THE IMPACT OF REGIONAL INTEGRATION ON PER CAPITAL INCOMES OF ECOWAS COUNTRIES

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Abstract
This paper investigates regional integration and its impact on per capita income convergence or divergence of ECOWAS countries and the formation of income clubs in selected years between 1980 and 2015. Using World Bank classification (2002, 2015) to identify ECOWAS countries' income groups and sigma convergence to establish convergence or divergence, the paper presents the evidence that ECOWAS countries belong to different income groups. The sigma convergence using standard deviation shows divergence in incomes while the coefficient of variation shows no clear tendency of convergence or divergence. Thus, there has been limited progress and prospects of ECOWAS integration process despite the importance of the concept to foster economic cooperation in the sub region. It is recommended that common policies be adopted in ECOWAS and in particular, on trade and investment which are critical indicators in the formation of regional integration and catalysts for income convergence, regional growth and economic cooperation.

Keywords: Regional Integration, Income Convergence, Income Divergence, Income Clubs, Economic Growth

Introduction

One notable trend in the global economy in the past decades has been the accelerated movement toward regional economic integration. The ultimate goal for such movement was to form regional and sub regional blocs in order to better integrate into the world economy given the small size of their national economies and further enhance growth and development. In assessing regional integration in Africa, ECA (2006) identified the various objectives driving African countries to join regional economic communities (RECs) within the continent. Although these objectives vary from country to country, the growth goal is fundamental to each REC member and the desire to generate income growth dynamics through integration is common across the countries. This has motivated theoretical and empirical discourses on regional integration as a possible catalyst for income convergence.

In West Africa, this trend also led to the formation of the Economic Community of West African States (ECOWAS) in 1975 with the purpose of raising the standards of living of its peoples, maintaining and enhancing economic stability, fostering relations among member states and contributing to the progress and development of the African continent among other objectives. It is an accepted fact that there is poverty between and within countries in the West African sub region occasioned by low level of income and poor economic development. Thus, these objectives to a large extent are influenced by the income distribution among groups and have motivated several studies as a means of poverty reduction and conflicts in society over the years. For instance, Rassekh (1998) posited that 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. Bourguignon and Morrison (2002) and Firebaugh (1999) also argued that differences in per capita income across countries play a critical role in explaining levels of poverty and inequality across the world's population. Hence, to the extent that convergence occurs, it suggests that, at least over long time horizon world inequality will diminish

Thus, income convergence among ECOWAS countries with divergent per capita incomes and growth paths is one fundamental objective. To this end, ECOWAS, through various revisions of the treaty had made attempts to achieve this objective and in particular, the three complementary dimensions of convergence: harmonious treatment of economic shocks, harmonized economic policies and convergence of per capita incomes. To achieve its aims and objectives, ECOWAS has succeeded in establishing a five-band Common External Tariff (CET), harmonization of Customs documents, regulations and formalities, harmonization of the convention on Mutual Assistance in Customs Matters among others.

In spite of the importance of the issue for the sub region, studies of income distribution and convergence for the ECOWAS are few. The results from the few income convergence studies of ECOWAS however, are also mixed, varying according to the period and countries included, and to the method of analysis. The earlier study of Ghura and Hadjimichael (1996) found that there is evidence of conditional convergence of per capita income in the group of 29 Sub-Saharan African countries during the 1981-92 periods with a slow rate. On the other hand, using time series stochastic convergence, McCoskey (2002) showed that income disparity in the region at large did not show any tendency to fall overtime. These studies show that there are differences in their per capita incomes.

The thrust of this paper therefore is to examine per capita income divergence or convergence and the formation of income clubs among member countries of ECOWAS as a sub regional bloc in its 41 years of existence. This paper starts with a brief introduction followed by statement of problem, review of relevant literature, theories on convergence, divergence and regional integration. Methodology, findings, recommendations and conclusion followed the previous sections.

Literature review

Regional integration

The literature on regional integration dates back to at least Viner (1950), who suggested that the effects of regional integration on trade can be either trade creating or trade diverting. Dodoo (1984) noted that consideration of a mutually acceptable distribution of benefits resulting out of any particular economic grouping within the game–theoretic framework gives an indication of the potential economic viability of that grouping. Rivera- Batiz and Romer (1991b), in their study concluded that the intensification of world integration would lead to incentives and would avoid redundancies in industrial investigation. Moreover, they came to the conclusion that compared to the residuals in closed economies; residuals of the integrated economy had access to a wider base of technological knowledge. Cappelen, Fagerberg, and Verspagen (2001) found in the EU (European Union) that regional integration and financial support may have succeeded in improving the EU's regional policy of generating growth in poorer regions and contributing to greater equality in productivity and income in Europe.

The effect of European integration on long-term growth of the current EU member states is studied by means of panel data methods. The length of EU membership is found to have a significant positive effect on economic growth, which is relatively higher for poorer countries (Crespo-Cuaresma, Dimitz, and Ritzberger-Grunwald 2002). Szekely and Watson 2007 found that laggards among the EU like Greece, Portugal, and Spain have converged towards more developed EU members due to integration. That real convergence in the recently acceded EU member states is taken place is a fact confirmed by a recent study conducted by the European Commission.

In Asia, Jayanthakumaran, K and Verma, R (2008) demonstrated that multilateralism and regionalism are complementary and that regional income convergence is likely with a like-minded, committed regionalism that includes cultural and geographical links. Berthelon (2004) introduced a

new measure of regional integration by interacting country memberships to a regional grouping and the partners' share of world GDP, which allows capturing differentiated effects depending on the size of the partners. His results indicated that regional integration positively influenced growth.

The benefits of regional integration may not be evenly spread amongst members of a region. Ethier (1998) suggests that smaller countries may have incentives to form a region in order to attract investment away from other members, particularly extra- regional FDI. This may be the case when regional tariff preferences allow foreign investors to set up beachhead locations in a small (or poor) country to serve the entire regional market. Venables (1999) on the other hand argues that South-South (lower income countries) agreements will tend to lead to divergence of income levels of members states, while North-North agreements may lead to convergence of income levels.

Velde and Bezemer (2006) found that membership of a region as such is not significantly related to inward FDI, but crucially, when a country is a member of a region with a sufficient number and level of the trade and investment provisions (e.g. describing treatment of foreign firms, large trade preferences), this will help to attract more inward FDI to the region. Important for the debate on convergence and divergence within regions, they find that the relative size of a country's economy within a region matters for attracting additional FDI, as does a central location in relation to the largest market. Countries that have larger economies or are geographically closer to other, larger countries within the region can expect a larger increase in FDI as a result of joining than those of countries that have smaller economies or are located in the periphery.

Regional integration and growth convergence

One fundamental question that is often asked in the economic literature on integration is to know whether economies tend to converge towards the same levels of income or production per capita. In order words, whether there exists a mechanism that allows a given country to catch up with the levels of per capita income of a more developed economy. In this direction, convergence has been empirically tested for countries in the world, regions in Europe, Africa and many other economies.

Barro and Sala-i-Martin (1995), Jones (1995), Mankiw, Romer and Weil (1992) and others emphasize that a number of economic forces can give rise to convergence: diminishing returns to capital within each country or region, spatial capital mobility, spatial labour mobility, and the diffusion of innovations across countries and regions. Baumol, Blackman and Wolf (1989), argue that if one looks separately at low income, middle income and high income countries, there is evidence of convergence within each group.

Jones (1997) provides evidence on persistence and stratification on the formation of convergence clubs and on the dynamics of the income distribution between 1960 and 1990. Dufrenot and Sanon (2005) also test the process of ὼ-conditional convergence of per-capita GDP in the same grouping between 1985 and 2003 under the assumption of parameter heterogeneity and contrary to Jones (2002) they find no evidence of real conditional convergence. These authors conclude that in ECOWAS, member states individually follow their long-run growth paths. In this respect they recommend active coordination of policies to reduce the structural heterogeneity.

Udah and Nyong (2011) investigates the prospects for systematic and robust tendency for convergence of real per capita income within ECOWAS member states for the period 1969-2010 using a battery of econometric tests. The results do not reveal the presence of any absolute or conditional ὼ-convergence in income per capita nor any diminution of income disparity in the sub region corresponding to α-convergence**.** The paper recommends more proactive economic policy coordination. A greater degree of political commitment and organizational coherence within government is suggested as well as greater level of national consensus in support of the policies being pursued for economic integration in ECOWAS.

McCoskey (2002) investigates the convergence properties of 37 Sub Saharan African Countries using both panel unit and panel cointegration test of McCoskey and Kao (1998). No evidence of time series stochastic convergence in per capita GDP was found across the whole sample even for Southern African Development Community (SADC) and the Southern Africa Customs Union (SACU). Paap, Franses, and Van Dijk D. (2005) examines the question whether or not sub-Saharan African countries have lower average growth rates in real per capita GDP than countries in Asia, Latin America and the Middle East over the period 1960-2000. The study found that many Eastern and Southern African countries belong to the slow growth cluster, and that none of them belong to the high growth cluster.

Mankiw, Romer and Weil (1992), in their study of convergence in 98 countries over a 25-year period, made an assumption of a common rate of technological progress. This has been criticized by Romer (1994) and Grossman and Helpman (1994). These 'new growth' theorists have pointed out the failure of per capita output to equalize across first and third world economies. They showed the failure of growth rates in less developed countries to exceed those of advanced industrialized countries as evidence that there is little observable tendency for poorer economies to catch up to richer ones. Pritchett, (1997) asserted that during the period 1960-90, poorer countries, especially in Africa, did not on average narrow the income gap with the richer economies. He showed that the last 150 years have seen divergence, 'big time' across nations. The ratio of GDP per capita of the richest to the poorest country increased from 8.7 in 1870 to 38 by 1960 and to 45 by 1990.

There are several explanations believed as to why regional integration is beneficial to a country's economic growth. Firstly, regional integration encourages capital and labor mobility within the region, which may lead to increase in output and labor productivity in the region. Secondly, trade agreements in some form of FTA or Customs Union benefits all countries involved through the increased volume of commodity traded within the region. Thirdly, regional integration helps diffusion of technology by the exchange of goods, ideas and knowledge which may lead the firms to develop technologies that are innovative on a global scale and not only new to the domestic market (Rivera- Batiz R. and Romer 1991b).

Regional integration and economic cooperation apparently benefited countries in European Community, East Asia and some countries in Latin America. Sohn and Lee (2006) found not only there is conventional beta-convergence among countries that established FTAs but also found that the trade liberalizing countries exhibit an accelerated income convergence in the sample of eight FTAs. For European countries, the empirical evidences of income convergence are found for example in Mankiw et al. (1992) and Ben-David (1993). Ben-David examined the episodes of major postwar trade liberalization within specific groups of countries and found a strong link between the timing of trade reform and income convergence among countries (Ben-David 1996). Furthermore, European integration has resulted in significant growth improvements on its member countries more likely through technology transfer mechanism (Henrekson et al. 1997; and Okko 2003).

In East Asia, Sato and Zhang (2006) observed that its remarkable sustained economic growth was accompanied by the outward looking, export-oriented development strategy and its spontaneous and rapid regional integration. The East Asian integration, however, is more of market driven phenomena and has occurred in the absence of formal institutional framework. They found that the East Asian countries exhibit some business cycles synchronization and co-movements in real output variables in both short run and the long run, which may be interpreted as an implication of convergence in output. The income convergence in the ASEAN and East Asian countries was supported by Heng and Siang (1999). Camarero, Flores and Tamarit (2006) found productivity convergence in the Mersocur countries. They explained that this evidence of productivity convergence is mainly the result from higher integration of the economies, through increased trade

flows among the member countries. Similarly, Holmes (2005) found a strong evidence of convergence among the member countries of the Central American Common Market (CACM) in Latin America.

Income groups

The issue of income inequality has received considerable policy attention over time. The ILO (2008) in its report posited that middle income groups are important for obvious economic reasons as they contribute substantially to economic growth through higher demand and investment. The report further stated that in lower middle income countries, the growing number people in the vulnerable "floating group" mirrors the decline in the number of poor people, and represents their positive progress out of poverty. In low income economies, the number of poor increased and in upper income economies, the increase in the middle- income group outpaced that of the floating group. Important differences were also observed in the trends in middle-income groups by regions: with the most striking expansion in Asia and Latin American economies, and more heterogeneous growth in African economies. The differences were explained by growth, employment performance and social policies.

ILO (2004) in its report stated that the income gap between the world's richest and poorest countries has widened in recent years. Only 16 developing countries had growth of more than 3 per cent a year between 1985 and 2000 while economic output declined in 23 developing nations. In its report the UNDP (2013) observed that households in various countries and regions witnessed periods of increasing and decreasing inequality during the period of review. Similarly, in the same regional and income grouping, countries had different trajectories, resulting in some cases in a net increase in income inequality and in some cases in a net decrease.

The identification of subgroups of countries that obey a common growth model corresponds to the longstanding idea that there may be convergence clubs for aggregate economies. As very well described in Galor (1996), there are good theoretical reasons why convergence clubs should characterize cross-country data. Dowrick S., Nguyen D (1989) and Mankiw, Romer and Weil (1992) demonstrated that convergence seemed to hold among the richest countries alone, specifically those countries in the Organization for Economic Cooperation and Development. Islam (1995) confirmed this evidence even by using a different econometric methodology using panel data.

Durlauf S., and Johnson P.A (1995), allude to theoretical models of multiple equilibrium and observe that convergence in large samples (global convergence) does not hold (or proves weak) because countries belonging to different equilibrium (or regimes) are lumped together. The proper thing according to them, is to identify country groups, whose members share the same equilibrium, and then to check whether convergence holds within these groups (local convergence). The authors use initial levels of income and literacy levels to group the countries and find the rates of convergence within the groups to be higher than in the whole sample. Also, estimated parameter values differ significantly across the groups, particularly when these groups are determined endogenously. The authors interpret the observed heterogeneity as indicative of the presence of different regimes.

Generally, in many empirical studies, however, it is established that income convergence does not occur in a wider group of countries that are heterogeneous. Income convergence is likely to occur as the empirical studies have shown in a more homogenous group of countries, hence, the existence of convergence clubs.

Theories of regional growth:

Convergence theory

Most early theories of regional economic growth were spatial extensions of neoclassical economic theories of international trade and national economic growth. Together, these early neoclassical theories predict that over time, differences in the price of labor and other factors across regions will diminish and tend toward convergence. This prediction has generated considerable controversy among theorists, particularly in light of the apparent tendency toward international divergence between the per capita incomes of industrialized nations and less developed nations. Early theories of regional economic development emerged out of this controversy and can be distinguished from one another in terms of differences in the theoretical predictions regarding interregional convergence or divergence in per capita incomes and factor prices over time.

Convergence theory is based on the neoclassical growth model (Solow, 1956; Swan, 1956) and implies a tendency over the long term to level the rate of income growth or that of per capita production in different geographical zones. In other words, there is convergence when a 'poor' economy tends to increase more rapidly than a 'rich' economy, in a way the 'poor' country in the long term will catch up with the level of income or per capita production of the 'rich' country. The model suggests that economies with similar rates of population growth and technological progress should exhibit similar levels of per capita income in the long run, regardless of their initial capital stock. During the adjustment to steady state, countries with a lower capital stock will grow faster than those with higher capital stock. This is known as the convergence hypothesis.

Theories of regional economic divergence

The concept of convergence, even in its weaker formulation as long-run constant per capita income growth rates, or conditional convergence, has come under attack from many sides. One criticism is largely empirical. The field of development economics emerged in the post–World War II period in recognition of the growing economic disparities between industrialized nations and less developed countries (LDCs). Although empirical studies such as Williamson (1965) supported a trend toward economic convergence at the regional scale, at least in the United States, critics pointed to the persistent poverty in most LDCs as evidence that some regions of the world were not conforming to the predictions of the neoclassical growth models.

Another criticism focuses on the unrealistic assumptions underlying neoclassical growth theories, particularly those having to do with the assumption of constant returns to scale, zero transportation costs, identical production technologies across regions, perfectly competitive markets, identical preferences across regions, and the assumption of homogeneous labor and capital inputs. Although there have been attempts to incorporate more realistic assumptions into extant models of exogenous growth, most neoclassical theories still tend to generate predictions of conditional convergence even when labor or capital is heterogeneous across space (Barro and Sala-i-Martin 1999).One response to the convergence critique has been to directly incorporate a prediction of divergence into extant theories of regional economic growth among which are the new endogenous theories.

These theories modify assumptions of the exogenous growth models to generate a range of economic predictions, some of which tend toward economic divergence across regions. However, endogenous growth theory stays true to the neoclassical tradition of general equilibrium modeling. The roots of endogenous growth theory can be traced to early work by Ramsey (1928), Cass (1965), and Schumpeter (1961). Models by Cass (1965) adopt the utility function proposed by Ramsey to incorporate a savings rate that is determined by household choice, a feature that makes savings rates endogenous to the growth model. Under certain conditions, the Ramsey-Cass-Koopmans model

predicts conditional convergence. If the savings rate rises with the capital/labor ratio, then the model predicts a slower speed of convergence than the Solow (1956) and Swan (1956) model.

Other variants of the endogenous growth theories make technological change and innovation endogenous to the model. Schumpeter (1961) was the first to point out that the process of innovation is largely a race for monopoly control over the stream of rents from new innovations, which are essentially public goods once introduced. Arrow's (1962) "learning-by-doing" framework is within the Schumpeterian tradition by arguing that firms can gain monopoly power over new knowledge through experience in internal production. Innovations are modeled as declining costs that are functions of a firm's previous investments. If a firm can internalize these costs, they can gain a competitive advantage.

Romer (1986) relies on Arrow's learning-by-doing framework to incorporate technical change as an endogenous parameter within a competitive equilibrium model of economic growth. Romer's model is based on the crucial assumption that knowledge exhibits increasing marginal productivity characteristics. In other words, the production of consumption goods is modeled with a production function that includes the stock of knowledge and other inputs. This production function assumes increasing returns to scale in the production of consumption goods, but decreasing returns to scale in the production of new knowledge, a feature that ensures mathematical tractability. In Romer's model, per capita output may be persistently slower over time in some countries than others; thus, the model departs from the standard neoclassical exogenous growth model by predicting divergence in regional growth rates. Furthermore, the equilibrium outcome is not necessarily pareto optimal. Other than an early regional growth model with agglomeration economies and endogenous technical change proposed by Harry Richardson (1978), models of endogenous growth have only recently begun to consider the role of space and geography in shaping patterns of regional growth and decline. Nijkamp and Poot (1998) extend the Romer-Arrow framework to allow for spatial considerations such as factor mobility, the spatial diffusion of innovations, and interregional trade. The authors demonstrate that when these spatial interactions across regions are incorporated into a regional endogenous growth model, the empirical implications of the model are indeterminate. Depending on the specification of the model, absolute convergence, conditional convergence, and divergence are all theoretical possibilities.

An exposition has been made in the previous sections to discuss the major theories relevant in this study. These include theories of convergence and divergence. The study therefore follows an eclectic approach. Searching through the literature, empirical investigation on the extent of integration in ECOWAS on per capita income equalization is still scanty. This study therefore is designed to fill this gap.

Methodology

Two main approaches are used to quantify the extent to which the growth process is leading to convergence or divergence in regional performance over time. The traditional approach is referred as to "sigma" convergence and the neo-classical approach known as the "beta" convergence. Among measures of "sigma" convergence is the dispersion of real per capita income or product between regions based on the standard deviation of the cross-section series. When the standard deviation tends to fall over time, such a result indicates that the differences of the per capita income between regions in absolute terms decrease with the passage of time, which is an evidence of convergence. On the other hand, divergence implies that the standard deviation of the series in terms of per capita income increases over time. In the case where the standard deviation does not show any clear tendency, but instead, increases or decreases alternatively, we can say that a mixed process of convergence and

divergence is taking place. An alternative way is to use the coefficient of variation i.e., by dividing the standard deviation by the mean of the sample

In this study we introduce ECOWAS countries GDP per capita incomes to examine convergence or divergence and whether they belong to the same convergence club. The analysis is done in two phases. We first examine the identification of income groups and secondly to establish the existence of convergence or divergence using the standard deviation and the coefficient of variation. The coefficient of variation σ developed by Sala-i-Martin (1995) is determined by the following formula

$$\sigma_t = \frac{\sqrt{(\sum N_{t=1} (y_{it} - \tilde{y}_{it})^2/(N-1)}}{\tilde{y}}$$

Where

- $\sigma_t = \sqrt{(\sum N_{t=1} (y_{it} - \tilde{y}_{it})^2/(N-1)}$ represents the standard deviation, namely a measure of the dispersion where N is an indicator of the number of observations within the sample
- $\tilde{y}$ represents the average of that certain series.

This may be systemized as follows: $\sigma_t + T < \sigma_t$. When the variance diminishes convergence process takes place and when the variance grows, divergence process takes place $\sigma_t + T > \sigma_t$.

Presentation of findings

Income groups of ECOWAS

Much of the discussion of development has implied a primary interest in distribution between large groups of countries, labeled rich and poor, developed and underdeveloped, and so on. An adequate measure of world inequality has, at least, to weight the observed levels of income by population. Based on per capita income level, World Bank (2002) and ECOWAS Statistical Bulletin (2008) categorized Countries into four groups namely: very low, low, middle income and high income groups. Very low income countries are defined as having a per capita income of $600 or less; low income countries having income between $601 and $1,200; middle income countries having income between $1,201 and $2,400 and high income countries having income between $2,401 and above.

Fig 1: Per Capita Income Groups of ECOWAS Countries 1980-2015

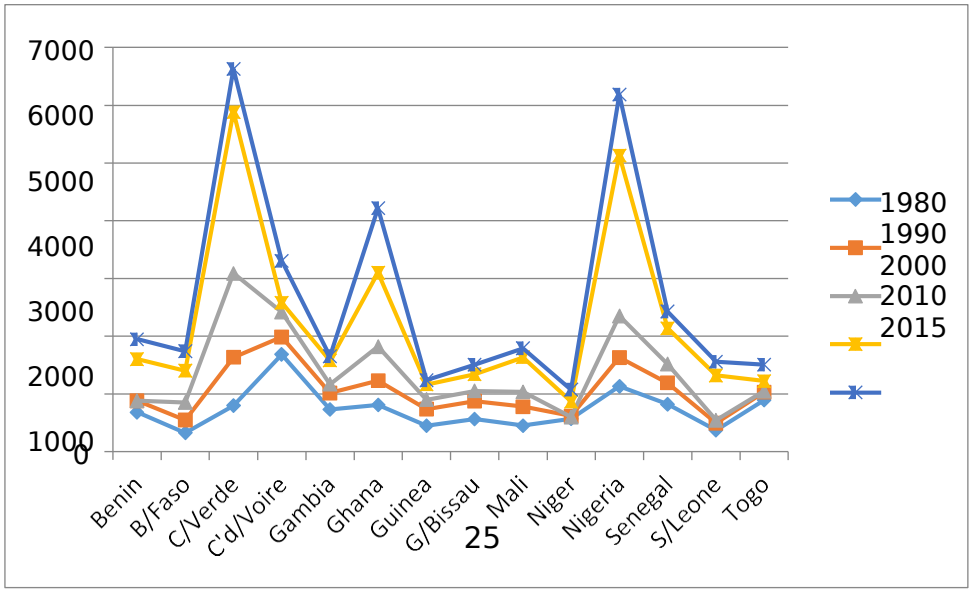

Figure 1 shows the number of countries that belong to the various groups between 1980 and 2015. In 1980 six countries were in the group of very low incomes of $1-600,. These include Burkina Faso, Guinea, Guinea Bissau, Mali, Niger and Sierra Leone. In 1990 and 2000, the number dropped to two countries each year and includes Burkina Faso and Sierra Leone (1990) and Sierra Leone (2000). In the succeeding years, none of the countries were found in this group.

In the low income group ($601-1200), five countries were found in 1980 (Benin, Cape Verde, Ghana, Nigeria and Togo). In 1990, Benin, Gambia, Guinea, Guinea Bissau, Niger, Senegal and Togo were found in this group while in 2000, Benin, Burkina Faso, Gambia, Guinea, Guinea Bissau, Mali and Togo were in this group. In 2010, Guinea and Niger were in this group and no country was found in this group in 2015.

Similarly, the middle income group ($1201-2400) was Nigeria and Cote d'Ivoire in 1980 and in 1990, the number increased to four- Cape Verde, Cote d'Ivoire, Nigeria and Ghana. In 2000, Nigeria and Ghana were the only countries in the categorization while in 2010, the number increased to six to include Benin, Burkina Faso, Guinea Bissau, Senegal, Sierra Leone and Togo. In 2015, seven countries were in this group and include Benin, Burkina Faso, Gambia, Guinea, Mali, Sierra Leone and Togo. Between 1980 and 1990, none of the ECOWAS countries was among the high income group and only five countries (Cape Verde, Cote d'Ivoire, Nigeria, Ghana and Senegal) entered this group from 2000 to 2015.

In the World Bank (2016) classification, countries are grouped as low, lower-middle, upper-middle and high income groups. Low income countries are defined as having a per capita income of $1045; lower-middle income countries having income between $1046 and $4125; upper-middle income countries having income between $4126 and $12,745 and high income countries having income between $12,746 and above. In this classification, only Nigeria, Ghana and Cape Verde are in the upper-middle group while the rest are in the lower-income group.

Convergence or divergence

By looking at the dispersion of income, one can make an observation whether the disparity of income among the member countries has tendency to fall over time. If there were convergence, the expectation would be that the standard deviation or the dispersion of the per capita incomes would be reducing over time.

SIGMA CONVERGENCE OF ECOWAS COUNTRIES PER CAPITA INCOMES

	1980	1990	200	2010	20
Benin	683.9	881.1	881.	1604.1	1947
B/Faso	326	545.7	852.	1400.4	1738
C/Verde	797.7	1633.6	3088.	5883.4	6628
C'd/Voire	1684.4	1986	2416.	2578.5	3303
Gambia	729.8	1015.3	1166.	1577.2	1650
Ghana	807.8	1228.2	1818.	3101	4215
Guinea	448.3	736.5	902.	1161.5	12
G/Bissau	564.1	875.4	1052.	1338.4	1505
Mali	449.9	777.7	1038.	1634.3	17
Niger	569.6	616.7	599.	866	1074

Nigeria	1131.	1630.	2351.	5127.	6184
Senegal	82	1191.	1517.	2134.	2425
S/Leone	369.	494.	545.	1319.	15
Togo	890.	1028.	104	1221.	1505
Mean	**733.871**	**1045.84**	**1377.13**	**2210.**	**2626.0**
SD	**353.**	**443.**	**763.**	**1522.**	**1810**
σ_t	**0.4**	**0.4**	**0.5**	**0.6**	**0.**

Source: Author's Computation

Table 1 shows per capita incomes of ECOWAS countries between 1980 and 2015 and standard deviation. In 1980, the standard deviation was 353.2 while in 1990, the standard deviation was 443.2. In 2000, the standard deviation was 763.9 while in 2010 it was 1522.4. Lastly, in 2015, the standard deviation was 1810.3. The analysis shows that there is disparity of income among the member countries and the standard deviation increased in the series. The coefficient of variation diminished from 0.48 in 1980 to 0.42 t0 0.42 in 1990 and subsequently increased from 0.54 in 2000 and maintained the same level of 0.68 in 2010 and 2015 respectfully. This shows that there is no clear convergence or divergence taking place.

Fig2: STANDARD DEVIATION OF ECOWAS COUNTRIES

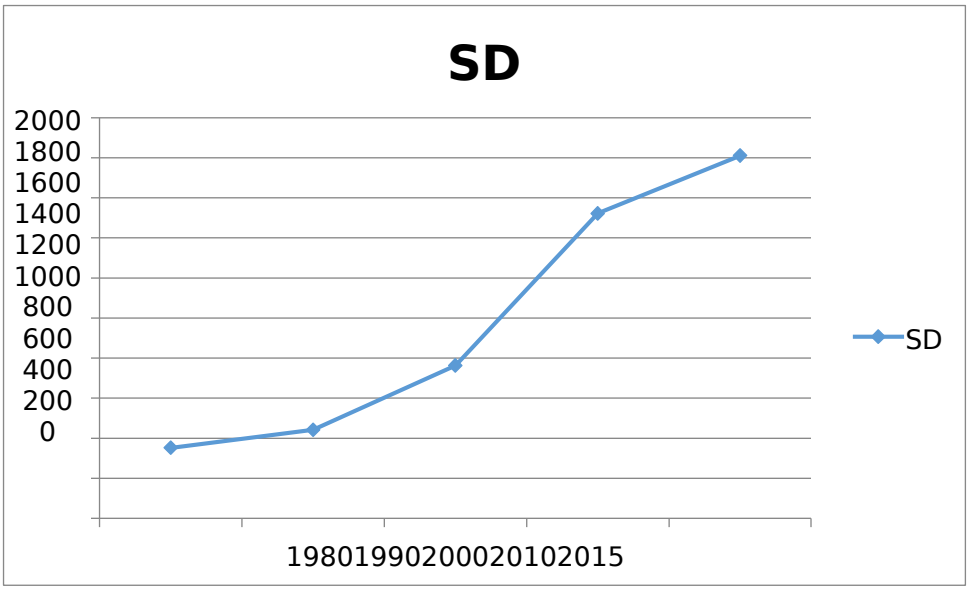

Figure 2 shows the plot of standard deviation. It is evident from the graph that apart from 1980 and 1990 which shows similar standard deviation, the standard deviation of the other years in the series in terms of per capita income increases over time. Thus, per capita incomes growth has been divergent. Therefore, membership in the sub regional body has not caused income convergence and do not belong to the same convergence club.

Summary of findings, recommendations and conclusion

Our analysis shows that per capita incomes of ECOWAS countries are divergent and these countries belonged to different income groups thus do not form convergence club(s). Also, the result of sigma convergence shows that there is increase in standard deviation and an evidence of economic divergence and supports earlier studies of economic divergence (Venables 1999, McCookey 2002 and Prichett 1997). The findings indicate that ECOWAS countries have not benefited from the process of integration or on the other hand ECOWAS integration has not caused per capita incomes to converge. It therefore implies that economic integration of this regional bloc is weak.

Recommendations

Economic integration is relevant and useful mechanisms by which developing countries can liberate themselves from their structural, economic and social dependency. Membership of a region as such do not mean development but only when a country is a member of a region with a sufficient number and level of trade and investment provisions. Therefore it is recommended that common policies that will increase trade and investment be encouraged in the sub region because these variables are critical for consideration in reaching agreement for economic integration.

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