Regional Integration, Economic Growth and Convergence in Sup-Saharan Africa: A Case Study of the East Africa Community

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Abstract

The old East Africa Community collapsed in 1977, partly because of political tensions, the unequal distribution of incomes and divergent macroeconomic performance between member states. Since then, achieving income convergence among member states remained a significant challenge for economic development and social cohesion within the Community. Despite considerable political goodwill and efforts to speed up the regional integration process within the East Africa Community and to achieve convergence in per capita income and macroeconomic convergence in the short-term, much more research remains crucial in order to guide policymakers for the new East Africa Community. This empirical study is mainly motivated by the need for well-researched empirical evidence to guide policymakers in East African countries in their ambitious programme to achieve Gross Domestic Product per capita (hereafter GDPPC) convergence in the region. Since the new East Africa Community is considered as government intervention in international/regional trade activities, and therefore as a shock to the regional economies, time series econometrics is the most appropriate methodology for measuring its impacts in the short term and long-term. The overall observations indicate that the East Africa Countries were converging to some extent and they are moving towards a common trend. In particular, the results from the unit roots and cointegration tests show a complete convergence in GDPPC.

Keywords: *growth, convergence, East Africa community.*

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Sahra Altı Afrika'da Bölgesel Entegrasyon, Ekonomik Büyüme ve Yakınsama Kriteri: Doğu Afrika Birliği Üzerine Bir Vaka Çalışması

Öz

İlk Doğu Afrika Topluluğu 1977 yılında ülkeler arası siyasi karışıklıklar, dengesiz gelir dağılımı ve üye ülkelerin makroekonomik performanslarındaki farklılık gibi nedenlerden dolayı dağılmıştı. Bu tarihten beri gelir dağılımı ve üye ülkeler arasındaki makroekonomik performansı birbirine yakınlaştırmak, ekonomik büyümeyi sağlamak ve sosyal uyumu oluşturmak ulaşılması zor bir hedef ve mücadele konusu olmuştu. Ciddi bir politik iyi niyetle, Doğu Afrika Birliği dâhilinde bölgesel entegrasyonu hızlandırma gayretlerine, kişi başına düşen geliri artırma ve makroekonomik yakınlaşma gibi planlanmış hedeflere ilişkin yapılmış çalışmalara rağmen, yeni Doğu Afrika Birliğindeki politik karar oluşturanlara rehberlik yapması açısından çok daha fazla sayıda kapsamlı araştırmalara ihtiyaç hissedilmektedir. Bu uygulamalı çalışma Doğu Afrika Ülkelerindeki bu açığı kapatmak amacıyla yapılmış bir çalışmadır. Yeni Doğu Afrika Birliğinin oluşumu uluslararası ve bölgesel ticari aktivitelere yönelik yapılmış bir hükümet müdahalesi ve bölgesel ekonomilere bir şok olduğu için bu müdahalenin etkilerini ölçmede en uygun ekonometrik yöntem ise zaman serisi analizidir. Bu teknik yöntemin uygulandığı çalışma şunu göstermiştir ki, Doğu Afrika Ülkeleri ekonomileri bir dereceye kadar yakınlaşmakta ve birbirine yakın ve ortak bir trende doğru hareket etmektedirler. Ekonometrik testler özellikle kişi başına düşen Gayri Safi Yurt İçi Hâsılada (GSYİH) tam bir yakınlaşma olduğunu göstermiştir.

Anahtar kelimeler: *büyüme, yakınlaşma, Doğu Afrika ülkeleri*

1. Introduction

From historical perspective, a remarkable achievement since the end of the Second World War has been the rapid improvements in growth and welfare in industrial countries and in the newly industrialized nations of East Asia, which have achieved satisfactory levels of prosperity. In contrast, African countries have experienced what[3] call *Africa's growth tragedy*. This situation raises important questions that lie at the heart of the debate on economic growth and convergence. Why are some nations poor and others rich? Have income inequalities across countries fallen or risen over the years? Why are some developing countries catching up with the rich, while African countries are falling behind in spite of economic reforms? Can theories and policies that explain growth convergence in OECD countries and newly industrialized countries also apply to African countries? Economists have asked these questions for decades, but after more than 200 years of the discipline, the mystery of economic growth has not been solved.[4]

Regarding the question of what should be done to improve and sustain Africa's growth; the debate is essentially a sterile and confusing one.[5] Following the 1980s economic crises characterised by declining growth, high inflation, unsustainable fiscal and current account deficits and huge external debt, the IMF and World Bank imposed structural adjustment programmes (SAPs). However, despite economic reform, it was recognised by the end of the 1990s that structural adjustment programmes had failed to bring about growth and macroeconomic stability. Given these disappointing results, East African Countries are increasingly turning to an ambitious regional integration project as an extension of the structural adjustment programmes. Regional integration is defined as a process in which countries enter into regional agreements for cooperation in the economic and political fields through free trade areas, customs unions, common markets, economic unions, and political federation.[6] In order to rescue their economies from persistent declining growth and macroeconomic instability, East African Countries moved in 1993 towards the resuscitation of the old East Africa

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[3] W. Easterly and R. Levine, "Africa's Growth Tragedy: Policies and Ethnic Division", *The Quarterly Journal of Economics*, Vol. 112, 1977, pp. 1203-1250.

[4] E. Helpman, *The Mystery of Economic Growth*, Harvard University Press, Cambridge, MA, 2004.

[5] M. Fafchamps, "Engines of Growth and Africa's Economic Performance", Discussion Paper, University of Oxford, Oxford, 2000.

[6] B. Balassa, *The Theory of Economic Integration,* Richard & Urwin, London, 1962.

Community (hereafter EAC). The signing of the Treaty establishing the new EAC in 1999 represented a new vision: the creation of trade, monetary and political integration to achieve sustainable growth and macroeconomic stability. The need for growth and macroeconomic convergence in East African countries stems from the legacy of a long history of East African integration with its rise from 1917 to 1965, fall in 1977 and resuscitation in 1993. This legacy includes the perception that one country, Kenya benefited disproportionately from the old EAC compared to Uganda and Tanzania. With new and poorer members countries (Rwanda and Burundi) there is recognition that a successful East African integration project requires the member states to converge in income per capita in order to avoid tensions among member states.

According to Rassekh[7] growth convergence is desirable because inordinate income disparity between rich and poor economies is offensive to human dignity, and it also continues to fuel the international tensions. The member states must follow similar macroeconomic policies in order to avoid economic disturbances in the regional economies. To achieve these objectives, the member states considered it necessary to expedite the successive stages of regional integration, so that the whole process could be achieved through a fast track mechanism.[8] In pursuing this fast tracking process, the East African Countries have set benchmark criteria: sustained growth, price stability, sustainable fiscal and current account deficits and external debt.[9] However, given the problems related to the implementation of different stages of regional integration, one can conclude that fast tracking and the setting of macroeconomic convergence criteria are unrealistic and unfeasible.

The old EAC collapsed in 1977, partly because of political tensions, the unequal distribution of incomes and divergent macroeconomic performance between member states. In addition, the enlargement of the EAC with the

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[7] F. Rassekh, "The Convergence Hypothesis: History, Theory, and Evidence", *Open Economies Review,* Vol. 9, 1998, pp. 85-105.

[8] The proposed 2004 fast track mechanism included customs unions in 2005, a common market in 2007, monetary integration in 2009 and political federation in 2010. Given the challenges in negotiating the issues in labour, capital and monetary markets and political issues such as democratic deficits and internal security, this time frame seem somewhat unrealistic; T. Nzioki Kibua and A. Tostensen, "Fast-tracking East African Integration: Assessing the Feasibility of a Political Federation by 2010", Michelsen Institute Report, No.14 Bergen, Norway, 2005.

[9] EAC,"The East African Development Strategy 2006-2010: Deepening and Accelerating Integration", General Secretariat, Arusha, 2005.

entry of the poor countries will radically change the landscape of regional income disparities. Consequently, achieving income convergence among member states remains a significant challenge for economic development and social cohesion. The combination of regional income disparities, unbalanced development and uncontrolled macroeconomic policies would inevitably hamper the success of the new EAC. There is a need to consider the well-researched and empirical evidence that guides policymakers on unsolved problems such as those of the equitable distribution of the costs and benefits of regional integration, imperfect competition, the protection of infant industries, labour market rigidities and labour mobility, disharmony in taxation structure, financial and current account liberalisation, national sentiment and sovereignty, and unstable macroeconomic management.

To date there are a few empirical studies by such as Mkenda, IMF, Buigut - Valev, UNECA and Opolot[10] that provide some empirical evidence on the problems of coordination and harmonisation policies and on the suitability of a common currency for East African Countries. Using different methodologies, these empirical works have reached different conclusions that can mislead policymakers. The motivation of this study is therefore twofold. Firstly, the study is motivated by the need for well-researched empirical evidence to guide policymakers in East African countries in their ambitious programme to speed up the regional integration process and achieve growth and macroeconomic convergence in the region. Secondly the study is motivated by the desire to contribute to current knowledge and general understanding of regional integration, growth and macroeconomic convergence. East Africa Countries have set growth and macroeconomic convergence and sustainability criteria concerning sustainable growth, price stability, sustainable fiscal and current account deficits and external debt.

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[10] B. K. Mkenda, "Is East Africa an Optimum Currency Area?", Electronic Publishing Center, Goteborg, Sweden, 2001; IMF, "Monetary Union Among Members of the East African Community: Preconditions and Policy Directions", African Department, Washington D.C, 2004; IMF, "Debt Sustainability in Low-Income Countries: Proposal for an Operational Framework and Policy Implication", Working Paper, International Monetary Fund, Washington D.C, 2004; S. Buigut and N. Valev, "Eastern and Southern Africa Monetary Integration: A Structural Vector Autoregression Approach", *Review of Development Economics*, Vol.23, 2006, pp. 134-149; S. Buigut and P. Valev, "Is the Proposed East African Monetary Union an Optimum Currency Area? A Structural Vector Autoregression Analysis", Working Paper, No. 04, Andrew Young University, School of Policy Studies, 2004; UNECA, "Assessing Regional Integration in Africa (ARIA III): Towards Monetary and Financial Integration in Africa", United Nations Economic Commission for Africa, Addis Abeba, http://www.uneca, 2008; J. Opolot, "Monetary Integration in East African Community: Feasibility and Progress on Macroeconomic Convergence", PhD Dissertation, University of Dar-es-Salam, Tanzania, 2008.

Economists such as Either, McKay et al. and McCulloch et al.[11] have begun to address the effects of trade and finance on growth and poverty, but unfortunately, the theoretical and empirical studies have not been put together into an integrated framework to map the relationship between regional integration, growth and convergence. Figure 1 provides such a framework by examining some channels through which regional integration affects growth and convergence.

Figure 1: Integrated Framework for Regional Integration, Growth and Convergence
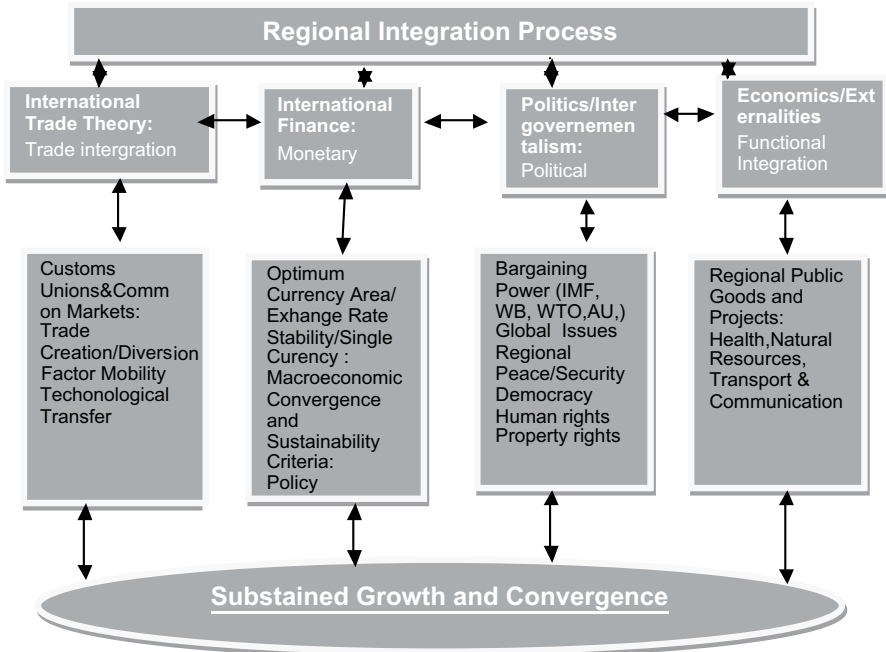
Source: Authors' own study

After decades of the implementation of regional integration policy, the following crucial research questions now arise: As an extension of the structural adjustment programme, has East African integration policy contributed to sustainable growth and convergence in income per capita in order to improve social cohesion? Are East Africa Countries conducting

[11] W. J. Ethier, "Regionalism in a Multilateral World", *Journal of Political Economy,* Vol. 106, 1998, pp. 1214-1245; A. McKay, L. A. Winters and A. M. Kedir, "A Review of Empirical Evidence on Trade, Trade Policy and Poverty", a Report to DFID Prepared as Background Document for the Second Development White Paper, 2000; N. McCulloch, L. A. Winters and A. Cirera, *Trade Liberalisation and Poverty: A Handbook,* Centre for Economic Policy Research, London, 2001.

similar macroeconomic policies to avoid disturbances in regional economies? Are East Africa Countries improving their external position by making sustainable their current account deficits and external debt?

These research questions indicate what the study seeks to investigate and help make the theoretical and empirical framework more explicit. In order to investigate these questions the paper is organised as follows. In section 2, the literature review on regional integration, economic growth and convergence will be reviewed to comprehend the theoretical background of the study. Section 3 will focus on Sub Sahara Africa and EAC and key politic, economic and social conditions in which East African integration has been and is taking place. In section 4, methodological background of the study will be summarised and key findings will be discussed. In section 5, conclusion will be drawn from the findings and policy implications will be presented.

2. Literature Review

The overall goal of this study is to investigate whether or not East Africa regional integration has reduced income disparities and improved key macroeconomic stability indicators. In order to do so, key concepts must be first examined such as, *regional integration, sustained growth* and *convergence*.

In the literature *regional integration* is defined as a process involving cooperation in economic and political fields. According to Balassa (1962), regional integration is expected to evolve progressively in the following stages.

- Free Trade Areas, in which member countries reduce or eliminate trade barriers between each other, while maintaining barriers for non-member countries.

- Customs Unions, in which member countries reduce or eliminate barriers to trade between each other and adopt a common external tariff towards non-member countries.

- Common Markets, in which member countries expand the basic customs union by reducing the barriers to the movement of factors of production (labour and capital).

- Economic Unions, in which member states aim at the harmonisation and coordination of national economic policies, including fiscal, monetary and exchange rates (e.g. common currency areas).

● Political Integration, in which member countries hand over their individual sovereignty to a supranational organization.

According to Lora et al,[12] *sustained growth* is the result of an increase of the factors of production and their productivity. This has been mostly affected by technological innovation, the quality of institutions, macroeconomic stability, the quality of financial systems, the quality of infrastructure, and finally the relative position of dominance in the international economy. In this view, non-economic factors are stressed as essential elements for economic growth since they allow the factors of production to grow in a sustainable manner. In this respect regional integration contributes to sustainable growth by affecting the quality of public and private institutions, the macroeconomic environment, financial and monetary systems, infrastructure and services, and the position of dominance in the global economy.

Generally speaking *convergence* is the approach toward a definite value, a definite point, a common view or opinion, or toward a fixed or equilibrium state. In the literature there are five definitions of convergence: sigma convergence, beta convergence, absolute convergence, conditional convergence and convergence to a common stochastic trend. a) *Sigma Convergence*: The neoclassical growth theories assume that poor countries with little capital grow faster than rich ones with large capital; thus, over time, they should tend to converge or catch up with rich ones according to the law of diminishing returns on capital;[13] b) *Beta Convergence*: Another type of convergence, β-convergence stems from the neoclassical assumption of diminishing returns and it tries to answer the question: why do countries tend to grow at different rates? In other words countries grow differently as long as they do not have similar characteristics. The concepts of α-convergence and β-convergence sound similar, but they are different. While α-convergence deals with income disparity across countries or regions within a country, β-convergence studies the mobility of income within the same distribution;[14] c) *Absolute Convergence*: Absolute convergence occurs if the dispersion of income per capita across integrated economies tends to

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[12] E. Lora, R. Quiroga and C. Bouillon, "Sustainable Economic Growth Strategy", Discussion Document, Inter-American Development Bank, Washington D.C, 2003.

[13] R. J. Barro and X.Sala-i-Martin, "Convergence", *Journal of Political Economy*, Vol. 100, 1992, pp. 223-251; W. J. Baumol, "Productivity Growth, Convergence, and Welfare", *American Economic Review*, Vol. 76, 1986, pp. 1072–85.

[14] R. J. Barro and X. Sala-i-Martin, *Economic Growth,* McGraw-Hill, New York, 1995.

decline over time.[15] In this sense, the concept of convergence usually refers to a process in which national economies display increasing similarities in the patterns of their economic performance and the reduction of existing gaps in income level between countries;[16] d) *Conditional Convergence*: Given that all economies do not have the same parameters and thus the same steady state positions, it is difficult to imagine that all countries could converge to the same growth rate. The incomes per capita of countries, which are identical in their structural economic characteristics (such as preferences, technologies, rates of population growth, government policies) converge in the long–run independently of their initial conditions. It is typically the case, however, that these conditioning variables, such as savings rates and capital-labour ratios, population growth rates and technology, change over time.[17] This suggests that absolute convergence should not apply when comparing industrial countries and developing countries; and e) *Convergence to a Common Stochastic Trend*: The modern statistical definition of convergence states that it occurs if the difference between the GDPPC of two countries evolves towards a stationary process. If there are more than two countries there is convergence if differences between the GDP of the leading economy in the group and the average GDPPC of the group evolve towards a stationary process, meaning that each country converges towards the regional average.[18]

From the growth, macroeconomic and sustainability criteria set by the East African Development Strategy 1999-2006, and in the light of subsequent theoretical and empirical literature, the main economic theory, which will be examined in this study, is Solow economic growth model and convergence criteria. Based on this economic growth and convergence literature three important research hypotheses will be tested against the data. The Solow growth model, also known as the neoclassical growth model, is the starting point for studying growth and the convergence process. This growth model is also the theoretical basis of this study. The model starts with the Cobb-Douglass production function.

[15] R. J. Barro and X.Sala-i-Martin, "Convergence", *Journal of Political Economy*, Vol. 100, 1992, pp. 223-251.

[16] United Nations Economic Commission for Europe, "Catching Up and Falling Behind: Economic Convergence in Europe", *Economic Survey of Europe 2000,* Geneva, United Nations Economic Commission for Europe.

[17] M. Abramovitz, "Catching Up, Forging Ahead and Falling Behind", *Journal of Economic History*, Vol. 46, 1986, pp. 385-406.

[18] A. B. Bernard and S. N. Durlauf, "Convergence in International Output", *Journal of Applied Econometrics*, Vol. 71, 1995, pp. 161-173.

$$Y = AK^a L^{1-a} \tag{1}$$

Where, Y represents output growth, K represents physical capital, L represents labour, the variable A represents the total factor productivity (often generalized as technology or knowledge capital), and α and 1- α represent the output elasticity of labour and capital, respectively. The Solow growth model assumes constant returns to scale, labour and capital substitutability, diminishing returns to capital, which drives income per capita convergence. As for convergence assumptions, the Solow growth model predicts that poor countries with lower capital stock tend to grow faster than rich countries with larger capital stock, and thereby catch up with them.

For the convergence Williamson and Fleming[19] approach is taken as the main approach for this research. According to Williamson and Fleming, the coefficient of variation is calculated by dividing the standard deviation by the mean of the sample. It is the ratio of the standard deviation to the mean, expressed as a percentage. In measuring convergence or divergence, they express the mean convergence per year symbolically as follows in equation 2:

$$MC/Year = [\frac{(CV_{t1} - CV_{t2})}{CV_{t1}} \text{ X } 100] / t_2 - t_1 \tag{2}$$

Where MC/Year is the mean convergence per year, Cv_{t1} is the coefficient of variation at the earlier date, CV_{t2} is the coefficient of variation at the later date, t1 is the earlier date, and t2 is the later date. The coefficient of variation is applied to GDP growth as well as to macroeconomic stability indicators in measuring whether or not countries are converging in fiscal and monetary policy. This methodology investigates convergence by modelling the individual behaviour of mean convergence. Convergence occurs if the coefficient of variation declines exactly to zero. In order to follow this methodology we set three hypotheses to test. These are as follows:

2.1. Regional Integration Contributes to Growth and Convergence

The existing literature suggests that increased regional trade is linked with economic growth via factor mobility and technology transfer, and therefore leads to more convergence in per capita income among member countries. Convergence in GDPPC is the tendency towards the reduction

[19] J. Williamson and J. Fleming, "Convergence Theory and the Social Welfare Sector: A Cross National Analysis", in A. Inkeles and M. Sasaki (eds), *Comparing Nations and Culture*, Engle Word Cliff, Prentice Hall, New Jersey, 2002.

over time of income disparities across member countries as a result of intra-trade.[20] Some economists, such as Snowdon[21] assume that trade is an unquestionable force promoting convergence in per capita income. The growth models also provide insight into the relationship between regional integration, macroeconomic growth and convergence. Since Viner[22] published his book, '*The Customs Union Issues*', a lot of empirical studies have examined the trade creation and trade diversion effects of regional integration. The trade creation effect is the shifting of production of some goods from a less efficient member to a more efficient member. The trade diversion effect is the shifting of production from efficient non-members to less efficient members.

2.2. Regional Integration Contributes to Macroeconomic Convergence

In the literature, macroeconomic convergence appears to be related to Optimum Currency Area (OCA) theory as developed over time by Mundell, Broz and Tavlas[23] among others. Macroeconomic convergence policy may also be thought of in relation to convergence in that institutions may shape growth and macroeconomic stability indicators. Some economists such as Acemoğlu and Robinson, Bassannin et al. and Tirelli,[24] argue that the persistent declining growth and macroeconomic instability in developing countries can been explained by weak political institutions that do not constrain political leaders and elites from corruption, As the regional integration of trade becomes successful, this can be expected to lead to monetary, fiscal and financial policy coordination and harmonisation.

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[20] There is no agreement on whether intra-trade can foster catch-up convergence. However there is evidence that some European countries, like Ireland, Spain, and Portugal, have converged in GDP per capita with respect to richer countries; A. De la Fuente, "Convergence Across Countries and Regions: Theory and Empirics", Working Paper, Vol. 5, Barcelona, CEPR, 2000.

[21] B. Snowdon, "The Enduring Elixir of Economic Growth: Xavier Sala-i- Martin on the Wealth and Poverty of Nation", *World Economics* Vol. 7, 2006, pp. 11-71.

[22] J. Viner, *The Customs Union Issue*, Stevens and Sons, New York, 1950.

[23] R. Mundell, "A Theory of Optimum Currency Area", *American Economic Review,* Vol. 60, 1961, pp. 657-65; T. Broz, "The Theory of Optimum Currency Areas: A Literature Review", *Privredna Kretanja i Ekonomska Politika*, Vol. 104, 2005, pp. 53-78; G. Tavlas, "The New Theory of Optimum Currency Areas", *The World Economy,* Vol. 6, 1993, pp. 663-685.

[24] D. Acemoglu and J. Robinson, "Disease and Development in Historical Perspective", *Journal of the European Economic Association*, Vol.192, 2003, pp. 397-405; A. Bassannin, S. Sarpetta and P. Hemmings, "Economic Growth: The Role of Policies and Institutions, Panel Data Evidence from OECD Countries", OECD Economics Department Working Paper, No. 283, Paris, 2001**;** P. Tirelli, "Growth and Macroeconomic Convergence in West African, Factor Endowments, Policies and Institutions", Discussion Paper, University of Milan, 2010.

When regional integration is successful in markets for goods and services, this can be expected to lead to the integration of financial and monetary markets, and thus macroeconomic convergence. Broadly speaking, macroeconomic convergence refers to macroeconomic policy stability in terms of price stability and fiscal deficits consistent with current account-to-GDP ratios and with sustainable external public debt-to-GDP ratios. In the context of monetary integration, macroeconomic convergence in key macro-aggregates seeks to eliminate policy shocks and reduce the costs of monetary integration. Macroeconomic convergence among given countries can be seen as either a prerequisite for, or the outcome of, a successful monetary integration agreement. In this sense, the study of macroeconomic convergence deals the feasibility/optimality (ex ante), or sustainability/stability (ex post) of a given monetary integration agreement. This prompts the third research hypothesis.[25]

2.3. Regional Integration Leads to the Sustainability of Macroeconomic Policies

The inclusion of sustainability hypothesis in East African macroeconomic convergence criteria is a reflection of great concern about unsustainable fiscal and current accounts deficits and external debt, which have been the most serious growth constraints in East African Countries. From a regional integration policy perspective, the macroeconomic policy convergence hypothesis posits that regional economies should be similar over time not only in terms of economic growth and macroeconomic policies, but also in terms of sustainable fiscal deficits, currents accounts and external debt.[26]

Empirical studies suggest that growth convergence may occur in countries with similar characteristics or those conducting regional integration. However, Venables[27] has found divergence in the customs unions of low income countries. Due to competitive advantage and the geographical agglomeration of economic activities, divergence may be inevitable in low income countries. The existing literature suggests income convergence among member countries of the European Union and the

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[25] A. Bagnai, "Macroeconomic convergence in Central Africa: A Survey of the Theory and Empirical Evidence", Discussion Paper, United Nations, Economic Commission for Africa, 2010.

[26] N. Chalk and R. Hemming "Assessing Fiscal Sustainability in Theory and Practice", Working Paper, No. 81, International Monetary Fund, 2000.

[27] V. Venables, "Winners and Losers from Regional Integration Agreements", Discussion Paper, London School of Economics, Department of Economics, 2003.

significant divergence among developing countries.[28] While empirical studies on Europe suggest growth and convergence as a result of regional integration, those conducted on African trade groups cannot establish robust growth and convergence effects. The consensus in the existing literature suggests that free trade is driving a force for growth and convergence in per capita income, opening up economies to technological diffusion, international finance and migration. This process is likely to promote growth and convergence when accompanied by institutional reforms in the rule of law, contract enforcement, corporate governance, stable and sound macroeconomic policies and social policies.[29]

In the context of regional integration, the idea of convergence presumes that cooperation among member states would enable the poorer countries to reach the level of incomes achieved by rich ones. The key factors affecting growth and convergence in regional trading arrangements range from natural resource endowments and competitive advantage, factor mobility, homogeneity, the nature of the countries and the harmonisation and coordination of government policy, monetary and financial integration, different institutions and trading rules. An important consideration for growth and convergence is that by conducting good government policies, capital and labour can move freely across regional countries. A good example is the European Union. Empirical studies such as those by Ben-David and Brabdli, Jones and Anyanwu[30] show how rapid growth, convergence in income per capita, and improving welfare have been achieved in recent member states of the European Union (Spain, Portugal and Greece). These countries have achieved economic growth and better standards of living, which are comparable to those of rich countries through trade, financial liberalisation, and technological transfer. The key solution to progress was to copy and absorb the technological improvements invented in the European Union and to open their economies to international trade and investment.

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[28] D. Ben-David, "Trade and Convergence among Countries", *Journal of International Economics,* Vol. 40*,* 1996, pp. 297-398; G. Karras, "Economic Integration and Convergence: Lessons from Asia, Europe and Latin America", *Journal of Economic Integration*, Vol.12, 1997, pp. 419-432; D. Quah, "Empirics for Growth and Distribution: Stratification, Polarization and Convergence Clubs", Discursion Paper, No. 324, London School of Economics, 1997; V. Venables, "Winners and Losers from Regional Integration Agreements", Discussion Paper, London School of Economics, Department of Economics, 2003.

[29] M. Obstfeld, *International Finance and Growth in Developing Countries: What Have We Learned*, University of California Press, Berkeley CA, 2007.

[30] D. Ben-David, "Equalizing Exchange: Trade Liberalisation and Economic Convergence", *Quarterly Journal of Economics,* Vol.108, 1993, pp. 653-679; M. Henrekson, J. Torstensson and R. Torstensson, "Growth Effects of European Integration", *European Economic Review*, Vol. 41, 1997, pp. 1537-1557.

In a survey of the empirical literature on growth and convergence in some African regional groupings, some economists such as[31] have suggested that there is evidence of convergence. Others such as[32] have found divergence. The methods used to establish such convergence or divergence range from graphical trend analysis, cross-regression analysis and econometric time series analysis. Regarding growth convergence among East African Countries, in their report '*Assessing Regional Integration in Africa III*', the United Nations Economic Commission for Africa (2008) found little evidence that supports growth convergence.

3. Sup-Saharan Africa and East African Communities

Past experience and common sense suggest that growth and macroeconomic convergence depend significantly on the nature of the interaction of the economic, social and political conditions in which East African integration has been and is taking place. During recent decades, empirical studies have shown how economic and political institutions have shaped economic performance in developing countries. Slow growth and macroeconomic instability in these countries have been explained in terms of institutions failing to constrain corruption among political elites and political instability. Using the EAC as a case study, this section presents an in-depth analysis of the background of the East African economies, analyses how well they have been performing in terms of key macroeconomic variables, and explores the economic performance of the alternative trade-led growth and macroeconomic stabilisation policies. These include the 1940s-1960s preferential trading arrangements, the 1960s-1970s import-substitution industrialisation, the 1980s-1990s trade liberalization or

[31] D. Ben-David and M. Brabdli, "African Convergence Clubs: The Effects of Colonialism and Trade", University of Texas, Graduate School for Business Working Paper, No. 24, 1996; B. Jones, "Economic Integration and Convergence of Per Capita Income in West Africa", *African Development Review*, Vol.14, 2002, pp. 18-47; J. C. Anyanwu, "Estimating the Macroeconomic Effects of Monetary Unions: the Case of Trade and Output", *African Development Review*, Vol.15, 2003, pp. 126-145; A. Wane, "Growth and Convergence in WAEMU Countries IMF Working Paper, Washington D.C, 2004; A. Konseiga, "Regionalism in West Africa: Do Polar Countries Reap the Benefits? A Role for Migration", Discussion Paper, No. 1516, Centre for Development Research and IZA Bonn, 2005.

[32] S. K McCoskey, "Convergence in Sub-Sahara Africa: A Nonstationary Panel, Data Approach", *Applied Economics*, Vol.34, 2002, pp. 819-829; V. Venables, "Winners and Losers from Regional Integration Agreements", Discussion Paper, London School of Economics, Department of Economics, 2003; M. Schiff and L. A. Winters, *"Regional Integration and Development"*, World Bank, Washington D.C, 2003; G. Dufrénot and G. Sanon, "Testing Real Convergence in the ECOWAS Countries in Presence of Heterogeneous Long-Run Growths: A Panel Data Study", University of Nottingham, Centre for Research in Economic Development and International Trade, 2005.

structural adjustment programmes, and the 1990s regional integration policies.

4. Methodology

The regression analysis stems from Solow growth theory and consists of investigating whether growth is negatively related to income per capita levels and consequently poor countries grow faster than the rich ones (known as beta convergence). Standard deviation from the income average or coefficient of variation is another measure of convergence (sigma convergence). The coefficient of variation is calculated by dividing the standard deviation by the mean of the sample, hence the name of mean convergence.

Having formulated research questions and hypotheses, the next step concerns the choice of a research methodology which clarifies the appropriate methods and procedures to be used for testing the growth and macroeconomic convergence and sustainability hypotheses as mentioned above. As in any scientific inquiry, the methodology underlying this research is based on the choice of theoretical perspectives related to the research topic under study, collecting and testing models, and interpreting the results in comparison with existing theories and empirical studies. Given the nature of its topic, research questions and hypotheses, it is obvious that the methodology underpinning the present study is essentially a positivist methodology.

Regarding the methodology used in most previous empirical studies on the effects of regional integration on the economy, such as, Enders and Hurn, Mkenda, Buigut and Valev[33] among others, employ positivist quantitative methodology including the use of applied general equilibrium (AGE), vector autoregression (VAR) model, gravity models, and G-PPP-cointegration analysis. These methodologies have major limitations. The AGE, VAR cointegration analysis models suffer from the problem of

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[33] W. Enders and S. Hurn, "Theory and Tests of Generalised Purchasing Power Parity: Common Trends and Real Exchange Rates in the Pacific Rim", *Review of International Economics,* Vol. 2, 1994, pp. 179-190; B. K. Mkenda, "Is East Africa an Optimum Currency Area?", Electronic Publishing Centre, Goteborg, Sweden, 2001; S. Buigut and P. Valev, "Is the Proposed East African Monetary Union an Optimum Currency Area? A Structural Vector Autoregression Analysis", Working Paper No 04, Andrew Young University, School of Policy Studies, 2004; M. Falagiarda, "Are the East African Countries Ready for a Common Currency? Traditional Indicators and Cointegration Analysis"*,* School of Economics, University of Trento, Italy, 2010.

identification which cannot be solved by a purely statistical tool. This is because it is still difficult to differentiate between correlation and causation, meaning that these methodologies combine the effects of shocks and responses. Using regional integration as dummy variables, the gravity models are miss-specified from an econometric point of view, which leads to incorrect interpretations of the dummy regional variable(s) and improper economic inference.

This study tries to isolate the effects of regional integration on key macro-aggregate variables such as per capita income and macroeconomic stability indicators by using historical data and a 'before and after approach, to the East Africa Community. Although this approach does not cover a long enough period of time to yield more reliable results, it is still give a clear picture of common stochastic trends since the EAC was resuscitated in 1993. Table 1 shows all key macroeconomic indicators analysed and calculated at in our original study. However, due to word limitation this study will only concentrate on the GDPPC results and convergence in GDPPC.

Table 1: Key Macroeconomic Indicators

Variable	Sources
GDP Per Capita	IMF (1999, 2007), World Economic Outlook Data.
1980-2007	For selected East African Countries (Burundi, Rwanda, Kenya, Tanzania and Uganda)

Source: Made by Authors

Since the new EAC is considered as government intervention in international/regional trade activities, and therefore as a shock to the regional economies, time series technic is an appropriate methodology for measuring its impacts in the short term and long-term. That is what[34] calls a gradually changing impulse function analysis, because government intervention may be prolonged for a considerable period of time. Since the EAC is a government intervention starting in 1993, this study applies a before-and-after approach; that is a time series econometric analysis.[35] To

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[34] W. Enders and S. Hurn, "Theory and Tests of Generalised Purchasing Power Parity: Common Trends and Real Exchange Rates in the Pacific Rim", *Review of International Economics,* Vol. 2, 1994, pp. 179-190.

[35] Time series econometrics helps in looking at the historical data, to describe and summarise data, make predictions or forecasts and improve policy advice in a much more realistic way than applied general equilibrium models (Stock and Watson, 2001).

conduct time series analysis we use Elliot, Rosenberg-Stock Unit Root[36] Test for each variable.

The rationale of this methodology is to look at historical data (Table 1) and understand what happened to data over the time in the past. Time series econometric analysis also helps to predict the future and improve policy implication in realistic way.

Table 2: Elliot, Rosenberg-Stock Unit Root Test Results for GDP Per Capita

Variable	Level		Critical Level
	Intercept	Intercept and Trend	
Mean Convergence for Burundi	**5,17**	**16,45**	
	1,87	4,22	1%
	2,97	5,72	5%
	3,91	6,77	10%
Mean Convergence for Rwanda	**42,40**	**19,39**	
	1,87	4,22	1%
	2,97	5,72	5%
	3,91	6,77	10%
Mean Convergence for Kenya	**3,99**	**13,43**	
	1,87	4,22	1%
	2,97	5,72	5%
	3,91	6,77	10%
Mean Convergence for Tanzania	**4,47**	**7,75**	
	1,87	4,22	1%
	2,97	5,72	5%
	3,91	6,77	10%
Mean Convergence for Uganda	**4,17**	**7,20**	
	1,87	4,22	1%
	2,97	5,72	5%
	3,91	6,77	10%

Source: *Calculated from Data 1980 to 2007 (n=28),* Critical values for this test are taken from MacKinnon[37]

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[36] G. Elliot, T. Rosenberg and J.H. Stock, 'Efficient Tests for an Autoregressive Unit Root', *Econometrica,* 64, 1996, pp. 813-816.

[37] J. G. MacKinnon, "Critical Valued for Cointegration Tests". In R. F. Engle and C. W. J. Granger, eds,

In Tables 2, the GLS Elliot -Rothenberg-Stock test shows that the overall results show that the data are stationary. For the GDPPC, the null hypothesis that variable has unit roots can be rejected, meaning that the data are stationary and are converging in all member states. In other words all calculated values for GDPPC are larger than critical values according to 1%, 5%and 10%confidence intervals. According to results Burundi's calculated value for GDPPC is 5,17 on level for intercept but critical values are respectively 1,87 (1%), 2,97 (5%) and 3,91 (10%), which are all lower than the calculated value of 5,17. As critical values are lower than the calculated value the null hypotheses, which states that variable has unit roots can be rejected for Burundi. Similarly, Rwanda's calculated value for GDPPC is 42,40 on level for intercept but critical values are respectively 1,87 (1%), 2,97 (5%) and 3,91 (10%), which are all lower than the calculated value of 42,40. As critical values are lower than the calculated value the null hypotheses, which states that variable has unit roots can be rejected for Rwanda. Same thing can be concluded for Kenya (calculated value for GDPPC is 3,99) and for Tanzania (calculated value for GDPPC is 4,47). Table 2 shows that similar results were also obtained for intercept and trend as well as only for intercept.

At this level no decision can be taken about convergence or divergence, and consequently the decision about running cointegration tests for nonstationary variables. Generally, the unit root test is the first stage in running cointegration tests between nonstationary variables. If the unit root test shows that the variables are stationary there is no need to proceed with cointegration tests. However, since[38] Nelson and Plosser argued that almost all macroeconomic time series have a unit root and are nonstationary, the absence of unit roots in some variables must be interpreted with caution. It is wise to check if the absence of a unit root is genuine. This is simply because most time series data are characterised by regular persistent change (stochastic trends) and sudden, unanticipated and large change (structural break)[39] argued that failure to ignore an existing structural break in a time series would lead to a bias that reduces the ability to reject the null hypothesis. They proposed the inclusion of the break endogenously from the data. Following this development, this study performs unit root tests with structural break in 1993 to ensure that the stationarity found throughout

Long Run Relationships: REadings in Cointegration, Oxford Unıversity Press, Oxford, UK, 1991, pp. 267–276.

[38] C. R. Nelson and C. I. Plosser, "Trends and Random Walks in Macroeconomic Time Series: Some Evidences and Implications", *Journal of Monetary Economics,* Vol. 10, 1982, pp. 139-162.

[39] P. Perron, "The Great Crash, the Oil Price Shock and the Unit Root Hypothesis", *Econometrica,* Vol. 57, 1989, pp. 1361-1401; P. Perron, "Further Evidence on Breaking Trend Functions in Macroeconomic Variables, *Journal of Econometrics*, Vol.80, 1997, pp. 355-385.

period is genuine. A break could be any change in time series data as a result of economic shocks such as government policies or economic crisis hitting the economies. In this study regional integration policy is considered as a break, which hit the East African economies in 1993.

The results from data inspection and unit root test results are inconclusive. In this case the decision to go ahead with cointegration was taken on the reasonable basis of the assumption of nonstationarity. The results from the cointegration test show a complete convergence in GDPPC. Generally the overall findings are mixed. However, they do give insight in helping to go beyond econometric test results, and to use common sense, existing empirical studies, and past experiences of the economies under study in order to draw useful conclusion and policy recommendations.

Regarding GDPPC convergence and sustainability criteria, the results are mixed. Figure 2 depicts the preliminary evidence of how the East African countries are converging or diverging towards zero in terms of GDP per capita over the sample period 1980-2007. Overall observation indicates that the EAC countries were relatively converging during the 1980s and diverging during the 1990s. Figure 2 indicates that there has not been significant growth convergence in the founding countries (Kenya, Tanzania, and Uganda), whose mean convergence of GDP in per capita has fluctuated between -0,60 and 0,80, suggesting that the value of mean convergence is not approaching zero. In the new members (Burundi and Rwanda) the mean convergence has fluctuated between -0,62 and 0,40, suggesting divergence in GDP per capita. Put together, the Figure 2 shows that all the EAC countries deviate from zero, suggesting divergence in income per capita.

**Figure 2: Mean Convergence for GDP Per Capita
in the East Africa Community**
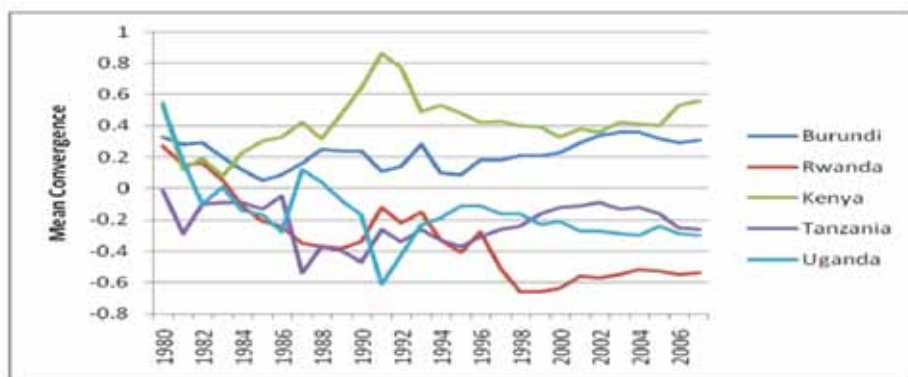
Source: Calculated from Data

Regarding GDPPC convergence and sustainability criteria, the results are mixed. As Table 3 shows, the situation is much better in Uganda with a surplus of 2,8 percent of GDP. Even if the target of 7 percent set in 1999 was unrealistic, the overall assessment shows that there has been positive progress toward growth at 5,8 percent at in 2005. Over the past seven years, Uganda and Tanzania have achieved spectacular growth rates of 5 percent and 4,8 percent respectively. During the same period Kenya's economy grew slowly at a growth rate of 1,3 percent a year. According to the Solow growth theory, in particular the assumption of diminishing returns, one could conclude that Uganda and Tanzania are catching up with Kenya. But in reality they do not. The Kenya's slow growth during the period 1999-2005 may be explained by the endemic corruption and political unrest.

Table 3: GDP Growth Rate and Trends towards Convergence for EAC Economies

Aggregate	EAC Partners	1999	2000	2001	2002	2003	2004	2005
GDP Growth Rate	Uganda	7,3	5,9	5,7	6,2	4,5	5,8	5,3
	Kenya	1,4	-0,3	1,2	1,1	1,8	4,9	5,8
	Tanzania	4,7	4,9	5,7	6,2	5,7	6,7	6,8

Source: EAC Development Strategy 2001-2010.

Cointegration is thought of as convergence towards a long-run equilibrium relationship. The notion of convergence involves testing for the existence of a co-integrating relationship between economic variables in different countries (Carmignani).[40] In the sense of the Maastricht-type criteria, if the economies diverge in their economic growth and macroeconomic policies, the costs of using a common currency would be high.

The trend assumption is of a linear deterministic trend. The co-integration test follows Johansen's approach, with a lag length of value 2. The decision criterion for testing for a cointegrating relationship in a set of variables (N-1) is made on the basis of the number of cointegrating vectors (r). According to Engle and Granger, there is convergence if the combination of nonstationary variables is stationary.[41] Such combination is possible up to N-1 distinct cointegrating vectors.

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[40] F. Carmignani, "The Road to Regional İntegration in Africa: Macroeconomic Convergence and Performance in COMESA", *Journal of African Economies*, Vol.15 (2), 2005, pp. 212-250.

[41] R. F. Engle and C. W. Granger, "Co-integration and Error Correction: Representation, Estimation, and Testing", *Econometrica*, 55, 1987, pp. 251-276.

- If r = N-1, there is a complete convergence.
- If r < N-1, there is a weak convergence.
- If r = 0, there is no convergence.

Determining the lag length in an empirical application is not always easy and the best strategy is to estimate a VAR model for different values of the lag length, then select on the basis of the Akaike or Schwarz information criteria. According to the Akaike decision criteria, the number of possible distinct cointegrating vectors is selected as 5 (6-1)

- If r = 5, there is a complete convergence.
- If r < 5, there is a weak convergence.
- If r = 0, there is no converge.

Tables 4 and 5 report the cointegration test results for GDP per capita as follows.

Table 4: Unrestricted Co-integration Rank Test (Trace) for GDP Per Capita

Null Hypothesis	Alternative Hypothesis	Eigenvalue	Trace Statistic	5%Critical value
None*, r = 0	r = 1	0,974	172,091	63,818
At most 1*, r ≤ 1	r = 2	0,789	83,558	47,856
At most 2*, r ≤ 2	r = 3	0,604	46,180	29,797
At most 3*, r ≤ 3	r = 4	0,504	23,898	15,494

Source: Calculated from Data.

Note: *denotes the rejection of the null hypothesis at the 0,05 per cent level.

Table 4 based on the inclusion of unrestricted cointegration rank test (Trace test). According to these results:

- The null hypothesis of no cointegration (r = 0) has to be rejected at a 5%level, when tested against the hypothesis of one cointegrating vector (r = 1), because trace statistic, 172,091 exceeds the critical value of 63,818.
- The null hypothesis of zero or one cointegrating vector (r ≤ 1) also has to be rejected against the alternative of two cointegrating relationship (r = 2), because trace statistic, 83,558 exceeds the critical value of 47,856.
- The null hypothesis of two or fewer cointegrating vectors can also be rejected against the alternative of r = 3, because trace statistic, 46,180 exceeds the critical value of 29,797.

- The null hypothesis of three or fewer cointegrating vectors can also be rejected against the alternative of r = 4; because trace statistic, 23,898 exceeds the value of 15,494.

Table 5: Unrestricted Co-integration Rank Test (Maximum Eigenvalue) for GDP Per Capita

Null Hypothesis	Alternative Hypothesis	Eigenvalue	Max-Eigen Statistic	5%Critical value
None*, r = 0	r = 1	0,974	88,532	33,876
At most 1*, r ≤ 1	r = 2	0,789	37,378	27,584
At most 2*, r ≤ 2	r = 3	0,604	22,281	21,131
At most 3*, r ≤ 3	r = 4	0,505	16,910	14,264

Source: Calculated from Data

Note: *de notes rejection of the null hypothesis at the 0,05 per cent level, max-eigenvalue test indicates 5 cointegrating equations at the 0,05 per cent level.

Table 5 based on the inclusion of unrestricted cointegration rant test (maximum Eigenvalue) for GDPPC. According to these results:

- The null hypothesis of no cointegration (r = 0) has to be rejected at a 5%level, when tested against the hypothesis of one cointegrating vector (r = 1), because trace statistic, 88,532 exceeds the critical value of 33,876.
- The null hypothesis of zero or one cointegrating vector (r ≤ 1) also has to be rejected against the alternative of two cointegrating relationship (r = 2), because trace statistic, 37,378 exceeds the critical value of 27,584.
- The null hypothesis of two or fewer cointegrating vectors can also be rejected against the alternative of r = 3, because trace statistic, 22,281exceeds the critical value of 21,131.
- The null hypothesis of three or fewer cointegrating vectors can also be rejected against the alternative of r = 4; because trace statistic, 16,910 exceeds the value of 14,264.

Tables 4 and 5 show trace and maximum eigenvalues tests and conclude that there are many cointegration relationships based on null hypotheses. These tables indicate that at most 5 co-integrating equations, and the null hypothesis of non-cointegrating vectors is rejected. The existence of 5 co-

integrating vectors suggests that the variables are cointegrated, and there is a complete convergence. In other words, these results imply that growth convergence is the interpretation of cointegrated variables.

5. Conclusion

From the situation of complete convergence a general conclusion can be drawn. As extension of structural adjustment programme, regional integration policy coupled with more disciplined fiscal and monetary policy appears to represent the most promising development strategy. This study considers GDPPC convergence as tools for successful East African integration. They may help to considerably reduce income disparities, transaction costs, and political tensions. Given what happened in the past experience with the EAC, which collapsed in 1977, it is essential to understand that growth and macroeconomic convergence are preconditions for the sustainability of the new EAC.

East African countries have made an important step towards deeper integration and the creation of monetary union by setting out stringent macroeconomic convergence criteria. But to achieve these criteria member states should continue to work together, increase intra-industry trade, and create appropriate economic and political institutions such as an East African Parliament and the East African Central Bank. Policymakers should continue with strengthening the macroeconomic convergence criteria as set out in the EAC Development Strategy. In order to be able to do that, policymakers should establish agreements on fiscal and monetary policies, in particular setting the rules of fiscal deficits and public debt discipline. This requires strong political will and leadership. The crucial question concerns whether or not the current political conditions, leadership and public consent will guarantee the sustainability of East African integration.

Regional integration is an important economic and political project where all member countries gain, but not equally, as is usually the case with international integration. Greater potential gains from regional cooperation can be achieved from an open focus on regional projects of common interest in agriculture, the joint construction of transport and communications infrastructure, education and research and development, environmental issues, food security, energy management, defence and security, and monetary and fiscal policy coordination.

Furthermore, East African integration is considered as the first step, which is pushing countries into the international economy. This is regarded

as the first step, where each country develops its comparative advantages in order to gain from the global economy, and hence increases sustainable growth and development.

Moreover this study has focused on the economic rationale for regional integration. However, it should also never be overlooked that regional integration is primarily driven by political forces, whereas economic analysis comes later. When the political decision to create regional integration is considered, the role of economists is to give economic analysis of the impact of regional integration on the regional economies that should be taken into consideration. The economic advice can be given to member states, not only after confronting the theories with the data, but also when considering the political and social environments prevailing in the region. Further research should go beyond the economic aspects and investigate the role of political conditionality and leadership in designing and implementing regional integration policy.

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