161 | 0.072 | 1 | | |
| **Ethiopia** | 0.080 | 0.462 | 0.310 | 0.129 | 0.080 | 0.226 | 1 | |
| **Sudan** | 0.685 | 0.401 | 0.648 | 0.052 | 0.231 | 0.256 | 0.063 | 1 |

**Table 8.3:** Correlations of Supply Shocks

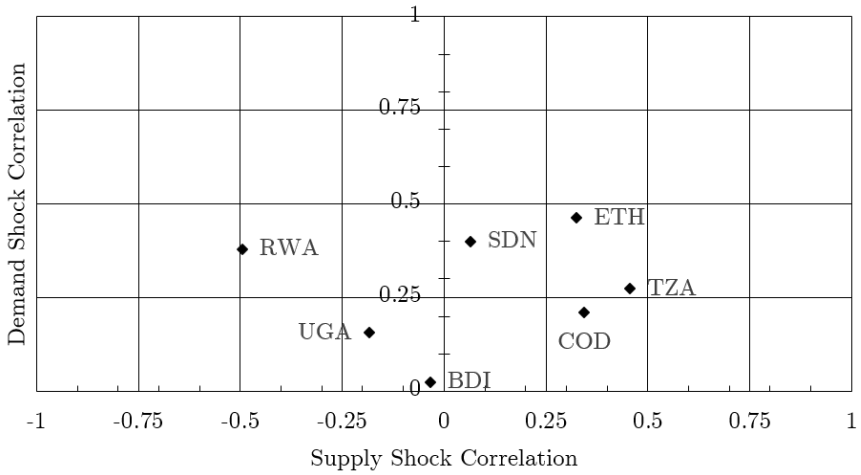
| | Burundi | Kenya | Rwanda | Tanzania | Uganda | DR Congo | Ethiopia | Sudan |
|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1 | | | | | | | |
| **Kenya** | -0.034 | 1 | | | | | | |
| **Rwanda** | 0.168 | -0.495 | 1 | | | | | |
| **Tanzania** | 0.040 | 0.457 | -0.290 | 1 | | | | |
| **Uganda** | 0.185 | -0.184 | 0.154 | 0.239 | 1 | | | |
| **DR Congo** | 0.519 | 0.345 | -0.051 | 0.305 | 0.121 | 1 | | |
| **Ethiopia** | 0.068 | 0.326 | -0.117 | 0.418 | 0.141 | 0.021 | 1 | |
| **Sudan** | -0.314 | 0.066 | 0.129 | 0.068 | -0.075 | -0.048 | -0.133 | 1 |

the more feasible it becomes to form a monetary union. Here, greater concern should be given to supply shocks as they are more likely to be invariant to demand management policies (Bayoumi and Eichengreen, 1993).

Overall, the countries exhibit widely asymmetric supply shocks. This holds within the EAC as Rwanda has negative coefficients with both, Kenya (-49.5 percent) and Tanzania (-29.0 percent), but also for candidate countries, especially for pairs involving Sudan. On a more positive note, many countries also show correlations of shocks between 10.0 and 25.0 percent, however, these only provide limited evidence for symmetric shocks. In addition to Kenya and Tanzania, the economic leaders of the region, exhibiting a high correlation of 45.7 percent, the two candidates DR Congo and Ethiopia also showcase highly correlated shocks with most countries in the region. Demand shock correlations generally look more promising, as only Uganda and Rwanda have a negative correlation coefficient of -2.2 percent, indicating slight asymmetry of shocks. All other countries are positively related, however, most coefficients are only marginally positive between 2.5 percent (Kenya and Burundi) and 20.9 percent (Kenya

and DR Congo). Only Burundi and Rwanda display a significant amount of positive correlation at 60.9 percent. Of the EAC candidates, Sudan exhibits the highest correlation coefficients with Burundi and Rwanda also beyond 60.0 percent, but also Kenya's demand shocks are significantly correlated with Ethiopia and Sudan at 46.2 and 40.1 percent, respectively. Overall, it is striking that candidate countries display higher coefficients with EAC members, than EAC countries among themselves.

**Figure 8.3:** Correlation of Demand and Supply Shocks with Anchor Kenya



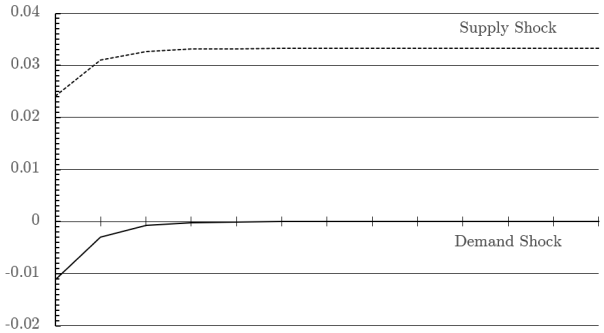

When represented graphically against Kenya as a possible anchor country as seen in Figure 8.3, the relationships become clearly visible.[51] Burundi effectively shows no shock correlation with Kenya, which is less worrisome than the negatively correlated supply shocks with Rwanda and Uganda. While the symmetry of shocks with Tanzania looks promising, emphasising the economic relationship of the two countries, the strongest correlations are experienced with the candidate countries DR Congo, Ethiopia, and Sudan which are currently not considered in the East African monetary unification efforts.

The responses in real output and prices to a one standard deviation positive shock in demand and supply are shown as impulse response functions in Figures 8.4 and 8.5. Overall, the imposed restrictions for the effects of shocks on output hold for all countries; positive supply shocks lead to a level increase in output, while positive demand shocks only have temporary effects on output. A different picture is drawn for the over-identification restrictions on prices.

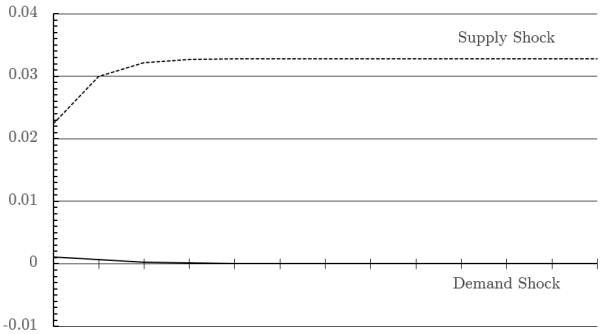
[51] Kenya would be the most obvious anchor candidate due to its predominant economic position in the region.

**Figure 8.4:** Impulse Response Functions for Output

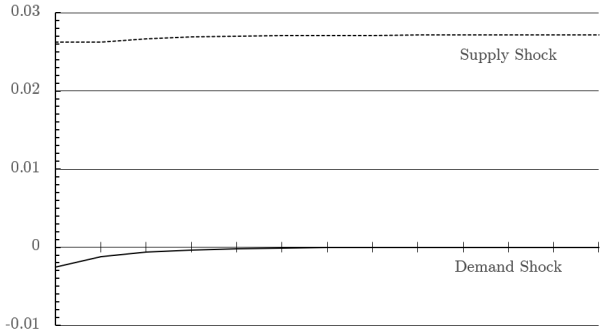
**(a)** Burundi



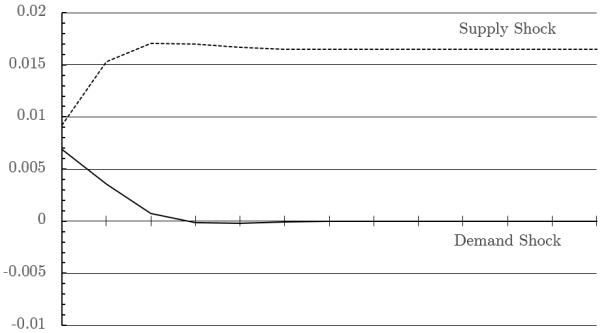

**(b)** Kenya



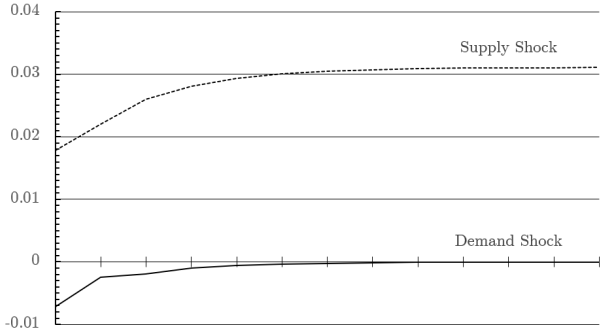

**(c)** Rwanda



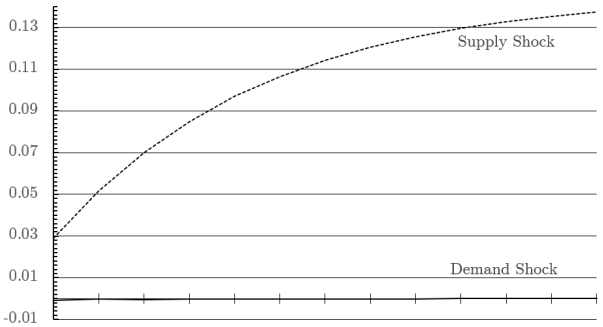

**(d)** Tanzania



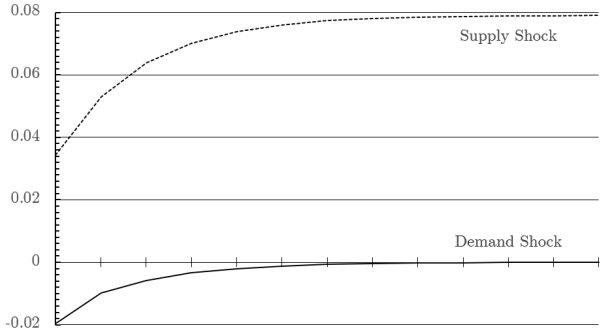

**(e)** Uganda




**(f)** DR Congo




**(g)** Ethiopia




**(h)** Sudan

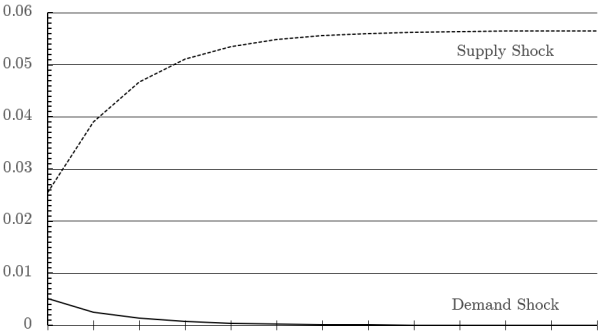
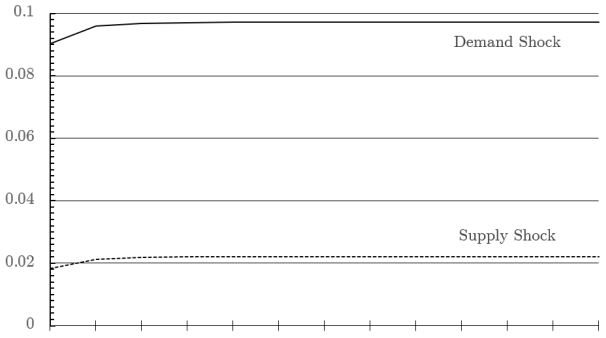
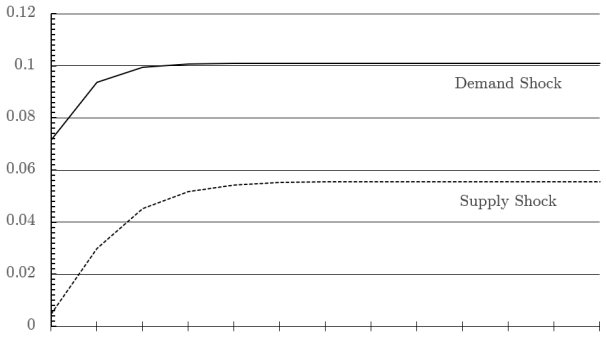


**Figure 8.5:** Impulse Response Functions for Prices

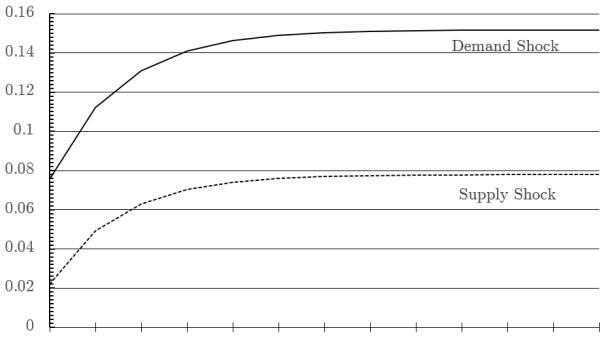
**(a)** Burundi



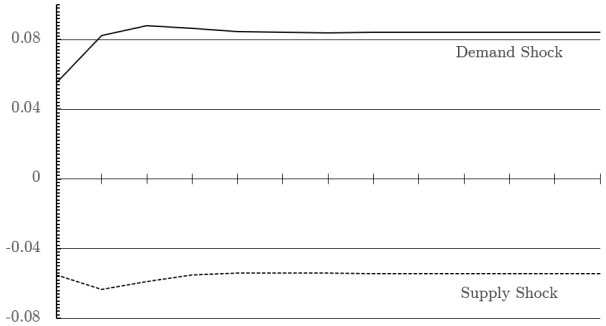

**(b)** Kenya



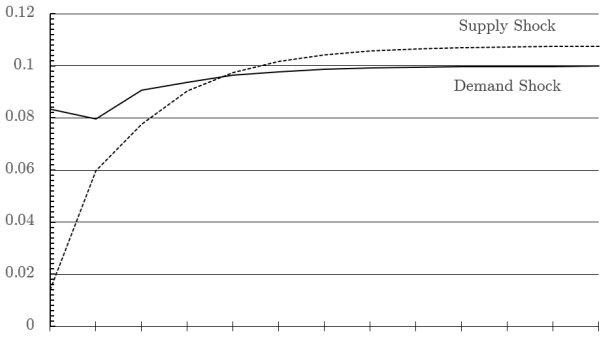

**(c)** Rwanda



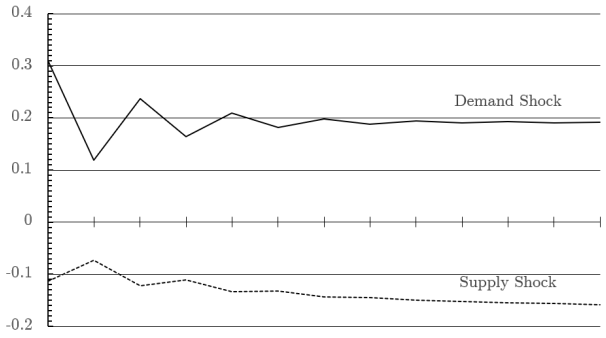

**(d)** Tanzania



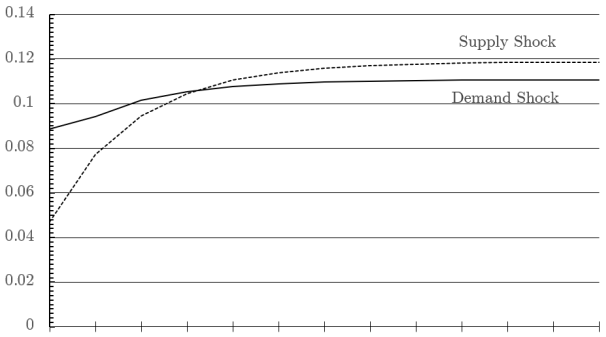

**(e)** Uganda



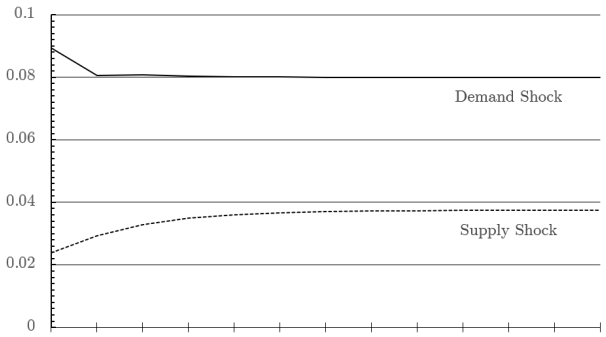

**(f)** DR Congo




**(g)** Ethiopia




**(h)** Sudan



Positive demand shocks generally result in a level increase of prices, which is in line with the AD-AS Model's implications. In contrast, most countries respond to a positive supply shock with a level increase in prices, representing a conundrum. Bayoumi and Ostry (1997) provide a reasoning for these inconsistencies by pointing towards the generally high fluctuations and poor quality of macroeconomic data of developing countries in Africa.

Focusing on the results of individual countries, it must be noted that while the directions of responses to shocks in output are similar across all countries, the magnitudes vary significantly. Burundi, Kenya, Rwanda, and Uganda respond to supply shocks with a long-term level increase in output of around 3.0 percent. In contrast, Tanzania is affected less at 1.7 percent, whereas DR Congo, Ethiopia, and Sudan are affected to a larger extent between 5.7 and 13.5 percent. Large variation can also be observed in the periods of adjustment. Most countries stabilise after around six periods; however, it takes Burundi, Rwanda, and Kenya only two to three periods to stabilise, and DR Congo and Ethiopia much longer at ten to twelve periods.

In line with the implications by the AD-AS Model, demand shocks do not have long-term effects on output for all countries. However, the magnitude of short-term effects as well as the length of adjustment periods vary significantly. While Kenya, Rwanda, and DR Congo are almost not affected by demand disturbances, stabilising more or less immediately. Burundi, Tanzania, Uganda, and Ethiopia have instantaneous effects of up to 2.0 percent, requiring more time to stabilise between three and six periods. When considering the effects on output as a response to supply disruptions, EAC countries were affected more similarly than candidate countries. However, this pattern is not clearly observable for output responses to demand shocks.

As Tanzania and DR Congo are the only countries fulfilling the over-identifying restrictions for the effect of supply shocks on prices implied by the AD-AS Model, the results should be interpreted with care. Tanzania experiences a -5.4 percent level change in prices, whereas DR Congo is affected by -15.8 percent. The long-run impact for the remaining countries is rather volatile, ranging from 2.1 percent (Burundi) to 11.9 percent (Ethiopia). Adjustment periods are more similar than before, extending from six to nine years, with Burundi being the only outlier with stabilisation after only two periods. In contrast, all countries fulfil the over-identifying restrictions for the effect of demand shocks on prices, all facing level increases in the long-run. Most long-term responses are clustered within an array of two percentage points around 10.0 percent. Exceptions are Rwanda at 15.2 percent and DR Congo at 19.2 percent. The adjustment

periods tend to be shorter than for supply shocks ranging from four to seven periods. Again, Burundi stabilises after only two periods.

When briefly comparing the results for East Africa with findings for the EMU by Bąk and Maciejewski (2017), it must be noted that the over-identifying restriction generally holds for the EMU countries. Further, lower magnitudes of shocks and higher consistency in the duration of adjustment periods stand out, overall indicating a higher degree of integration.

### 8.1.4 Concluding Remarks

Applying the methodology by Blanchard and Quah (1989) to analyse the symmetry of shocks in the East African region casts reasonable doubt on the feasibility of a East African Monetary Union for several reasons. First, demand and supply shocks are rather volatile across the entire sample period. Second, many negative and weakly positive correlation relationships between the eight countries have been found for both, demand and supply shocks, with the highest coefficients between Kenya and currently not considered candidate countries. Third, the EAC countries react very differently to shocks, both in terms of magnitude and duration of adjustment periods. Furthermore, this is even worse for candidate countries, which might be a result of past integration efforts by the EAC. Overall, these difficulties must be addressed in form of rigorous policy reforms prior to monetary unification with the implications of the results being reflected in Section 9.

## 8.2 Business Cycle Synchronisation

In addition to similarity of underlying shocks, synchronisation of business cycles is an essential precondition for forming a sustainable currency union in the East African region. If business cycles of the countries in East Africa are highly synchronised, losing monetary sovereignty to counter asymmetric disturbances becomes less of a burden (Broz, 2005).

### 8.2.1 Methodology

Correlations of the development of real GDP can be used to assess business cycle synchronisation in the East African region. Real GDP ($y_t$) can be viewed as the sum of a cyclical and a trend (or growth) components. According to Hodrick and Prescott (1997), the growth component of

the time series varies smoothly over time and does not differ too much from the observed $y_t$, whereas cyclical components reflect short term fluctuations from this trend. Therefore, real GDP can be described as the sum of a growth component $g_t$ and a cyclical component $c_t$:[52]

$$y_t = g_t + c_t \quad \text{for } t = 1, \ldots, T \tag{8.13}$$

The growth component faces following minimisation problem:

$$\text{Min}_{\{g_t\}_{t=-1}^{T}} \left\{ \sum_{t=1}^{T} c_t^2 + \lambda \sum_{t=1}^{T} \left[ (g_t - g_{t-1}) - (g_{t-1} - g_{t-2}) \right]^2 \right\} \tag{8.14}$$

The first term of 8.14 provides information about the difference between the variable of interest $y_t$ and the growth or trend term $g_t$ and thus, can be written as: $c_t = y_t - g_t$. Over longer time periods these deviations $c_t$ shall average near zero. The second term is the Hodrick and Prescott (1997) measure of smoothness of the growth component of the series. In their conceptual framework this smoothness is implemented by the sum of squared second differences of the trend component and reflects a penalty for variability in the trend component series. The larger the value of the positive smoothness parameter $\lambda$, the greater the penalty and the smoother the resulting trend. If $\lambda \to \infty$, then $g_t$ is the least squares fit of a linear time trend model. In contrast, if $\lambda \to 0$, the penalty term approaches zero and $g_t$ would solely be the time series $y_t$ itself. The common practice for the penalty term is to choose $\lambda = 1600$ for quarterly time series data, whereas for annual data a lower value should be chosen, e.g. $\lambda = 100$ (Hamilton, 2017).

For the analysis, GDP data at constant 2010 USD by the World Bank from 1995 to 2017 is used for all countries, except South Sudan, which will be excluded from the analysis due to data unavailability. The HP Filter is applied to the log of real GDP to detrend and extract cyclical components for each country.[53] In addition, the BP Filter by Baxter and King (1999) was applied to enhance the analysis. However, both filters show strong similarities in their results; thus, business cycle synchronisation will be discussed in light of the HP Filter results only.[54]

[52] In its infinite sample version, one can see that the HP Filter removes non stationary unit root components from the data (Baxter and King, 1999).

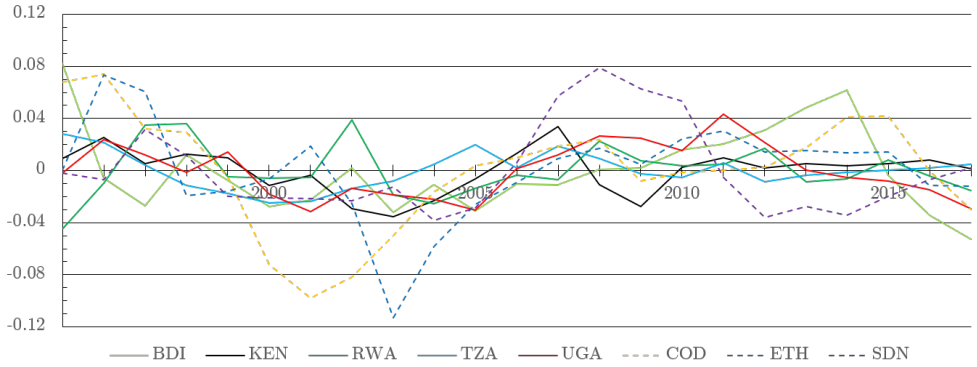
[53] Artis et al. (2004) note that the industrial production index might be a better indicator as it displays more sensitivity to cyclical movements than estimates of real GDP. However, due to data unavailability of this index, real GDP will be used to go forward.

[54] Amongst others, Hamilton (2017) has recently brought up criticism against this method used for the decomposition of a time series. He notes that the HP Filter often produces a series exhibiting rather spurious dynamics, which differ from the underlying data-generating process. Furthermore, there exists disagreement

### 8.2.2 Results and Interpretation

As seen in Figures A1.3a to A1.3e, all countries in East Africa exhibit an upward trend during the last two decades, with the exception of DR Congo, facing a declining GDP up until 2001.

**Figure 8.6:** Business Cycles in East Africa (1995–2017)




At a first glance, the business cycles of the five EAC members display some similar features, especially since its establishment in 1999, as seen in Figure 8.6. However, there exist times where some countries experienced different economic conditions. For example, while Kenya shows a clear downward trend after the financial crisis in 2008, Burundi and Uganda display rather positive fluctuation in the same period. In addition, the amplitude of GDP business cycles seems to vary between the countries and across time. According to Di Giovanni and Levchenko (2005), the degree of openness of a country is positively related to the volatility of the economy. This is partially consistent with the results for East Africa – Rwanda and Kenya have been more open to trade than for example Tanzania over the last decade and are also exposed to slightly more fluctuations in business cycles. Furthermore, potential candidates display higher fluctuations of business cycles over the same period.

Tables 8.4 and 8.5 show the correlation matrices of the East African countries' permanent and cyclical component of real GDP. With regards to the permanent components, a positive and high correlation coefficient is found, especially between the three founding members of the EAC, ranging from 98.8 percent between Kenya and Uganda to 99.8 percent between Tanzania and Uganda. But also Burundi and Rwanda display high correlations of the permanent component

over the value the penalty parameter $\lambda$ applied to time series of different frequencies. However, this method is still widely implemented in academic research and policy analysis, especially with regards to business cycle synchronisation.

**Table 8.4:** Correlation of Permanent Component of GDP in East Africa (1995–2017)

| | **Burundi** | **Kenya** | **Rwanda** | **Tanzania** | **Uganda** | **DR Congo** | **Ethiopia** | **Sudan** |
|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1 | | | | | | | |
| **Kenya** | 0.997 | 1 | | | | | | |
| **Rwanda** | 0.980 | 0.987 | 1 | | | | | |
| **Tanzania** | 0.990 | 0.995 | 0.998 | 1 | | | | |
| **Uganda** | 0.983 | 0.988 | 0.999 | 0.998 | 1 | | | |
| **DR Congo** | 0.977 | 0.972 | 0.921 | 0.944 | 0.926 | 1 | | |
| **Ethiopia** | 0.998 | 0.999 | 0.987 | 0.995 | 0.988 | 0.972 | 1 | |
| **Sudan** | 0.963 | 0.969 | 0.996 | 0.989 | 0.995 | 0.887 | 0.969 | 1 |

of GDP with the EAC partner states, speaking in favour of a monetary union between the EAC members. Ethiopia displays high co-movements with all EAC countries in the permanent component of real GDP. Contrarily, the Democratic Republic of the Congo and Sudan display the lowest correlations with the rest of the countries in scope, but still of high magnitude. Looking at the correlation coefficients of the cyclical components of the economies' real GDP, there exist significant cross-country differences. Almost all country pairs display positive, but often only moderately high correlation coefficients. Among the current EAC member states, correlations are found to be highest between Burundi and Uganda (38.9 percent), Kenya and Tanzania (38.8 percent), Kenya and Uganda (33.8 percent), and Rwanda and Uganda (33.1 percent). In addition, Kenya displays a high correlation of the cyclical GDP component with DR Congo and Ethiopia (60.5 percent and 60.7 percent, respectively), while Uganda does so with all three potential members for an EAC enlargement. In contrast, Rwanda is found to have negative correlations with all EAC members, except Uganda.

**Table 8.5:** Correlation of Cyclical Component of GDP in East Africa (1995–2017)

| | **Burundi** | **Kenya** | **Rwanda** | **Tanzania** | **Uganda** | **DR Congo** | **Ethiopia** | **Sudan** |
|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1 | | | | | | | |
| **Kenya** | 0.194 | 1 | | | | | | |
| **Rwanda** | -0.107 | -0.069 | 1 | | | | | |
| **Tanzania** | 0.184 | 0.388 | -0.373 | 1 | | | | |
| **Uganda** | 0.389 | 0.338 | 0.331 | 0.213 | 1 | | | |
| **DR Congo** | 0.481 | 0.605 | -0.093 | 0.707 | 0.488 | 1 | | |
| **Ethiopia** | 0.249 | 0.607 | 0.281 | 0.231 | 0.550 | 0.456 | 1 | |
| **Sudan** | -0.086 | 0.114 | 0.295 | 0.253 | 0.503 | 0.213 | 0.279 | 1 |

To assess whether business cycle synchronisation has increased since the establishment of the first integration pillar of the EAC in 2005, the HP Filter was applied to a subsample ranging from 2005 to 2017.[55] With regards to the permanent component of real GDP, correlation coefficients have increased between all but three country pairs in the EAC and most with the three potential candidates for an EAC enlargement, speaking in favour of increased synchronisation over past years. However, the results with regards to the cyclical component of real GDP are mixed. While correlations have significantly increased for Rwanda, between Kenya and Tanzania, and Burundi and Uganda, co-movements with Kenya and Tanzania in general are found to be smaller in this subsample. In addition, some of the correlation coefficients turned negative, especially between the three founding members of the EAC. Most troublesome are Tanzania's highly negative correlations with all current EAC member states but Kenya. This might reflect Tanzania's remaining efforts for further integration with its Southern neighbours rather than the EAC exclusively. With regards to the three countries considered for a potential enlargement of the EAC, Ethiopia displays the most favourable results exhibiting mostly strong positive correlations with Burundi (63.4 percent), Kenya (12.9 percent), Rwanda (42.1 percent), and Uganda (60.3 percent), while being negatively correlated with Tanzania only. Furthermore, DR Congo is relatively synchronised with Burundi's, Kenya's, and Tanzania's cyclical components, but negatively correlated with Rwanda and Uganda. Moreover, Sudan is only positively correlated with Rwanda and Uganda. However, drastic changes in correlation coefficients might be due to the short time frame of the subsample – the period of 1995 to 2017 might give a more holistic view of business cycle synchronisation in East Africa.

### 8.2.3 Concluding Remarks

While positive correlations of permanent components within the EAC and with potential candidates for an EAC enlargement suggest a positive outlook for monetary unification, the results of the cyclical component are less clear-cut. Even though correlations of the cyclical component seem to be especially high for the three founding countries from 1995 to 2017, results of the sub-period from 2005 to 2017 suggest differently. Especially for Tanzania, the costs for participating in a monetary union in East Africa is potentially large due to mostly negative correlations with the remaining EAC member states. However, positive effects on business cycle

[55] The results for the subsample can be found in Tables A2.13 and A2.14.

synchronisation due to the Customs Union, Common Market, and future Monetary Union might yet have to unfold. The following section will explore potential positive endogenous effects on business cycle synchronisation in a dynamic setting.

## 8.3 Endogeneity versus Specialisation

Not only an overall degree of openness, but especially high intra-regional trade linkages among the candidates for monetary unification can significantly increase the benefit of the introduction of a common currency among member countries (Kigabo, 2018; Frankel and Rose, 1998). The Customs Union has been the first integration milestone in the EAC with the goal to establish free trade on goods and services among the EAC member states to incentivise intra-regional trade in East Africa.

Due to numerous obstacles to trade such as infrastructure and remaining non-tariff barriers, the intra-regional trade remains relatively low, compared on a global level. However, trade amongst the East African countries is steadily increasing, with the exception of a slight decrease from 2014 to 2016 (see Table A2.15), and has always been high compared to other regions on the continent (Kamau, 2010). Total intra-EAC trade has risen from USD 2.30 billion in 2005 to USD 5.92 billion in 2018, displaying a 157.0 percent increase in trade within the region.[56] However, total trade for most East African countries has increased even slightly more. Both, the share of intra-EAC exports and imports as a fraction of total exports and total imports have not significantly increased since 2005 and remain between 5.0 and 20.0 percent in most countries, with the exception of intra-regional exports in Kenya and Uganda, as well as intra-regional imports in South Sudan. In some cases, e.g. in Burundi and Rwanda, intra-EAC as a share of total trade has even decreased over past few years, as seen in Tables A2.16 to A2.24. South Sudan represents a special case as it hardly exports products to other EAC countries but contrarily, receives around two-third of its total imports from the region. This reflects the fact that the main trading partners of most East African countries are the People's Republic of China and countries in the Middle East (see Table A2.25), Uganda being the exception with exports to the East African countries accounting for more than half of total exports.

[56] As some authors note, the reported values have to be handled with care as measurement errors might be substantial and informal trade values are possibly excluded, which might be high in the region (Mafusire and Brixiova, 2013; Durevall, 2011).

Intra-EAC trade varies significantly among its members. Kenya and Uganda account for most intra-EAC trade with 34.1 percent (42.1 percent of exports and 25.7 percent of imports) and 33.2 percent (39.2 percent of exports and 26.9 percent of imports), respectively, followed by Tanzania (11.8 percent), Rwanda (11.7 percent), South Sudan (6.7 percent), and Burundi (2.5 percent). In addition, Kenya and Tanzania are the only net exporter within the region, while Burundi, Rwanda, South Sudan, and Uganda import from than exporting to their partner states.

Overall, the data points at Kenya's crucial role in the EAC trade as confirmed by it's high trade share of exports to other EAC countries, especially Burundi, Rwanda, South Sudan, and Uganda. Kenya's imports from the region remain fairly low, but with an increasing share from Tanzania and Uganda, which might be due to the reduction of (non-) tariff barriers (Asiimwe, 2014). In addition, Uganda seems to be most active in intra-regional trade with roughly half of its exports going to the region, as well as a relatively high import share, and positive development with regards to overall intra-regional trade. Despite being a founding member of the EAC, Tanzania shows relatively low engagement in intra-regional trade in East Africa, with 9.4 percent and 3.4 percent of total exports and imports, respectively. This can mainly be attributed to the lack of adequate infrastructure between Tanzania and the rest of the EAC as well as its integration efforts with the SADC, leading to its main trading partners being in the South of the continent or overseas (Kigabo, 2018).

DR Congo is the most promising potential candidate for an EAC enlargement in terms of trade integration, with exports amounting to USD 853.80 million to and USD 1,397.50 million from EAC member states, as seen in Table A2.22. Though having the countries from the Middle East and China as main trading partners, DR Congo interacts quite actively in exports and imports with Tanzania, Kenya, and Uganda. In case of an actual enlargement, these numbers could be expected to increase as barriers to trade would be reduced by the accession in the Customs Union. Conversely, Sudan has only little trade activity with EAC members, whereas Ethiopia exports a significant amount of its products to South Sudan and Sudan, but imports only marginally from the rest of the region.

**Effects of a Monetary Union on East African Trade and Business Cycles**

Despite currently experiencing relatively low levels of intra-regional trade in East Africa, there might still be a case for monetary unification in the region from a trade perspective. While the previously mentioned criteria took a backward-looking approach by implicitly assuming business cycles being largely unaffected from preceding economic integration, the endogeneity hypothesis suggests that adopting a common currency can act as catalyst itself to deepen integration, increase trade, and convergence in the region, enabling the member states to fulfil the OCA criteria ex-post, even if not sufficiently fulfilled ex-ante (Frankel and Rose, 1998).

Headed by Andrew Rose, a significant amount of research has indicated a trade generating effect due to monetary unification. However, the actual size of the increase remains ambiguous. Mainly using structural gravity models on panel data sets comprising of large numbers of countries and controlling for a host of other trade enhancing influences,[57] early studies found the astonishing potential for a common currency to double or even triple the amount of bilateral trade of countries sharing a common currency as opposed to countries with different currencies, ceteris paribus (Frankel and Rose, 2000; Glick and Rose, 2002). Though agreeing on national money to constitute a significant barrier to international trade, the subsequent studies conclude on more moderate estimates of currency union induced trade effects. Combining the results of 34 studies in a meta-analysis, Rose and Stanley (2005) reject the hypothesis that currency unions have no effect on trade and conclude on an increase of bilateral trade between 30.0 percent and 90.0 percent.[58] However, especially with regards to the EMU, trade effects due to a common currency have been estimated lower. While many studies conclude on a bilateral trade increase of only 5.0 to 20.0 percent,[59] some other studies even suggest that the EMU has not lead to trade diversion as the trade with third countries has significantly increased over the past decades (see Micco et al., 2003; König and Ohr, 2013).

In East Africa, a currency union has yet to be established. Buigut (2011) generally questions significant effects on trade for African monetary unions as the continent's countries depend highly on exports of primary products which might limit the scope of integration compared

[57] These comprise of measurements of geographic distance, GDP per capita, common language, and common border, among others.

[58] Rose and Van Wincoop (2001), using the structural gravity model proposed by Anderson et al. (2003), come to a similar result and conclude that the EMU might increase trade by up to 58.0 percent. More recently, Rose (2017) estimates the export-enhancing effect of the EMU to be around 54.0 percent.

[59] See Baldwin (2006); Baldwin and Wyplosz (2015); Glick et al. (2015), among others.

to more advanced economies. Similarly, Busse and Shams (2005) suggest that considerable trade effects should not be expected, except for a very narrow range of intermediate products. Accordingly, other early studies on the EAC's trade effects conclude that there are endogeneity effects on trade in African monetary unions, but their effect and size are suggested to be small (Carmignani, 2009; Tapsoba, 2008).

However, more recent studies are increasingly positive about trade enhancing effects in the East African region. By comparing bilateral trade flows conditioned on the underlying exchange rate arrangement, Qureshi and Tsangarides (2012) find significant trade effects for fixed exchange rate regimes on the African continent. Buigut (2016) uses a theoretically consistent gravity model to assess trade effects arising from the EAC Customs Union and concludes that the economic integration since 2005 has produced a moderate positive effect on intra-regional trade of around 22.0 percent. In accordance, Umulisa (2016), specifying the gravity model on the effect of monetary unification on the EAC, finds a positive and significant coefficient on the common currency dummy, indicating potential for joining a monetary union among the EAC member states. However, she points out that free trade agreements affect bilateral trade significantly stronger than a common currency does.[60] Though often identified to be lower than for monetary arrangements of more advanced economies, trade integration appears to be higher and of greater potential for the EAC countries than in most other regions in the SSA (Alper et al., 2016). Allowing for intra-regional comparison between SSA countries that have committed to trade or monetary unions in their gravity equation, Allard and Selassie (2015) argue that, ceteris paribus, the bilateral trade flows between WAEMU and EAC partner states are three and five times higher compared to the remaining trade flows in the SSA, respectively. In addition, a recent study by Mayer and Thoenig (2016) combines gravity regressions with a general equilibrium simulation to evaluate the consequences of trade and currency arrangements. They find a large historical effect of EAC agreements in terms of trade creation and see a great potential for the effects of an effective and complete implementation of the common market. However, they conclude that, due to the costs of the establishment of a common currency, gains from monetary unification would have a modest effect on bilateral trade in the EAC.[61]

[60] Adam and Chaudhry (2014) find similar results for the countries of the ECOWAS.

[61] Nevertheless, one must note that all past empirical results might certainly underestimate the endogeneity effect of further economic and monetary integration as official trade data mostly fails to include informal trade, which is of great relevance for African economies (Tapsoba, 2010).

While most studies for the EAC and other prominent currency unions suggest that measures of economic and monetary integration increase bilateral trade, it is important to evaluate whether this leads to greater synchronisation of shocks and business cycles or to divergent trends due to specialisation effects.[62] However, two decades after introducing the euro, there remains no common ground to which effect is dominating.

Frankel and Rose (1998), making their case for endogenous effects of monetary unification by analysing 21 industrialised countries, find a positive relation between the size of bilateral trade and business cycle synchronisation.[63] Similar results are put forward by Artis and Zhang (1995); Emerson et al. (1990); Mongelli and Vega (2006). Other authors have further specified this general view of business cycle synchronisation induced by monetary unification and increased bilateral trade linkages. More support for the hypothesis of increased bilateral trade leading to higher business cycle synchronisation for the East African countries is found by Baxter and Kouparitsas (2005), who suggest that as long as both countries in the pair are industrialised countries or both developing countries, a positive relationship with business cycle correlation is robust. However, they find that being part of a common currency does not have significant effects on the correlation of business cycles, questioning empirical findings by Frankel and Rose (1998). Furthermore, Fidrmuc (2004) clarifies that there exists only a direct relationship between business cycle synchronisation and intra-industry trade and not bilateral trade linkages per se.

More empirical findings speaking in favour of the specialisation hypothesis have been put forward with regard to the EMU. Since the financial crisis, large economic heterogeneity as well as intensive and growing clustering of EU members is found. These differences in economic structure are often due to discrepancies in productivity and employment, especially between Northern and Southern European states (Bąk and Maciejewski, 2015; König and Ohr, 2013). In this context, Caporale et al. (2015) analyse the determinants of output synchronisation and find support for the specialisation hypothesis due to diverging patterns between core and periphery in the euro area. Therefore, they conclude that greater convergence in the EMU is not guaranteed by more intense trade linkages between EMU's partner countries.

[62] While Krugman (1993) suggests that increased trade linkages drive specialisation of countries on the products where they experience a comparative advantage leading to mainly increased inter-industry trade and exposure to industry-specific shocks, the Emerson et al. (1990) argues for a dominant increase of intra-industry trade leading to more common shocks among its members.

[63] Imbs (2004) makes a case for the endogeneity of financial integration by concluding that economic regions with significant financial links tend to be more synchronised, though Kose et al. (2003) find this to be much smaller for developing countries than for industrialised.

With respect to the African continent, discussions about possible endogenous effects of monetary unification have been scarce. Calderón et al. (2007), using annual data for 147 countries between 1960 and 1999, conclude on a positive and significant impact of trade intensity on business cycle synchronisation among developing countries, but of substantially smaller magnitude than for advanced economies. They suggest these discrepancies can be explained by differences in the patterns of specialisation and bilateral trade among developing countries, as the latter in contrast often exhibit different production structures leading to mainly inter-industry trade. In addition, De Grauwe and Mongelli (2005) suggest that for the increasing share of services in output in the East African countries, economies of scale are not as crucial as for other sectors, making regional concentration and specialisation less likely. Tapsoba (2010) testing the endogeneity hypothesis by Frankel and Rose (1998) on 53 African countries from 1995 to 2004, find that trade intensity and business cycle synchronisation are also positively correlated for the economies on this continent. However, he suggests that the magnitude of this endogenous effect might be smaller, and convergence might happen much slower than for more advanced and industrialised countries. Performing several empirical methods, Ncube et al. (2014) find support of endogenous effects as deeper intra-regional trade seems to have helped the EAC to absorb global output shocks, as opposed to the Southern African Customs Union (SACU). Therefore, they suggest that, especially within the EAC, increasing trade linkages have the ability to increase the synchronisation of output among the partner states.

Though it remains questionable if any set of countries could form a currency union, hoping for endogenous effects to reap the net benefits of a common currency and significant challenges to further regional integration remain,[64] there exists strong potential for intra-regional trade and endogenous effects to be revealed (Mongelli, 2005). Despite recent, more sceptical studies with regards to the EMU, academics overall seem to suggest that countries not fulfilling the OCA criteria ex-ante may do so ex-post due to advancing integration induced by a common currency. To unfold the true potential of the Customs Union, Common Market, and the future Monetary Union, it is essential for policy makers to ensure compliance by all partner states with EAC agreements and harmonisation targets – first and foremost by removing existent tariff equivalent measures and outstanding non-tariff barriers (Buigut, 2016; Alper et al., 2016).

[64] These include low per capita income and resulting internal markets of limited size, concentration on primary and commodity exports, high share of informal trade, limited transportation infrastructure, and continued use of tariff-equivalent measures, and non-tariff barriers, among others.

## 8.4 Credibility of Monetary Policy

As already suggested by Gandolfo (1992), the issue of time inconsistency can also be applied to the traditional argument of inflation similarity, such that convergence in rates of inflation do not necessarily need to prevail ex-ante, but could be a feasible outcome from joining a common currency area. Therefore, countries with track records of high inflation combined with a reputation for neglecting low inflation commitments can restore credibility by forsaking its sovereign monetary and exchange rate policy to form a currency union with a country of sustainable and credible low inflation commitments (Guillaume and Stasavage, 2000).[65]

While the issue of credibility constituted a crucial consideration in the debate surrounding the EMU, this argument might even be of greater importance for less developed African economies. Though considerable improvements have been achieved in recent years and several integration initiatives in Africa are on the rise, African economies have generally lacked political and economic institutions to commit credibly to financial stability, low inflation and sustainable public finances on an individual basis, and still remain vulnerable to these institutional weaknesses (Debrun et al., 2011). The main factors in Africa that undermine credibility and put their economic stability at risk constitute of capacity constraints for an effective implementation of institutional reforms, strong fiscal pressure, and the fear of investors that future policy makers might not have the same preferences as the current regime. Therefore, to make a credible commitment to sound monetary policies, joining a common currency area and delegating monetary policy to an independent supra-national institution might be the second-best solution for the developing economies in Africa as acquiring a reputation of low inflation independently might be too lengthy of a process (Guillaume and Stasavage, 2000; Debrun et al., 2011).[66]

The establishment of an independent regional central bank and a common currency is envisioned by the Protocol on the Establishment of the East African Community Monetary Union (EAC, 2013a) to bring forth greater credibility of monetary policies in East Africa. However, the existence of an anchor country with a long history of low-inflation commitment is often considered crucial for this mechanism to work (Mongelli, 2002; Giavazzi and Giovannini,

[65] Alesina and Barro (2002) refer to this as a high-inflation country's ability to import credibility from a low-inflation country.

[66] In their early study, Guillaume and Stasavage (2000) note that due to little separation of powers, African countries have additionally lacked the checks and balances of political institutions necessary for conducting credible independent monetary policy on a national level before 2000.

1989). Looking at current EAC partner states, the three founding members Kenya, Tanzania, and Uganda could be considered to be such anchor as they are the largest economies in terms of GDP. Unfortunately, none of them has a long or outstanding successful history of low inflation rates or stable, independent monetary policy (see Section 6.1 and Buigut (2010)). Hence, one might argue that the possibility to import credibility would be rather limited for the East African countries. However, Buigut and Valev (2009) show that monetary unification between emerging and developing economies can still enhance price stability significantly even if no anchor country with a long history of commitment to low inflation rates exists. They argue mutual restraints and checks on monetary policies provided by a common independent central bank are important in determining the benefits of monetary unification for the EAC members. This is because opportunistic goals of one country can be kept in check at the supra-national level by the other partner states, as long as they have disparate goals. Assessing the five EAC countries, Buigut and Valev (2009) conclude that due to different preferences among the East African countries, especially Uganda and Tanzania can significantly benefit from monetary unification with the other EAC partner states. Similarly, Debrun et al. (2011) find that those supra-national institutions are arguably more credible and more difficult to influence due to the implied coordination efforts than policies made independently and on a national level.

Though agreeing on the benefit of monetary unification from a credibility and stability point of view, Guillaume and Stasavage (2000); De Grauwe (2018) add crucial conditions, especially for developing countries in Africa. First, the institutional design of the East African Monetary Union must support a strict enforcement of monetary rules. Second, the exit of a member state from the union must be made sufficiently costly. This can be achieved by regional agreements on trade, financial assistance or security commitments conditional on the membership in the Monetary Union. Third, the partner states' governments must actively oppose attempts of countries trying to break rules imposed by the union. Fourth, only a full monetary union between the partner states is able to establish the required credibility between its members – currency boards or fixed exchange rate regimes are not sufficient. Furthermore, De Grauwe (2018) points out that East African countries, which were more stable and credibly committed to low-inflation targets than others, might lose from a new monetary institution with less credible partner states.

# 9 Policy Recommendations

The objective set out in the Protocol on the Establishment of the East African Community Monetary Union is "to maintain monetary and financial stability aimed at facilitating economic integration to attain sustainable growth and development" (EAC, 2013a, p. 7). As Owino (2014) argues, this does not necessarily mean that forming a monetary union would be the superior policy choice for achieving financial stability and economic growth, pointing towards difficulties associated with the implementation of weaker forms of integration such as the Customs Union and Common Market, among others. However, Juncker et al. (2015) make a case for the euro being more than simply a common currency which can be easily translated into the context of East Africa. From the political and economic integration inevitably arises a shared destiny, which requires solidarity, responsibility, and respect for the commonly agreed rule in order to withstand times of crisis. To achieve a sustainable union that benefits all its members, progress must be made on four fronts. First, a genuine economic union must be established, ensuring that individual members have the structural features to prosper within the union. Second, the integrity of the common currency and risk-sharing must be in place in form of a financial union. Third, a fiscal union would deliver both, fiscal sustainability and stabilisation. Finally, a solid foundation for the three aforementioned areas can only be provided through an accountable and legitimate political union. While the first theme is mainly addressed in Section 9.1, the remaining three areas are the focus of Section 9.3.

## 9.1 Short-term Focus of EAC Efforts

As Durevall (2011) outlines, when the European Union decided to move forward with its plans for a common currency, among the main motivators were the creation of exchange rate stabilisation to further enhance the already strong trade integration and the better administration of transfer mechanisms within the economic area.[67] This is not necessarily the case for the EAC. Instead, politicians are mainly motivated by a vision to end the artificial separation of peoples in East Africa, boost economic development in the region, attract investment, and create monetary stability. While the transfer of national sovereignty has never been unopposed in Europe, East

[67]This mainly concerns the Common Agricultural Policy (CAP) including a price support system and considerable subsidies (Durevall, 2011).

African leaders are probably more hesitant due to differing motivations. This is an important distinction as it provides a rationale for weaknesses of the current integration agenda.

As outlined in previous sections, fiscal discipline is widely considered a key factor for the successful implementation of a monetary union (Drummond et al., 2015). While the EAC acknowledges the importance of fiscal discipline by formulating convergence criteria closely related to the EMU's Maastricht treaty, the partner countries currently mostly fail to meet the targets for deficit and gross public debt. The underlying problems are two-fold. First, the Protocol on the Establishment of the East African Community Monetary Union distinguishes between non-binding indicative convergence criteria and binding performance criteria. The indicative criteria are solely intended as orientational benchmark for the partner states before the performance criteria become binding three years prior to the introduction of the common currency. Second, the EAC currently does not have any institutions in place tasked with the surveillance and enforcement of the convergence criteria. Masson (2015) puts it in simple terms: better policy coordination is required throughout the EAC, in order to prevent consequences of weakly enforced rules and inadequate policies which is often thought to be the root cause of the recent euro zone debt crisis. Therefore, a supra-national institution equipped with the required authority to effectively monitor and enforce binding fiscal convergence criteria already before the three year period leading up to monetary unification would significantly contribute to mitigate the risks at hand. Furthermore, Anand et al. (2011) underline the importance of independence and sufficient budgetary capacity of such institution in order to effectively carry out its responsibilities.

With the first two pillars of economic integration, the partner states outlined a promising foundation for monetary unification. While the Customs Union is approaching full implementation, with the exception of non-tariff barriers to trade, progress has been sluggish for the Common Market as outlined in previous sections. However, a fully operational Common Market is a required pre-condition for a sustainable currency union in order to improve the currently weak economic integration of the region. According to the reasoning outlined by Kigabo (2018), the asymmetry of shocks found in the earlier analysis could be of endogenous origin rather than being caused exogenously, additionally underlining the requirement for coherence within the region. Therefore, the completion of the objectives outlined in the Common Market Protocol should be the first and foremost priority of EAC efforts. Moreover, as the countries

will likely remain to be susceptible to asymmetric shocks even after the full establishment of the Common Market, they should start thinking of ways to resolve this issue, such as establishing fiscal transfer systems as risk-sharing mechanism which will be covered to greater extent in Section 9.3.

Many of the initiatives pooled under the Monetary Union Protocol are aimed at the harmonisation of regulations of the six partner states. While the MAC notes important results with regard to monetary and exchange rate policies as well as payment systems, challenges remain especially in the areas of taxation, non-banking financial sector across all six nations, and the establishment of the EAMI (EAC, 2018). Here, the absence of agreed rules and enforcement mechanisms represent a challenge when it comes to the implementation of decisions by the MAC and other committees of the EAC (Kigabo, 2018). Therefore, the focus of the EAC must be the timely implementation of initiatives laid out in the Monetary Union Protocol, especially the fast-tracked full operationalisation of the EAMI as key institution of the upcoming currency union.

However, due to the identified deficiencies, it ultimately remains questionable whether the current target of 2024 can still be met. The transition towards a monetary union is a medium-to-long-term process, which requires firm commitment by all parties involved (Drummond et al., 2015). The failure of the Monetary Union would likely have severe consequences for the entirety of the EAC, putting the development of past decades at risk. Therefore, member states are ill-advised to rush into monetary union and should rather re-evaluate the current frameworks, resolve above stated shortcomings, and potentially update the integration schedule which would result in significantly increased chances for success of the East African Monetary Union.

## 9.2 The Case for Two-speed East Africa

Article 18 (2) of the Protocol on the Establishment of the East African Community Monetary Union states that "the single currency shall be adopted by at least three Partner States that meet the requirements" set out in the Protocol (EAC, 2013a, p. 15). This opens up the possibility of not all EAC members simultaneously moving towards monetary unification, feeding into a concept that was also considered for the European Monetary Union in the 1990s. Martin (1995) outlines that depending on the economic and political situation in individual candidate countries,

the integration should take place at different levels and pace. Especially large differentials in inflation can potentially result in a trade-off between the necessity for convergence and free-rider issues. To resolve this, the idea of a multi-speed or two-speed EMU has been raised, where the currency union is first formed by a portion of the member states of the economic union and later extended (Alesina and Grilli, 1993). This argument is also valid in the context of the proposed EAMU, i.e. the possibility of a two-speed East Africa should be considered.

While the feasibility of a currency union generally remains questionable due to the prevalence of asymmetric shocks in the region, results of the undertaken analyses tend to be better for the three founding members of the EAC. Kenya, Tanzania, and Uganda were able to demonstrate better compliance with the performance convergence criteria over recent years and have rather diversified economies when compared to the remaining members. Furthermore, permanent components of the three countries' business cycles appeared to be highly positively correlated and intra-regional trade activity also looks more promising among the founding members, and especially for Uganda.

Therefore, the two-speed East Africa alternative might be favoured due to several reasons. First, as Mongelli (2002) notes, heterogeneity that exists at the point of monetary unification diminishes only gradually and will likely result in issues down the line. Owino (2014) points towards lessons from the role of Greece in the euro zone crisis, where parallels with South Sudan can be drawn.[68] Consequently, the EAC should be cautious to introduce disproportionate heterogeneity into the EAMU. Second, as the East African countries widely fail to fulfil the Optimum Currency Area criteria, the cost associated with the single currency will likely outweigh the benefits, at least in the short-run (De Grauwe, 2018). As Kenya, Tanzania, and Uganda not only show better pre-conditions for monetary unification, but are also the overall stronger economies in the region, they are more likely able to bear this cost. Third, Ltaifa et al. (2014) argue that one of the reasons for little compliance with the fiscal convergence criteria is the public investment required to remedy infrastructure gaps. Sequencing the integration process would enable the less developed countries to engage with desperately needed investments and achieve short-run improvements for their citizens without the burden of fiscal constrains in the form of binding convergence criteria. Finally, two-speed East Africa also opens perspectives for

[68] As discussed in Section 7.4, South Sudan displays troublesome heterogeneity as its exports almost exclusively rely on petroleum.

potential future enlargements of the EAC. Instead of being faced with an all-or-nothing decision, promising candidates such as Ethiopia, DR Congo, and Sudan could first join the Customs Union and Common Market, and so deepen the economic integration with EAC members. Contingent on sufficient convergence, accession to the monetary union may be achieved which will ultimately result in a more resilient EAMU.

As this would require the EAC members to compromise their political will in favour of economic reasoning, process certainty for all stakeholders involved must be guaranteed. Currently, membership decisions are based on rather arbitrary negotiations in technical committees and not clearly defined criteria as outlined in Article 3 (2) and (3) of the Treaty for the Establishment of the East African Community (EAC, 1999). Therefore, as a pre-condition for two-speed East Africa, legally binding processes and criteria must be established in order to achieve certainty for both, the candidates and current members in the process of gaining accession to the East African Common Market and the Monetary Union.

## 9.3 Completing the Monetary Union

Even if the East African Monetary Union is successfully established by 2024 and a common currency and common central bank are introduced, circumstances under which the monetary union can be sustained in the long-run must be considered.

### 9.3.1 Fragility of Incomplete Monetary Unions

De Grauwe (2018) argues that one must differentiate between complete and incomplete monetary unions; the former being characterised by the centralisation of fiscal budget and deficit on a supra-national level or even budgetary unification. Thus, if the EAMU is characterised by a common currency and common central bank but also by the absence of a budgetary union, this monetary union runs the risk of being fragile and imposing significant costs to its member states (Adam et al., 2016).

This fragility arises from the fact that in an incomplete monetary union in East Africa the national governments of the partner states can only issue debt in the newly introduced common currency, which is a currency they do not have direct control over (Masson, 2015). If one country is hit by an asymmetric shock, the national government might be forced into

default due to the liquidity constraint it is exposed to. Bondholders cannot be sure that the regional, common central bank would provide the liquidity for a pay-out This distrust can lead to a self-fulfilling prophecy; the liquidity crisis possibly transforms into a loss of sovereignty. In contrast, if monetary policy is governed on the national level, local governments could always guarantee liquidity such that bondholders would not expect or force a default (De Grauwe, 2018). Furthermore, there are several means to either complete the monetary framework in East Africa or significantly reduce the fragility to create a sustainable monetary union. These means will be discussed in the following sections.

### 9.3.2 Lessons from other Monetary Unions

History provides a fair number of examples of both, successful and unsuccessful monetary unifications, which bring valuable insights for the creation of relevant circumstances, institutions, and the design of the EAMU. Early monetary unions, like the Scandinavian Currency Union established between Denmark, Norway, and Sweden from 1873 to 1913 and the former East African Currency Board up to 1966 lacked a common currency and fiscal instruments as adjustment mechanism (Baldwin and Wyplosz, 2015). Especially the latter suffered considerably from the eroding common political will and low degree of solidarity after the colonial era of Great Britain, which ultimately lead to the collapse of the system (Adam et al., 2016; Durevall, 2011). In contrast, monetary unions which have been preceded by periods of significant political integration, such as the formation of federal states in Germany and in the United States, can be considered more successful and sustainable. Additionally, the eight member states of the East Caribbean Currency Union, which established a common currency pegged to the US dollar, have considerable economic and political relationships and strong sense for solidarity as they primarily identify themselves in regional terms (Durevall, 2011).

There also exist a few monetary unions in Africa, which currently exist without a full political and budgetary union, like the Common Monetary Area in South Africa or the two unions in the CFA franc zone (Durevall, 2011). However, those unions experience significantly different circumstances than the countries in East Africa. On one hand, in the CMA in South Africa, the small countries of Lesotho, Namibia, and Swaziland have adopted the currency and monetary policy of South Africa due to the significant asymmetries in size and power. On the other hand, monetary unification in the CFA franc zones emerged from very particular historical

circumstances in the colonial era. The CFA franc is therefore held at fixed peg to the euro, providing a nominal anchor for the region. In contrast, countries in East Africa are aiming for a common currency amongst rather equal states, which will go beyond simple pegs or currency boards and will be established without a hegemon on the regional or international level (Adam et al., 2016; Durevall, 2011). Thus, the EMU and future plans for completing the monetary union are the most relevant comparison available today.

Even though the EMU is seen as a benchmark when it comes to monetary unification and has been a a role model on different fronts for the EAC, one must be aware of significant structural differences and institutional requirements for a sustainable establishment of a monetary union between African and European countries (Masson, 2015). First, structural differences with regards to wealth and intra-regional trade as well as degrees of diversification may inevitably lead to differences in prevalence of shocks and policy responses required between member states of the EMU and those of East Africa (Adam et al., 2016; Masson, 2015). Second, the dualistic nature of the euro area with its core-periphery pattern is probably one of the major roots of divergence in Europe and politics in the EMU are rather heavily influenced by Germany, its strongest economy. Such strong anchor does not exist in East Africa and especially the three founding members Kenya, Tanzania, and Uganda are much more similar in economic structure and co-movement (Adam et al., 2016; Owino, 2014). In addition, monetary policy is often not used effectively and efficiently on a national level, especially in small African countries like Burundi and Rwanda, making the costs of abandoning monetary sovereignty lower than in Europe. Additionally, a common currency has the ability to coordinate sovereign policies that otherwise might have been a significant source of asymmetry and macroeconomic shocks in the region (Kabananiye, 2011). Third, regional institutions are mainly in their early stages and often under-developed, and the political legitimacy of union-wide authorities is less established in East Africa (Adam et al., 2016; Masson, 2015). This requires considerable political and public will to create necessary institutions and commitment of the sovereign governments.

Despite the significant differences between the efforts for the EAMU and other established monetary unions around the globe, academics and policy makers largely agree on how to address the issues arising from incomplete and fragile monetary unions, especially with regard to the euro zone. In general, it is anticipated that a monetary union needs a wide range of supra-national institutions in the fiscal, financial, and political areas and means of risk-sharing

or other mechanisms to mitigate the impact of asymmetric shocks (Masson, 2015). De Grauwe (2012) points out that the main problems that arose during the financial crisis are due to the fact that no significant steps were undertaken to embed the EMU in a political union. Therefore, the euro zone was left without an insurance mechanism to cope with asymmetric shocks by automatic transfers towards countries experiencing economic difficulties and without instruments to prevent economic divergence, especially between core and periphery. Wyplosz (2013) adds that a banking union and an effective lender of last resort could have played a significant role in mitigating the effects of the global financial crisis. Juncker et al. (2015) therefore note, that the project of monetary unification is much more than just a common currency, but rather a holistic economic and political project that should be accompanied with an economic, financial, fiscal, and political union.

### 9.3.3 Towards a Complete East African Monetary Union

As described above, fragility and potential problems in a monetary union mainly arise from its incompleteness. For the EAC it is not yet decided how the future monetary union will deal with asymmetric disturbances and how to prevent divergence where traditional levers – i.e. labour mobility, price and wage flexibility – to mitigate costs of a common currency fail to act as a sufficient adjustment mechanism (Gupta and McHugh, 2014). Alternative means of risk-sharing mechanisms have to be developed before the introduction of the common currency in 2024. De Grauwe (2016, p. 16) takes this a step ahead and argues for monetary unification in Europe that "the euro zone can only be sustained if it is embedded in a fiscal and political union". However, if the required political will and national sense of common purpose in East Africa is not yet sufficiently developed, there exist a wide range of small steps towards a more sustainable monetary union (De Grauwe, 2018; Thygesen and Gros, 1992). These steps, which need to be taken on the level of the governments and central banks, as well as different options for the EAMU will be outlined in the following.

#### Establishment of an East African Banking Union

In Europe, the lack of a banking union as well as an institution that acts as an effective lender of last resort has been one of the main reasons why the global financial crisis had such dramatic effect by pushing up interest rates on debt of peripheral countries such as Greece, Italy, and

Spain (Wyplosz, 2013). In an established monetary union in East Africa, issues occurring in the financial sector of a country are no longer a solely national one, but rather have to be solved by the union due to increasingly integrated financial markets (Masson, 2015).

Establishing a banking union between the participants of a monetary union in East Africa is a strong lever to reduce financial risks arising from further integration.[69] In general, a banking union involves the establishment of a single supervisory and regulatory framework, a common resolution framework, and a common deposit insurance on the regional level as safety net for the common currency area in East Africa (Goyal et al., 2013; Masson, 2015).

First, a common and centralised supervisory and regulatory framework is necessary. The future EACB could be used as the institution to enforce the supervision and regulation of the major banks of the member states, similar to the framework in the EMU. Second, a common central bank resolution framework has the ability to share costs arising from a banking crisis in one member state between the entire union (De Grauwe, 2018).[70] Such common resolution would require ex-ante funding by the member states and transparent and efficient governance (Drummond et al., 2015). Third, a common deposit insurance mechanism is necessary on EAC level to be able to share the costs of compensating deposit holders in case of a large-scale crisis between the entire union, similar to the US (De Grauwe, 2018). Just as the resolution fund, such insurance mechanism would require private ex-ante contributions paid by the national banks of the member states on risk-based distribution (Juncker et al., 2015). However, such insurance and resolution scheme requires large political and public support as well as the willingness of partner states to transfer significant amounts of resources (De Grauwe, 2018).[71]

### East African Central Bank as Lender of Last Resort

Without a monetary union, national central banks can issue debt and provide liquidity to the sovereign governments in a currency they have control over to avoid severe effect of liquidity crises. Even though the Protocol on the Establishment of the East African Community Monetary

[69] Certain common financial rules and banking supervision are already highlighted in the Protocol for the Establishment of the EAMU. However, a banking union would go a significant step farther by establishing a regional resolution mechanism and other safety nets for the EAMU (Drummond et al., 2015).

[70] In Europe, such resolution fund was set up in the after-math of the financial crisis, containing approximately EUR 55.0 billion. However, its effectiveness has been questioned as the amount is considered insufficient to resolve a severe banking crisis of multiple member states (De Grauwe, 2018).

[71] The European project is still relatively far from a full and efficiently working banking union since a common bank resolution framework is only partially realised and a common deposit insurance has yet to be agreed on (Juncker et al., 2015; De Grauwe, 2018).

Union envisions the establishment of a common central bank heading a system of national central banks similarly to the Eurosystem, specific arrangements for such a role as lender of last resort are still undefined for the East African Central Bank (Zephirin and Wajid, 2014; Adam et al., 2016).[72]

However, in a monetary union exists a crucial role for the common central bank to act as lender of last resort and resolve liquidity crises in the domestic government bond markets (De Grauwe, 2018).The lack of a common lender of last resort entails the risk of removing an important source of security for the bondholders as national governments can only issue debt in the common currency against their own domestic balance sheet. Combined with the constraints on national debt and fiscal deficit imposed by the convergence criteria, national central banks are limited in their ability to provide liquidity to bondholders claims on government bonds, increasing the risk of turning it into a nation-wide solvency crisis (Adam et al., 2016). In contrast, if the East African Central Bank will acquire the legitimacy and ability to act as lender of last resort on the supra-national level in East Africa, it could always guarantee liquidity, restore confidence of the bondholders, and significantly reduce the fragility of an incomplete monetary union (De Grauwe, 2018).

Nevertheless, policy makers in East Africa should be aware of the risks of inflation, fiscal consequences, and risk of moral hazard when designing the framework of the EACB being the common lender of last resort in the union.

**Fiscal Risk-sharing Mechanisms and Political Unification in East Africa**

There exist several potential fiscal risk-sharing mechanisms that could be established simultaneously to the creation of a common currency by 2024 that would mark potential steps towards political unification in the East African region. However, those options depend on the political and public willingness of the partner countries (Drummond et al., 2015).

First, the joint issue of supra-national EAC bonds constitutes an alternative risk-sharing mechanism in case of asymmetric shocks by internalising possible externalities stemming from the EAMU (Gupta and McHugh, 2014). If the member states issue bonds jointly, they become

[72]In Europe, the lack of the role of the European Central Bank (ECB) as lender of last resort was already criticised prior to the establishment of the EMU (Masson, 2015). In reaction to the global crisis, the ECB declared its readiness to act as lender of last resort by buying unlimited amounts of sovereign bonds as part of the Outright Monetary Transactions programme, which has been criticised especially by Germany (De Grauwe, 2018).

collectively liable for the debt. This would present a visible and constraining commitment that allows for market access at sustainable interest rates, especially when individual partner states are differently affected by disturbances (Gupta and McHugh, 2014). However, problems could arise, if the countries in the East African region have significantly different credit ratings. The establishment of a common EAC bond would force higher rated countries to accept less favourable borrowing conditions. As credit ratings by Standard & Poor's do not differ significantly between East African countries, ranging from B+ in Kenya to B- in DR Congo, this represents a minor issue (Standard & Poor's, 2019). In addition, a joint bond issuance creates the risk of moral hazard, as it contains an implicit insurance for the participating economies. This creates an incentive to issue debt irresponsibly since the participating countries are collectively liable for the debt issuance (De Grauwe, 2018).[73]

Second, a regional fiscal stabilisation fund could be used to cushion effects of asymmetric shocks by temporarily funding member states running into fiscal or financial distress. This stabilisation fund needs to be set-up with initial contributions by the participating countries and could be replenished when the economies face returning upward GDP trends (Gupta and McHugh, 2014). Allard et al. (2013) estimate necessary annual contributions by the partner states of the European Union between 1.5 to 2.5 percent of GNP, while for WAEMU contributions of 1.0 to 1.25 percent are argued to be sufficient to absorb most of the common and idiosyncratic shocks in the region (Drummond et al., 2015). However, such regional stabilisation fund requires strong and independent governance structures to be enforced in an unbiased and effective manner (Gupta and McHugh, 2014). Similarly, intra-governmental fiscal transfers have the ability to counteract asymmetric disturbances and can provide more stabilisation in the region. Working as redistribution mechanism by partially aligning income across the member states of the monetary union in East Africa, intra-governmental transfers discourage national governments to undertake fiscal policies in conflict with the main objectives of the common East African Central Bank, such as price stability (Drummond et al., 2015; Gupta and McHugh, 2014).

Third, and probably the biggest step for fiscal policies towards a political union between the East African states is the creation of a fiscal or budgetary union (Masson, 2015). This generally affects two dimensions of national policies, the centralisation of national government budgets and

[73]The European think tank Bruegel offers a mechanism to address these types of risks incorporated by a collective EAC bond issuance (Delpla and Von Weizsäcker, 2011). However, this goes beyond the scope of this thesis.

the consolidation of sovereign government debts at the supra-national level (De Grauwe, 2016). This centralisation can provide both, an insurance mechanism and a protection mechanism. The latter refers to the fact that a budgetary union implies the creation of a common and central fiscal authority on the EAC level which is able to oversee the partner states budget and issue debt in the currency under control of that authority which is backed by a common East African Central Bank when asymmetric disturbances occur. This protects the partner states not only from being forced into default and liquidity crises, but also from the pressure financial markets can exert on the union. The insurance mechanism of a budgetary union further promotes automatic income transfers between the East African countries, reducing the cost of giving up sovereign monetary policy (De Grauwe, 2018). This insurance mechanism could work as shock absorber by transferring resources in case of asymmetric shocks from positively affected to negatively affected countries in the region, especially when national governments run into payment difficulties (De Grauwe, 2016; Baldwin and Wyplosz, 2015).

The ultimate step would be a complete fiscal and budgetary union embedded in a political federation in East Africa. With regard to Europe, De Grauwe (2016, p. 16) points out that "the only governance that can be sustained in the euro zone is one where a euro zone government backed by a European parliament acquires the power to tax and spend. This will then also be a government that will prevail over the central bank in times of crisis and not the other way around. This will also be a government that has the political legitimacy to impose macroeconomic and budgetary policies aimed at avoiding imbalances". Abandoning budgetary austerity in favour of deeper forms of integration would require strong political will and public support (Masson, 2015). Similar to the EMU, different political institutions and philosophies exist for each possible member state of the EAMU. In other complete monetary, fiscal, and political unions such as Germany, successful unification was the result of an intense feeling of belonging to the same culture and nation as well as a given sense of common purpose (Baldwin and Wyplosz, 2015; De Grauwe, 2018). Seemingly, this factor is weakly developed between the current EAC members.[74] Potentially, this might be further weakened by future enlargements of the community, making progress towards fiscal and political unification difficult.[75]

[74]Buigut and Valev (2018) show that Kenyans have preferences which countries should join the common currency. Tanzania and Uganda are clearly favoured over other members of the EAC.

[75]One example is the reluctance of dismantling non-tariff barriers and restrictions on the free movement of labour in the region (see Appendix A3 for interviews with Dr. Pantaleo Kessy, Principal Economist of the EAC Secretariat).

Additionally, consolidating a significant amount of national government debt and budget on a central, supra-national level creates the risk of moral hazard. When a negative shock affects parts of the region, such automatic transfers might create a perception of community bail-out, hence, taking the pressure off negatively affected countries (Drummond et al., 2015). Therefore, De Grauwe (2018) points out that such insurance mechanism should only be used to combat temporary shocks or solely used temporary in case of permanent shocks to allow for adjustments of fundamental variables. However, the results of the analysis indicate that in East African countries like Burundi, Rwanda, and South Sudan tend to net-benefit from such fiscal arrangements as they exhibit largely uncorrelated business cycles, negatively correlated supply shocks, and differences in economic structure. This suggests a rather permanent and one-way character of fiscal transfers. If large permanent transfers occur, the more prosperous regions might become increasingly opposed to transfers such that political and public resistance and questioning of the unification process have to be mitigated (De Grauwe, 2018).

A recent study by Adam et al. (2016), inspired by the design and recent reforms of the Eurosystem, propose options for fiscal policies in the future EAMU. Alongside the design of institutions for maintaining convergence, managing liquidity and macroeconomic compliance, monitoring and surveillance, the report focuses on the necessity and design of institutions and instruments for shock management.[76] They suggest a form of budgetary transfer union based on regular contributions by each member state to an East African Community Stabilisation Facility (EACSF). This newly established institution would provide temporary financial and fiscal assistance to member states adversely affected by economic disturbances in order to restore balance in the union. Also, the option of an EAC structural fund to provide more medium-to-long-term assistance for peripheral regions in East Africa is proposed.[77] However, it appears that plans for establishing a sophisticated fiscal transfer mechanism in the East African region is not pursued by officials, at least in the near future. The priority of policy makers seems to rest solely on the establishment of the EAMU and compliance with the macroeconomic convergence criteria. Additionally, the hesitation of pursuing deeper fiscal integration might be resulting from the lack of strong commitment throughout East Africa.

[76] Article 10 of the EAMU Protocol requires the establishment of a stabilisation facility aiming to provide assistance in case of member states being affected by severe adverse economic disturbances (Article 10 (3)).

[77] For details on the proposed EACSF in terms of governance, operations, and capital contributions as well as the idea of complementary structural funds, see Adam et al. (2016).

# 10 Conclusion

At the 20th Ordinary Summit of Heads of State of the East African Community in February 2019, the six partner states reaffirmed their commitment towards monetary unification in the region by 2024 (EAC, 2019b). As deadlines associated with the integration schedule are approaching rapidly, questions regarding the feasibility of the proposed East African Monetary Union become inevitable.

Based on the results, little evidence in favour of the proposed East African Monetary Union consisting of all current members of the EAC being an optimal currency area is found. Over recent years, Kenya, Tanzania, and Uganda were able to fulfil the self-imposed convergence criteria to a larger extent than other countries in the region. Especially for fiscal indicators, Burundi and South Sudan exhibit large deviations. Furthermore, while labour mobility remains troubling within the region, rather flexible wages have the potential to function as an alternative adjustment mechanism. Despite the three founding members displaying relatively high diversification of production and consumption as well as similar economic structures, the EAC overall has moderately open economies and limited financial market integration, especially when compared to more advanced countries in Europe. Nevertheless, Kenya and Uganda remain significant trade facilitators within the region. Generally, the East African countries react to shocks heterogeneously, with Burundi and Rwanda experiencing the largest asymmetries both, in magnitude and speed of adjustment. A similar picture is drawn for business cycle synchronisation, where Rwanda was found to have mostly negative correlations of cyclical components. However, Kenya, Tanzania, and Uganda display the highest positive correlations.

These results indicate that membership of Burundi, Rwanda, and South Sudan would not benefit the EAC monetary union at this point. Structural differences and imperfect shock correlation between the East African countries may result in fragility due to improper monetary policies on an individual basis, putting not only the Monetary Union, but the entire progress in the region at risk. Though the candidate DR Congo exhibiting promising results, an enlargement should not be on the short-term EAC agenda, given the unresolved internal difficulties. Contingent on sufficient political will, economic convergence, and potential endogeneity effects, supporting evidence in favour of a common currency between Kenya, Tanzania, and Uganda is found. Therefore, a two-speed East Africa approach, where the

common currency is first established between the three founding members and subsequently expanded to remaining countries, could represent a real alternative.

Even if political will prevails over economic reasoning and the EAC decides to go forward with a six-country monetary union, critical steps must be taken in order to mitigate associated risks both, in the short-term and long-term. The pre-conditions outlined in the Protocol on the Establishment of the East African Community Monetary Union propose appropriate measures to achieve convergence, and so lays the groundwork for a successful transition. However, the implementation has been sluggish and lacking behind schedule. Therefore, the partner countries must focus on the timely fulfilment of these measures, especially with regard to fully establishing the first two pillars of integration, harmonising regulations, and other factors affecting frictionless trade such as crucial infrastructure developments to deepen economic integration. Furthermore, in light of increasing gross public debt, close attention must be paid to the surveillance and enforcement of convergence criteria, which demands the building of strong institution.

Experiences from the European Monetary Union, especially during the recent euro zone debt crisis, combined with the expectation of sustained asymmetries in the region, illustrate the importance of fiscal, financial, and political integration alongside monetary unification. First, the establishment of an East African banking union could be a strong lever to reduce financial risk arising from further integration. Second, assigning the role as lender of last resort to the East African Central Bank could prevent liquidity crises by restoring the confidence of sovereign bond holders. Third, well-designed fiscal risk-sharing mechanisms are imperative to cushion adverse disturbances and provide insurance for impaired member states.

These actions require far-reaching political will, which must also be reflected in the public opinion. However, given the hesitant execution of integration initiatives, it remains questionable whether the political commitment is sufficiently substantial to delegate additional national sovereignty to supra-national institutions. Therefore, an analysis of political factors at play could contribute to the assessment of the feasibility of an East African monetary union. Detached from these considerations, it ultimately remains questionable whether the current target of 2024 can still be met. Member states are ill-advised to rush into monetary union if above stated shortcomings cannot be resolved in a timely manner, and should instead re-evaluate the tight integration schedule.

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# Appendix

## A1 Figures

**Figure A1.1:** Map of the East African Region

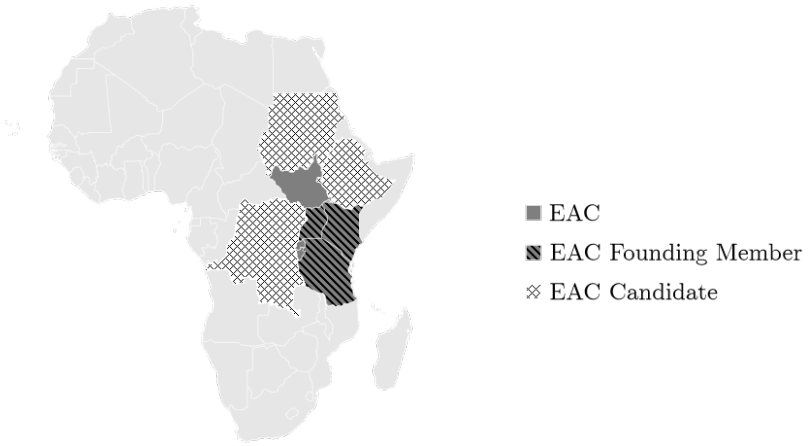



**Figure A1.2:** Specialisation Hypothesis

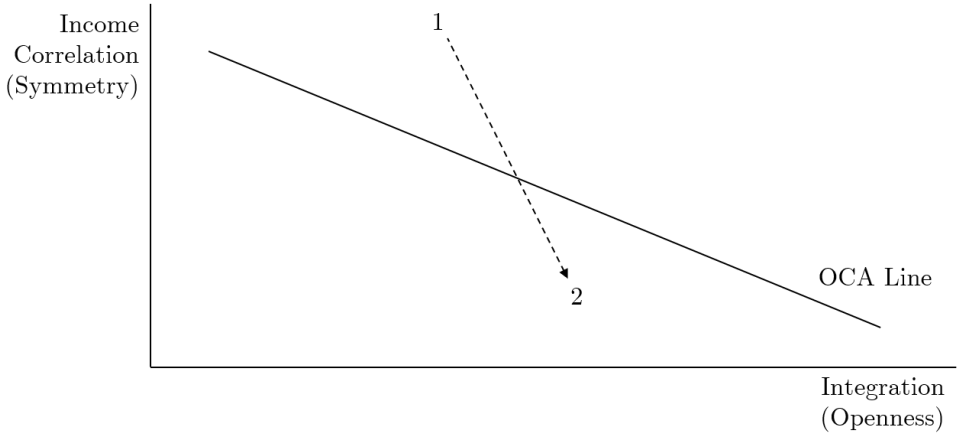
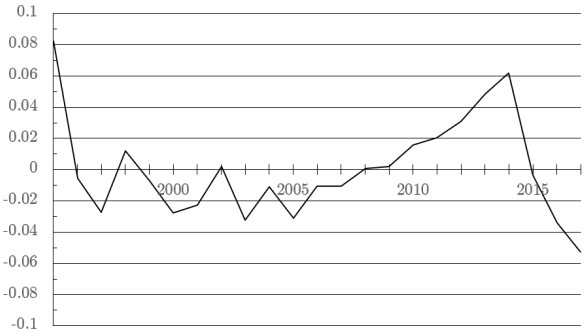
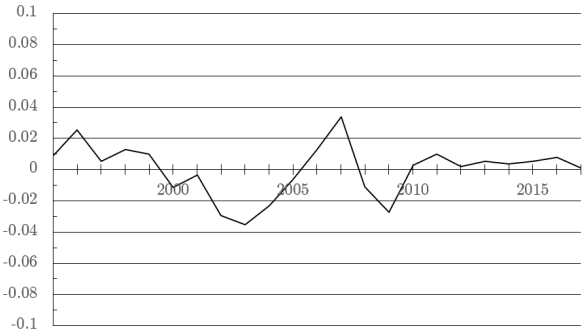


**Figure A1.3:** Cyclical Components in East Africa (1995–2017)

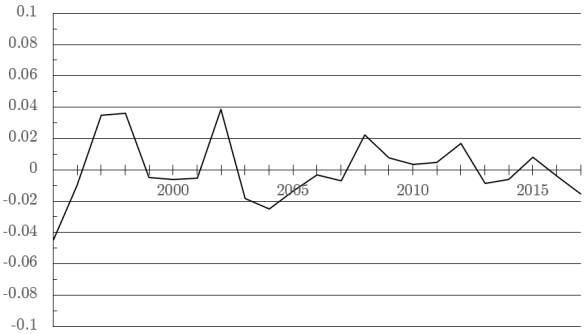
**(a)** Burundi



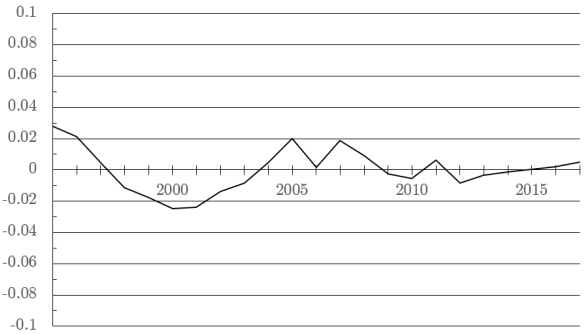

**(b)** Kenya



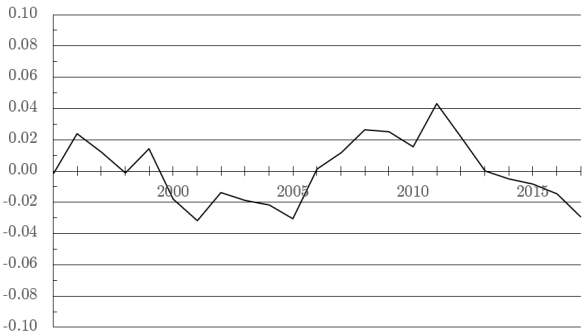

**(c)** Rwanda



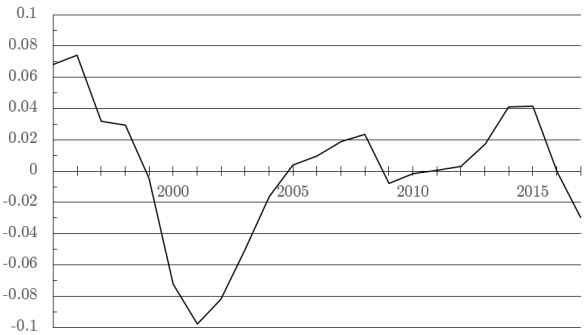

**(d)** Tanzania



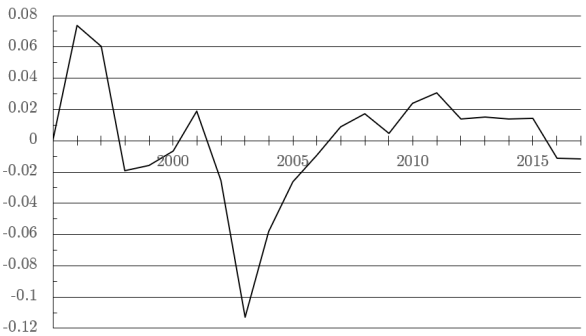

**(e)** Uganda




**(f)** DR Congo




**(g)** Ethiopia




**(h)** Sudan

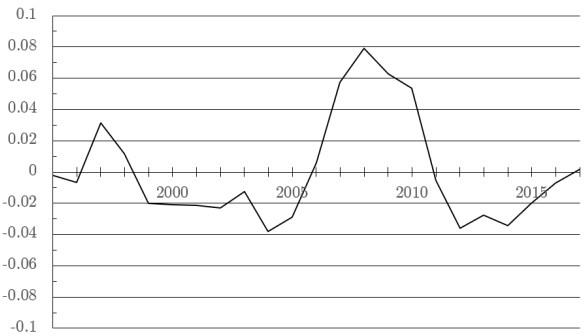
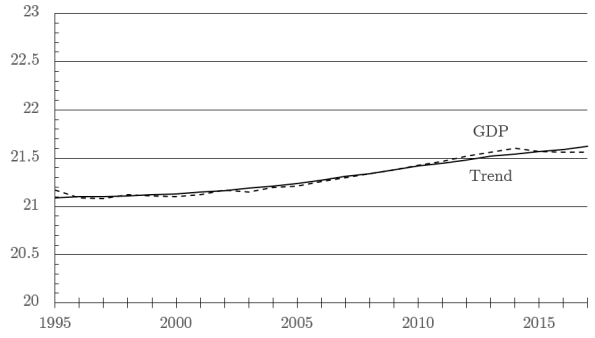
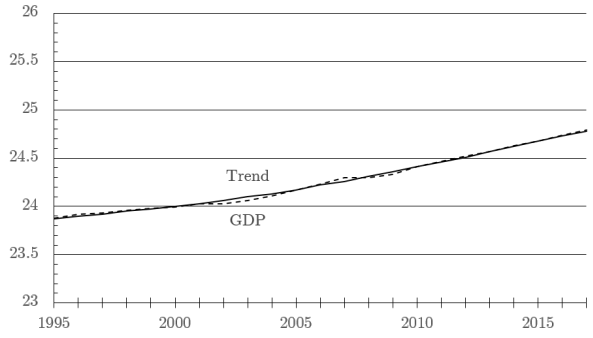


**Figure A1.4:** Trend and Cyclical Components in East Africa (1995–2017)

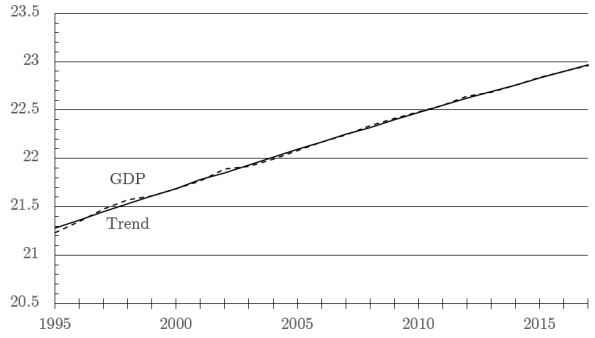
**(a)** Burundi



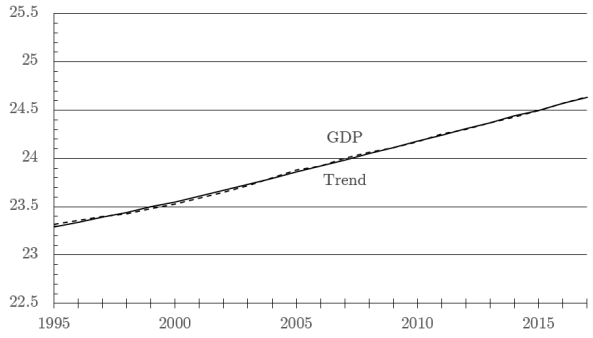

**(b)** Kenya



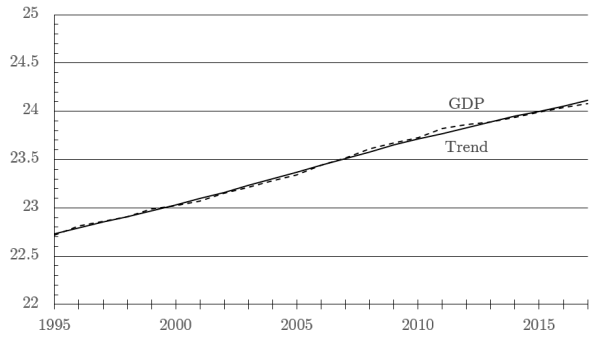

**(c)** Rwanda



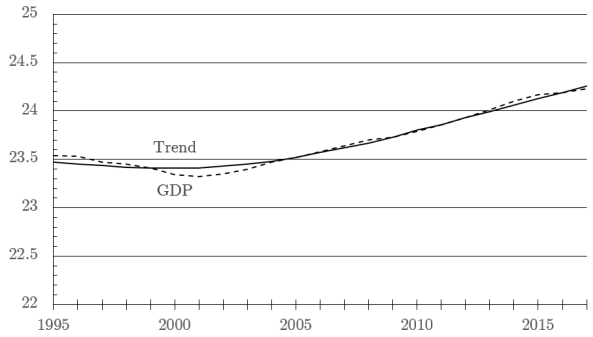

**(d)** Tanzania



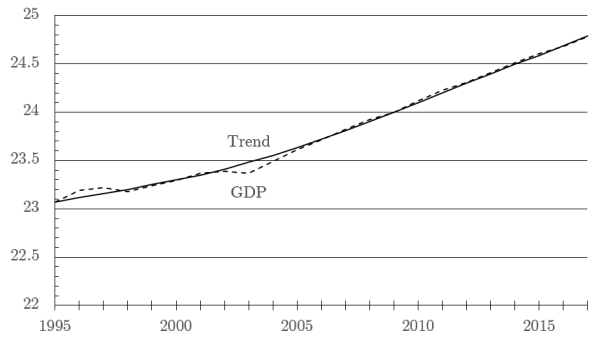

**(e)** Uganda



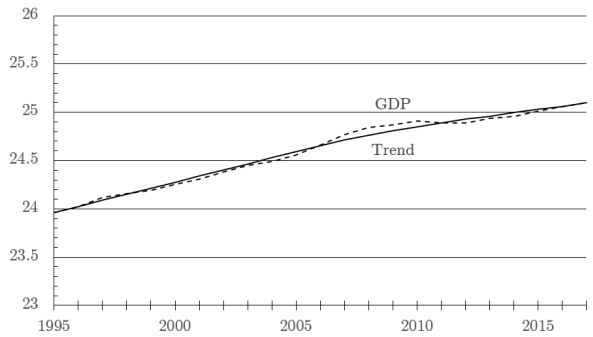

**(f)** DR Congo




**(g)** Ethiopia




**(h)** Sudan



# A2 Tables

**Table A2.1:** General Characteristics of EAMU Candidates

| Indicator | Unit | Burundi | Kenya | Rwanda | South Sudan | Tanzania | Uganda | Weighted Average | EAC Total |
|---|---|---|---|---|---|---|---|---|---|
| **Economy** | | | | | | | | | |
| GDP, current prices (2018) | USD, bn | 3.4 | 89.6 | 9.7 | 4.0 | 55.6 | 27.9 | 56.9 | 190.2 |
| GDP PPP, current prices (2018) | bn | 8.2 | 177.4 | 27.1 | 19.8 | 175.9 | 96.7 | 144.5 | 505.1 |
| GDP per capita, current prices (2018) | USD | 306.97 | 1865.21 | 800.21 | 306.70 | 1090.10 | 717.50 | 1232.09 | 5086.7 |
| GDP growth, constant prices (2018) | % | 0.1 | 6.0 | 7.2 | -3.2 | 5.8 | 5.9 | 5.5 | 21.8 |
| Avg. GDP growth (2013-2018) | % | 0.9 | 5.6 | 6.7 | 1.6 | 6.7 | 4.7 | 5.6 | 26.2 |
| GDP growth volatility 2013-2018 | Stdev | 3.7 | 0.4 | 1.5 | 14.7 | 0.6 | 1.3 | 1.3 | 22.1 |
| Total Investment | % of GDP | 6.0 | 16.8 | 25.0 | 9.2 | 30.5 | 27.2 | 23.5 | 114.7 |
| Gross National Savings | % of GDP | -7.4 | 11.2 | 12.3 | 0.5 | 26.1 | 20.3 | 17.5 | 63.0 |
| CPI Inflation (2018) | % | 1.2 | 5.0 | 3.3 | 106.4 | 3.8 | 3.8 | 8.2 | 123.5 |
| Avg. CPI Inflation (2013-2018) | % | 6.9 | 6.4 | 3.7 | 121.4 | 5.6 | 4.7 | 10.2 | 148.8 |
| CPI Inflation volatility (2013-2018) | Stdev | 5.3 | 1.0 | 1.5 | 145.1 | 1.3 | 1.0 | 6.9 | 155.2 |
| Unemployment rate (2018) | % | 1.5 | 11.4 | 1.4 | 11.5 | 2.3 | 2.2 | 5.8 | 30.3 |
| Avg. Unemployment rate (2013-2018) | % | 1.5 | 11.6 | 1.4 | 11.9 | 2.3 | 2.0 | 5.8 | 30.8 |
| Unempl. rate volatility (2013-2018) | Stdev | | 0.1 | 0.4 | 0.6 | 0.3 | 0.1 | 0.2 | 1.6 |
| **Government** | | | | | | | | | |
| Government Gross Debt (2018) | % of GDP | 58.4 | 56.1 | 42.6 | 43.7 | 37.4 | 42.9 | 45.9 | 281.1 |
| Avg. Gov. Gross Debt (2013 - 2018) | % of GDP | 46.0 | 51.2 | 34.9 | 53.0 | 35.7 | 35.4 | 41.9 | 256.3 |
| Gov. Gross Debt volatility (2013-2018) | Stdev | 8.9 | 4.4 | 6.3 | 24.7 | 2.8 | 5.8 | 5.1 | 52.8 |
| Current Account (2018) | % of GDP | -13.4 | -5.6 | -8.9 | -8.8 | -4.3 | -6.9 | -5.8 | -47.9 |
| **Trade** | | | | | | | | | |
| Exports of goods and services (2017) | % of GDP | 6.4 | 13.2 | 18.2 | 54.9 | 15.1 | 18.1 | 16.6 | 125.9 |
| Imports of goods and services (2017) | % of GDP | 16.6 | 24.1 | 32.8 | 61.8 | 17.5 | 25.3 | 23.9 | 178.1 |
| **Socio-Economic Statistics** | | | | | | | | | |
| Population (2018) | Mio | 11.2 | 48.0 | 12.1 | 13.0 | 51.0 | 38.8 | 43.4 | 174.2 |
| Population growth (2013-2018) | % | 3.1 | 2.6 | 2.5 | 3.0 | 3.1 | 3.3 | 2.9 | |
| Employment to population (2018) | Total (%) | 77.7 | 57.9 | 84.9 | 64.0 | 81.4 | 69.2 | 70.3 | |
| Poverty gap at $1.90 a day | | 30.3 | 11.6 | 20.2 | 18.9 | 15.4 | 13.2 | 14.3 | |
| GINI index | | 39.2 | 48.5 | 50.4 | 37.8 | 41.0 | 41.4 | | |
| Human Development Index | | 0.4 | 0.6 | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 | |
| Democracy Index | out of 10 | 2.3 | 5.1 | 3.4 | | 5.4 | 5.2 | 4.9 | |
| Corruption Perception Index | out of 100 | 17 | 27 | 56 | 13 | 36 | 26 | 31 | |
| Global Competitiveness Index | out of 100 | 37.5 | 53.7 | 50.9 | | 47.2 | 46.8 | 47.6 | |
| Index of Economic Freedom | out of 100 | 48.9 | 55.1 | 71.1 | | 60.2 | 59.7 | 56.4 | |
| Freedom Index | out of 10 | 5.2 | 6.8 | 7.0 | | 6.5 | 6.8 | 6.4 | |

Note: Weighted Average is based on GDP in purchasing power parity.
*Source: Various sources, refer to respective section in the text.*

**Table A2.2:** Overview of Empirical Literature Review

| Authors | Methodology | Period | Countries | Feasibility | Justification/Recommendations |
|---|---|---|---|---|---|
| Mkenda (2001) | G-PPP | 1980-1998 | KEN, TZA, UGA | Yes | Cointegrated exchange rates |
| Caporale et al. (2018) | G-PPP | 1960-2011 | BDI, KEN, RWA, SSD, TZA, UGA | Yes | Cointegration relationships found in favour of G-PPP, business cycle synchronisation |
| Buigut and Valev (2005) | SVAR | 1970-2001 | BDI, KEN, RWA, TZA, UGA | Yes/No | Symmetric speed in adjustment, but asymmetric demand and supply shocks, overall more integration required |
| Sheikh et al. (2011) | Correlation, ANOVA | 1980-2010 | BDI, KEN, RWA, TZA, UGA | Yes/No | Similar business cycles among EAC, but not for RWA |
| Rusuhuzwa and Masson (2012) | SVAR, Correlation, G-PPP | 1990-2010 | BDI, KEN, RWA, TZA, UGA | No | Asymmetric shocks and different trends in exchange rates, similar patterns in business cycles |
| Kishor and Ssozi (2011) | SVAR, Unobserved Components | 1970-2007 | BDI, KEN, RWA, TZA, UGA | Yes | Increased, but overall weak business cycle synchronisation |
| Sheikh et al. (2013) | SVAR | 2001-2010 | BDI, KEN, RWA, TZA, UGA | Yes/No | Asymmetric shocks, but relatively better than other African unions |
| Davoodi et al. (2013) | SVAR | 2000-2010 | BDI, KEN, RWA, TZA, UGA | No | Weak, heterogeneous Monetary Transmission Mechanism |
| Mafusire and Brixiova (2013) | SVAR | 1980-2009 | BDI, KEN, RWA, TZA, UGA | No | Significant impact of demand shocks, lack of integration |
| Drummond et al. (2015) | SVAR | 1990-2013 | BDI, KEN, RWA, TZA, UGA | No | Asymmetric shocks and country-specific output drops, exchange rates function as shock absorbers |
| Kigabo (2018) | VAR, CVAR | 2000-2017 | BDI, KEN, RWA, TZA, UGA | No | Asymmetric shocks, only partial convergence in inflation and exchange rates |
| Buigut (2011) | VECR | 1997-2008 | BDI, KEN, RWA, TZA, UGA | No | Only partial convergence |
| Bagumhe (2013) | GMM | 2000-2010 | BDI, KEN, RWA, TZA, UGA | Yes/No | Symmetry of outputs and convergence among KEN, TZA, and UGA |
| Asongu (2014) | GMM | 1981-2009 | BDI, KEN, RWA, TZA, UGA | No | Lack of real, monetary, and fiscal convergence |
| Muwanga (2016) | Multivariate Cointegration | 1960-2011 | BDI, KEN, RWA, TZA, UGA | Yes/No | Conintegration relationships, but mainly uni-directional |
| Siele (2018) | GMM | 2000-2016 | BDI, KEN, RWA, TZA, UGA | Yes/No | Convergence in real exchange rates and openness, but real cost and lack of convergence for other criteria |
| Buigut and Valev (2009) | Simulation of Welfare Effects | 1990-2004 | BDI, KEN, RWA, TZA, UGA | | Mutual restraint in monetary policy is potential benefit |
| Asongu (2012) | Granger Causality | 1980-2010 | BDI, KEN, RWA, TZA, UGA | Yes | Financial factors have significant impact on short-run growth components |
| Lepetit et al. (2015) | Stylised Decision Model | 2003-2010 | BDI, KEN, RWA, TZA, UGA | No | No net benefits from moneatry union once uncertainty is introduced into decision making |
| Umulisa and Habimana (2018) | Wavelet | 1989-2015 | BDI, KEN, RWA, TZA, UGA | Yes/No | Core vs. periphery cluster: EAMU viable with KEN, TZA, UGA, but RWA and BDI not sufficiently synced |

**Table A2.3:** Headline Inflation of EAMU Candidates (in percent, 2008–2018)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Mean | St.Dev | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 24.4 | 10.6 | 6.5 | 9.6 | 18.2 | 7.9 | 4.4 | 5.6 | 5.5 | 16.6 | 1.2 | 6.9 | 5.2 | 1.2 | 16.6 |
| **Kenya** | 15.1 | 10.6 | 4.3 | 14.0 | 9.4 | 5.7 | 6.9 | 6.6 | 6.3 | 8.0 | 5.0 | 6.4 | 1.0 | 5.0 | 8.0 |
| **Rwanda** | 15.4 | 10.3 | 2.3 | 5.7 | 6.3 | 4.2 | 1.8 | 2.5 | 5.7 | 4.8 | 3.3 | 3.7 | 1.5 | 1.8 | 5.7 |
| **South Sudan** | | | | | 45.1 | | 1.7 | 52.8 | 379.8 | 187.9 | 106.4 | 121.4 | 145.0 | 0.0 | 379.8 |
| **Tanzania** | 10.3 | 12.1 | 7.2 | 12.7 | 16.0 | 7.9 | 6.1 | 5.6 | 5.2 | 5.3 | 3.8 | 5.7 | 1.3 | 3.8 | 7.9 |
| **Uganda** | 12.0 | 13.0 | 3.7 | 15.0 | 12.7 | 4.9 | 3.1 | 5.4 | 5.5 | 5.6 | 3.8 | 4.7 | 1.0 | 3.1 | 5.6 |
| **DR Congo** | 18.0 | 46.1 | 23.5 | 14.9 | 0.9 | 0.9 | 1.2 | 1.0 | 18.2 | 41.5 | 23.0 | 14.3 | 16.5 | 0.9 | 41.5 |
| **Ethiopia** | 44.4 | 8.5 | 8.1 | 33.2 | 24.1 | 8.1 | 7.4 | 10.1 | 7.3 | 9.9 | 12.7 | 9.3 | 2.1 | 7.3 | 12.7 |
| **Sudan** | 14.3 | 11.3 | 13.0 | 18.1 | 35.6 | 36.5 | 36.9 | 16.9 | 17.8 | 32.4 | 61.8 | 33.7 | 16.4 | 16.9 | 61.8 |
| **EAC Cross-country St.Dev** | 5.45 | 1.17 | 2.02 | 3.78 | 13.98 | 2.93 | 2.19 | 19.51 | 152.75 | 73.55 | 42.06 | | | | |
| **EAC Weighted Average** | 13.0 | 11.6 | 5.1 | 11.8 | 14.1 | 5.9 | 5.3 | 8.5 | 23.4 | 14.3 | 8.2 | | | | |

Note: Mean, St.Dev, Min and Max based on data from 2013 - 2018. Weighted Average is based on GDP in purchasing power parity.
*Source: IMF (2019c) and own calculations*

**Table A2.4:** Fiscal Balance, incl. grants of EAMU Candidates (in percent of GDP, 2008–2018)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Mean | St.Dev | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | -2.7 | -5.1 | -3.6 | -3.5 | -3.8 | -1.8 | -3.6 | -5.3 | -6.2 | -7.8 | -8.6 | -5.6 | 2.5 | -8.6 | -1.8 |
| **Kenya** | -3.4 | -4.3 | -4.4 | -4.1 | -5.0 | -5.7 | -7.4 | -8.1 | -8.3 | -7.9 | -6.6 | -7.3 | 1.0 | -8.3 | -5.7 |
| **Rwanda** | 0.9 | 0.3 | -0.7 | -0.9 | -2.5 | -1.3 | -4.0 | -2.8 | -2.3 | -2.5 | -2.0 | -2.5 | 0.9 | -4.0 | -1.3 |
| **South Sudan** | | | | 4.6 | -14.8 | -3.5 | -9.2 | -20.3 | -21.3 | 3.7 | 17.7 | -5.5 | 14.9 | -21.3 | 17.7 |
| **Tanzania** | -1.9 | -4.5 | -4.8 | -3.6 | -4.1 | -3.9 | -3.0 | -3.3 | -2.2 | -1.4 | -2.9 | -2.8 | 0.9 | -3.9 | -1.4 |
| **Uganda** | -2.6 | -2.1 | -5.7 | -2.7 | -3.0 | -4.0 | -4.7 | -4.6 | -4.9 | -3.8 | -4.7 | -4.4 | 0.4 | -4.9 | -3.8 |
| **DR Congo** | -0.4 | 1.0 | -0.9 | -0.9 | 2.0 | 2.0 | 0.1 | -0.2 | -1.0 | -1.5 | -0.6 | -0.2 | 1.2 | -1.5 | 2.0 |
| **Ethiopia** | -2.9 | -0.9 | -1.3 | -1.6 | -1.2 | -1.9 | -2.6 | -1.9 | -2.3 | -3.3 | -3.7 | -2.6 | 0.7 | -3.7 | -1.9 |
| **Sudan** | | | | | -4.1 | -4.2 | -3.6 | -3.9 | -3.6 | -3.8 | -4.1 | -3.9 | 0.3 | -4.2 | -3.6 |
| **EAC Cross-Country St.Dev** | 1.66 | 2.24 | 1.91 | 1.25 | 0.99 | 1.79 | 1.70 | 2.10 | 2.60 | 3.01 | 2.69 | | | | |
| **EAC Weighted Average** | -2.50 | -3.69 | -4.60 | -2.58 | -4.68 | -4.35 | -5.29 | -6.17 | -5.81 | -4.07 | -3.77 | | | | |

Note: Mean, St.Dev, Min and Max based on data from 2013 - 2018. Weighted Average is based on GDP in purchasing power parity.
*Source: IMF (2019e) and own calculations*

**Table A2.5:** Fiscal Balance, excl. grants of EAMU Candidates (in percent of GDP, 2008–2018)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Mean | St.Dev | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | -27.7 | -24.0 | -26.3 | -25.3 | -21.9 | -19.2 | -17.3 | -14.9 | -9.1 | -10.6 | -11.4 | -13.7 | 4.0 | -19.2 | -9.1 |
| **Kenya** | -4.3 | -5.0 | -5.0 | -4.6 | -5.5 | -6.2 | -7.9 | -8.5 | -8.7 | -8.2 | -7.0 | -7.8 | 1.0 | -8.7 | -6.2 |
| **Rwanda** | -9.6 | -11.1 | -12.5 | -12.3 | -10.2 | -10.6 | -11.7 | -9.0 | -7.4 | -7.3 | -6.9 | -8.8 | 2.0 | -11.7 | -6.9 |
| **South Sudan** | | | | 1.7 | -20.9 | -9.9 | -15.6 | -26.8 | -21.4 | 3.6 | 17.7 | -8.7 | 16.6 | -26.8 | 17.7 |
| **Tanzania** | -6.4 | -8.1 | -8.2 | -6.9 | -7.0 | -6.3 | -4.7 | -4.1 | -2.9 | -2.3 | -3.7 | -4.0 | 1.4 | -6.3 | -2.3 |
| **Uganda** | -5.1 | -4.5 | -8.2 | -4.4 | -4.9 | -5.0 | -5.8 | -5.9 | -6.0 | -4.6 | -6.4 | -5.6 | 0.7 | -6.4 | -4.6 |
| **DR Congo** | -0.7 | -1.9 | -4.4 | -2.8 | -0.1 | 0.2 | -4.2 | -3.4 | -3.5 | -3.4 | -2.5 | -2.8 | 1.6 | -4.2 | 0.2 |
| **Ethiopia** | -6.8 | -5.2 | -4.5 | -4.8 | -2.9 | -3.4 | -3.7 | -3.0 | -3.2 | -4.0 | -4.5 | -3.6 | 0.6 | -4.5 | -3.0 |
| **Sudan** | | | | | | | | | | | | | | 0.0 | 0.0 |
| **EAC Cross-country St.Dev** | 9.77 | 7.99 | 8.40 | 9.33 | 7.70 | 5.21 | 5.23 | 8.30 | 6.35 | 5.07 | 10.41 | | | | |
| **EAC Weighted Average** | -6.02 | -6.72 | -7.66 | -5.34 | -7.25 | -6.71 | -7.28 | -7.75 | -6.74 | -4.95 | -4.84 | | | | |

Note: Mean, St.Dev, Min and Max based on data from 2013 - 2018. Weighted Average is based on GDP in purchasing power parity.
*Source: IMF (2019d) and own calculations*

**Table A2.6:** Gross Public Debt of EAMU Candidates (in percent of GDP, 2008–2018)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Mean | St.Dev | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 102.5 | 25.7 | 46.9 | 42.7 | 41.4 | 36.1 | 35.8 | 45.3 | 48.4 | 51.7 | 58.4 | 46.0 | 8.9 | 35.8 | 58.4 |
| **Kenya** | 41.5 | 41.1 | 44.4 | 43.0 | 43.9 | 44.0 | 48.6 | 51.4 | 53.2 | 54.2 | 56.1 | 51.3 | 4.4 | 44.0 | 56.1 |
| **Rwanda** | 19.5 | 19.5 | 20.0 | 19.9 | 20.0 | 26.7 | 29.1 | 33.4 | 37.3 | 40.5 | 42.6 | 34.9 | 6.3 | 26.7 | 42.6 |
| **South Sudan** | | | | | 8.9 | 17.6 | 38.3 | 69.3 | 86.6 | 62.7 | 43.7 | 53.0 | 24.7 | 17.6 | 86.6 |
| **Tanzania** | 21.5 | 24.4 | 27.3 | 27.8 | 29.2 | 30.9 | 33.8 | 37.2 | 38.0 | 37.0 | 37.4 | 35.7 | 2.8 | 30.9 | 38.0 |
| **Uganda** | 20.3 | 19.2 | 22.4 | 23.4 | 24.6 | 27.7 | 30.8 | 33.5 | 37.4 | 40.0 | 42.9 | 35.4 | 5.8 | 27.7 | 42.9 |
| **DR Congo** | 90.5 | 93.2 | 31.9 | 26.3 | 23.2 | 19.1 | 16.8 | 16.8 | 19.3 | 18.1 | 16.2 | 17.7 | 1.3 | 16.2 | 19.3 |
| **Ethiopia** | 41.7 | 37.8 | 40.5 | 45.3 | 37.7 | 42.9 | 46.8 | 54.0 | 53.2 | 54.2 | 59.5 | 51.8 | 5.9 | 42.9 | 59.5 |
| **Sudan** | 55.8 | 70.9 | 67.4 | 69.5 | 97.0 | 93.1 | 83.2 | 82.3 | 99.5 | 121.6 | 167.5 | 107.9 | 32.5 | 82.3 | 167.5 |
| **EAC Cross-Country St.Dev** | 35.54 | 8.93 | 12.59 | 10.86 | 10.45 | 7.12 | 7.71 | 7.93 | 7.45 | 7.72 | 9.22 | | | | |
| **EAC Weighted Average** | 30.57 | 29.20 | 32.67 | 28.92 | 32.16 | 33.87 | 38.39 | 43.16 | 45.64 | 45.12 | 45.89 | | | | |

Note: Mean, St.Dev, Min and Max based on data from 2013 - 2018. Weighted Average is based on GDP in purchasing power parity.
*Source: IMF (2019a) and own calculations*

**Table A2.7:** Reserve Cover of EAMU Candidates (in months of imports, 2008–2018)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Mean | St.Dev | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 5.2 | 7.2 | 6.4 | 4.5 | 3.9 | 4.3 | 4.0 | 1.9 | 1.5 | 1.3 | 2.6 | 1.4 | 1.3 | 4.3 |
| **Kenya** | 2.7 | 4.0 | 3.8 | 3.1 | 3.7 | 4.1 | 4.4 | 4.8 | 5.3 | 4.3 | 4.6 | 0.5 | 3.7 | 5.3 |
| **Rwanda** | | | 5.7 | 5.6 | 4.1 | 5.0 | 4.5 | 3.8 | 3.9 | | 4.3 | 0.5 | 3.8 | 5.0 |
| **South Sudan** | | | | | | | 0.9 | 0.5 | 0.2 | | 0.5 | 0.4 | 0.2 | 0.9 |
| **Tanzania** | 3.8 | 5.2 | 4.8 | 3.5 | 3.6 | 3.9 | 3.6 | 3.6 | | | 3.7 | 0.2 | 3.6 | 3.9 |
| **Uganda** | 4.9 | 6.4 | 5.0 | 4.0 | 4.6 | 5.0 | 4.8 | 4.5 | | | 4.7 | 0.3 | 4.5 | 5.0 |
| **DR Congo** | 0.1 | 1.6 | 1.3 | 1.2 | 1.6 | 1.2 | 1.1 | 1.0 | 0.7 | 0.5 | 0.9 | 0.3 | 0.5 | 1.6 |
| **Ethiopia** | 1.1 | 2.4 | 2.7 | 2.9 | 1.9 | 2.0 | 2.3 | 2.3 | 1.8 | 1.9 | 2.0 | 0.2 | 1.8 | 2.3 |
| **Sudan** | 1.0 | 0.9 | 0.8 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.0 | 0.2 | 0.2 |
| **EAC Cross-Country St.Dev** | 1.15 | 1.39 | 1.01 | 0.97 | 0.38 | 0.50 | 1.42 | 1.65 | 2.29 | 2.13 | | | | |
| **EAC Weighted Average** | 3.45 | 4.80 | 4.53 | 3.18 | 3.69 | 4.01 | 3.99 | 3.99 | 2.08 | 1.54 | | | | |

Note: Mean, St.Dev, Min and Max based on data from 2013 - 2018. Weighted Average is based on GDP in purchasing power parity.
*Source: World Bank (2019c) and own calculations*

**Table A2.8:** Bilateral Estimates of Migration Stocks in East Africa (2017)

| Destination country (across) Source country (down) | Burundi | Kenya | Rwanda | South Sudan | Tanzania | Uganda | DR Congo | Ethiopia | Sudan | EAC | East Africa | World |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | | **4,321** | **64,729** | | **233,606** | **64,092** | **41,654** | **42** | **4** | **366,748** | **408,448** | **466,962** |
| Emigration (%) | | 0.04 | 0.60 | | 2.15 | 0.59 | 0.38 | 0.00 | 0.00 | 3.38 | 3.76 | 4.30 |
| Immigration (%) | | 0.01 | 0.53 | | 0.41 | 0.15 | 0.05 | 0.00 | 0.00 | 0.20 | 0.10 | 0.01 |
| **Kenya** | **1,066** | | **2,590** | **9,570** | **59,236** | **61,501** | | | **3,037** | **133,963** | **137,000** | **523,364** |
| Emigration (%) | 0.00 | | 0.01 | 0.02 | 0.12 | 0.12 | | | 0.01 | 0.27 | 0.28 | 1.05 |
| Immigration (%) | 0.01 | | 0.02 | 0.08 | 0.10 | 0.14 | | | 0.01 | 0.07 | 0.03 | 0.01 |
| **Rwanda** | **66,530** | **6,296** | | | **24,947** | **108,638** | **298,642** | **158** | | **206,411** | **505,211** | **606,728** |
| Emigration (%) | 0.54 | 0.05 | | | 0.20 | 0.89 | 2.45 | 0.00 | | 1.69 | 4.14 | 4.97 |
| Immigration (%) | 0.61 | 0.01 | | | 0.04 | 0.25 | 0.37 | 0.00 | | 0.11 | 0.12 | 0.01 |
| **South Sudan** | | **91,862** | | | | **903,199** | **9,329** | **417,150** | **301,885** | **995,061** | **1,723,425** | **2,018,258** |
| Emigration (%) | | 0.73 | | | | 7.18 | 0.07 | 3.32 | 2.40 | 7.91 | 13.70 | 16.05 |
| Immigration (%) | | 0.18 | | | | 2.11 | 0.01 | 0.40 | 0.74 | 0.54 | 0.42 | 0.03 |
| **Tanzania** | **28,951** | **39,721** | **45,373** | | | **35,789** | | | **1** | **149,834** | **149,835** | **322,830** |
| Emigration (%) | 0.05 | 0.07 | 0.08 | | | 0.06 | | | 0.00 | 0.26 | 0.26 | 0.56 |
| Immigration (%) | 0.27 | 0.08 | 0.37 | | | 0.08 | | | 0.00 | 0.08 | 0.04 | 0.00 |
| **Uganda** | **921** | **332,008** | **106,501** | **145,799** | **18,524** | | **6,637** | **230** | **1,481** | **603,753** | **612,101** | **775,892** |
| Emigration (%) | 0.00 | 0.77 | 0.25 | 0.34 | 0.04 | | 0.02 | 0.00 | 0.00 | 1.41 | 1.43 | 1.81 |
| Immigration (%) | 0.01 | 0.67 | 0.87 | 1.16 | 0.03 | | 0.01 | 0.00 | 0.00 | 0.33 | 0.15 | 0.01 |
| **DR Congo** | **173,417** | **11,231** | **231,438** | **87,871** | **105,174** | **298,749** | | **107** | **943** | **907,880** | **908,930** | **1,849,863** |
| Emigration (%) | 0.21 | 0.01 | 0.28 | 0.11 | 0.13 | 0.37 | | 0.00 | 0.00 | 1.12 | 1.12 | 2.27 |
| Immigration (%) | 1.60 | 0.02 | 1.90 | 0.70 | 0.18 | 0.70 | | 0.00 | 0.00 | 0.49 | 0.22 | 0.02 |
| **Ethiopia** | | **36,692** | | **12,802** | | **1,512** | | | **71,631** | **51,006** | **122,637** | **847,712** |
| Emigration (%) | | 0.03 | | 0.01 | | 0.00 | | | 0.07 | 0.05 | 0.12 | 0.81 |
| Immigration (%) | | 0.07 | | 0.10 | | 0.00 | | | 0.18 | 0.03 | 0.03 | 0.01 |
| **Sudan** | | **29,066** | | **563,135** | | **90,652** | **5,994** | **41,734** | | **682,853** | **730,581** | **2,019,643** |
| Emigration (%) | | 0.07 | | 1.39 | | 0.22 | 0.01 | 0.10 | | 1.68 | 1.80 | 4.98 |
| Immigration (%) | | 0.06 | | 4.48 | | 0.21 | 0.01 | 0.04 | | 0.37 | 0.18 | 0.03 |
| **EAC** | **97,468** | **474,208** | **219,193** | **155,369** | **336,313** | **1,173,219** | **356,262** | **417,580** | **306,408** | **2,455,770** | **3,536,020** | **4,714,034** |
| Emigration (%) | 0.05 | 0.26 | 0.12 | 0.08 | 0.18 | 0.63 | 0.19 | 0.23 | 0.17 | 1.32 | 1.91 | 2.54 |
| Immigration (%) | 0.90 | 0.95 | 1.80 | 1.24 | 0.59 | 2.74 | 0.44 | 0.40 | 0.76 | 1.32 | 0.86 | 0.06 |
| **East Africa** | **270,885** | **551,197** | **450,631** | **819,177** | **441,487** | **1,564,132** | **362,256** | **459,421** | **378,982** | **4,097,509** | **5,298,168** | **9,431,252** |
| Emigration (%) | 0.07 | 0.13 | 0.11 | 0.20 | 0.11 | 0.38 | 0.09 | 0.11 | 0.09 | 0.99 | 1.28 | 2.29 |
| Immigration (%) | 2.49 | 1.11 | 3.69 | 6.51 | 0.77 | 3.65 | 0.45 | 0.44 | 0.93 | 2.21 | 1.28 | 0.13 |
| **World** | **299,569** | **1,308,860** | **509,788** | **845,775** | **707,066** | **1,692,251** | **985,983** | **1,234,818** | **741,446** | **5,363,309** | **8,325,556** | **266,143,792** |
| Emigration (%) | 0.00 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.07 | 0.11 | 3.53 |
| Immigration (%) | 2.76 | 2.63 | 4.18 | 6.73 | 1.23 | 3.95 | 1.21 | 1.18 | 1.83 | 2.89 | 2.02 | 3.53 |

Note: Emigration (percent) and immigration (percent) were calculated as share of population in 2017 (World Bank, 2019e)
*Source: World Bank (2019b) and own calculations*

**Table A2.9:** Degree of Openness in Selected European Countries (in percent, 1990–2017)

| | 1990 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2017 |
|---|---|---|---|---|---|---|---|---|---|
| **Austria** | 71.49 | 65.99 | 68.26 | 70.08 | 74.87 | 76.93 | 78.26 | 85.36 | 104.71 |
| **Belgium** | 120.57 | 112.39 | 115.51 | 118.06 | 124.37 | 123.48 | 124.00 | 141.08 | 169.40 |
| **Finland** | 45.82 | 62.42 | 64.07 | 65.74 | 68.26 | 67.02 | 66.24 | 74.99 | 76.72 |
| **France** | 42.74 | 41.83 | 43.65 | 44.33 | 48.03 | 49.51 | 49.76 | 55.86 | 62.87 |
| **Germany** | 46.01 | 42.07 | 43.54 | 45.00 | 49.60 | 51.58 | 53.37 | 61.39 | 86.90 |
| **Ireland** | 104.90 | 126.34 | 135.94 | 138.70 | 142.32 | 157.98 | 160.14 | 175.14 | 207.89 |
| **Italy** | 36.43 | 40.58 | 45.82 | 42.98 | 44.68 | 45.21 | 44.73 | 50.47 | 59.51 |
| **Luxembourg** | 182.87 | 180.95 | 184.62 | 190.43 | 210.58 | 232.89 | 239.22 | 271.95 | 423.99 |
| **Netherlands** | 104.57 | 103.48 | 108.38 | 109.13 | 114.88 | 113.34 | 115.14 | 126.45 | 161.25 |
| **Portugal** | 65.05 | 57.17 | 59.91 | 60.21 | 62.29 | 63.81 | 63.29 | 67.42 | 85.20 |
| **Spain** | 35.64 | 41.70 | 44.83 | 46.33 | 51.29 | 52.86 | 54.74 | 60.24 | 65.52 |
| **EMU 11 Average** | 77.83 | 79.54 | 83.14 | 84.64 | 90.11 | 94.06 | 95.35 | 106.40 | 136.72 |
| **EMU 11 Weighted Average** | 50.36 | 50.48 | 53.45 | 54.05 | 58.21 | 59.76 | 60.91 | 68.52 | 87.67 |

Note: Weighted Average based on GDP in purchasing power parity.
*Source: World Bank (2019d) and own calculations*

**Table A2.10:** Diversification of Exports in selected European Countries (1997–1999)

| | 1997 | | 1998 | | 1999 | |
|---|---|---|---|---|---|---|
| | # of Products | HHI | # of Products | HHI | # of Products | HHI |
| **Austria** | 250 | 0.060 | 252 | 0.060 | 254 | 0.067 |
| **Belgium** | 254 | 0.099 | 255 | 0.091 | 254 | 0.092 |
| **Finland** | 240 | 0.184 | 241 | 0.204 | 237 | 0.220 |
| **France** | 257 | 0.066 | 258 | 0.071 | 258 | 0.074 |
| **Germany** | 256 | 0.088 | 256 | 0.092 | 257 | 0.098 |
| **Ireland** | 241 | 0.181 | 240 | 0.207 | 240 | 0.202 |
| **Italy** | 257 | 0.054 | 256 | 0.054 | 256 | 0.054 |
| **Luxembourg** | 235 | 0.126 | 234 | 0.132 | 230 | 0.131 |
| **Netherlands** | 259 | 0.062 | 259 | 0.069 | 259 | 0.071 |
| **Portugal** | 242 | 0.123 | 240 | 0.120 | 241 | 0.116 |
| **Spain** | 254 | 0.119 | 255 | 0.125 | 256 | 0.125 |

*Source: UNCTAD (2019b)*

**Table A2.11:** Main Products of Export in East Africa (2017)

| | # 1 | | # 2 | | # 3 | | # 4 | | # 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | Coffee | 23.0% | Gold | 23.0% | Tea | 16.0% | Chemical Substances | 7.2% | Raw Lead | 5.1% |
| **Kenya** | Tea | 22.0% | Cut Flowers | 11.0% | Refined Petroleum | 4.8% | Coffee | 4.3% | Chemical Substances | 2.2% |
| **Rwanda** | Coffee | 27.0% | Tea | 22.0% | Chemical Substances | 18.0% | Tin Ores | 6.4% | Tungsten Ore | 3.4% |
| **South Sudan** | Crude Petroleum | 99.2% | Scrap Iron | 0.2% | Gas Turbines | 0.1% | Aircraft Parts | 0.1% | Sawn Wood | 0.1% |
| **Tanzania** | Gold | 29.0% | Nuts | 12.0% | Raw Tobacco | 6.5% | Coffee | 3.0% | Fish Fillets | 3.0% |
| **Uganda** | Coffee | 20.0% | Gold | 15.0% | Dried Legumes | 3.5% | Fish Fillets | 3.1% | Cocoa Beans | 2.7% |
| **DR Congo** | Cobalt | 26.0% | Refined Copper | 25.0% | Copper Ore | 13.0% | Cobalt Oxides | 10.0% | Cobalt Ore | 7.1% |
| **Ethiopia** | Coffee | 32.0% | Oily Seeds | 16.0% | Gold | 11.0% | Cut Flowers | 9.4% | Dried Legumes | 5.3% |
| **Sudan** | Gold | 32.0% | Crude Petroleum | 15.0% | Sheep and Goats | 10.0% | Other Oily Seeds | 9.8% | Other Animals | 6.5% |

*Source: Observatory of Economic Complexity (2019)*

**Table A2.13:** Correlation of Permanent Component of GDP in East Africa (2005–2017)

| | **Burundi** | **Kenya** | **Rwanda** | **Tanzania** | **Uganda** | **DR Congo** | **Ethiopia** | **Sudan** |
|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1 | | | | | | | |
| **Kenya** | 0.994 | | | | | | | |
| **Rwanda** | 0.997 | 0.999 | 1 | | | | | |
| **Tanzania** | 0.994 | 0.999 | 0.999 | 1 | | | | |
| **Uganda** | 0.999 | 0.998 | 0.999 | 0.998 | 1 | | | |
| **DR Congo** | 0.994 | 0.999 | 0.999 | 0.999 | 0.998 | 1 | | |
| **Ethiopia** | 0.996 | 0.999 | 0.999 | 0.999 | 0.999 | 0.999 | 1 | |
| **Sudan** | 0.999 | 0.997 | 0.999 | 0.997 | 0.999 | 0.997 | 0.998 | 1 |

**Table A2.14:** Correlation of Cyclical Component of GDP in East Africa (2005–2017)

| | **Burundi** | **Kenya** | **Rwanda** | **Tanzania** | **Uganda** | **DR Congo** | **Ethiopia** | **Sudan** |
|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1 | | | | | | | |
| **Kenya** | -0.110 | 1 | | | | | | |
| **Rwanda** | 0.258 | -0.489 | 1 | | | | | |
| **Tanzania** | -0.485 | 0.442 | -0.441 | 1 | | | | |
| **Uganda** | 0.449 | -0.296 | 0.761 | -0.394 | 1 | | | |
| **DR Congo** | 0.341 | 0.331 | -0.089 | 0.207 | -0.331 | 1 | | |
| **Ethiopia** | 0.634 | 0.129 | 0.421 | -0.093 | 0.603 | 0.276 | 1 | |
| **Sudan** | -0.159 | -0.343 | 0.483 | -0.090 | 0.544 | -0.445 | 0.115 | 1 |

**Table A2.12:** Value Added to GDP by Sector in East Africa (in percent)

| | 2000 | | | | 2010 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Agriculture** | **Industry** | **Services** | **Other** | **Agriculture** | **Industry** | **Services** | **Other** | **Agriculture** | **Industry** | **Services** | **Other** |
| **Burundi** | 44.1 | 15.5 | 32.1 | 8.2 | 38.4 | 15.4 | 37.0 | 9.2 | 30.6 | 11.6 | 49.1 | 8.7 |
| **Kenya** | 28.7 | 15.0 | 49.3 | 6.9 | 24.8 | 18.5 | 48.1 | 8.5 | 34.6 | 16.5 | 43.6 | 5.2 |
| **Rwanda** | 37.2 | 15.8 | 46.9 | 0.1 | 28.2 | 14.8 | 49.2 | 7.8 | 31.0 | 15.8 | 46.4 | 6.9 |
| **Tanzania** | 31.3 | 17.9 | 44.3 | 6.5 | 29.9 | 20.3 | 44.2 | 5.6 | 30.1 | 26.4 | 37.5 | 6.0 |
| **Uganda** | 27.5 | 21.4 | 44.7 | 6.4 | 26.2 | 18.1 | 48.5 | 7.2 | 24.6 | 20.3 | 47.1 | 8.0 |
| **DR Congo** | 32.0 | 22.4 | 44.5 | 1.1 | 21.4 | 38.7 | 35.4 | 4.5 | 19.9 | 41.6 | 34.1 | 4.4 |
| **Ethiopia** | 44.7 | 11.4 | 37.4 | 6.5 | 41.4 | 9.4 | 41.8 | 7.4 | 34.0 | 22.9 | 36.9 | 6.2 |
| **Sudan** | 40.7 | 20.1 | 35.7 | 19.0 | 23.3 | 26.9 | 44.5 | 5.3 | 30.5 | 2.3 | 46.8 | 20.4 |

Note: Data for South Sudan was unavailable.
*Source: World Bank (2019e)*

**Table A2.15:** Trade Linkages within East Africa (in million USD, 1999–2018)

| | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Exports to EAC** | | | | | | | | | | | |
| **Burundi** | 1.0 | 4.0 | 5.2 | 12.8 | 16.0 | 29.8 | 25.5 | 23.3 | 25.1 | 11.5 | 16.6 |
| **Kenya** | 443.5 | 976.2 | 1,230.8 | 1,522.3 | 1,566.9 | 1,444.5 | 1,265.1 | 1,371.8 | 1,359.8 | 1,272.5 | 1,273.5 |
| **Rwanda** | 2.1 | 37.2 | 55.9 | 81.0 | 342.3 | 453.0 | 353.2 | 103.5 | 114.3 | 128.9 | 142.4 |
| **South Sudan** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 |
| **Tanzania** | 48.0 | 162.0 | 558.0 | 409.0 | 615.0 | 424.2 | 602.6 | 925.0 | 430.8 | 385.1 | 405.5 |
| **Uganda** | 8.1 | 144.8 | 428.6 | 503.7 | 580.3 | 627.4 | 642.2 | 771.6 | 822.0 | 1,148.2 | 1,183.1 |
| **DR Congo** | 5.7 | 80.7 | 361.9 | 472.9 | 432.9 | 369.0 | 405.5 | 370.9 | 312.0 | 470.5 | 853.8 |
| **Ethiopia** | 5.4 | 3.7 | 7.5 | 18.3 | 177.6 | 938.0 | 940.5 | 1,888.1 | 1,882.3 | 1,958.6 | 1,980.5 |
| **Sudan** | 3.6 | 57.3 | 158.5 | 285.2 | 188.7 | 73.0 | 119.8 | 88.6 | 72.0 | 145.6 | 166.4 |
| **EAC total** | 502.8 | 1,324.2 | 2,278.5 | 2,528.8 | 3,120.6 | 2,978.9 | 2,888.7 | 3,195.3 | 2,752.1 | 2,946.4 | 3,021.3 |
| **Imports to EAC** | | | | | | | | | | | |
| **Burundi** | 13.4 | 59.1 | 89.3 | 141.8 | 147.2 | 171.1 | 126.1 | 114.2 | 157.6 | 152.1 | 134.3 |
| **Kenya** | 32.5 | 61.3 | 247.4 | 298.1 | 359.4 | 329.4 | 479.2 | 426.8 | 324.4 | 589.8 | 745.7 |
| **Rwanda** | 57.0 | 123.1 | 399.1 | 438.8 | 512.7 | 481.0 | 534.0 | 464.5 | 435.6 | 419.2 | 548.8 |
| **South Sudan** | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 2.8 | 4.9 | 164.2 | 250.4 | 522.1 | 396.7 |
| **Tanzania** | 102.2 | 181.1 | 295.2 | 378.1 | 678.6 | 397.0 | 706.5 | 278.7 | 300.3 | 150.4 | 294.5 |
| **Uganda** | 347.0 | 551.4 | 576.5 | 692.6 | 646.9 | 616.6 | 684.6 | 630.2 | 530.1 | 576.9 | 779.7 |
| **DR Congo** | 50.8 | 281.8 | 759.0 | 1,121.0 | 1,144.5 | 1,302.7 | 1,474.0 | 1,453.3 | 1,081.3 | 1,028.1 | 1,407.4 |
| **Ethiopia** | 21.2 | 27.6 | 35.7 | 36.2 | 112.2 | 59.7 | 109.2 | 108.8 | 94.3 | 106.9 | 103.2 |
| **Sudan** | 51.4 | 73.6 | 128.3 | 110.8 | 106.2 | 155.6 | 149.9 | 147.5 | 145.0 | 197.2 | 229.6 |
| **EAC** | 552.1 | 976.0 | 1,607.6 | 1,949.5 | 2,346.7 | 1,997.9 | 2,535.2 | 2,078.6 | 1,998.5 | 2,410.5 | 2,899.6 |
| **Total Trade within EAC** | | | | | | | | | | | |
| **Burundi** | 14.5 | 63.1 | 94.5 | 154.6 | 163.3 | 200.9 | 151.5 | 137.5 | 182.7 | 163.6 | 150.9 |
| **Kenya** | 476.0 | 1,037.5 | 1,478.2 | 1,820.5 | 1,926.3 | 1,773.9 | 1,744.3 | 1,798.6 | 1,684.2 | 1,862.4 | 2,019.2 |
| **Rwanda** | 59.1 | 160.3 | 455.0 | 519.8 | 855.0 | 934.0 | 887.2 | 568.0 | 550.0 | 548.1 | 691.1 |
| **South Sudan** | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 2.8 | 4.9 | 164.3 | 250.5 | 522.3 | 396.9 |
| **Tanzania** | 150.2 | 343.1 | 853.2 | 787.1 | 1,293.6 | 821.2 | 1,309.1 | 1,203.7 | 731.1 | 535.5 | 700.0 |
| **Uganda** | 355.1 | 696.2 | 1,005.1 | 1,196.4 | 1,227.2 | 1,244.0 | 1,326.9 | 1,401.8 | 1,352.1 | 1,725.0 | 1,962.8 |
| **DR Congo** | 56.5 | 362.6 | 1,120.9 | 1,594.0 | 1,577.4 | 1,671.7 | 1,879.5 | 1,824.2 | 1,393.3 | 1,498.6 | 2,261.2 |
| **Ethiopia** | 26.6 | 31.3 | 43.3 | 54.5 | 289.8 | 997.7 | 1,049.7 | 1,996.9 | 1,976.7 | 2,065.5 | 2,083.7 |
| **Sudan** | 55.0 | 130.9 | 286.8 | 396.0 | 294.9 | 228.6 | 269.7 | 236.1 | 217.1 | 342.8 | 396.0 |
| **EAC** | 1,054.9 | 2,300.1 | 3,886.1 | 4,478.3 | 5,467.3 | 4,976.8 | 5,423.8 | 5,273.9 | 4,750.6 | 5,356.9 | 5,920.9 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.16:** Intra-regional Trade of Burundi (in million USD, 1999-2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Kenya** | 0.1 | 0.4 | 1.5 | 3.9 | 3.0 | 13.4 | 13.0 | 13.4 | 14.4 | 3.6 | 4.2 |
| **Rwanda** | 0.9 | 2.7 | 1.7 | 5.0 | 4.3 | 8.0 | 6.4 | 4.6 | 5.5 | 2.4 | 5.4 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | | | 0.3 | 0.1 | 1.3 | 2.6 | 2.7 | 2.2 | 1.3 | 1.3 | 2.5 |
| **Uganda** | 0.0 | 0.9 | 1.7 | 3.7 | 7.5 | 5.8 | 3.3 | 3.1 | 3.9 | 4.2 | 4.4 |
| **DR Congo** | 0.1 | 0.6 | 2.6 | 4.0 | 9.9 | 12.01 | 28.4 | 28.3 | 27.5 | 26.7 | 18.9 |
| **Ethiopia** | | | | | | | | 0.1 | | | 1.1 |
| **Sudan** | | | | | | 1.5 | 2.3 | 2.2 | 2.5 | 3.4 | 2.7 |
| **EAC** | 1.1 | 4.0 | 5.2 | 12.8 | 16.0 | 29.8 | 25.5 | 23.4 | 25.1 | 11.5 | 16.6 |
| **East Africa** | 1.1 | 4.6 | 7.8 | 16.8 | 25.9 | 43.3 | 56.2 | 53.9 | 55.1 | 41.6 | 39.3 |
| **Total Exports** | 40.9 | 44.4 | 90.8 | 110.9 | 111.3 | 205.8 | 141.5 | 113.7 | 123.0 | 149.4 | 169.3 |
| **Imports** | | | | | | | | | | | |
| **Kenya** | 6.2 | 33.9 | 30.9 | 45.9 | 45.4 | 58.3 | 37.4 | 36.2 | 47.8 | 43.0 | 39.2 |
| **Rwanda** | 2.1 | 0.9 | 2.5 | 6.0 | 10.7 | 10.4 | 8.5 | 6.4 | 13.0 | 7.4 | 4.6 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | 5.1 | 12.8 | 27.0 | 48.3 | 48.5 | 58.9 | 56.3 | 44.0 | 51.6 | 59.2 | 49.8 |
| **Uganda** | | 11.4 | 28.9 | 41.5 | 42.7 | 43.6 | 23.9 | 27.5 | 45.2 | 42.4 | 40.7 |
| **DR Congo** | 0.7 | 0.9 | 0.8 | 5.3 | 5.1 | 3.8 | 3.7 | 2.8 | 3.8 | 0.9 | 3.9 |
| **Ethiopia** | | | | | | 0.1 | 0.7 | 0.8 | 0.1 | 0.1 | 0.1 |
| **Sudan** | | | | | | | 0.1 | 0.1 | | | |
| **EAC** | 13.4 | 59.1 | 89.3 | 141.8 | 147.2 | 171.1 | 126.1 | 114.2 | 157.6 | 152.1 | 134.3 |
| **East Africa** | 14.1 | 60.0 | 90.2 | 147.1 | 152.4 | 175.0 | 130.5 | 117.8 | 161.4 | 153.2 | 138.3 |
| **Total Imports** | 104.1 | 240.9 | 461.3 | 664.3 | 663.5 | 721.2 | 672.0 | 560.5 | 625.2 | 782.8 | 792.9 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.17:** Intra-regional Trade of Kenya (in million USD, 1999-2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 5.6 | 49.1 | 66.2 | 65.3 | 61.5 | 64.7 | 85.2 | 83.7 | 71.3 | 71.4 | 65.2 |
| **Rwanda** | 46.1 | 96.4 | 128.1 | 150.3 | 187.3 | 156.0 | 169.2 | 166.5 | 172.4 | 165.6 | 176.1 |
| **South Sudan** | | | | | | | | 149.5 | 160.9 | 162.0 | 127.9 |
| **Tanzania** | 87.4 | 264.4 | 404.3 | 461.5 | 536.1 | 471.1 | 415.5 | 400.9 | 342.8 | 275.8 | 293.6 |
| **Uganda** | 304.4 | 566.2 | 632.2 | 845.2 | 782.0 | 752.7 | 595.2 | 571.2 | 612.4 | 597.8 | 610.7 |
| **DR Congo** | 31.0 | 134.5 | 155.3 | 193.9 | 212.5 | 215.7 | 196.8 | 189.2 | 197.4 | 182.6 | 149.9 |
| **Ethiopia** | 25.7 | 33.6 | 53.3 | 53.3 | 53.2 | 55.9 | 86.1 | 85.6 | 79.3 | 67.5 | 62.6 |
| **Sudan** | 46.1 | | | 246.5 | 77.1 | 73.6 | 45.4 | 42.2 | 52.8 | 66.8 | 61.2 |
| **EAC** | 443.5 | 976.2 | 1,230.8 | 1,522.3 | 1,566.9 | 1,444.5 | 1,265.1 | 1,371.8 | 1,359.8 | 1,272.5 | 1,273.5 |
| **East Africa** | 546.3 | 1,144.3 | 1,439.5 | 2,016.1 | 1,909.8 | 1,789.7 | 1,593.4 | 1,688.7 | 1,689.3 | 1,589.5 | 1,547.2 |
| **Total Exports** | 2,003.3 | 3,168.1 | 4,677.2 | 5,616.8 | 5,724.5 | 5,529.4 | 5,826.5 | 5,867.7 | 5,671.2 | 5,721.2 | 6,023.5 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | 0.1 | 0.3 | 1.8 | 5.2 | 3.6 | 0.6 | 2.6 | 2.5 | 0.7 | 0.6 | 0.7 |
| **Rwanda** | 0.2 | 1.5 | 5.2 | 4.6 | 9.6 | 11.5 | 9.1 | 8.0 | 7.6 | 16.3 | 11.7 |
| **South Sudan** | | | | | | | | 0.1 | 0.1 | 0.2 | 0.2 |
| **Tanzania** | 31.2 | 41.0 | 128.4 | 175.0 | 167.8 | 133.4 | 170.6 | 148.8 | 126.2 | 166.1 | 245.3 |
| **Uganda** | 1.1 | 18.5 | 112.1 | 113.3 | 178.3 | 183.9 | 296.9 | 267.5 | 189.8 | 406.6 | 487.8 |
| **DR Congo** | 0.1 | 12.0 | 15.9 | 27.5 | 10.2 | 6.4 | 2.9 | 2.3 | 2.1 | 4.9 | 12.7 |
| **Ethiopia** | 1.2 | 0.8 | 0.9 | 0.8 | 1.3 | 0.9 | 7.7 | 7.2 | 5.2 | 20.4 | 9.5 |
| **Sudan** | 1.8 | | | 8.6 | 11.3 | 15.6 | 0.0 | 0.0 | 4.7 | 21.2 | 6.6 |
| **EAC** | 32.5 | 61.3 | 247.4 | 298.1 | 359.4 | 329.4 | 479.2 | 426.8 | 324.4 | 589.8 | 745.7 |
| **East Africa** | 35.6 | 74.1 | 264.2 | 335.1 | 382.2 | 352.4 | 489.8 | 436.4 | 336.4 | 636.3 | 774.5 |
| **Total Imports** | 3,082.6 | 5,822.7 | 11,463.0 | 14,501.0 | 15,990.9 | 16,093.0 | 18,394.8 | 16,097.5 | 14,097.1 | 16,679.4 | 17,424.5 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.18:** Intra-regional Trade of Rwanda (in million USD, 1999-2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 1.9 | 2.2 | 5.0 | 8.5 | 13.6 | 20.9 | 19.3 | 6.7 | 7.1 | 3.1 | 9.2 |
| **Kenya** | 0.1 | 33.0 | 39.5 | 63.6 | 94.8 | 83.2 | 74.3 | 80.2 | 90.2 | 99.7 | 103.2 |
| **South Sudan** | | | | | | | 0.2 | 5.3 | 1.2 | 0.6 | 2.2 |
| **Tanzania** | 0.0 | 0.2 | 4.3 | 1.5 | 165.5 | 260.9 | 181.5 | 2.0 | 2.8 | 1.3 | 1.5 |
| **Uganda** | | 1.8 | 7.0 | 7.3 | 68.4 | 88.1 | 78.1 | 9.2 | 13.0 | 24.2 | 26.2 |
| **DR Congo** | 0.9 | 3.9 | 18.1 | 44.6 | 109.3 | 115.0 | 153.6 | 59.8 | 43.8 | 62.8 | 223.3 |
| **Ethiopia** | | 0.2 | 0.2 | 0.5 | 2.2 | 4.2 | 3.9 | 2.3 | 2.5 | 1.6 | 1.5 |
| **Sudan** | | | | | 17.1 | 0.2 | 0.2 | 0.7 | 0.2 | 0.8 | 0.7 |
| **EAC** | 2.1 | 37.2 | 55.9 | 81.0 | 342.3 | 453.0 | 353.2 | 103.5 | 114.3 | 128.9 | 142.4 |
| **East Africa** | 2.1 | 37.2 | 55.9 | 81.0 | 342.3 | 453.0 | 353.2 | 103.5 | 114.3 | 128.9 | 142.4 |
| **Total Exports** | 49.3 | 148.8 | 240.3 | 391.0 | 507.0 | 606.4 | 653.3 | 409.8 | 406.8 | 660.4 | 844.9 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | 1.0 | 1.1 | 2.0 | 4.0 | 11.4 | 8.3 | 6.7 | 8.7 | 5.2 | 3.2 | 6.5 |
| **Kenya** | 50.7 | 50.5 | 142.2 | 134.3 | 153.8 | 139.5 | 180.6 | 147.5 | 139.8 | 127.2 | 172.6 |
| **South Sudan** | | | | | | | 0.0 | | | 0.0 | |
| **Tanzania** | 3.4 | 22.0 | 75.9 | 85.2 | 90.6 | 94.6 | 79.8 | 83.4 | 95.0 | 95.2 | 133.2 |
| **Uganda** | 1.8 | 49.5 | 178.9 | 215.3 | 256.9 | 238.6 | 266.9 | 233.1 | 199.9 | 196.2 | 242.7 |
| **DR Congo** | 5.4 | 2.6 | 30.9 | 16.7 | 10.4 | 9.3 | 10.7 | 11.0 | 9.2 | 9.0 | 10.3 |
| **Ethiopia** | 0.5 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.4 | 0.8 | 0.5 | 0.3 |
| **Sudan** | | | | | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.0 | 0.0 |
| **EAC** | 57.0 | 123.1 | 399.1 | 438.8 | 512.7 | 481.0 | 534.0 | 464.0 | 434.7 | 418.6 | 548.5 |
| **East Africa** | 57.0 | 123.1 | 399.1 | 438.8 | 512.7 | 481.0 | 534.0 | 472.8 | 439.9 | 421.8 | 555.0 |
| **Total Imports** | 218.9 | 374.1 | 1,405.2 | 1,505.3 | 1,831.8 | 1,988.9 | 1,953.9 | 1,840.5 | 1,770.3 | 1,781.0 | 2,931.1 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.19:** Intra-regional Trade of South Sudan (in million USD, 1999-2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | | | | | | | | | | | |
| **Kenya** | | | | | | | | 0.1 | 0.1 | 0.2 | 0.2 |
| **Rwanda** | | | | | | | 0.0 | | | 0.0 | |
| **Tanzania** | | | | | 0.0 | | | | | 0.0 | 0.1 |
| **Uganda** | | | | | | | | | | | |
| **DR Congo** | | | | | | | | | | | |
| **Ethiopia** | | | | | | | | | | | |
| **Sudan** | | | | | | | | | | | |
| **EAC** | | | | | | | | 0.1 | 0.1 | 0.2 | 0.2 |
| **East Africa** | | | | | | | | 0.1 | 0.1 | 0.2 | 0.2 |
| **Total Exports** | | | | | 139.1 | 2,320.2 | 4,085.0 | 2,193.0 | 1,375.8 | 1,258.9 | 1,567.7 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | | | | | | | | | | | |
| **Kenya** | | | | | | | | 158.5 | 170.5 | 171.7 | 135.6 |
| **Rwanda** | | | | | | | 0.2 | 5.6 | 1.3 | 0.7 | 2.4 |
| **Tanzania** | | | | | 1.8 | 2.8 | 4.7 | 0.1 | | 0.2 | 0.3 |
| **Uganda** | | | | | | | | | 78.6 | 349.6 | 258.5 |
| **DR Congo** | | | | | | | | | | | |
| **Ethiopia** | | | | | | | | | | | |
| **Sudan** | | | | | | | | | | 0.8 | 1.4 |
| **EAC** | | | | | 1.8 | 2.8 | 4.9 | 164.2 | 250.4 | 522.1 | 396.7 |
| **East Africa** | | | | | 1.8 | 2.8 | 4.9 | 164.2 | 250.4 | 522.9 | 398.1 |
| **Total Imports** | | | | | 99.1 | 283.8 | 224.6 | 509.2 | 400.7 | 701.7 | 618.2 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.20:** Intra-regional Trade of Tanzania (in million USD, 1999–2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 5.5 | 12.7 | 56.1 | 39.8 | 54.6 | 45.3 | 43.0 | 39.2 | 52.1 | 45.9 | 31.1 |
| **Kenya** | 28.4 | 93.5 | 324.9 | 221.3 | 349.7 | 228.4 | 446.0 | 793.9 | 313.9 | 317.5 | 276.3 |
| **Rwanda** | 3.1 | 7.0 | 116.8 | 95.2 | 105.8 | 81.5 | 35.8 | 41.3 | 6.5 | 5.8 | 53.4 |
| **South Sudan** | | | | | 1.7 | 2.6 | 4.5 | 0.1 | | 0.2 | 0.3 |
| **Uganda** | 11.0 | 48.9 | 60.2 | 52.6 | 103.2 | 66.5 | 73.3 | 50.5 | 58.2 | 15.7 | 44.4 |
| **DR Congo** | 14.2 | 62.3 | 156.1 | 128.1 | 187.4 | 237.6 | 281.5 | 198.3 | 291.7 | 203.5 | 161.8 |
| **Ethiopia** | 0.6 | 1.8 | 1.6 | 1.1 | 3.1 | 2.0 | 5.4 | 0.1 | 0.8 | 2.2 | 3.0 |
| **Sudan** | 0.2 | | | | 2.4 | 4.6 | 4.8 | 7.0 | 4.8 | 0.2 | 0.2 |
| **EAC** | 48.0 | 162.0 | 558.0 | 409.0 | 615.0 | 424.2 | 602.6 | 925.0 | 430.8 | 385.1 | 405.5 |
| **East Africa** | 63.0 | 226.1 | 715.7 | 538.2 | 807.9 | 668.4 | 894.3 | 1,130.5 | 728.1 | 591.0 | 570.6 |
| **Total Exports** | 609.4 | 1,667.0 | 4,038.6 | 4,731.5 | 5,546.0 | 4,411.2 | 5,692.9 | 5,849.2 | 4,736.3 | 3,844.2 | 4,305.2 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | 0.0 | 0.3 | 0.6 | 0.8 | 3.9 | 1.7 | 0.6 | 1.1 | 0.8 | 0.2 | 2.4 |
| **Kenya** | 96.1 | 174.4 | 275.3 | 339.3 | 564.2 | 335.6 | 654.7 | 237.3 | 267.7 | 126.2 | 249.2 |
| **Rwanda** | 0.0 | 0.0 | 1.4 | 1.6 | 2.1 | 1.7 | 3.2 | 1.1 | 1.1 | 1.0 | 4.2 |
| **South Sudan** | | | | | 0.0 | | | | | 0.0 | 0.1 |
| **Uganda** | 6.0 | 6.4 | 17.9 | 36.4 | 108.3 | 58.0 | 48.0 | 39.2 | 30.7 | 23.1 | 38.6 |
| **DR Congo** | 0.1 | 0.6 | 1.1 | 0.4 | 0.9 | 0.1 | 0.8 | 0.6 | 0.4 | 0.6 | 0.4 |
| **Ethiopia** | 0.9 | 1.1 | 0.1 | 0.8 | 1.0 | 0.6 | 0.3 | 2.3 | 0.1 | 0.2 | 0.4 |
| **Sudan** | 0.0 | | | | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 |
| **EAC** | 102.2 | 181.1 | 295.2 | 378.1 | 678.6 | 397.0 | 706.5 | 278.7 | 300.3 | 150.4 | 294.5 |
| **East Africa** | 103.2 | 182.8 | 296.4 | 379.3 | 680.6 | 397.9 | 707.7 | 281.7 | 300.9 | 151.2 | 295.7 |
| **Total Imports** | 1,659.1 | 3,254.1 | 8,037.1 | 11,224.5 | 11,759.9 | 12,359.0 | 12,432.7 | 14,712.1 | 7,894.1 | 5,671.5 | 8,685.6 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.21:** Intra-regional Trade of Uganda (in million USD, 1999-2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | | 20.8 | 51.3 | 41.5 | 46.1 | 48.7 | 43.5 | 46.3 | 45.1 | 42.9 | 41.1 |
| **Kenya** | 1.0 | 72.4 | 190.3 | 226.6 | 254.1 | 314.4 | 297.4 | 427.0 | 440.3 | 549.3 | 605.4 |
| **Rwanda** | 1.7 | 36.1 | 149.3 | 193.5 | 226.1 | 216.3 | 245.3 | 237.6 | 191.9 | 176.8 | 216.2 |
| **South Sudan** | | | | | | | | | 74.1 | 329.8 | 243.8 |
| **Tanzania** | 5.5 | 15.4 | 37.6 | 42.2 | 54.0 | 48.0 | 56.0 | 60.8 | 70.6 | 49.5 | 76.6 |
| **DR Congo** | | 60.4 | 183.9 | 182.4 | 240.9 | 268.2 | 181.7 | 152.6 | 176.7 | 189.5 | 202.3 |
| **Ethiopia** | 0.0 | 0.2 | 2.2 | 6.2 | 12.2 | 4.1 | 1.2 | 1.7 | 0.4 | 7.3 | 10.9 |
| **Sudan** | 0.3 | 50.5 | 208.6 | 329.2 | 424.3 | 239.4 | 105.1 | 88.0 | 61.8 | 77.7 | 56.6 |
| **EAC** | 8.1 | 144.8 | 428.6 | 503.7 | 580.3 | 627.4 | 642.2 | 771.6 | 822.0 | 1,148.2 | 1,183.1 |
| **East Africa** | 8.4 | 255.9 | 823.2 | 1,021.5 | 1,257.7 | 1,139.1 | 930.2 | 1,013.9 | 1,060.9 | 1,422.6 | 1,453.0 |
| **Total Exports** | 384.6 | 793.8 | 1,531.5 | 2,039.6 | 2,207.0 | 2,068.9 | 1,804.7 | 1,844.7 | 2,164.0 | 2,829.2 | 2,904.7 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | 0.0 | 0.2 | 1.1 | 2.2 | 1.4 | 0.5 | 4.1 | 3.4 | 1.3 | 1.1 | 5.4 |
| **Kenya** | 334.8 | 520.7 | 511.5 | 644.6 | 590.2 | 562.8 | 593.9 | 554.5 | 459.0 | 471.3 | 514.9 |
| **Rwanda** | | 0.5 | 7.4 | 7.9 | 5.4 | 7.4 | 10.9 | 9.4 | 10.1 | 10.6 | 13.8 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | 12.1 | 30.1 | 56.5 | 38.0 | 50.0 | 45.9 | 75.7 | 62.9 | 59.7 | 94.0 | 245.5 |
| **DR Congo** | | 3.0 | 7.3 | 6.4 | 12.2 | 6.8 | 5.9 | 3.6 | 2.5 | 4.9 | 47.9 |
| **Ethiopia** | 0.1 | 0.4 | 1.0 | 0.4 | 0.3 | 0.2 | 0.2 | 0.4 | 0.9 | 0.3 | 0.4 |
| **Sudan** | | 0.2 | 3.8 | 3.3 | 2.1 | 1.1 | 1.3 | 0.5 | 0.2 | 0.3 | 0.1 |
| **EAC** | 347.0 | 551.4 | 576.5 | 692.6 | 646.9 | 616.6 | 684.6 | 630.2 | 530.1 | 576.9 | 779.7 |
| **East Africa** | 347.1 | 555.0 | 588.6 | 702.7 | 661.6 | 624.7 | 692.1 | 634.8 | 533.7 | 582.4 | 828.0 |
| **Total Imports** | 812.0 | 2,054.0 | 4,654.2 | 5,620.3 | 6,013.4 | 5,805.9 | 6,060.3 | 5,514.8 | 4,822.2 | 5,610.7 | 6,719.0 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.22:** Intra-regional Trade of DR Congo (in million USD, 1999–2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Kenya** | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.6 |
| **Rwanda** | 4.9 | 0.1 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.4 | 0.6 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | 0.1 | 79.6 | 356.9 | 466.3 | 426.9 | 363.9 | 399.8 | 365.7 | 307.7 | 463.9 | 841.9 |
| **Uganda** | | 1.0 | 4.5 | 5.9 | 5.4 | 4.6 | 5.1 | 4.6 | 3.9 | 5.9 | 10.6 |
| **Ethiopia** | | | | | | | | | | | |
| **Sudan** | | | | | | | | | | | |
| **EAC** | 5.7 | 80.7 | 361.9 | 472.9 | 432.9 | 369.0 | 405.5 | 370.9 | 312.0 | 470.5 | 853.8 |
| **East Africa** | 5.7 | 80.7 | 361.9 | 472.9 | 432.9 | 369.0 | 405.5 | 370.9 | 312.0 | 470.5 | 853.8 |
| **Total Exports** | 1,092.8 | 1,416.8 | 6,350.2 | 8,298.3 | 7,596.4 | 6,475.0 | 7,114.8 | 6,507.4 | 5,475.0 | 8,255.5 | 14,980.7 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | 0.1 | 0.4 | 1.1 | 1.7 | 1.7 | 1.9 | 2.2 | 2.2 | 1.6 | 1.5 | 2.1 |
| **Kenya** | 34.2 | 48.5 | 130.6 | 192.9 | 196.9 | 224.2 | 253.6 | 250.1 | 186.1 | 176.9 | 242.2 |
| **Rwanda** | 1.0 | 8.1 | 21.8 | 32.3 | 32.9 | 37.5 | 42.4 | 41.8 | 31.1 | 29.6 | 40.5 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | 15.6 | 188.4 | 507.4 | 749.4 | 765.0 | 870.8 | 985.3 | 971.5 | 722.8 | 687.3 | 940.8 |
| **Uganda** | | 34.4 | 92.8 | 137.0 | 139.9 | 159.2 | 180.1 | 177.6 | 132.1 | 125.7 | 172.0 |
| **Ethiopia** | | 1.8 | 5.0 | 7.3 | 7.5 | 8.5 | 9.6 | 9.5 | 7.1 | 6.7 | 9.2 |
| **Sudan** | | 0.1 | 0.3 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.5 | 0.5 | 0.6 |
| **EAC** | 50.8 | 279.9 | 753.7 | 1,113.2 | 1,136.4 | 1,293.6 | 1,463.6 | 1,443.2 | 1,073.7 | 1,020.9 | 1,397.5 |
| **East Africa** | 50.8 | 281.8 | 759.0 | 1,121.0 | 1,144.5 | 1,302.7 | 1,474.0 | 1,453.3 | 1,081.3 | 1,028.1 | 1,407.4 |
| **Total Imports** | 632.1 | 3,635.2 | 9,789.6 | 14,459.5 | 14,762.9 | 16,804.4 | 19,013.3 | 18,747.3 | 13,947.7 | 13,262.4 | 18,154.8 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.23:** Intra-regional Trade of Ethiopia (in million USD, 1999–2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | | | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| **Kenya** | 3.9 | 2.4 | 4.7 | 16.6 | 13.3 | 15.4 | 16.5 | 17.0 | 15.5 | 30.6 | 19.7 |
| **Rwanda** | 0.5 | 0.0 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.5 | 0.9 | 0.6 | 0.3 |
| **South Sudan** | | | | | | | | 934.4 | 931.9 | 962.8 | 979.2 |
| **Tanzania** | 0.8 | 1.3 | 0.7 | 0.1 | 0.8 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.3 |
| **Uganda** | 0.1 | 0.0 | 1.9 | 1.1 | 0.6 | 0.6 | 0.6 | 0.8 | 1.3 | 0.7 | 0.7 |
| **DR Congo** | | 0.0 | | 0.0 | | | | | | | |
| **Sudan** | 0.2 | | | | 162.7 | 921.0 | 922.3 | 934.4 | 931.9 | 962.8 | 979.2 |
| **EAC** | 5.2 | 3.7 | 7.5 | 18.3 | 14.8 | 17.0 | 18.2 | 953.7 | 950.5 | 995.8 | 1,001.3 |
| **East Africa** | 5.4 | 3.7 | 7.5 | 18.3 | 177.6 | 938.0 | 940.5 | 1,888.1 | 1,882.3 | 1,958.6 | 1,980.5 |
| **Ttal Exports** | 430.2 | 973.7 | 2,178.5 | 2,438.0 | 2,892.5 | 3,661.7 | 4,338.1 | 4,651.8 | 4,066.5 | 4,196.3 | 3,977.7 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| **Kenya** | 18.4 | 25.7 | 32.8 | 35.1 | 40.6 | 37.5 | 61.9 | 70.5 | 61.8 | 53.0 | 49.3 |
| **Rwanda** | | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 2.3 | 2.5 | 1.6 | 1.5 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | 0.6 | 1.7 | 1.1 | 0.6 | 1.8 | 2.1 | 2.2 | 2.2 | 2.2 | 4.2 | 4.7 |
| **Uganda** | 0.0 | 0.1 | 1.8 | 0.4 | 0.4 | 0.1 | 0.0 | 0.1 | 0.0 | 0.2 | 0.4 |
| **DR Congo** | | | 0.0 | 0.1 | | | | | | | |
| **Sudan** | 2.1 | | | | 69.5 | 20.0 | 45.1 | 33.7 | 27.9 | 47.9 | 47.2 |
| **EAC** | 19.1 | 27.6 | 35.7 | 36.1 | 42.7 | 39.7 | 64.1 | 75.1 | 66.4 | 59.0 | 55.9 |
| **East Africa** | 21.2 | 27.6 | 35.7 | 36.2 | 112.2 | 59.7 | 109.2 | 108.8 | 94.3 | 106.9 | 103.2 |
| **Total Imports** | 1,538.7 | 3,983.3 | 8,477.2 | 8,714.1 | 11,895.5 | 13,329.0 | 16,445.1 | 18,289.8 | 18,155.8 | 17,557.5 | 16,981.9 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.24:** Intra-regional Trade of Sudan (in million USD, 1999–2018)

| Exports | 1999 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Burundi** | | | | | | | | 0.4 | | | |
| **Kenya** | 1.6 | 2.2 | 0.1 | 3.3 | 9.8 | 20.4 | 1.0 | 1.2 | 0.2 | 21.8 | 11.5 |
| **Rwanda** | | | | | | | 0.0 | 0.2 | | | |
| **South Sudan** | | | | | | | | | | 0.8 | 1.3 |
| **Tanzania** | 0.0 | | | | | | | | | | |
| **Uganda** | | | 0.0 | 0.7 | 0.4 | 1.3 | 3.0 | 0.1 | 0.1 | 0.1 | 0.1 |
| **DR Congo** | | | | | | | | | | | |
| **Ethiopia** | 1.9 | 55.1 | 158.4 | 281.3 | 178.6 | 51.3 | 115.8 | 86.7 | 71.8 | 123.0 | 153.5 |
| **EAC** | 1.7 | 2.2 | 0.1 | 3.9 | 10.2 | 21.7 | 4.1 | 1.9 | 0.3 | 22.6 | 12.9 |
| **East Africa** | 3.6 | 57.3 | 158.5 | 285.2 | 188.7 | 73.0 | 119.8 | 88.6 | 72.0 | 145.6 | 166.4 |
| **Total Exports** | 704.6 | 4,810.0 | 11,303.7 | 9,252.4 | 3,192.2 | 4,005.3 | 4,099.2 | 2,922.3 | 2,546.7 | 4,058.5 | 5,459.5 |
| **Imports** | | | | | | | | | | | |
| **Burundi** | | 0.5 | 1.1 | 0.1 | 0.1 | 0.4 | 4.0 | 1.3 | | 1.3 | 1.1 |
| **Kenya** | 50.7 | 40.7 | 71.4 | 69.7 | 57.1 | 84.1 | 78.0 | 55.1 | 62.6 | 68.0 | 63.5 |
| **Rwanda** | | | 0.3 | 0.1 | 0.0 | 0.4 | 0.8 | 2.1 | | 1.2 | 11.4 |
| **South Sudan** | | | | | | | | | | | |
| **Tanzania** | 0.2 | | | | | | | 0.2 | 0.0 | 0.0 | |
| **Uganda** | 0.3 | 29.2 | 38.4 | 36.4 | 38.0 | 40.8 | 35.9 | 45.6 | 41.7 | 54.2 | 45.2 |
| **DR Congo** | | 1.0 | 0.2 | 0.1 | | | | | | 0.7 | 0.0 |
| **Ethiopia** | 0.2 | 2.1 | 17.0 | 4.5 | 10.9 | 29.9 | 31.2 | 43.3 | 40.8 | 71.7 | 108.4 |
| **EAC** | 51.2 | 70.4 | 111.2 | 106.3 | 95.3 | 125.7 | 118.7 | 104.2 | 104.3 | 124.7 | 121.3 |
| **East Africa** | 51.4 | 73.6 | 128.3 | 110.8 | 106.2 | 155.6 | 149.9 | 147.5 | 145.0 | 197.2 | 229.6 |
| **Total Imports** | 1,576.9 | 6,605.8 | 9,634.7 | 8,886.3 | 8,992.7 | 9,308.1 | 8,616.2 | 8,823.9 | 5,416.7 | 9,030.3 | 7,776.4 |

Note: Exports measured in FOB (free on board) and imports include cost, insurance, and freight.
*Source: IMF (2019b) and own calculations*

**Table A2.25:** Main Trading Partners of East African Countries (2017)

| | | #1 | #2 | #3 | #4 | #5 |
|---|---|---|---|---|---|---|
| **Burundi** | Exports | UAE | DR Congo | Pakistan | Belgium | Switzerland |
| | Imports | Saudi Arabia | China | UAE | India | Tanzania |
| **Kenya** | Exports | Uganda | Pakistan | US | Netherlands | UK |
| | Imports | China | India | Saudi Arabia | UAE | Japan |
| **Rwanda** | Exports | DR Congo | UAE | Kenya | Switzerland | Singapore |
| | Imports | China | UAE | India | Uganda | Kenya |
| **South Sudan** | Exports | China | India | Pakistan | | |
| | Imports | Uganda | Kenya | China | US | Netherlands |
| **Tanzania** | Exports | India | South Africa | Kenya | Belgium | Switzerland |
| | Imports | China | UAE | India | Saudi Arabia | South Africa |
| **Uganda** | Exports | Kenya | UAE | South Sudan | Rwanda | DR Congo |
| | Imports | China | India | UAE | Saudi Arabia | Kenya |
| **DR Congo** | Exports | China | South Africa | UAE | Tanzania | Zambia |
| | Imports | China | Saudi Arabia | Zambia | Tanzania | UAE |
| **Ethiopia** | Exports | Sudan | China | Somalia | US | Netherlands |
| | Imports | China | Saudi Arabia | India | Kuwait | France |
| **Sudan** | Exports | UAE | China | Saudi Arabia | Egypt | India |
| | Imports | China | India | Russia | Saudi Arabia | UAE |

*Source: IMF (2019b)*

# A3 Interview Transcripts

## A3.1 Interview 1: Pantaleo Kessy

**Interviewer:** Florian Preis, Dominik Michael Thomas Rappe

**Interviewee:** Dr. Pantaleo Joseph Kessy, Principal Economist, East African Community Secretariat, Arusha

**Date:** 4 March 2019, 16:00 CET, Copenhagen/Zanzibar (via Skype)

**The Customs Union and Common Market became operational in 2005 and 2010, respectively. What is your view on the progress of economic integration under the first two pillars outlined in the Treaty for the Establishment of the East African Community?**

The objective of the Customs Union was to remove tariff and non-tariff barriers to trade, establish common external tariffs, and guarantee the free movements of goods. This has been implemented to a great extent. However, few challenges remain, especially with regards to non-trade barriers which has also been pointed out in a recent report by the Ministers of Trade. Also, the support by the public has been rather reluctant, and I think this is because they don't feel the impact of the Customs Union as much as they do for other measures.

For the Common Market it is a different story. While there has been good progress in many aspects, such as lowering the regulations for the movements of capital, there remain numerous challenges overall. First, Kenya, Rwanda, and Uganda had little regulations regarding the movement of capital in place to start with, so only little effort was required to remove these. However, Burundi and Tanzania were heavily regulated in beginning and while some progress has been made, they are still lacking behind. This is also the case for South Sudan.

However, the greatest deficits are with regard to labour regulations where member states not only failed to remove barriers, but even introduced additional ones since the Protocol was ratified in 2010. One of the main reasons are the large difference in the level of skill of the labour forces. Less developed countries such as Burundi and Rwanda fear that the few jobs in the formal sector will be taken away by higher skilled workers from Kenya in case they fully liberalise the labour markets. Unfortunately, I don't see a solution, unless the heads of state

make the tough decision of removing all barriers and face the short-term consequences. In the long-run, this will increase the efficiency due to increased competition throughout the EAC.

I will check with the monitoring committee whether there are any new reports and forward you some information that will be useful for your analysis. You should also check the Common Markets Score Card by the IMF.

**You mentioned South Sudan. From a very practical standpoint, we were wondering how the ratification works for protocols introduced before the country's accession in 2016. We couldn't find any information on whether South Sudan signed the Treaty and other EAC documents.**

When South Sudan gained its membership, one of the conditions was that the country will accept all previously agreed terms. Therefore, a formal signing of previous EAC documents is not required. However, in case the EAC moves forward with its plans to form a political federation, South Sudan is expected to sign this protocol.

**Now that we established a common understanding of the current progress of the integration process, we were wondering what the situation looks like for the third pillar, the Monetary Union.**

The preparatory work for the Monetary Union is split into four periods. First, the full implementation of the first two Protocols must be achieved. As I said before, this is more or less the case for the Customs Union, but we are still facing significant challenges for the Common Market.

Second, the required institutions to facilitate preparations and support the union should be established. While the surveillance agency is almost ready, the approval process is very long, involving all sorts of EAC bodies such as the legal affairs committee, council, and legal assembly. Due to this, there are significant delays with regard to establishment of the East African Monetary Institute and the Statistical Bureau. Overall, I believe the delay is already about four years.

Third, the convergence criteria outlined in the Monetary Union Protocol must be fulfilled. Currently, we mainly look at the non-binding indicative criteria to assess the progress by the member states. Three years prior to monetary unification, the performance criteria becomes

binding. According to the governors of the national central banks, the monetary criteria of inflation and reserve cover targets should be manageable. However, given the infrastructure investment requirements of all member states, the fiscal criteria might be too ambitious. In my perception, Uganda is probably the country most committed to achieving the targets, but the other partner states are often too egoistic, and I doubt they will significantly change their government spending behaviour.

Finally, policies and regulations across all six countries must be harmonised. This concerns tax policies, but also non-banking financial sector regulations, for example insurance and pensions, as well as the banking sector. Overall, we have made some progress, but especially in Burundi, Rwanda, and South Sudan additional efforts are required.

**In light of all the challenges and delays, do you think the current plan to have the Monetary Union established by 2024 is still realistic?**

From a pure pragmatic and economic perspective, and I think I can speak for most of my colleagues, there's definitely reasonable doubt about the successful implementation by 2024. Currently, there is a study being carried out to examine exactly this. If the 2024 target is found to be unrealistic, an updated timeline will be established. In my opinion, we are looking at up to ten years additionally, so a full implementation by 2034 could be realistic.

**One contribution we can make with our thesis is the incorporation of potential candidates for a future enlargement of the EAC. There is a large number of countries in the immediate proximity, so we believe that there are interesting options. As Somalia is essentially a failed state, we understand the rejection of its membership application. However, we thought of Sudan as one of the strongest candidates, could you please provide some insight as to why its application was denied?**

The reason Sudan was denied in 2014 is that it couldn't fulfil the requirement of a shared border with an EAC member state which is specified in the EAC Treaty. Now that South Sudan gained membership in 2016, this is no longer an issue and rumours are that Sudan will re-apply soon. So I would share your judgement about Sudan being a strong candidate. As you correctly pointed out, the security situation in Somalia casts doubt on the benefits its accession would

entail. Therefore, the heads of state decided to put the application on hold and currently don't consider Somalia in any future processes, and I don't think this will change any time soon. The President of the Democratic Republic of the Congo has been very open about his aspirations of joining the EAC. In the past, he already had meetings with the head of state of Kenya, and both parties have been very positive in their declarations. I think it's reasonable to expect an application soon and with the support from Kenya, Tanzania, and Uganda, there are good chances for success. Although I don't know about any concrete initiatives, Ethiopia is definitely a potential candidate as well due to its strong economic ties with most current EAC members. For countries like Eritrea and Djibouti, I think we are looking at a timeline of 15 to 20 years. So probably not relevant for your thesis.

**We read a lot about the long-term goal of establishing an African Monetary Union, that means one currency for the entire continent. Is that something you keep in mind in the EAC?**

An AMU is a long-term goal and currently not impacting the unification of individual RECs. Due to the significant uncertainty attached, I would even consider it wishful thinking. I know that the COMESA also supports this long-term goal, but just like in the EAC, no process has been initiated yet.

**Is there anything you would like us to keep in mind for our thesis?**

I think it's important to understand the various stakeholders. There is an ongoing clash between the ambitions of politicians and what the technocrats deem to be feasible. It's been like that when politicians wanted to fast-track the Monetary Union in 2009, and it's the same again now. So while there's definitely considerations regarding future enlargements, I think it's already difficult enough for the six countries to reach consensus. Therefore, I would recommend you to keep the scope for potential future candidates rather small.

Also, it is imperative to keep in mind what's at stake. I believe that in case the Monetary Union fails, it will rip apart the entire EAC and demolish all progress that has been made over recent decades. Countries should take the time required and not rush into monetary unification. In my opinion, fiscal discipline is essential to the success of any monetary union and at the same time, compliance and enforcement institutions are required to track the efforts.

## A3.2 Interview 2: Pantaleo Kessy

**Interviewer:** Florian Preis, Dominik Michael Thomas Rappe

**Interviewee:** Dr. Pantaleo Joseph Kessy, Principal Economist, East African Community Secretariat, Arusha

**Date:** 23 April 2019, 16:00 CEST, Copenhagen/Arusha (via Skype)

**In the first part of our analysis, we assessed compliance with the convergence criteria defined in the Monetary Union Protocol. We found that there has been some convergence regarding headline inflation, fiscal deficit, gross public debt, and reserve coverage for all EAC and even candidate countries. However, not all countries are yet complying with the indicative criteria, and given the short timeline to 2021, we wondering if there are any initiatives to push the countries towards compliance or enforce the criteria in some other way?**

One thing that I would want to clarify is that the way the convergence of criteria is set in the Protocol, we cannot point a finger to any partners that do not meet the criteria at the moment. Because what the Protocol says and what the agreement is, the partner states do not have any obligation to fulfil the convergence of criteria before the year 2021. So the evaluation period will be from 2021 to 2024.

In addition, there's disagreement between politicians and expert with regard to what can realistically be achieved. Most politicians still believe that they can fulfil the criteria by 2021 despite being significantly off targets at the moment. I believe that they will start to realise the issues at hand closer to 2021 and it's already possible to see these developments today. In early May, the Finance Ministers will have a meeting and expect that one of the results will be a stronger commitment to the convergence goals, but none of the ministers will publicly admit that they will fail to fulfil the requirements.

I will send you section 2 of last year's ministers' report which will show you what I mean.

**In our last call we already covered the issues with labour mobility in the region, unless there have been some developments, we would like to go on to diversification of production and consumption. We calculated industry concentration for all nine countries and found that for all countries concentration has been increasing or at least stagnating, with Kenya being the only exception. Is the EAC aware of this issue?**

I'm not surprised to hear that, I would expect many countries being dependent on a small number of exports. For South Sudan oil exports probably make up more than 80 percent. However, I'm not aware that this is currently considered on regional level. Many countries have plans to move from agriculture dominated economies to industrialised manufacturing economies, for example Kenya, Uganda, and Tanzania, and I expect that these efforts will be noticeable in the medium-run. But these are all national initiatives, not on EAC level.

**But these factors have serious implications for shocks impacting the Monetary Union. How are you planning to respond to asymmetric shocks, for example on oil prices?**

That is something that was discussed when developing and negotiating the Protocol. Post monetary unification, countries will lose many of their policy tools and responses to shocks will have to be coordinated on the regional level. However, some countries will be affected by asymmetric shocks more seriously than others and the solution to this, laid out in the Protocol, is to establish a stabilisation mechanism.

I'd recommend you to look at the paper "Designing Fiscal Institutions for East African Monetary Union" by Christopher Adam at the International Growth Centre of Oxford University and the London School of Economics. In the paper a suggestion for the design and architecture of a stabilisation mechanism is outlined and the EAC Ministers of Finance adopted more or less this proposal.

However, all plans were put on hold at a higher level, as it is not considered a current priority. We would also have to look into how its funded which will all hopefully be done in the near future.

**Looking at trade activity, the intra-regional trade in East Africa is higher than for other regions on the continent, but still rather low when for example compared to Europe. Actually, over recent years intra-regional trade has stagnated as share of overall trade in the region. In addition to Customs Union and Common Market, are there any plans to promote trade in the region?**

That definitely has been a concern of the Ministers of Trade that intra-regional trade has not been expanding recently. The hopes were to have more noticeable impact of both, the Customs Union and the Common Market. The Ministers of the Treasury have requested a thorough study to find out what exactly is happening. How we can rectify this situation. So depending on the findings of this study, there will be action to address the issues.

In addition, there are efforts to address the issue of non-tariff barriers to trade which is believed to be the main cause of trade deflections. We had many meetings, even have a designated task force in place and small effects are already noticeable. Apart from this, I'm not aware of any additional efforts.

**We also found very limited evidence of convergence in financial markets. We know several initiatives have been on the agenda, but even nine years after establishing the Common Market, only little impact is found. Do you know of any plans to increase the financial market integration?**

Let me say that there are many initiatives going on, but whether they will be completed soon and have any effects in the short-run is a different story as we move at a very slow pace. In the non-banking sector we have initiatives to harmonise capital markets, insurance sectors, and also the micro-finance sector. With generous support from the World Bank, we were able to establish something called the "Financial Sector Development and Regionalisation Project" and hope to achieve significant impact on the harmonisation of regulations within the next one to two years.

**When harmonising policies, what is your strategy? Are you aiming at one regional body being responsible for supervision and regulation, or are you aligning national policies with decentralised power?**

Initially when we set out, we wanted to establish one centralised supervisory and regulatory agency at the regional level. However, we quickly noticed that the efforts were not successful as partner states did not fully cooperate. They are not ready to give up their autonomy and are reluctant to dilute their power. So what we are trying to do now is to coordinate policies within a regional body called the East African Financial Services Commission, and then have them implemented and enforced by national authorities. Of course, this requires more time and effort.

**Is this approach also the one you are following for the banking sector?**

No, for the banking sector we still want to have one regional central bank being in charge of supervision and regulation of commercial banks. The national central banks will remain in place to support the regional central bank, but won't have any power in setting the regulatory agenda.

Ultimately, we hope to establish one regional banking sector with banks being able to operate across borders. But we are also facing difficulties with the implementation here, as the partner states do not always commit to their duties outlined in the Protocol.

**One of the findings of our main model is that asymmetric shocks are predominant in the EAC. We already talked about your plan to set up a stabilisation mechanism in order to tackle these effects. Are there any considerations of further fiscal centralisation, for example in form of a full budgetary union where policies would be determined on a supranational level and then simply implemented by national authorities?**

I am confident that this will not happen at least in this generation. Nobody wants to see that and nobody wants to discuss that. This is because it is already a significant commitment to give up on national monetary and exchange rate policies, so politicians don't want to give up their fiscal autonomy. So I think them fighting against a budgetary union is completely natural.

**But isn't that in conflict with the planned fourth pillar of integration, political federation? We have read reports that a committee was tasked with drafting a constitution.**

You know, that is something we have to wait and see if it will happen. People normally tend to rush into things they don't fully understand. From my experience, and what I've seen here, is that a lot of money and resources will be spent only to later find out that they don't actually want it.

I actually lead a group of national experts, comprised of finance ministers and representatives of revenue authorities, where we looked at the fiscal architecture of the EU. That would also work for us. Those experts made it clear that they appreciate what is being done in the EU regarding a fiscal union, but they also made it clear that they think it won't be accepted in the EAC region for now. So whenever we are discussing the Monetary Union, a fiscal union is not part of it. In a way, to be honest with you, the fiscal union will never happen in this generation.

**Do you have any additional remarks we should keep in mind for our policy recommendations?**

I would like you to keep in mind the requirement for political appetite in order to implement changes. Technical people like you have a very good economic understanding and make their recommendations based on research and facts. Of course, I agree that monetary unions work better with some degree of fiscal union or centralised fiscal budgets, but the reality is that there needs to be political will, appetite to make these changes, and this appetite simply isn't there, despite us at the Secretariat making those recommendations.

## A3.3 Interview 3: Richard Siele

**Interviewer:** Florian Preis, Dominik Michael Thomas Rappe

**Interviewee:** Dr. Richard Kiplangat Siele, Moi University, Nairobi

**Date:** 28 April 2019, 16:30 CEST, Copenhagen/Nairobi (via Skype)

**Thank you for sending over your remarks via email ahead of our meeting. The insights were very valuable and we already implemented some of them into our thesis.**

What I didn't mention earlier is that I saw in your analysis part that you included Ethiopia, DR Congo, and Sudan as potential future candidates. As you know, the EAC currently comprises of only six member states and while it is interesting to include this outlook into your analysis, from my perspective, it is unlikely that an additional country will gain accession at least in the short-run. Therefore, I would advise you to focus on the current members in your policy recommendations and neglect the candidates.

**One very interesting suggestion you made were the implications of Article 18 (2) of the Monetary Union Protocol. It states that the partner states do not have to simultaneously move towards monetary unification as it requires a minimum of three members fulfilling the convergence criteria. From your perspective, what could be feasible blocs for a better EAMU?**

In my paper, I used three methods and all gave slightly different results. The GMM approach showed that there is no synchronisation of business cycles with Rwanda and Burundi, so these countries should be dropped from the Monetary Union. Results looked more favourable for Kenya, Tanzania, and Uganda, so my suggestion would be for these three countries to jump-start the monetary union by 2024 and then later be joined by the others. In total, I came up with I think six separate combinations of countries as indicated by my results. The only country that cannot be missed is Kenya, and Rwanda was almost never included. Their fiscal deficit is a large issue which almost always knocked them out. Looking at the results of your business cycle analysis, Kenya, Tanzania, and Uganda could also be a feasible combination. At least the cyclical components are highly correlated. But results in general are not very clear-cut and

there could be many valid combinations, for example also Burundi, Kenya, and Uganda.

**Looking at your paper, the conclusion and policy recommendations section is rather short. You probably had strict guidelines with regard to the length of the paper. What other policy recommendation would you like to make?**

If you look at the EAC, most countries have a poor history in fulfilling the headline inflation and reserve coverage criteria. When abandoning national monetary policy autonomy, countries must be able to count on each other. What I'm trying to say is that there must be a larger degree of monetary policy coordination. The underlying issue to this is also that there currently are no institutions to effectively monitor and enforce monetary convergence criteria. The EAC should therefore focus on establishing a statistical bureau tasked with the surveillance of member states.

**So you would attach less weight to the fiscal convergence criteria? This is a surprising perspective since most researchers in academia would agree that fiscal convergence is critical.**

No, they are both very relevant to the discussion. Especially the significant fiscal deficits of the countries make it difficult to achieve convergence. However, I believe there is no real solution to the fiscal issues as the countries will have to continue making infrastructure investments. Without the fiscal commitment though, the countries will collapse, they won't be able to afford the monetary union. So consequently, we are not really stressing on monetary policy, but we are saying that the two, monetary and fiscal policy, should work together and be utilised together in order to make the monetary union more sustainable.

**With regard to long-term sustainability of the monetary union, there is a debate around the requirement of fiscal transfer mechanisms in order to decrease fragility. Do you see this happening in East Africa?**

In the near future? No, not at all. But if we look at Europe, we can see that the euro zone was facing various issues and the underlying cause is often thought to be the lack of fiscal integration. I believe the EAC will face similar scenarios without a firm commitment to deeper reaching forms of integration.

**Do you see this being reflected in the public opinion? From our perspective it looks like there is tremendous political will to progress with the integration despite questionable circumstances from an economic point of view. Being a citizen in the region, what are your thoughts on this?**

This really depends on who you ask. For example, Kenya and Uganda are both producing sugar. In Uganda, production costs are significantly lower than in Kenya. Despite the quality of sugar being better in Kenya, since the Common Market became operational, Uganda can export the cheap sugar to Kenya without any boundaries. So if you ask Ugandan workers in the sugar industry, they are very happy about the EAC integration. Kenyan workers in the sugar industry probably not so much.

**But on the other side, we know that Kenyan workers are on average more highly skilled than Ugandan workers, so if there exists perfect labour mobility, Kenyan workers could move to Uganda and get better jobs.**

That's true. But it's the politicians' job to lay out and weigh these costs and benefits. If it turns out for the benefits to be greater than the cost, they should go ahead with the economic integration. So far, there has been strong political will, but it's difficult to estimate how far it goes. That would be an interesting angle for future research. A more qualitative approach assessing the political factors affecting the future integration schedule. I would assume it would definitely change the results compared to pure economic analyses like ours.

**Do you have any thoughts on how potential enlargements of the EAC should be handled in future?**

You can see how the process currently works by considering the way South Sudan joined the EAC in 2016. There have been many informal talks, a lot of back and forth in a lot of different committees of the EAC before South Sudan eventually gained membership. In my opinion, there must be more certainty in the process. There should be a standardised process and clear criteria the candidates can follow and plan with. But since you're closely integrated in a monetary union, it would also help the members to know what is coming up in the future. Everyone involved would gain from this.