**International Journal of Economics, Commerce and Management**
United Kingdom ISSN 2348 0386 Vol. 13, Issue 1, Jan 2025

***https://ijecm.co.uk/***

# STRUCTURAL TRANSFORMATION AND ECONOMIC GROWTH IN CEMAC COUNTRIES: EVIDENCE OF THE CAUSALITY TEST

**Samuel Honoré NTAVOUA**, Ph.D
University of Yaoundé II, Cameroon
ntavoua@yahoo.fr

**Zenabou TOURERE**, Ph.D
University of Douala, Cameroon

**Yettehai HAYATOU**, Msc.
University of Yaoundé II, Cameroon

**Abstract**

*The objective of this article is to study the link between structural transformation and economic growth in the CEMAC zone. From the Hausman test, the Pooled Mean Group method was highlighted to test the hypothesis of the existence of the link. The results show that structural transformation and economic growth are cointegrated, and that there is a short-term relationship between these variables, vice versa. Indeed, the short-term increase in structural transformation of 1% leads, all other things being equal, to an increase in growth of 12.57% and the increase in short-term economic growth of 1%, ceteris paribus, leads to an increase in structural transformation of 0.00558%. It is therefore urgent and imperative for the CEMAC countries to become aware of the existence of this reciprocal link and to see to what extent further amplify the links; by further diversifying their production and exports, by developing new products in order to attract foreign investors with technologies to process these products locally before exporting them.*

*Keywords: Structural transformation, Sophistication index, Economic growth, Pooled Mean Group method*

## INTRODUCTION

After a prosperous period characterized by a sustained growth rate driven by the good performance of raw materials, the CEMAC countries are faced with the fall in raw material prices, which began in 2014. The heavy dependence of these economies on oil exports is one of the main reasons. Growth fell from 2.3% in 2013 to 0.2% in 2016. A decline was noted in Congo, Gabon, Equatorial Guinea and Chad. Foreign assets fell from 8,777.5 billion CFA francs at the end of 2013 to 3,079.8 billion CFA francs at the end of 2016 (-64.9%). The fluctuation of economic growth from one country to another leads us to think about the role of structural transformation in CEMAC countries. The Economic and Financial Reform Program (2016) and the Economic Commission for Africa (ECA) also recall the need to actively engage in the structural transformation of the economies of the sub-region and of the entire continent to demonstrate greater resilience. Thus structural transformation can be seen as the change in the sectoral composition of output (or GDP) and the sectoral type of labor employment as the economy develops. (ie as an increase in real GDP per capita)" (ECA and AU, 2011). As GDP per capita increases, the share of agriculture in GDP will decrease and that of industry and services will increase. In other words, we are witnessing a reallocation of resources from the non-productive sectors to the more productive sector or quite simply a migration of labor from the rural primary agricultural sector to the urban secondary industrial sector and the tertiary services sector ( ECA, 2013).

The disproportionate economic growth in the CEMAC countries is explained by the levels of structural transformation of these economies. The promotion of export diversification, likely to increase the production necessary for processing; productivity is encouraged with levels that vary from country to country. A situation that is due to the dual and heterogeneous nature of the CEMAC zone (Nguyen, 2017). Five out of six countries have not only oil resources but also natural resources. Cameroon remains at the head of the pack due to its greater diversification than the others. The CAR has no oil and experiences low export diversification. This clearly explains the contrasting nature of the evolution of economic growth in CEMAC.

These countries should not stop at export diversification alone, which is why, without ignoring, according to Kuznets (1966) and Kruger (2008), processing plays an important role in the development process. Conscious that it is not only necessary to produce and that it is necessary to transform, the CEMAC countries cannot register on the margins of the sophistication of products intended for export. And this is why Colombie (2018) thinks that Economic complexity results from the level of knowledge and technological progress of a country from the manufacturing phase to that of export; and that the ability to manufacture

products that are not designed allows for increased production and export of higher value-added goods. Thus, the sophistication of a zone varies from one country to another because, despite the evidence of convergence policies, and in addition to the factors noted above, there are differences at the level of natural, physical and financial resources likely to affect influencing the complexity of economies.

The structural policies and economic convergences advocated by the CEMAC countries make it possible to increase investments (domestic and foreign), to consolidate the favorable financial system for the financing of sectors with high added value, investments in infrastructure and human capital for the local recovery of raw materials. All these strategies implemented in the CEMAC aim to develop sophisticated products and increase sustainable and inclusive economic growth with a significant impact on employment and the income of the population. Hausmann et al. (2007) show that for a given country the composition of the export basket is as important as the income from said exports. Countries become what they produce. Indeed, countries that are able to successfully export goods that are relatively sophisticated given their level of development, achieve rapid growth. Thus, given the heterogeneous nature of the CEMAC and the disproportionate evolution of economic growth and the degree of structural transformation of their economy, what is the extent of the link that would exist between structural transformation and economic growth? Is this link reciprocal? In addition to the introduction, this article is structured around the following points: section 2 focuses on the literature review, section 3 on the methodology, section 4 on the results and interpretations and finally the conclusion.

## LITERATURE REVIEW

### Theoretical literature review

It is a question here of starting from the hypothesis of the dual economy to show that structural transformation is a necessary condition for the convergence of economies, then to show how it facilitates the migration of labor from traditional sectors (primary) to the secondary and tertiary sectors and finally to show the controversial role of structural transformation on economic growth and vice versa.

The exogenous and endogenous growth theories developed by Solow (1956) have highlighted factors of production capable of stimulating economic growth. Capital, labor, technical progress, human capital and research and development have led to constant and increasing returns to scale; which triggered the process of growth and convergence of the countries grouped together. These theories have disregarded the coexistence of two sectors in an economy, namely: the traditional sector which dominates for the most part in developing

countries and the modern sector which predominates in developed countries. The traditional sector, with a low level of productivity and which provides its employees with subsistence, and the modern sector which embodies the characteristics presented by the neoclassical model, raise questions about the emergence of dual economy models; which refocuses the debate on the essential nature of the dynamic between the traditional and modern sectors for an understanding of the growth challenges for developing countries (Rodrik, 2013). These models suggest that growth remains dependent on the progress made by each sector, but also on the capacity of the modern sector to absorb more of the labor factor freed up by the traditional sector. Thus, the possibility of the traditional sector to upgrade its production systems and converge towards the modern sector, and that the latter is able to grow to provide job opportunities to the labor force that emanates from the traditional sector is called transformation. structural.

CEMAC countries need this type of structural transformation. Despite their heterogeneous character, these countries are for the most part characterized by an economic dualism as developed above, i.e. an agricultural sector with low productivity and a weak but high productivity industrial fabric. Thus, the financial reform program (PREF, 2016) promotes export diversification in the zone to mitigate exogenous shocks, as is the regular case of oil prices; in order to migrate to other job-creating and high-productivity sectors (industry and the tertiary sector). This idea goes in the same direction with the economists Clark (1940) and Fischer (1939) who theoretically developed that any sustained growth over a prolonged period is associated with a metamorphosis of the economic structure of a country, which manifests itself through the strengthening of the role of tertiary and secondary activities to the detriment of primary activities initially, before the secondary activities themselves contract in relative terms so that the tertiary sector becomes, at an advanced stage of development, the main provider jobs and wealth creator.

One of the most consistent contributions is that of Kuznets (1966) who thinks that, rapid changes in the structure of production are inevitable, given the differential impact of innovations on the different production sectors, the income elasticity different from domestic demand for various consumer goods. It highlights the economic forces behind this structural transformation. Theoretically, this reallocation process is the result of the combination of two factors: the first is linked to the sphere of supply (Baumol (1967); Ngai and Pissarides (2007)), namely the degree of technological absorption by sector that results in a change in relative prices, and the second is driven by demand, precisely income elasticity (Kongsamut et al, 2001). Thus, with the more intense use of the capital factor and the appearance of new technologies, the agricultural sector is the first to benefit from it, which makes it possible to increase productivity in this sector and

free up a large supply of labor for the industrial sector (pushing strategy). Once the level of development has been reached, the same logic is similar to the secondary sector and the economic center of gravity shifts from units producing industrial goods to units producing services. Regarding the second factor, the elasticity of demand plays in favor of the decline of the primary sector and, subsequently, the secondary sector in favor of the tertiary sector (pulling strategy). With the development of the standard of living, the share of income allocated to foodstuffs is contracting. Manufactured products have a higher income elasticity than primary products, but with the growth of incomes, consumption becomes more and more oriented towards services.

There is controversy about the effect of structural transformation on economic growth. Economists of the theory of exogenous economic growth believe that capital, labor and progress lead to short-term growth. Endogenous growth theory theorists believe that transformation is the result of innovations, which are caused by technical progress considered endogenous (Schumpeter, 1950; Agion et al, 1991). Indeed, process innovation will allow the reduction of production costs and price reductions, which will make the economy more competitive on the international market. The drop in production costs will facilitate the transformation of the economy through the diversification of exports of agricultural products. And the innovation produced will make it possible to offer goods of superior performance to those existing on the market and in the situation of inelastic demand, companies will have to reap profits, which will in turn allow them to further increase the transformation. structure favorable to the convergence of economies. The idea developed here is to note that, of course, diversification will increase exports and that the innovation highlighted will make it possible to create sophisticated products intended for export.

Ultimately, the contribution of the authors developed above believe that structural transformation is a necessary condition for the growth and convergence of nations. It is favorable in dual economies and facilitates the reallocation of labor released from the traditional sector to the secondary and tertiary sector. Its role has been controversial, on the one hand it leads to short-term growth when exogenous technical progress is at the origin of structural transformation, and on the other hand to long-term growth when structural transformation is caused by endogenous technical progress or innovation. To do this, the CEMAC countries cannot be on the sidelines of this sustainable growth process, because the multilateral convergence criteria are well defined to facilitate the transformation of this economy into a truly convergent economy.

**Review of empirical literature**

Several authors have addressed the theme of structural transformation on the axes of the impact or the effect of structural transformation, the causality between structural transformation and economic growth.

Azzedine et al (2016) conducted a study on "the structural and institutional transformations of economies in the South of the Mediterranean". They discussed the processes that guide these transformations. They conclude that the modernization, sophistication and diversification of economic structures could constitute a new paradigm for the development of the region for the coming years.

Dietrich (2012) conducted a study in seven OECD countries to find out the causality between structural transformation and economic growth. This article examines a Granger causality test in a panel environment to determine the relationship between economic growth and structural transformation, measured either in terms of employment shares or real value added shares. The estimate covering the period 1960-2004, shows that, although the causality seems heterogeneous between these countries, some general conclusions can be drawn. Overall economic growth slows down structural transformation in the very short term but accelerates it with a certain time lag. The aggregate effect depends on whether structural transformation is measured in terms of employment or in terms of real value added. Conversely, structural transformation supports overall economic growth, regardless of the measure of structural change chosen. Echevarria (1997) worked on the link between change in sectoral composition and economic growth. The dynamic general equilibrium method shows that growth is affected by sectoral composition, and vice versa.

Stamer (1998,1999) investigates the interrelation between subsidies, structural change and growth for the former West Germany, with sectoral data from 1970 to 1993 on 41 industries using the modified Lilien index (MLI). Applying Granger causality analysis, he finds strong evidence that growth impacts change as well as the reverse, but finds even stronger evidence that structural change depends on overall economic growth rather than from the reverse. He observes that growth accelerates structural change and structural change, in turn, slows growth.

Ngai (2004) conducted a study on a multisector growth model with differences in total factor productivity growth rates between sectors and derived sufficient conditions for the coexistence of structural change, characterized by sectoral reallocation workforce and balanced overall growth. It is found that, along the path of balanced growth, labor employed in the production of consumer goods gradually shifts to the sector with the lowest total factor productivity growth rate, up to so that, ultimately, it is the only non-trivial use sector of this type.

The employment shares of intermediate goods and capital goods remain constant during the reallocation process.

Hwang and Rodrik (2007) over the period 1997-2007 using detailed data on China's foreign trade to study the upgrading of its exports and its consequences on export performance and growth. Their results confirm the prediction of Hausmann, Hwang and Rodrik (2007): that regions that engage in the discovery cost process by developing more sophisticated goods reap greater gains from globalization and grow faster.

In conclusion, studies show that in dual economies, structural transformation is a condition for growth and economic convergence. Diversification makes it possible to increase production for exports and sophistication requires investments in technology to transform local raw materials. The dual and heterogeneous nature of the CEMAC countries leads us, based on the observations of Hausmann et al (2007), to test the relationship between structural transformation measured by the sophistication of exports and economic growth in the short and long term.

**METHODOLOGY**

This study is inspired by that of Hausmann et al (2007) who placed particular emphasis on the sophistication of product exports to measure structural transformation. Thus, the autoregressive model of the ARDL type was highlighted. This simultaneous equation model takes into account the series having integrations of order 0 and 1 making it possible to capture the evolution of the variables in the short and long term. In a generic way the model is written:

$$Y_t = \lambda_i + \sum_{t=1}^{p} \alpha_i Y_{t-1} + \sum_{t=1}^{q} \beta_i X_{t-1} + \mu_i$$

with $\lambda_i$ the constant (adjustment variable or restoring force) , $Y_{t-i}$ the lagged dependent variable ; $X_{t-j}$ the independent variable ; P the number of shifts for the $Y_{t-i}$; $q$ the number of shifts for the $X_{t-j}$; $\alpha_i$ the parameters of $Y_{t-i}$ ; $\beta_j$ : the parameters of $X_{t-j}$ and $\mu_i$ the stochastic error term. From this pattern comes the following specified pattern:

$$CRO_t = \lambda_i + \sum_{t=1}^{p} \alpha_i CRO_{t-i} + \sum_{j=0}^{q} \beta_j ISO_{t-j} + \sum_{j=0}^{q} \beta_j IDI_{t-j} + \sum_{j=0}^{q} \beta_j CRE_{t-j} +$$

$$\sum_{j=0}^{q} \beta_j INV_{t-j} + \sum_{j=0}^{q} \beta_j CHU_{t-j} + \varepsilon i$$

With $\boldsymbol{CRO_t}$ **:** The economic growth rate measured by the GDP growth rate of each country in the CEMAC zone at period t,

$\boldsymbol{ISO_{t-j}}$ **:** The sophistication index calculated on the basis of data on the value added of international trade on exported goods and services, petroleum products and mining products over a period of 55 years. It is used to measure structural transformation

$IDI_{t-j}$ **:** The diversification index also used to approximate structural transformation

$CRE_{t-j}$**:** Credit to the economy likely to facilitate the structural transformation of the economy.

$INV_{t-j}$ **:** Investment is approximated by Gross Fixed Capital Formation (GFCF) which also promotes structural transformation.

$CHU_{t-j}$**:** Human capital is also a favorable variable for structural transformation. It is approximated by the number of people enrolled in secondary school, in vocational training.

Secondary data is used and a cross-sectional study is highlighted. They come from the WDI database of the World Bank and the study extends from 1980 to 2020. After having used the stationarity test in the sense of Granger, the Hausman test is applied in a dynamic panel model. To decide on the favorable estimator within the framework of our analysis, the Hausman test between the MG (Mean group) and the PMG (Pooled mean group) gives us a probability: if it is greater than 5%, a second comparison is made between the DFE (Dynamic Fixed Effect) and the MG. These probabilities allow us to conclude whether to analyze the effect of structural change captured by the sophistication or diversification index, on economic growth for example, we will use either the Pooled Mean Group method to estimate our parameters or other methods cited above from the conclusion of the cited test. In the case of this study, the choice is made between the Pooled Mean Group estimator (PMG) or the weighted group mean estimator according to Pesaran and Shin (1999). It is an estimator halfway between the MG and the DFE which has the particularity in the ARDL model of correcting the problems of multicollinearity and heterocedasticity.

The period from 1980 to 2020 allows for an in-depth analysis of the dynamics between structural transformation and economic growth in the CEMAC countries, while taking into account the major economic and political events that have shaped the region. Causality tests applied to this period help better understand the nature and direction of the relationships between these two phenomena.

## RESULTS AND INTERPRETATION

### Unit root test

The study of the stationarity of all the variables is a necessary step in any study. In this study, we used the panel stationarity test procedure provided by Im & all (2003). These are the most used, when the time dimension is limited. The authors propose tests that allow the detection of the presence of a unit root in models using ADF statistics from Ficher. It appears from table N01 opposite that the economic growth rate, credit to the economy, investment are stationary at level. The other variables being integrated of order 1 or stationary in first

difference. Therefore, all the variables can be used in the same model. Moreover, the existence of both I(0) and I(1) variables further justifies the choice of the model which can be applied with raw series without fearing spurious regression problems.

**Table 1: Result of unit root tests (based on WDI data)**

| **Variables** | At the level | In difference | **Decision** |
|---|---|---|---|
| Iso | 0.0000 | - | I(0) |
| Idi | 0.0428 | - | I(0) |
| Cro | 0.6036 | 0.0000 | I(1) |
| Cre | 0.6036 | 0.0000 | I(1) |
| Inv | 0.000 | - | I(0) |
| Chu | 0.1064 | 0.0000 | I(1) |

**Results of structural transformation on economic growth**

The results of table 2 show that the long-term adjustment speed, which is the equilibrium restoring force, is negative and significant at the 1% threshold, i.e. -0.804 (ECT) in the long term. This speed close to 100% makes it possible to conclude that the variation of the economic growth of the CEMAC is consecutive to the structural variation which is measured by the index of sophistication. The variables are said to be cointegrated in the long run because the speed of adjustment is negative. Despite the existence of causality between the variables, the sophistication index on economic growth is not significant in the long term but is in the short term. Indeed, the increase in the sophistication index by 1% leads, all other things being equal, to an increase in economic growth of 12.57% in the short term. This observation has already been made in the CEMAC and this is why the PREF (2016) emphasizes the diversification of exports. It will allow a significant production favorable not only for export but also for local processing. Efforts to attract CEMAC economies are made with the promotion of good governance and the improvement of business climates, to attract foreign direct investment carrying high quality technologies.

The investment positively and significantly influences economic growth at 5% in a short-term situation. Investment causes economic growth. Indeed, the increase in investment of 1% leads, all other things being equal, to an increase in economic growth of 12.07%. This situation can be explained in the CEMAC zone with the evidence of structuring projects set up on both sides in these countries. Thus, there are investments in socio-economic infrastructure and energy to facilitate local production and processing, which is observed through the public investment budget in the countries of the area.

Credit influences significantly and negatively in the short term and positively in the long-term economic growth. In the short term, the increase in credit by 1% leads, all other things being equal, to a decrease in economic growth of 6.825% and in the long term, any increase leads rather to an increase in economic growth of 5.763%. As part of the PREF (2016), it is clear that the lack of credit in an economy does not facilitate production and processing, which is why one of the axes of this program is to consolidate the system of the zone and to further facilitate access to bilateral and multilateral debt and above all to long-term investments coupled with long-term loans.

Table 2 : Effects of structural transformation on economic growth

| D.Cro | MG | | PMG | | DFE | |
|---|---|---|---|---|---|---|
| | ECT | SR | ECT | SR | ECT | SR |
| ECT | | -0.893*** | | -0.804*** | | -0.712** |
| | | (0.0902) | | (0.104) | | (0.0523) |
| D.lnIso | | 12.24*** | | 12.57*** | | 9.530*** |
| | | (3.930) | | (3.379) | | (2.231) |
| D.lnCre | | -6.173*** | | -6.825*** | | -9.790*** |
| | | (1.784) | | (1.487) | | (2.748) |
| D1.lnInv | | 11.05* | | 12.07** | | 2.383 |
| | | (5.731) | | (5.297) | | (2.665) |
| D2.lnInv | | -0.456 | | -4.010 | | 0.0768 |
| | | (1.569) | | (2.608) | | (1.855) |
| D.lnChu | | 0.681 | | 1.942 | | 1.093 |
| | | (2.416) | | (1.593) | | (1.858) |
| L.lnIso | 0.662 | | -0.843 | | -1.032 | |
| | (0.868) | | (0.617) | | (0.899) | |
| L.lnCre | 4.096** | | 5.763** | | 10.23** | |
| | (1.863) | | (2.629) | | (4.066) | |
| L.lnInv | 8.915* | | 0.922 | | 5.812*** | |
| | (4.890) | | (1.364) | | (2.047) | |
| L.lnChu | 1.929 | | 0.286 | | -0.426 | |
| | (1.943) | | (1.534) | | (2.662) | |
| Constant | | -40.54 | | -5.930 | | -5.634 |
| | | (35.75) | | (9.050) | | (14.03) |
| Observations | 324 | 324 | | 324 | 324 | 324 |
| Test de Hausman $chi^2$ | | 3.69 | | | 0.11 | |
| Prob. | | 0.4502 | | | 0.9984 | |
| Decision | **The appropriate method is that of mean groups** | | | **The appropriate method is that of mean groups** | | |
| Standard deviation of errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 | | | | | | |

**Result of economic growth on structural transformation**

The choice of the optimal number of lags from the AIC criterion reveals that the optimal number of lags for the model that allows us to capture the effect of growth on structural transformation is 1 for the growth rate variable only,

Table 3 presents the long and short-term estimate of the effect of economic growth on structural transformation measured by the sophistication index (Iso) of the CEMAC zone. The use of the DFE as an estimation method following the Hausman tests allows us to visualize the long and short-term estimation together. Thus, the adjustment coefficient is negative and significant at the 1% level, which stipulates that in the long term, there is convergence of all the variables towards a position of equilibrium, from which the variables are co-integrated . Moreover, it indicates a joint causality of the explanatory variables towards the sophistication index. The coefficient of this variable is equal to -0.0825, which stipulates that any shock on the sophistication index is adjusted with an adjustment speed of 8.25%. This speed is relatively low compared to the speeds of adjustment in the specifications of the effect of structural change on growth.

The growth rate is positive and significant at 1% over the short and long term, its coefficient is 0.00558. This result implies that any increase (decrease) in GDP per capita leads to an increase (decrease) in the sophistication index of 0.5% e in the short term. There is causality from the growth rate to the sophistication index. The credit is not significant since there is no causal relationship from the latter to the sophistication index.

Table 3: Effect of economic growth on structural transformation

| D.Isoo | MG | | PMG | | DFE | |
|---|---|---|---|---|---|---|
| | ECT | SR | ECT | SR | ECT | SR |
| ECT | | -0.0831* | | -0.0139*** | | -0.0825*** |
| | | (0.0467) | | (0.00498) | | (0.0218) |
| Cro | | 0.00811*** | | 0.00718*** | | 0.00558*** |
| | | (0.00188) | | (0.00165) | | (0.00198) |
| lnCre | | -0.0778 | | -0.0840** | | -0.0921 |
| | | (0.0715) | | (0.0386) | | (0.0999) |
| lnInv | | -0.119 | | -0.0829 | | -0.0170 |
| | | (0.0879) | | (0.0764) | | (0.0651) |
| lnChu | | -0.0426 | | -0.00363 | | -0.0172 |
| | | (0.0512) | | (0.0328) | | (0.0665) |
| L.lnCro | 0.0625 | | 0.0860 | | -0.0103 | |
| | (0.0392) | | (0.0788) | | (0.0237) | |

Table 3…

| | | | | | | |
|---|---|---|---|---|---|---|
| L.lnCre | 3.293 | | 5.811 | | 0.0526 | |
| | (4.097) | | (3.917) | | (1.223) | |
| L.lnInv | 3.232* | | 8.033 | | 0.290 | |
| | (1.905) | | (4.982) | | (0.807) | |
| L.lnChu | -2.703 | | -6.801* | | -0.559 | |
| | (1.717) | | (3.887) | | (0.826) | |
| Constant | | 2.049* | | 0.854*** | | 1.296*** |
| | | (1.242) | | (0.276) | | (0.492) |
| Observations | 330 | 330 | 330 | 324 | 330 | 324 |
| Hausman test $chi^2$ | | 1.35 | | | 5.58 | |
| Prob | | 0.8522 | | | 0.2330 | |
| Decision | **The appropriate method is that of mean groups** | | | **The appropriate method is that of the DFE** | | |
| Standard deviation of errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 | | | | | | |

**Country effect results**

Table 4 gives us the results of the estimation of the short-term coefficients for each country in the panel. For the model with the sophistication index (Iso), the restoring force at short-term equilibrium is positive and significant at the 1% level for all the countries in the panel. This speed of adjustment is -0.640 for Cameroon; -1.190 for CAR; -0.700 for Guinea; -0.466 for Congo; -0.898 for Gabon and -0.928 for Chad. Therefore, any shock on growth adjusts with a speed of 64%; 119%, 70%, 46.6%, 89.80%.

In the short term, sophistication has a negative significant effect at 1% on growth in Gabon, Congo and Chad; 5% for CAR their coefficients are respectively 23.25; 12.48; 21.28; 8.852.

Credit to the economy has a significance of 1% for Chad, which has a negative coefficient of -8.661. This result implies that any increase (decrease) in credit to the economy of 1% leads to an increase (decrease) in the growth rate of 8,661 pts. The same is true for Equatorial Guinea which has a 5% threshold on growth and Gabon and Congo which have a 10% threshold on economic growth.

The investment is significant at 1% at the first difference for Cameroon, CAR and Gabon 15, 85; 18.39; 30.32. Therefore, an increase respectively a decrease of 1% of the investment leads to an increase (respectively a decrease) in the growth rate of 15.85pts, 18.39pts, 30.32pts respectively for Cameroon, CAR, and Gabon. At the second difference, we have a significance of 10% for the RCA which has the coefficient -14.52. There is therefore long-term co-integration between economic growth and investment in Cameroon, RCA, and Gabon. The negative sign carried by their respective coefficient also supposes a causality.

After reviewing the significant variables, there is causality between the sophistication index, credit to the economy, gross fixed capital formation and economic growth depending on the country.

Nevertheless, the adjustment coefficient being negative and significant for each CEMAC Member State reflects a double information:

Firstly that there is co-integration between the explanatory variables and the growth rate and secondly, the negative sign reflects the convergence of all the variables towards a point of equilibrium and therefore that there is a joint short-term causality from exogenous variables to the growth rate.

Table 4 : Country effect results

| Cro | ECT | Cameroun | RCA | Guinée | Congo | Gabon | Tchad |
|---|---|---|---|---|---|---|---|
| **ECT** | | -0.640*** | -1.190*** | -0.700*** | -0.466*** | -0.898*** | -0.928*** |
| | | (0.135) | (0.123) | (0.120) | (0.102) | (0.109) | (0.119) |
| **D.lniso** | | 2.046 | 8.852** | 7.431 | 12.48*** | 23.25*** | 21.38*** |
| | | (5.720) | (3.483) | (4.838) | (3.931) | (5.150) | (6.756) |
| **Lncre** | | -2.825 | -8.445** | -12.01** | -2.636* | -6.428* | -8.611*** |
| | | (2.291) | (3.418) | (4.675) | (1.555) | (3.362) | (2.903) |
| **D.lninv** | | 15.85*** | 18.39*** | 13.54 | -0.861 | 30.32*** | -4.807 |
| | | (5.347) | (5.791) | (12.66) | (1.876) | (8.284) | (3.551) |
| **D2.lninv** | | -3.100 | -5.799 | -14.52* | -0.179 | -5.042 | 4.579 |
| | | (3.946) | (3.908) | (8.334) | (1.132) | (5.332) | (2.846) |
| **Lnchu** | | -0.480 | 4.223 | 8.844 | -0.123 | -1.434 | 0.622 |
| | | (1.300) | (2.693) | (5.629) | (1.442) | (2.566) | (2.631) |
| **L.lniso** | -0.843 | | | | | | |
| | (0.61) | | | | | | |
| **L.lncre** | 5.763* | | | | | | |
| | (2.62) | | | | | | |
| **L.lninv** | 0.922 | | | | | | |
| | (1.36) | | | | | | |
| **L.lnchu** | 0.286 | | | | | | |
| | (1.53) | | | | | | |
| **Constant** | | 5.190 | -28.69 | -37.74 | 2.733 | 19.33 | 3.584 |
| | | (14.42) | (22.71) | (44.09) | (14.28) | (22.87) | (20.41) |
| **Observations** | 324 | 324 | 324 | 324 | 324 | 324 | 324 |
| Standard deviation of errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 | | | | | | | |

## CONCLUSION

Ultimately, the objective was to study the relationship between structural transformation and economic growth in the countries of the CEMAC zone. The literature review shows that diversification leads to economic growth and that in the case of the grouping of countries like CEMAC, the extent varies from one country to another due to the heterogeneous and dual characteristics of these countries. The PREF (2016) encourages diversification because it will increase not only local production but also exports. The sophistication of the products will make it possible to have very high added values, which is why the CEMAC countries cannot register on the sidelines of the promotion of good governance and the business climate in order to attract foreign direct investments bearing technologies and favorable to the local processing of goods. The method used is based on the Hausman test and allowed us to note that the variables are cointegrated and that there is indeed a causal relationship between structural transformation and economic growth. The effect of structural transformation through sophistication is stronger and more significant in the short term than in the long term. A situation that can be explained by the use of less efficient technologies, the absence of products and new products in sufficient quantity for processing, under-capitalization.

## RECOMMENDATIONS

Based on the current findings, here are some recommendations:

-Accelerate economic diversification

-Strengthen infrastructure and regional connectivity

-Improve governance and management of natural resources

-Promote innovation and entrepreneurship

-Strengthen human capital and education

-Implement more flexible economic policies tailored to local specificities

-Develop monitoring and evaluation mechanisms for policies

These recommendations aim to support sustainable economic transformation and maximize the benefits of economic policies for the CEMAC countries, while considering the results of causality tests, which highlight the complex relationship between economic growth and structural transformation

## REFERENCES

Acemoglu, D., et J. A. Robinson (2015). « Prospérité, puissance et pauvreté – pourquoi certains pays réussissent mieux que d'autres ». Genève: Marks Haller Éditions, pp:1-170

Aditya, A., et A. Rajat (2012). « Does What Countries Export Matter? » Journal of Economic Development 37 (3) PP: 47–74.

Agénor, P.,Canuto. O, et Jelenic. M(2012) « Avoiding Middle-Income Growth Traps. » Economic Premise, Banque mondiale, N$^0$ 9, pp : 1-7

Agosin, M., R. Alvarez, et C. Bravo-Ortega (2012). « Determinants of Export Diversification around the World: 1962–2000». The World Economy 35 (3), pp : 295-315.

Aidi, W (2016). « Crise financière et dynamique du processus de libéralisation financière : incohérence temporelle et identification de l'effet seuil. » Canadian Journal of Development Studies

Azzedine. G, Philippe. H et Nassim O (2016) « Transformations structurelles et institutionnelles des économies au Sud de la Méditerranée », Revue canadienne d'études du développement, 37:2, pp : 131-141,

Baldwin R. E. (2003) «Openness and Growth: What's the Empirical Relationship?" NBER Working Paper 9578. Cambridge, MA: National Bureau of Economic Research.

Bastidon, C., et Y. Kocoglu (2016). « Accès au financement et dynamique des exportations des pays MENA méditerranéens ». Canadian Journal of Development Studies / Revue canadienne d'études du développement 37 (2), pp : 178–196.

Commission Economique pour l'Afrique (CEA) (2013) "La transformation économique pour le développement de l'Afrique", Division de la Politique Macroéconomique, Réunion du C-10, Avril, 2013, Washington D.C, pp : 1-17.

Commission Economique pour l'Afrique (CEA) et Union Africaine (UA) (2014) "Rapport Economique sur l'Afrique, Politique industrielle dynamique en Afrique", institutions novatrices, processus efficaces et mécanismes flexibles, Addis-Ababa, pp : 1-8.

Commission Economique pour l'Afrique (CEA) et Union Africaine (UA) (2012) "Libérer le potentiel de l'Afrique en tant que pôle de croissance mondiale", Rapport économique sur l'Afrique, Addis-Ababa, pp : 1-212.

Commission Economique pour l'Afrique (CEA) et Union Africaine (UA) (2010), "Promouvoir une croissance forte et durable pour réduire le chômage en Afrique", Rapport économique sur l'Afrique, Addis-Abeba, pp : 1-260.

Commission Economique pour l'Afrique (CEA) et Union Africaine (UA) (2011) "Gérer le développement : le rôle de l'Etat dans la transformation économique", Rapport économique sur l'Afrique, Addis-Abeba, pp : 1-160.

Commission Economique pour l'Afrique (CEA) et Union Africaine (UA) (2014) "L'industrialisation au service du développement inclusif et de la transformation en Afrique", Document de synthèse, Abuja, pp : 1-21.

Dietrich, A. (2012) «Does growth cause structural change, or is it the other way around? A dynamic panel data analysis for seven OECD countries". Empir Econ 43, PP: 915–944.

Echevarria, C. (1997) « Changes in Sectoral Composition Associated with Economic Growth. International Economic Review, 38(2), pp: 431-452.

Ngai. R and Pissarides. C.A (2004) « Structural change in a multi-sector model of growth » CEPR discussion paper N$^0$ 627, pp: 1-45