

**MACROECONOMIC CONVERGENCE WITHIN EAC  
COUNTRIES : TOWARDS A SINGLE CURRENCY**

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*ABSTRACT*

This paper investigates the extent of macroeconomic convergence in the EAC countries using the “sigma convergence hypothesis” on the GDP growth rates, on the CPI growth rates and on the monetary variables. The results detected some mixed and incoherent evidence of macroeconomic convergence, with convergence being established only for some countries and on very few indicators. With respect to GDP growth rate, a nominal variable, there is evidence of lack of convergence on overall and a little evidence convergence on monetary policy variables in some instances, while no convergence has been evidenced for fiscal policy variables.

It is obvious that within the EAC countries, there is a strong need to increase policy harmonization and co-ordination so as to stimulate macroeconomic convergence and policy environment effectiveness. The national planning strategies should include stability criteria and macroeconomic convergence benchmarks as to ensure effective convergence and to bring the regional integration process to its success.

**Key words:** Macroeconomic Convergence, Monetary Union, sigma convergence, beta convergence

## *1. Context and justification of the study*

The traditional Optimum Currency Area (OCA) theory has identified macroeconomic convergence as an important precondition for successful monetary integration.

Ingram (1969), Haberler (1970), Tower and Willett (1970), and Bayoumi and Ostry (1997), among others, argue that similarity in policy attitude and inflation convergence is an important precondition for a monetary union to succeed. It goes without saying that for the macroeconomic stability and equity to be realized in an economic and monetary union, the integrating economies should be characterized by economic homogeneity (internal and external economic convergence and equilibria).

The literature on convergence has so far identified three main notions of convergence:

1. Real convergence (which implies equalization of levels of economic welfare or economic and social cohesion),
2. Nominal convergence (which refers to the tendency of nominal variables to attain greater uniformity, these variables are relatively linked to macroeconomic stability),
3. Institutional convergence (which implies harmonization of institutional legislations and regulations).

The re-established and enlarged East African Community (EAC) is an ambitious regional integration initiative that is aimed at a full economic and political integration within the area. It is now composed of 5 countries (Burundi, Kenya, Rwanda, Tanzania and Uganda) and since the 1<sup>st</sup> of July 2010, the EAC states have embarked on a common market stage.

From there, the EAC member States are working closely to establish a Common Currency within a Monetary Union. This is mostly and frequently, if not always, perceived as the most advanced stage in the regional integration process.

Amongst other various tremendous advantages of a monetary union, it is aimed at promoting trade and investments which are required within the economic community to achieve growth agenda.

As long as the monetary union is concerned, we suppose harmonization of a number of criteria and/or policies in macroeconomic management constituting itself a significant move towards trade facilitation among the member countries. To establish a monetary union, it is crucial to implement the required conditions for the stability of the common currency to be issued. Therefore, attainment of some degree of convergence of a set of macroeconomic indicators is a pre-condition for the single or common currency to succeed as a monetary union tool. The EAC treaty and protocols have settled up a battery of primary and secondary criteria to be met at two different major stages towards a full macroeconomic convergence as shown in the table below.

The primary objective of forming a monetary union is to promote macroeconomic discipline and stability, enhance regional economic integration and more rapid economic growth and development. In the pursuit of regional macroeconomic stability, the EAC has set macroeconomic convergence benchmarks to be achieved by member countries during the transition to full economic and monetary unification..

The EAC macroeconomic convergence criteria have three stages and are categorized into primary and secondary criteria.

The primary criteria include, amongst others:

- ❖ Benchmarks on fiscal deficits,
- ❖ Inflation and external reserves.

The secondary criteria on the other hand include areas of policy and real convergence.

The benchmarks in stage II (2011 -2014) are tighter than those in stage I (2007 – 2010) given the fact that the common East African currency is scheduled to be introduced in 2015.

*Table 1: Macroeconomic Convergence Criteria for EAC for the period from 2007 to 2015*

|                                     | <i>Primary Criteria</i>  | <i>Secondary Criteria</i>  |
|-------------------------------------|--|--|
| <i>Stage I<br/>(2007-<br/>2010)</i> | <ul style="list-style-type: none"> <li>✚ Overall Budget Deficit to GDP Ratio (excluding grants) of not more than 6,0%</li> <li>✚ Overall Budget Deficit to GDP Ratio (including grants) of not more than 3,0%</li> <li>✚ Annual Average inflation rate not exceeding 5%</li> <li>✚ External Reserves of more than 4 months of imports of goods and non-factor Services.</li> </ul> | <ul style="list-style-type: none"> <li>✚ Achievement and maintenance of stable real exchange rates ;</li> <li>✚ Achievement and maintenance of Market Based Interest Rates ;</li> <li>✚ Achievement of sustainable real GDP Growth Rate of not less than 7,0%</li> <li>✚ Sustained pursuit of debt reduction initiative on domestic and foreign debt i.e.</li> <li>✚ reduction of total debt as a ratio of GDP to a sustainable level ;</li> <li>✚ National Savings to GDP Ratio of not less than 20% ;</li> <li>✚ Reduction of Current Account Deficit (Excluding grants) as a % of GDP to sustainable level consistent with debt sustainability</li> <li>✚ Implementation of the 25 core Principles of Bank Supervision and Regulation based on</li> </ul> |

|                            |  |   |
|----------------------------|--|---|
|                            |  | <p>agreed Action Plan for Harmonization of Bank Supervision ; and</p> <ul style="list-style-type: none"> <li>✦ Adherence to the Core Principles for Systematically Important payment Systems by modernizing payment and settlement systems.</li> </ul>  |
| <i>Step II (2011-2014)</i> | <ul style="list-style-type: none"> <li>✦ Overall Budget Deficit to GDP Ratio (excluding grants) not exceeding 5%; and</li> <li>✦ Overall Budget deficit to GDP Ratio (including grants) not exceeding 2% ;</li> <li>✦ Annual Average Inflation Rate of not more than 5%</li> <li>✦ External Reserves of more than 6 months of imports of goods and non-factor services.</li> </ul> | <ul style="list-style-type: none"> <li>✦ Maintenance of Market Based Interest Rates</li> <li>✦ Maintenance of high and sustainable rate of real GDP growth of not less than 7,0%</li> <li>✦ Sustained pursuit of debt sustainability ;</li> <li>✦ Domestic Savings to GDP Ratio of at least 20% ; and</li> <li>✦ Maintenance of sustainable level of Current Account Deficit (excluding grants) as % of GDP.</li> </ul> |
| <i>Stage III (2015)</i>    | Introduction and circulation of a single East African Currency   |   |

Source: Mbilinyi, 2009.

A study carried out at by the end of 2009 for the EAC by European Central Bank consultants showed that a number of challenges would have to be overcome in the EAC member States before a monetary union could take place. These relate principally to convergence in key economic areas of inflation, debt levels and GDP growth rates, which are still some way off.

In the available literature, we have identified few studies that have attempted to use specific EAC benchmarks for assessing the extent of macroeconomic convergence in the EAC:

1. Mkenda (2001) examines the extent of real exchange rate convergence using a generalized purchasing power parity framework of Enders and Hurn (1994),
2. While IMF (2004) examines fiscal convergence and vulnerabilities,
3. Opolot (2008) examines the extent of real and nominal convergence in the EAC.
4. Jacob Opolot and Eliab Luvanda (2009) assess the progress of the macroeconomic convergence in the EAC and its implications on the proposed Monetary Union.

Other studies, such as Carmignani (2005) and Mutoti and Kihangire (2007) examine macroeconomic convergence in COMESA, a broader regional grouping, in which one of the EAC Partner States is not a member; whereas Xavier Debrun, Paul R. Masson, and Catherine Pattillo (2010) investigate the scope for monetary integration in SSA asking whether the existing African Monetary Unions should be expanded or not.

The purpose of this paper is to investigate macroeconomic convergence trends and determinants within the East African Community (EAC) as it aspires to become a common currency by 2012.

This paper is motivated by the desire to provide a clear perspective of *the extent of macroeconomic convergence in the EAC compared to the targets of 2010* and in light of the projected monetary union.

It will thus contribute significantly to the ongoing debate on *the desirability of a monetary union in the EAC*, by bringing to light new evidence relating to the extent of macroeconomic convergence in the region.

The paper is also motivated by the purpose of *carrying out a comparative analysis of the convergence versus divergence degrees amongst the member states of the EAC.*

The methodology used for this study consists of a desk study or literature review, data collection and clearing, econometric modelling and results interpretation.

Data collection is being carried from the EAC Secretariat Publications (EAC Database, EAC Facts and Figures, EAC trade report, UNCTAD CD-ROM, the World Bank Development Indicators CD-ROM, etc...

Of course, a critical glance has been brought out from the data availability and relevance according to various sources.

The paper is shedding theoretical and empirical light on these matters of fact using advanced panel data analysis. The software we used is Eviews 6.

## *II. Literature Review*

### *II. 1. Convergence in the old Optimum Currency Area Theory*

According to the «old OCA theory» the criteria that a country should meet in order to benefit (or not to be damaged) from a monetary union are the following (we list them in chronological order):

- 1) *Flexibility of prices and wages* (Rfiedman, 1953): it reduces the need to adjust employment or the nominal exchange rate in reaction to country specific shocks;
- 2) *High interregional factor (especially labour) mobility* (Mundell,1961):it allows a country or region to absorb shocks without the need of adjusting the nominal exchange rate;
- 3) *High degree of openness* (Mc Kinnon,1963):the more open the economy, the lower the impact of nominal exchange rate

adjustments on competitiveness, hence the lower the cost of renouncing nominal exchange rate as a policy tool; moreover, the open the economy, the larger the costs of resource reallocation between tradable and non tradable sectors after a nominal exchange rate adjustment;

- 4) *High product diversification* (Kenen, 1969): it helps overcoming industry-specific shocks, thus reducing the need to resort to nominal exchange rate adjustments
- 5) *High fiscal integration* (Kenen, 1969): it allows to absorb the impact of asymmetric shocks through fiscal transfers from one to another country, thereby reducing the need of nominal exchange rate adjustments;
- 6) *Convergence of inflation rates* (Fleming, 1971): differences in inflation rates cause variations of the terms of trade and give rise to persistent or even rising current account disequilibria.
- 7) *Political factors* (Mintz, 1970) i.e., the "political will to integrate on part of the prospective members".

The only convergence considered by "old" OCA theory is that of *inflation rates*, and this is only *one* among seven criteria of optimality. In other words, "old" OCA theory provides no economic rationale for analyzing the convergence of variables like the money stock, prices, fiscal receipts, or GDP.

Therefore, our aim is to analyze the macroeconomic convergence through the convergence of inflation rates in EAC countries.

## ***II.2. Convergence in the new OCA theory: the cost-benefit approach***

As stated above, a distinct feature of "new" theory is that it weighs the benefits of OCA membership against its costs. The major benefits are:



- 1) *Macroeconomic stability through the solution of time-consistency problems* (Giavazzi and Pagano, 1988): by joining a currency union with a low-inflation country, the monetary authorities of otherwise inflation policies. This increases their reputation, thus solving the time-consistency problems and favouring convergence of inflation rates to the bottom. Under the extreme hypothesis of vertical short-run Phillips curve, this outcome is only beneficial, in that it minimizes the costs of inflation without increases in unemployment.
- 2) *Increase in trade volumes*: according to Rose (2001), joining a monetary union causes a sizeable increase in trade (due to the elimination of exchange rate risk, to enhanced transparency in prices, to greater financial integration); this in turn, would synchronize the economic cycles of member countries through increased demand spillovers.
- 3) *Savings on exchange reserves or low transaction costs* (Mundell, 1973; Frenkel, 1999): by joining a monetary union member countries no longer need international reserves for intra-regional transactions; moreover, the pooling of foreign exchange reserves entails of imports requirements than would be otherwise possible.
- 4) *Political advantages or negotiating power* (Gandolfo, 2002): a monetary union "carries more weight than the single countries in negotiating as a whole with outside parties".

The new OCA theory has identified the main costs of a monetary integration. These are amongst all other the major costs, we can recall the following: *loss of autonomy in monetary policy* (De Grauwe, 1992); *asymmetry of shocks* (Alesina et al., 2002); *lack of synchrony of business cycles; nature of the shocks* (Gandolfo, 2002); *increased specialization in production* (Artis, 1991).

This increases the costs of adjustment in response to asymmetric shocks. However, Frankel and Rose (1997) argue that this effect is offset by monetary union would be business cycle synchronisation. In other words, the formation of OCA is an endogenous process (the so-called endogenous OCA hypothesis).

Other authors have stressed on the perverse incentive effects on fiscal policy from a monetary union: Tornell and Velasco(2001) discussed the view that fixed exchange rates provides more “discipline” than flexible rates; Feldstein (2005) points out that a unified monetary policy with decentralized fiscal policies creates a free riding problem, as spendthrift countries do not incur in market discipline through higher interest rates; whereas De grauwe (1996) and Gandolfo (2002) point out the need for the adoption of some binding rules.

### *III. Methodology for convergence tests*

#### *III. 1. Convergence matters*

The idea of **convergence** in economics (also sometimes known as the **catch-up effect**) is the hypothesis that poorer economies' per capita incomes will tend to grow at faster rates than richer economies. As a result, all economies should eventually converge in terms of per capita income. Developing countries have the potential to grow at a faster rate than developed countries because diminishing returns (in particular, to capital) aren't as strong as in capital rich countries. Furthermore, poorer countries can replicate production methods, technologies and institutions currently used in developed countries.

In the economic growth literature the term "convergence" can have two meanings however. The first kind (sometimes called "sigma-convergence") refers to the catch up effect between countries described above. "Beta-convergence" on the other hand, refers to countries converging to their own steady state long run growth rate.

In this paper, we decided to analyze the macroeconomic convergence under the so-called “sigma convergence”.

### III.2. Beta Convergence

Empirical testing for what is known as  $\beta$  convergence in per capita income across nations or regions often utilizes a form of the neoclassical growth model that allows the growth rate of per capita income between two points in time to be related to some initial level of income. That form may be represented as follows:

$$\log(y_{it} / y_{i,t-1}) = a - (1 - e^{-\beta}) \cdot \log(y_{i,t-1}) + \mu_{i,t} \quad (1)$$

where  $y$  represents per capita real GDP,  $t$  represents the time (year),  $i$  represents the nation or region and  $\mu$  is the stochastic error term. The coefficients,  $a$  and  $\beta$ , are estimated by non-linear least squares techniques.

For a group of counties, a positive statistical estimate of  $\beta$  implies that the initially poorer counties grow on average at a faster rate than do the richer ones. A negative  $\beta$  implies greater growth for the initially richer counties. The parameter  $\beta$  represents the *speed* of convergence (or divergence) among the counties.

### III.3. Sigma Convergence

Sigma ( $\sigma$ ) convergence is a simpler concept. Data on per capita income are collected as a time series for each of the nations or regions under analysis. Then the standard deviation of the log of per capita income is computed for each year across the regions. This is a simple measure of dispersion, or income inequality for the sample data. If this standard deviation declines over time, per capita incomes are less dispersed and  $\sigma$  convergence is implied. This concept, sigma-convergence, provides a measure of the extent of income inequality and how such inequality changes over time.

Generally, the beta ( $\beta$ ) convergence implies the sigma ( $\sigma$ ) convergence, but the process may be offset by shocks that increase income dispersion. Put differently,  $\beta$  convergence is a necessary, but not sufficient, condition for  $\sigma$  convergence. It follows that the reverse does not hold; it is possible to have sigma divergence accompanied by beta convergence. This could occur if the initially poor regions (countries) grew such that they “passed” those above to such an extent that dispersion ( $\sigma$ ) increased.

#### *IV. Trade integration and Macroeconomic overall environment within the EAC*

##### *IV.1. The Past, Present and Future of East African Community*

The East Africa has a long history of regional integration. WTO (2006) reports that Kenya and Uganda first formed a customs union in 1917, which the then Tanganyika (Tanzania without Zanzibar) joined in 1927. Subsequently, the three countries had close economic relationships in the East African High Commission (1948-61); the East African Common Services Organization (1961-67); the East African Community (1967-77); and the East African Cooperation (1993-99). Then, since the end of 2006 and effectively the mid – 2007, Burundi and Rwanda joined the Community and a lot of advancements are being made. The (current) Treaty for the Establishment of the East African Community (EAC) was signed on 30 November 1999, and entered into force on 7 July 2000. The present EAC has its origins in the Mediation Agreement for Division of Assets and Liabilities of the original EAC, which collapsed for a variety of political and economic reasons in 1977. In that Mediation Agreement, signed on 14 May 1984, Kenya, Tanzania, and Uganda agreed to explore areas of future cooperation, and to make concrete arrangements for such cooperation. Subsequent meetings of the three Heads of State led to the signing of the Agreement for the Establishment of

the Permanent Tripartite Commission (PTC) for East African Cooperation on 30 November 1993. Full fledged cooperation started on 14 March 1996 when the Secretariat of the PTC was launched at the headquarters of the EAC in Arusha, Tanzania.

The key objective of the EAC is to develop policies aimed at widening and deepening cooperation in all fields for the mutual benefit of its members (Article 5 of the EAC Treaty). The EAC is thus to be an economic area (including customs and monetary unions, with harmonized macroeconomic policies, and ultimately a political federation), although no precise timetable has been established.

Negotiations are intensively being carried on in order to ensure the implementation of the economic union structure and studies are being done on the feasibility and timeline of a monetary cooperation and union framework, which is supposed to start by 2012 and get fully implemented in 2015.

#### *IV.2. Aid Dependency and Governance within EAC partner States*

It's obvious that the authorities of the EAC stress on the role of good governance as a prerequisite for East Africa economic integration. The EAC Common Market is the backbone of any integration as it will facilitate free movement of persons, goods, services, capital, right of residence and establishment. It requires establishment of regional supra national institutions that will address the challenges of these freedoms. Thus, the need to establish institutions and structures that will promote good governance, uphold rule of law, combat corruption and enhance ethics and integrity. With these freedoms, also comes challenges of issues related to peace and stability in the region; to which end, a lot is being done to ensure the appropriate mechanisms are in place to address those challenges. Burundi is the most aid-

dependent country within the EAC whereas Kenya is the least aid-dependent country.

**Table 2: Aid dependency in EAC countries, 2007**

| <i>Country</i> | <i>Aid dependency</i> |
|----------------|-----------------------|
| Burundi        | 47.88                 |
| Kenya          | 4.71                  |
| Rwanda         | 20.99                 |
| Tanzania       | 17.43                 |
| Uganda         | 14.81                 |

Source: OECD, 2007

In Doing Business 2010 ranking, for the first time a Sub-Saharan African country—Rwanda—was the world's top reformer, based on the number and impact of reforms implemented between June 2008 and May 2009.

EAC Countries fare very badly in the Corruption Perception Index by Transparency International. In 2007, Kenya worst amongst the EAC countries at position 150 out of the 180 nations surveyed. The Kenyan situation has been as bad as countries facing stability problems in Africa including DRC Congo, Liberia, Cote d'Ivoire and Sierra Leone). Tanzania leads in the region as the least corrupt in the Transparency International study taking position 94 out of 180, followed by Uganda (110), Rwanda (111) and Burundi (134). Yet, even for Tanzania, the score is poor, considering that it is placed 57 places below Botswana with the cleanest graft record in Africa.

In terms of foreign investment attractiveness, the perception of potential or would be investors matters. Therefore, the EAC as a region needs to respond to the challenges related to corruption, as it does affect the business climate in the region. The newly formed anti-corruption association in East Africa needs to proceed and address the substantive corruption problems the region faces.

**Table 3: Transparency International, the corruption perception index, 2007**

| Country  | Corruption Perception rank<br>(out of 180 states) | Corruption Perception Index |
|----------|---|-----------------------------|
| Burundi  | 134   | 2.4                         |
| Kenya    | 150   | 2.2                         |
| Rwanda   | 111   | 2.5                         |
| Tanzania | 94  | 2.9                         |
| Uganda   | 110   | 2.7                         |

Source: Chikwanha, 2007

**Table 4: State currency to US dollar exchange rate**

| Indicator                               | States      | 2004  | 2005  | 2006  | 2007  | 2008  |
|---|-------------|-------|-------|-------|-------|-------|
| End of year (31 <sup>st</sup> December) | Burundi     | 1     | 997.8 | 1     | 1     | 1 235 |
|   | Tanzania    | 109.5 | 1     | 002.5 | 119.5 | 1     |
|   | Uganda      | 1     | 165.5 | 1     | 1     | 280.3 |
|   | Kenya       | 043.0 | 1     | 261.6 | 132.1 | 1     |
|   | Rwanda      | 1     | 816.9 | 1     | 1     | 949.2 |
|   | East Africa | 738.6 | 72.4  | 741.4 | 697.3 | 77.7  |
|   |             | 77.3  | 553.9 | 69.4  | 62.7  | 558.9 |
|   |             | 567.6 | -     | 549.6 | 544.2 | -     |
|   | -           | -     | -     | -     | -     |       |



**Table 4: State currency to US dollar exchange rate (suite)**

| Indicator      | States      | 2004  | 2005  | 2006  | 2007  | 2008  |
|----------------|-------------|-------|-------|-------|-------|-------|
| Annual average | Burundi     | 1     | 1     | 1     | 1     | 1     |
|                | Tanzania    | 100.9 | 081.6 | 029.0 | 081.9 | 185.7 |
|                | Uganda      | 1     | 1     | 1     | 1     | 1     |
|                | Kenya       | 089.1 | 129.2 | 253.9 | 244.1 | 206.3 |
|                | Rwanda      | 1     | 1     | 1     | 1     | 1     |
|                | East Africa | 810.8 | 780.7 | 831.5 | 723.5 | 720.4 |
|                |             | 79.2  | 75.5  | 72.1  | 67.3  | 69.2  |
|                |             | 575.0 | 557.0 | 548.0 | 547.0 | 547.6 |
|                | -           | -     | -     | -     | -     |       |

Source : EAC, 2010

**Table 5: Real GDP, Million US dollars**

| State       | 2004   | 2005   | 2006   | 2007   | 2008   |
|-------------|--------|--------|--------|--------|--------|
| Burundi     | 628    | 703    | 884    | 858    | 837    |
| Tanzania    | 9 625  | 9 968  | 9 581  | 10 154 | 12 395 |
| Uganda      | 7 437  | 8 320  | 8 659  | 9 944  | 10 875 |
| Kenya       | 13 948 | 15 514 | 17 260 | 19 842 | 19 668 |
| Rwanda      | 1 504  | 1 669  | 1 790  | 1 973  | 3 682  |
| East Africa | -      | -      | -      | -      | -      |

Source: EAC, 2010

**Table 6: Macroeconomic stability (GDP figures for 2007, estimates by IMF staff)**

|                        | BU   |      | KE   |      | RW   |      | TA   |      | UG   |      |
|------------------------|------|------|------|------|------|------|------|------|------|------|
|                        | 2006 | 2007 | 2006 | 2007 | 2006 | 2007 | 2006 | 2007 | 2006 | 2007 |
| GDP (US Billion)       | 0.9  | 1.0  | 22.8 | 29.3 | 2.9  | 3.3  | 14.2 | 16.2 | 9.5  | 11.2 |
| Population (Million)   | 7.6  | 7.7  | 34   | 35   | 9.2  | 9.4  | 38.2 | 39   | 29.8 | 30.9 |
| GDP Growth (%)         | 5.1  | 3.6  | 6.1  | 6.9  | 5.4  | 6.2  | 6.7  | 7.2  | 5.7  | 6.5  |
| Inflation (%)          | 2.8  | 8.3  | 14.4 | 9.8  | 8.8  | 9.4  | 7.2  | 7.0  | 6.6  | 6.8  |
| GDP per Capita (US \$) | 120  | 128  | 670  | 854  | 311  | 353  | 371  | 415  | 318  | 363  |

Source: EAC, 2010

Economically, the EAC Partner States have all embarked on comprehensive reforms that seek to reduce government intervention in the economy. As highlighted in the tables above, EAC countries have had a somehow stable macroeconomic environment, marked by steady economic growth.

**Tableau 7: EAC Development indicators, 2008**

| Country  | Population (million) | Human development index | Ranking (out of 117 countries) | Adult literacy (% ages 15 and >) | Life expectancy at birth (yrs) |
|----------|----------------------|-------------------------|--------------------------------|----------------------------------|--------------------------------|
| Burundi  | 8,09                 | 0,384                   | 169                            | 59,3                             | 42                             |
| Rwanda   | 10,5                 | 0,450                   | 158                            | 64,9                             | 44,2                           |
| Uganda   | 27,8                 | 0,502                   | 145                            | 66,8                             | 48,4                           |
| Kenya    | 33,5                 | 0,491                   | 152                            | 73,6                             | 47,5                           |
| Tanzania | 37,6                 | 0,430                   | 162                            | 69,4                             | 45                             |

Source: EAC, 2010

## *V. Empirical framework and findings*

### *V.1. Data, Variables and sample characteristics*

We use both real and nominal variables for the analysis of cross-country convergence. The focus of the analysis is on real income per capita, real GDP, real GDP growth, inflation, etc.

For time series evidence, we limit the analysis to inflation, monetary aggregates and GDP using annual data for the period running from 1980 to 2009. Both the choice of variables and the period of analysis are dictated by the availability of adequate and consistent data. Since all countries in the EAC use a monetary targeting framework, we use base money as a proxy for monetary policy, since it reflects actions being taken by the central bank to affect reserves in the banking system, inflation and broad money (M2) to reflect the outcome of monetary policy. The time series evidence thus largely concentrates on monetary policy convergence and GDP convergence.

### *V.2. Cross-country convergence*

We examine cross-country convergence across all the five EAC countries. When all the EAC countries are considered, the standard deviations of most of the variables evolve non-linearly over time. Apart from the real GDP per capita and the fiscal deficit which evidenced an increasing dispersion especially, and inflation, which has shown a decreasing dispersion, it is difficult to identify a general pattern of convergence or divergence.

The real GDP per capita displays a general tendency of divergence. The dispersions of real GDP per capita in purchasing power parity prices, evolve non-linearly over time, although there has been a general tendency of convergence since 2000's.

Real investment trends in the EAC countries displayed standard deviations evolving non-linearly over time. Real GDP growth rates have also evolved nonlinearly over time.

Inflation rates seem to have a converging tendency since the 2000's, but have they evolved non-linearly over time. The national savings rates have also largely followed a similar trend. The current account deficits have evolved non-linearly over time but with a general tendency of divergence since the 2000's. The fiscal deficits have also evolved nonlinearly over time, but on average largely displaying a tendency of divergence.

Using the Elliott, Rothenberg and Stock (1996) unit root testing procedure, we found out that convergence in base money growth is detected for Tanzania, Uganda and Rwanda, while for broad money growth; convergence is detected in only Kenya. On the other hand, inflation convergence is detected in Kenya, Burundi and Rwanda. These results suggest that there is some partial convergence of monetary policy variables taking place in the EAC.

## *VI. Concluding Remarks and the way forward*

### *VI. 1. Main conclusions*

Efforts are being made to make the EAC members countries open up their respective economies towards more openness and deepen their integration. Amongst other issues to be addressed in this integration process, the matter of macroeconomic convergence and policy harmonization are set as main components and priorities of the integration process success. The analysis and tests conducted revealed that within the EAC, the macroeconomic environment is somehow stable and converging to improved levels. Moreover, the governance environment revealed to be still very low and the economies of the EAC have been found still highly dependent to external foreign aid.

This paper has examined the extent of macroeconomic convergence in the EAC countries using three approaches: Cross-country dispersion, time series analysis and panel unit root tests. The evidence emanating from the analysis is that there is some partial convergence of macroeconomic indicators in the region.

This evidence is however, incoherent, being established only for some (but not all) countries/indicators. In particular, there is some evidence of convergence of monetary policy variables, while for fiscal policy variables; there is absolutely no evidence of convergence. For other macroeconomic variables, the evidence is at best mixed. This calls for further policy actions.

These results have important policy implications for the EAC countries. First, the EAC countries need to increase policy coordination and harmonization so as to establish a coherent policy environment in the region. They should also continue with the macroeconomic stabilization objective so as to further enhance macroeconomic stability.

Second, the macroeconomic policy convergence and harmonization framework needs to be strengthened. This calls for the design of effective monitoring and enforcement mechanisms. Furthermore, the EAC countries need to integrate the Macroeconomic convergence benchmarks into the national planning and decision-making frameworks.

## *VI. 2. Policy Recommendations and Suggestions*

Some policy implications and recommendations have been drawn from these analyses:

- ❖ The EAC secretariat and head of states should concentrate more at implementing common and shared targets in terms of policy convergence and therefore, the EAC member states would achieve the MDGs and the Macroeconomic Convergence intended to help in successful monetary union to come ;

- ❖ Economic growth and wealth creation should be set as priorities of the integration process;
- ❖ Advancements towards a common market will surely improve the integration process and generate the expected regional institutions which need to be more transparent and allow good governance development within the region;
- ❖ A successful monetary union is achievable upon the sine qua non condition of real and monetary convergence.

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