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Can West African countries catch up with Nigeria? Evidence from smooth nonlinearity method in fractional unit root framework

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A B S T R A C T

West African countries have long promoted economic integration and income convergence. In recent trends, Nigeria has recorded the highest GDP per capita, and its neighbouring countries are yet to catch up with this economic growth. The paper examines the convergence of West African countries to catch up with Nigeria in terms of real per capita income. For the estimation, the paper employs fractional unit root approach to model simultaneously smooth breaks by means of flexible Fourier function in time. This approach is novel and has not been widely applied in the study of economic convergence across countries. The findings show that, while there is evidence of economic convergence and catching up in West Africa, only Ghana is likely to catch up with Nigeria in the region. As a policy recommendation, the West African countries should strengthen their human resource capacities through acquisition of relevant skills and technology transfers. This would promote income convergence and equitable economic growth.

1. Introduction

On May 28, 1975, some West African countries formed a regional group called Economic Community of West African States (ECOWAS) via the Treaty of Lagos. The constituting member countries are Benin, Burkina Faso, Cape Verde, Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal, and Togo. The common goal is to promote economic growth among member countries over time in different sectors including industries, resource management, technology and banking and finance through economic integration (Turkson, 2018). Economic integration contributes to income convergence among member countries (Campos et al., 2018).

Data presented in World Bank open data show that ECOWAS member countries are not homogenous in terms of their income performance. Nigeria alone accounted for 69% of the community's nominal GDP in 2017, followed by Ghana and Cote d'Ivoire with 8.4% and 7.2% respectively (ECOWAS Commission, 2017). In Table 1, the economic performances of each ECOWAS member country based on nominal GDP growth rate in 2017 are ranked. It shows that Nigerian's economy has progressed at 12.77%, recording the fastest

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Table 1
Nominal GDP growth (%) of ECOWAS.

Country Name	1990	2000	2010	2017
Benin	8.98	5.86	2.11	5.58
Burkina Faso	−0.6	1.82	5.37	6.74
Cabo Verde	0.69	14.28	1.47	3.89
Cote d'Ivoire	−1.1	−2.07	2.02	7.8
Gambia, The	3.56	5.5	6.53	3.5
Ghana	3.33	3.7	7.9	8.51
Guinea	4.32	2.5	4.82	8.25
Guinea-Bissau	6.1	5.43	4.61	5.92
Liberia	−51.03	28.62	6.1	2.45
Mali	−2.5	−0.06	5.41	5.3
Niger	−1.28	−1.41	8.37	4.89
Nigeria	12.77	5.32	7.84	0.81
Senegal	−0.68	3.19	4.18	6.79
Sierra Leone	3.35	6.65	5.35	4.16
Togo	−0.24	−0.78	4	5.57

Source: World Bank Open Data

rate of growth in 1990 as compared to other member countries. Despite the remarkable rate in the earlier period, the economy has shown a weak sign of growth rate at 0.81% only in 2017, as the country has been experiencing its worst recession in recent times. A comparison between member countries demonstrates the effectiveness of ECOWAS in stimulating income convergence among them, especially in recent years. For instance, Ghana, which is reported to have grown her nominal GDP by 3.33% in 1990 has become the fastest growing nation in 2017, recording a growth rate of 8.51% for that year. As most of the other member economies continue to grow, if the current trend continues, there may be economic convergence with respect to Nigeria. Meanwhile, the wealth of an economy is relatively measured in terms of GDP per capita, that is, taking the population of such a nation into consideration.[1] Judging by nominal GDP level will mislead since the population that will chop up the output is not taken care of. Then, Table 2 presents the comparison of ECOWAS economic growth based on GDP per capita. Recall that Nigeria's nominal GDP grew at a rate of 0.81% in 2017, whereas her GDP per capita decreased by 1.77% in that year. In the same results table (Table 2), the economies of other member countries seem to be converging with that of Nigeria. Ghana, for instance, achieved 6.15% rate of growth in GDP per capita; the highest relative to other member countries in 2017.

Earlier studies have employed different definitions and methodologies to approach the hypothesis of convergence. Using the time series analysis approach, stochastic convergence checks whether permanent movements in one country's per capita income are related to permanent movements in another country's income. It examines the persistence of the differences in income level of the pair, and this is not expected to contain unit root for convergence to be achieved (Cunado et al., 2004). Thus, differences observed in the per capita income and in growth rates of countries concerned justify a deeper study on convergence, particularly in the case of West African

Table 2
GDP per capita growth (%) of ECOWAS.

Country Name	1990	2000	2010	2017
Benin	5.51	2.75	−0.72	2.72
Burkina Faso	−3.21	−1.03	2.24	3.7
Cabo Verde	−1.28	11.97	0.37	2.59
Cote d'Ivoire	−4.55	−4.34	−0.31	5.14
Gambia, The	−0.47	2.38	3.22	0.44
Ghana	0.54	1.17	5.22	6.15
Guinea	−0.35	0.7	2.51	5.52
Guinea-Bissau	3.61	3.52	2.03	3.32
Liberia	−50.23	21.93	2.43	−0.1
Mali	−4.3	−2.83	2.14	2.19
Niger	−4.29	−4.93	4.33	0.97
Nigeria	9.89	2.71	5	−1.77
Senegal	−3.66	0.7	1.23	3.83
Sierra Leone	1.85	3.7	2.92	1.94
Togo	−2.89	−3.67	1.24	2.98

Source: World Bank Open Data

[1] The GDP per capita is an important indicator of economic performance recommended by economist in making cross-country comparisons of living standards and economic wellbeing of people. It is computed by dividing the nominal GDP in current international currency like US dollars by the country's population in that year.