International Journal of
Economic Policy
(IJECOP)

Macroeconomic Risk Diversification and Sectoral Structure Evolution: An Adaptation of the Portfolio Model in CEMAC

CARI Journals

International Journal of Economic Policy
ISSN: 2788-6352 (Online)
Vol. 5, Issue No. 3, pp 12 - 28, 2025
www.carijournals.org

Macroeconomic Risk Diversification and Sectoral Structure Evolution: An Adaptation of the Portfolio Model in CEMAC

Dr. Zolo Eyea Alain Remy

Faculty of Economics and Management, University of Ngaoundere, Cameroon

https://orcid.org/0009-0000-8835-2024

. ***Accepted: 10th Apr, 2025, Received in Revised Form: 10th May, 2025, Published: 11th June, 2025***

Abstract

Purpose: This study adapt the traditional portfolio model to evaluate the capacity of CEMAC countries to diversify macroeconomic risks.

Methodology*:* The study used a quantitative approach to analyse sectoral structures from 1995 to 2009. Drawing inspiration from Markowitz's portfolio theory by establishing an analogy between the evolution of a country's GDP and that of a financial asset.

Findings: According to the findings a low level of economic diversification was observed in CEMAC countries, except for Cameroon, which recorded significant gains. At a collective level, CEMAC failed to lay the foundation for diversified economies. The risk-return performance of the countries remains limited, demonstrating an inability to significantly reduce economic volatility.

Unique contribution to the theory, practice and policy*:* Theoretically, they should innovate application of portfolio theory to the economic domain to assess sectoral and regional diversification. It is important to identify structural and sectoral weaknesses in CEMAC countries to guide policymakers in formulating strategies to foster economic diversification. Highlighting the collective role of the region in improving macroeconomic resilience. Practically, we should develop an analytical tool providing a better understanding of regional economic performance and the levers necessary to optimize diversification.

Keywords: *Macroeconomic risks, Sector of activity, Portfolio model, CEMAC.*

INTRODUCTION

Risk diversification, a central concept in market finance, has traditionally been approached from the perspective of constructing financial asset portfolios (Markowitz,1959; Fama, 1970). However, at the macroeconomic level (Berthélemy,2005; Hammouda et al., 2009), this notion is just as important. Most economic value chains are based on commodities. Developing countries dependent on their exports, are generally highly vulnerable and suffer from economic and political shocks transmitted by global markets including, most recently, those resulting from the COVID-19 pandemic and the Russo-Ukrainian war. In a context of increased globalization and commodity price volatility, CEMAC countries, heavily dependent on hydrocarbons, have found themselves exposed to recurring exogenous shocks that have highlighted the limits of excessive specialization (Ngangoue, 2016), thus underscoring the urgent need to diversify sources of growth. Indeed, as the world shifts toward more sophisticated and expensive products on international markets, commodity-dependent countries risk falling behind. Achieving the Sustainable Development Goals (SDGs) in an increasingly uncertain global economic and political environment will require them to become more resilient by moving up value chains, and diversifying their production to broaden their export portfolio. In this case, diversification can not only protect against future market shocks, but also generate growth and foster structural transformation (Petit and Barghouti, 1992). Coordinated regional diversification policies may be beneficial for CEMAC countries, given the narrowness of their domestic markets and the variations in export potential from one country to another.

This study aims to adapt the traditional portfolio model to assess the macroeconomic risk diversification capacity of CEMAC countries. Using a quantitative approach, an analysis of the evolution of sectoral structures in member countries and an assessment of their contribution to gross domestic product (GDP) volatility will be made.

The remainder of the article is structured as follows: the first section presents a literature review on risk diversification models and their applications in economics. The second presents an overview of the evolution of economic fluctuations in CEMAC, highlighting the main dependencies and existing vulnerabilities. The third section presents the methodological approach, the results and economic implications, and the fourth concludes with economic policy recommendations.

LITERATURE REVIEW

Economic literature offers a wide range of theories and empirical analyses on risk diversification. Given that risk management research is embedded within a transdisciplinary framework, this section presents two dimensions of theoretical analysis: one oriented toward finance and the other toward the economic sphere.

Theoretical approaches in the field of finance

The modern portfolio theory, proposed by Markowitz (1959) in his article "Portfolio Selection," suggests that investors can reduce portfolio risk by combining assets that are not perfectly correlated. Diversifying investments can optimize returns for a given level of risk. A few years later, Sharpe (1964) and Lintner (1965) developed the Capital Asset Pricing Model (CAPM). These authors introduced the concept of systematic and unsystematic risk, showing that only systematic (market) risk is relevant in determining an asset's expected return, which encourages diversification to eliminate unsystematic risk. In the same vein, the efficient markets theory was developed by Fama (1970), in his article entitled "Efficient Capital Markets: A Review of Theory and Empirical Work". According to the later, asset prices reflect all available information. Diversification is important because it allows investors to reduce their exposure to unforeseen events that could affect a single company or sector.

The analysis of this theoretical universe demonstrates that the portfolio model has several advantages over others, insofar as it allows for risk and return optimization. Indeed, it allows for the construction of a portfolio that maximizes the expected return for a given level of risk or minimizes the risk for a given level of expected return. This offers a systematic approach to making investment decisions. Additionally, this theory emphasizes the importance of diversification by combining assets with low correlations, which helps reduce overall portfolio risk more effectively than other approaches that do not consider correlations between assets. Portfolio theory, unlike others, is also based on statistical and mathematical methods, allowing for rigorous and objective investment analysis. This contrasts with some more qualitative or behavioral approaches that can be subject to bias.

Theoretical approaches relevant to the economic sphere

Studying risk diversification only in the field of finance can be incomplete. Risk management born in a science other than management, drew on several other sciences before taking its place in management sciences. It is therefore part of a transdisciplinary framework. To work together and sustainably on the same problem in these different science-disciplines, it is not enough to aggregate disciplinary knowledge; it is much more a matter of adopting or shaping common conceptual tools, the fruit of theoretical negotiation, which make it possible to organize the different disciplinary contributions into a single paradigm. Thus, although business cycle theory and modern portfolio theory address different subjects in economics and finance, they share common concepts related to risk, uncertainty, and investment decisions.

This is how we can call upon the theory of real cycles, developed by Prescott and Kydland (1982) in their article "Time to Build and Aggregate Fluctuations". This emphasizes the role of technological shocks and investment decisions in economic fluctuations. This approach has been influential in the development of modern economic models, particularly within the framework of new classical macroeconomics. In the same vein, we can mention the theory of complex systems, which gained popularity in the 1990s and 2000s. Economists such as Brian (2015) played a key role in applying the concepts of complex systems to economics. This approach considers economies as complex systems, characterized by nonlinear interactions between different agents and sectors. It highlights the importance of contagion effects and the interdependence of risks. These approaches highlight the mechanisms of markets and economies in general, as dynamic networks where interactions between agents can create unexpected results.

Empirical approaches to macroeconomic risk diversification

Most empirical studies on the issue of economic risk diversification takes two approaches. One focuses on measuring economic resilience, and the second relies on the diversification of sources of growth as the foundation for developing economic resilience.

Paradigm based on the measurement of economic resilience

Literature on measuring economic resilience agrees that there is still no single established methodology for measuring this concept. Econometric studies approach the problem from several angles. There are those that link the factors of fragility and resilience. They put emphases on aspects such as insufficient constraints imposed on the executive branch (Meryem et al., 2024; Sindu et al., 2021; Abdulfatai et al., 2021); poor economic and social indicators, including low economic growth, high inflation, and endemic conflicts (Collier and Hoeffer, 2003); and weak governance and institutions (African Development Bank, 2019, 2020). For other authors, the analysis of economic resilience focuses on the reconstruction process. It studies the pre- and post-shock phases (Lane and Milesi-Ferretti, 2010; Claessens et al., 2010). These later analyses show that the degree of flexibility of a country's economic structures can facilitate recovery.

In light of this literature, the observation is that economic resilience refers to three capacities of the country: the first is the ability to recover quickly, as it is linked to the flexibility of the economy (countercyclical resilience). The second concerns the country's ability to absorb or neutralize the shock (absorptive resilience). For example, a shock in a given sector will easily trigger a shift of resources to other sectors. Finally, the third is the ability to avoid shocks.

Diversification of sources of economic growth as the foundation for developing resilient economies

For international organizations, namely the OECD and the WTO, economic diversification is considered an essential component of economic development, through which a country moves towards a more varied production and trade structure. A lack of economic diversification is associated with increased economic vulnerability, such that external shocks can jeopardize the development process. Given that the structure of economies varies, there is no single model of what constitutes economic diversification at the sectoral level (i.e., in terms of the contribution of agriculture, manufacturing, and services) (OECD, WTO, 2020).

Many authors have demonstrated that diversification can increase income by spreading investment risks across a broader portfolio (Acemoglu and Zilibotti, 1997). According to Petit and Barghouti (1992), economic diversification, as opposed to specialization, is a process of structural transformation of an economy that migrates from an economy dominated by primary sectors (natural resources, agriculture, mining, etc.) to secondary sectors (processing industries, manufacturing, etc.) and tertiary sectors (trade, tourism, etc.). This dynamic and normative process, for Romer (1990), is characterized by the reduction of the relative importance of the contribution of primary sectors in the creation of wealth in the economy concerned. Berthélemy (2005) demonstrates that diversification provides advantages linked to the dilution of macroeconomic risks. Indeed, for this author, an economy be diversified if its productive structure is made up of a large number of activities that differ from each other, by the nature of the goods and services produced. Ben Hammouda et al., (2009) showed that diversification limits the political and institutional instability of the country, because it steers the national economy in a direction opposite to the rent economy which is a source of permanent conflicts within the elite for the capture and redistribution of rent from natural resources. According to the World Bank (2017), the economy diversifies when national production is oriented towards new activities within and between sectors. This phenomenon leads to a better allocation of resources and improves overall productivity. For Ngangoue (2016), by concentrating their efforts on the export of basic products, the value of which represents a low elasticity of prices and incomes in relation to demand, Central African countries put their economies in a state of real imbalance, which increases their vulnerability to internal and external shocks. Thus, according to the author, to overcome the structural failures of their economies, these countries should make rational choices by organizing and planning the diversification of their economies.

ECONOMIC FLUCTUATIONS IN THE CEMAC AND INTERNATIONAL SITUATION

During the period 1960-1980, two main industrialization strategies were imposed: import-substitution, to reduce dependence on imported goods and export promotion, which required having a solid industrial base to gain international market share. However, although this strategy promoted sustained growth from the end of the 1960s until the end of the 1970s, it presented limitations from the beginning of the 1980s due to the weak internal articulation of industrial activities, with the growth of final consumption activities leading to an exponential increase in imports; the narrowness of domestic consumer markets, with an embryonic middle class; the reversal of raw material prices, which reduced sources of income; and the low productivity of new companies. Since then, the economies of the CEMAC countries have shown a strong concentration of their economic fabric, and therefore of their export products.

The decade 2000-2010, which saw the start of oil exploitation in Chad and the rise of oil activity in Equatorial Guinea and Congo, revealed an acceleration of this concentration (70% of exports). From 2014, there was a drop in oil revenues following the drastic fall in the price of a barrel of oil. This shock caused a sharp contraction in budget revenues, mainly consisting of export revenues, falling from 6,548.8 billion FCFA in 2014 to 3,844.9 billion FCFA in 2015, to reach 2,794.2 billion FCFA in 2016. Moreover, the accumulation of arrears resulting from this gloom affected all sectors of the economy, weakening the financial situation of both businesses and banking institutions; thus creating a powerful mechanism for disseminating the effects of the external shock on the internal macroeconomic balance.

In 2018, the economic situation in CEMAC countries was marked by real GDP growth of 1.6% (+1.6% for the oil sector and +1.6% for the non-oil sector), after 0.6% in 2017. Commodity markets grew overall, thanks to strong growth in energy prices and the depreciation of the euro against the US dollar. In addition, 2018 was characterized by an increase in the prices of fishery products (+4.7%), metals and minerals (+3.8%), and agricultural products (+0.1%). Such a trend has been attributed to the rise in trade tensions between major economic powers and pressure on the financial markets of certain emerging and developing economies.

Despite this attempt recovery, there are still persistent economic, monetary, financial, and security vulnerabilities such as commodity market prices declined overall in 2019, driven by a general decline in prices for both energy and non-energy products. The export commodity price index fell by 10%, mainly due to a decline in the prices of energy products (-12.3%), forestry products (-5.1%), and fishery products (-4.2%). This reversal of trend is justified by the escalation of trade

tensions between the United States and China, on the one hand, and weak demand in Europe and Asia, on the other. US sanctions against Iran and Venezuela have also led to a reduction in crude oil exports from these countries, and an increase in US production. In 2021, the prices of the main exported commodities rose again, due to a general rise in raw material prices on the world market, but above all to a sharp rise in energy products (oil and natural gas). Thus, on an annual average in 2021, the index of exported commodity prices rose by 41.1%, mainly due to an increase in the prices of energy products (80%), metals and minerals (27%), forestry products (6.3%), agricultural products (5.3%) and fishery products (3.4%). The main external factors impacting the prices of these products were the global economic recovery, especially in developed countries, following the easing of containment measures (due to the Covid-19 pandemic) and the gradual resumption of air traffic; the continuation of the policy of the Organization of the Petroleum Exporting Countries (OPEC) which did not wish to increase its production, despite the constant increase in demand for energy products.

In 2023, the composite index of prices of the main exported commodities recorded a decline, due to the unfavorable development of energy products (oil and natural gas). On an annual average, it fell by 15.2%, driven by the decline in the prices of energy products (-27.5%) and forestry products (-9.3%). This downward trend in economic activity in the sub-region is attributable to external factors such as the monetary tightening undertaken by most major central banks, which contributed to the slowdown in global economic activity, particularly in developed countries. In addition, the fall in natural gas prices and the recommitment of the Organization of the Petroleum Exporting Countries (OPEC) and their allies to the agreement signed in 2022 on the reduction of oil production, with a view to maintaining prices at desired levels in the face of persistent economic uncertainties. It is also worth noting the disruption to supply chains caused by the war between Russia and Ukraine, and by tensions in the Middle East, a region home to many oil producers. The table below shows the contributions to GDP of different economic sectors in the face of cyclical fluctuations in the economies of the sub-region.

Table 1: Contribution of sectors to the growth of real gross domestic product as a percentage of CEMAC from 2013 to 2022

Sectors	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Primary	-1 ,1	1,7	1	-1,6	-1,4	0,8	1,1	-0,6	-1,2	0,5
Secondary	0,7	0,3	-0,4	-1,8	0,4	0 ,2	0,5	-0,2	0,8	0,3
Tertiary	2,7	2,6	0,4	1,1	1,3	0,7	0,2	-1	1,7	1,6
GDP at constant market prices	1,6	4,6	1,4	-1,5	0,6	1,8	2	-1,7	1,8	2,9

METHODOLOGY

Our emphasis on the importance of diversification and the role it can play in strengthening country's resilience to macroeconomic risks allows us to adopt two-pronged approach. First, we measure changes in the diversification of member countries' economies using the following Herfindalh index:

$$IH = \sum_{i=1}^{N} \left(\frac{x_i}{X} \right)^2 \quad (1)$$

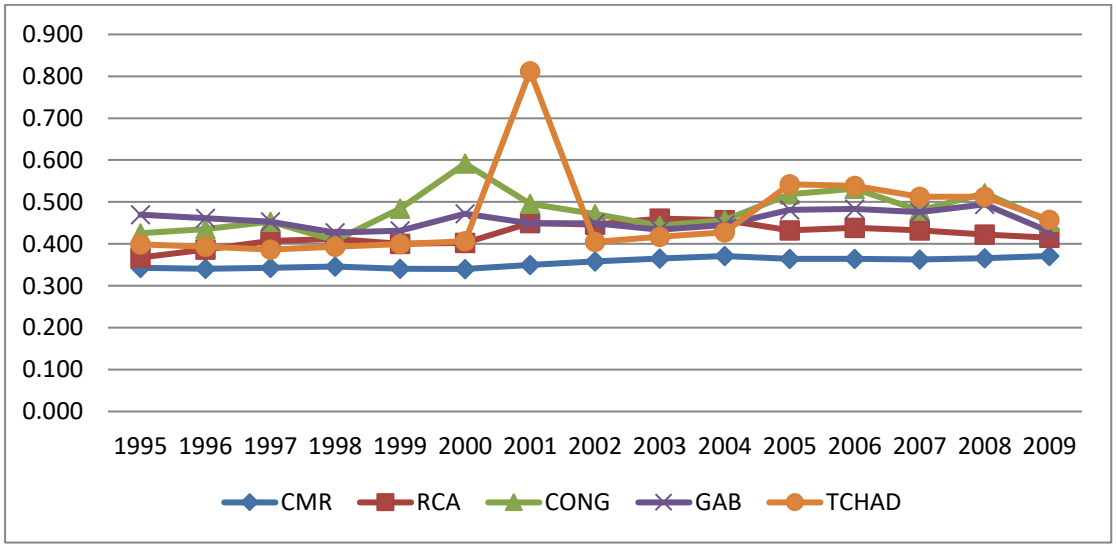
With x_i sector of activity i; X the country's GDP, N the number of sectors of activity and $\frac{x_i}{X}$ the share of sector i in the country's GDP.

The Herfindalh index for each country is the sum of the squares of the sectoral contributions. The effective number of sectors is obtained as the inverse of the Herfindalh index and represents the number of sectors that would exist in the country if all sectors had the same sizes. The interpretation is as follows: the Herfindalh index is equal to 1 if two sectors have a contribution of 0, and only one sector accounts for 100% of the GDP. On the other hand, if all three sectors have the same contribution, the index is equal to 0.333. Between 0.333 and 1, higher values of the index indicate less diversified structures. The effective number of sectors is 1 in the case where two sectors have a contribution of 0 and only one sector accounts for the total GDP, and 3 in the case where all three sectors have the same contribution. Between 1 and 3, a higher effective number of sectors indicates an increasingly diversified economic structure.

Thus, we consider that each CEMAC countries are composed of three sectors: the primary sector encompassing agriculture, livestock, hunting, fishing, forestry and extractive industries. The secondary sector includes manufacturing industries, construction and public works. The tertiary sector takes into account market services and non-market services. We selected five of the six countries in the sub-region (Cameroon, Gabon, Chad, Congo-Brazzaville, Central African Republic), with Equatorial Guinea excluded due to lack of data for the period from 1995 to 2009. The data used come from the various reports of the Bank of Central African States (BEAC). It should be noted that the time frame from 1995 to 2009 for this study was chosen because several political and economic changes took place during this period. This includes the institutional reforms implemented by CEMAC to strengthen economic integration (revision of the CEMAC founding treaty in 2008). In addition, some countries experienced periods of political stability, while others were marked by internal conflicts and political crises that had a negative impact on their economic development (the Central African Republic was marked by armed conflicts that disrupted the economy and political stability). During this period, CEMAC countries also adopted policies aimed at promoting good governance, human rights, and the rule of law.

RESULTS AND ECONOMIC IMPLICATIONS

Assessment of the diversification of sector's structures is based on the Herfindalh Index, illustrated by the graph below.



Graph 1: Evolution of the Herfindalh Index

This graph shows that the Herfindalh indices of all countries generally increased during the study period. It also shows that Cameroon is the country that ranks first in terms of economic

diversification within the sub region, with a Herfindalh index below 40% over the entire study period. Indeed, the diversification process in this country is characterized by relative instability. The primary and secondary sectors have helped compensate for the decline recorded in the tertiary sector. In the primary sector, subsistence agriculture has seen significant growth thanks to continued government support for farmers, including the free distribution of seeds and phytosanitary products, technical assistance for crop selection based on areas, seasons, and even changes in market demand. The good performance of the secondary sector, namely manufacturing industries, is largely attributable to the cement, textile and oil refining sectors, in which investments have continued to meet demand. The contribution of the electricity, gas and water sector has also been of particular interest, thanks to the emergency program launched in 2007. The building and public works sector also represents a considerable portion of Cameroon's GDP, thanks mainly to the continuation and acceleration of development work in major cities, as well as the launch of social housing construction sites in the cities of Yaoundé and Douala. As for the tertiary sector, trade, hotels and restaurants, as well as transport and communications, have seen a marked improvement, largely due to the expansion of mobile telephony and the substantial improvement in the quality of services in hotels.

However, in Chad, the economy is highly concentrated overall, which has been reinforced since the early 2000s, with the advent of the oil sector, which took off in 2003. Indeed, despite the relative contribution of subsistence agriculture, especially cereal production (penicillin, sorghum, berbere, corn, paddy rice) and livestock to the GDP of this country, attributable respectively to the good distribution of rainfall and satisfactory phytosanitary conditions, the oil sector has always remained the most important in this economy. It has contributed considerably to growth, thanks to the production of the Doba basin deposits. Furthermore, the manufacturing sector, for its part, is sufficiently limited by the energy deficit and the intensification of competition from imported products. Graph 1 shows that from 2008, the diversification index has decreased to below 50%. This situation could be explained by the fact that certain sectors have begun to emerge in the growth dynamic, in the face of the decrease in oil production, due to the recurring presence of water in the oil aquifers. The secondary sector has thus experienced growth, supported primarily by Buildings and Public Works, thanks to the continued construction and rehabilitation of public buildings, road and airport infrastructure. Work carried out in 2009 focused in particular on the construction of the Bokoro-Arboutchatak and Oum Hadjer-Mangalmé roads. The water and electricity sector also saw a slight improvement in energy production thanks to the support of certain friendly countries (China and Libya).

In the Central African Republic, the productive structure of goods also shows a high concentration. The Herfindalh index remained relatively stable during the period, demonstrating little diversification. Coffee, tobacco and timber are classic export products. Diamond production appears to remain constant. As of today, the Central African Republic remains the only non-oil country in CEMAC.

In Congo, an examination of the diversification index shows that economy is also concentrated. The observed instability of the Herfindalh index reflects the poor results of the diversification policies undertaken by this country. In the primary sector, the contribution of the agriculture, livestock and fishing sector has evolved, notably with the good sugar harvest carried out by Saris-Congo, the revival of food and market gardening crops following the implementation of the Agricultural Support Fund (FSA), and the improvement of the supply of food products to the city of Brazzaville, favored by the completed paving of the Brazzaville-Kinkala road. Gabonese economy is also highly concentrated, the range of export products, mainly composed of crude oil, manganese and wood, has hardly varied during the period under review. These products have experienced a slight expansion in value, but their relative weight in exports is relatively constant. Overall, CEMAC economies are characterized by a low level of diversification, so experiences in this area have varied between countries, but generally speaking, most of them have not succeeded in orienting their production towards new sectors. However, it would be prudent not to draw hasty conclusions about the evolution of economic diversification in this sub-region.

One could conclude, in light of these trends, that member countries as a whole are less efficient in terms of trade-off between expected return and risk. This is not necessarily true, however, considering a scenario that could contradict this intuition. Indeed, CEMAC countries could have oriented their activities towards sectors characterized by higher risk and expected return, which could improve their performance in terms of risk diversification.

In the second stage of our methodological approach, and in the interest of improving the representation of the evolution, in terms of estimated return-risk performance, we describe more precisely the sectoral characteristics of the member countries of the sub-region. Inspired by Markowitz's portfolio theory, we establish an analogy between the evolution of a country's product and that of a financial security, as did Goldberg and Levi (2000). Indeed, for the latter, each country is described by the mean and standard deviation of the annual growth rate of its GDP, which correspond respectively to the expected return and the risk of a financial security. However, the approach of Goldberg and Levi (2000) does not integrate the characteristics of the countries forming a monetary union. However, these characteristics are likely to evolve as the integration

dynamic is initiated. Thus, as Gunther and Robinson (1999) did, we consider countries not as securities characterized by their own risk and their own expected return, but rather as a sum of sectors of activity. In this case, it is a question of establishing an analogy between sectors of activity and financial securities, with the mean and variance of the annual growth rate of a sector, the expected return and the risk of a financial security respectively. Inspired by Méon and Weill (2003), we study the evolution of the estimated return-risk performance of the different CEMAC countries in a first step, and of the sub-region as a whole in a second step.

Adapting the portfolio method allows us to describe the assets that make up the portfolios and determine their respective weights. Like Gunther and Robinson (1999), we consider countries as portfolios whose basic assets are sectors of activity. By operationalizing, we calculate the average annual growth rate of the production of each sector of activity interpreted as the equivalent of the expected return of a financial security and the volatility of production in the sector as the risk associated with a financial security, defined as follows:

$$\text{Expected return}_{j,t} = \sum_{i=1}^{3} \alpha_{i,j,t}\rho_i \qquad (2)$$

Where ρ_i represents the average annual growth rate of sector i (i= 1, 2, 3), and

$$\alpha_{i,j,t} = \frac{\text{sector i in country j during year t}}{GDP_{j,t}}$$

$$Risk_{j,t} = \sqrt{\sum_{i=1}^{3}\sum_{k=1}^{3} \alpha_{i,j,t}\alpha_{k,j,t}\Omega_{i,k}} \qquad (3)$$

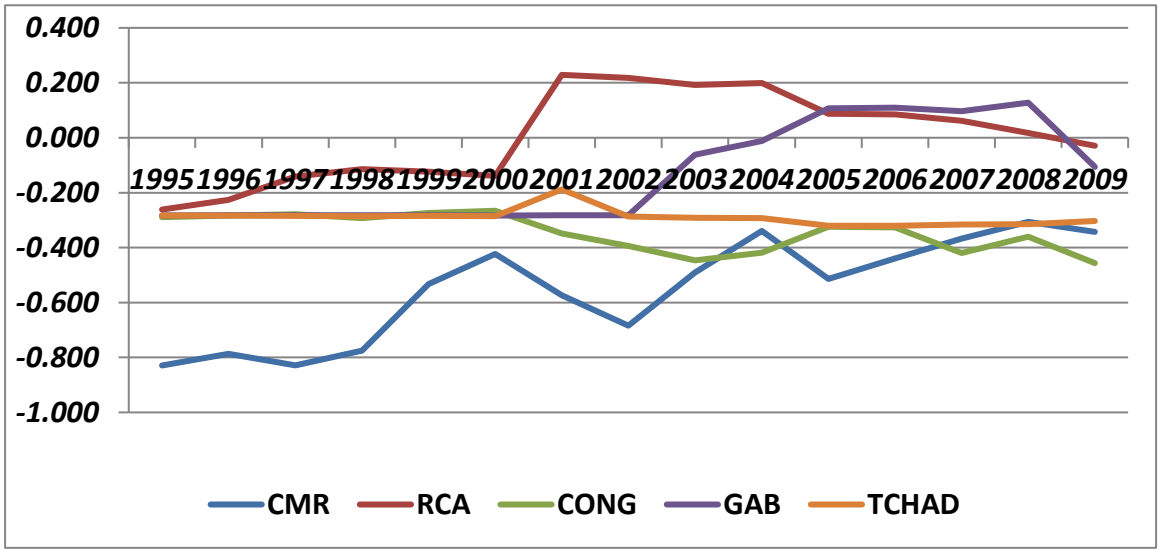
With $\Omega_{i,k}$ represents the covariance of the growth rate of sector i with that of sector k. Once the risk and expected return of each sector have been defined, as well as its share in the country's portfolio, we measure the estimated performance of a country by the inverse of its coefficient of variation, which is equal to the average growth rate of its sector portfolio divided by the standard deviation of its portfolio. That is determine the following ratio:

$$E_{j,t} = \frac{E_{j,t}}{Risk_{j,t}} \quad (4)$$

In the absence of a collective utility function that would allow us to classify situations in terms of well-being, we are forced to use the estimated performance measure to assess the relevance of portfolios of economic sectors.

Evaluation of the Performance of Economic Sector Portfolios

The results of the evaluation of the risk-return performance of the sectoral diversification of activities within CEMAC are shown in Figure 2 below.

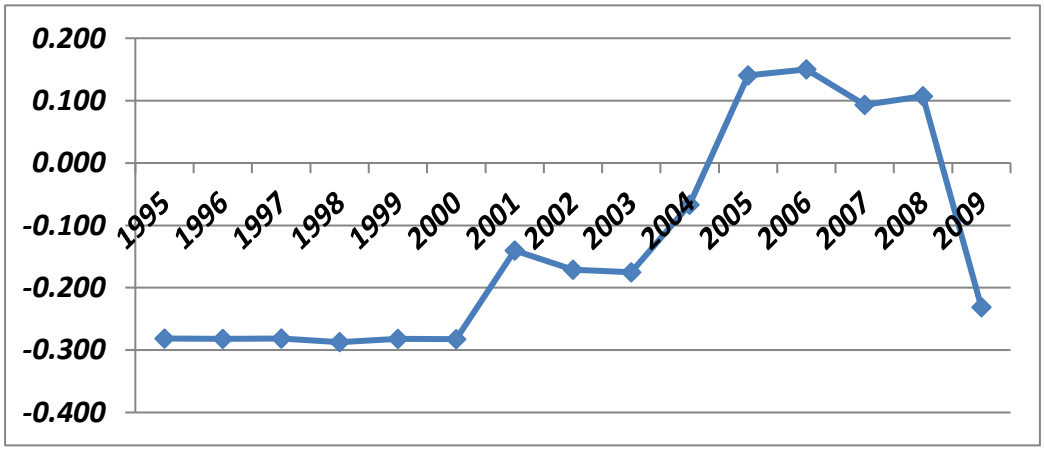


Graph 2: Evolution of the estimated return-risk performance for CEMAC countries

A quick glance at Figure 2 is enough to see that, overall, CEMAC countries have been less successful, with negative returns. Indeed, this figure clearly shows that the countries of the sub region have not managed to accumulate significant gains in diversification. Except for Cameroon, despite being the most diversified of all, it has not managed to achieve true horizontal diversification, which would include high value-added export products. On the contrary, it has experienced vertical diversification, with an increase in exports of products, unfortunately of low value, still requiring a very large and low-yield workforce, which has not allowed this country to use these exports to support rapid economic growth. These results are in line with those obtained by Ngangoue (2016) who finds that CEMAC economies are characterized by a low level of

diversification, with diversification experiences varying between countries. Kamgna (2007) also finds that the explanatory factors of diversification such as the budget balance, the degree of trade openness and the investment rate are likely to favor the concentration of economies in CEMAC. From the year 2000, the performance regime of the business sector portfolios has changed somewhat. Some countries, such as the Central African Republic and Gabon, have made a good start, recording remarkable gains in diversification before experiencing a decline, likely due to "Dutch disease." This phenomenon may have played a decisive role in the performance of sector portfolios in the sub region. In most cases, the explosion of single-product exports has played a role in diverting production factors from other products, particularly those related to oil, which has had the effect of reversing and reducing the contribution of previous industries to the diversification process.

The experiences of Chad and Congo in terms of diversification are good examples, given the decline in their expected risk-return performance. Indeed, these countries have not been able to implement the strategy to include new products that could gain their place alongside petroleum products, which remain traditional exports. Regarding the sub-region as a whole, the graph below (graph 3) illustrates the evolution of performance in the diversification dynamics of CEMAC, considered as a portfolio of the five member countries, representing the assets of portfolio, each having an expected return and a risk.



Graph 3: Evolution of the estimated return-risk performance of the Cemac zone

The results at the sub-regional level indicate that the diversification efforts deployed in the 2002s were encouraging. However, the related gains were not sustainable, given that they did not withstand the pressures of the various crises. CEMAC as a whole failed to lay solid foundations

for building diversified economies, and the weak renewal and modernization of productive potential had a significant impact on CEMAC countries at certain levels. First, this situation partly explains the fragility of growth in this sub-region. Indeed, growth dynamics have settled into a "soft underbelly." These are more closely linked to the evolution of world prices for certain exported products such as oil, coffee, or cocoa than to the performance of the productive sector. Furthermore, the fragility of the local productive fabric has had an impact on the performance of export sectors and has resulted in a deepening of the marginalization of these economies in globalization.

CONCLUSION

This analysis highlights the persistent challenges related to economic diversification and macroeconomic risk management in CEMAC. The results, revealing low diversification and limited performance in terms of returns and risk management, reflect a marked dependence on a limited number of economic sectors. This situation increases the subregion's vulnerability to exogenous shocks, hampering its potential for economic resilience. To reverse this dynamic, concerted efforts are needed. It is in this context that the following economic policy recommendations are made.

RECOMMENDATIONS

These aim to strengthen economic resilience and maximize the benefits of regional integration. This includes promoting more ambitious sectoral diversification through structural reforms, encouraging the development of non-oil sectors, including agriculture, manufacturing, and services, to reduce dependence on raw materials. Spatial planning policies can also play an important role when growth is unevenly distributed across regions and some countries are lagging behind. These policies can be based on government interventions designed to stimulate economic development in certain countries by attracting productive and innovative businesses. Investment policy and promotional measures can support diversification by stimulating foreign direct investment. The right approach is to invest in transport, energy, and telecommunications infrastructure to facilitate trade and improve the competitiveness of member economies. At the same time, it would also be necessary to develop more effective tax strategies to increase public revenues and reduce dependence on external financing. To this end, it is imperative to implement anti-corruption mechanisms and strengthen the effectiveness of economic institutions to attract more investment in the sub-region. Finally, monetary policy and banking supervision must be strengthened to ensure the stability of the financial system and prevent economic crises. This

comprehensive approach could enable CEMAC to lay the foundations for a more stable and efficient economy in the long term.

REFERENCES

Abdulfatai, A. & Oluwatosin, A. (2021). The Impact of Fragility on Growth and Poverty in Nigeria: A State-Level Disaggregated Analysis. *African Economic Research Consortium.* Working Papers.

Acemoglu, D. & Zilibotti, F. (1997). Was Prometheus Unbound by Chance? Risk, Diversification, and Growth. *Journal of Political Economy* .Vol.105. pp. 709-751.

African Development Bank (2019). Evaluation of the AfDB Strategy for Addressing Fragility and Building Resilience in Africa (2014-2019).

African Development Bank (2020), Fragility and Resilience.

Ben Hammouda, Nassim O. & Mustapha S. J. (2009). From Spontaneous to Organized Diversification. *Economic Review.* vol. 60.

Berthélemy, J. (2005). International Trade and Economic Diversification, *Journal of Political Economy,* Vol. 115.Issue 5.

Brian, A. (2015). Complexity and the Economy, Complexity and the Economy. New York: Oxford University Press. Google

Claessens, S. Dell'Ariccia, Igan, D. & Laeven, L. (2010). Cross-Country Experience and Policy Implications from the Global Financial Crisis. *Economic Policy,* Vol. 62, pp. 269-293.

Collier, P., Elliott, H., Hegre, A., Hoeffler, M., Reynal-Querol, & Sambanis, N. (2003). Breaking the Conflict Trap: Civil War and Development Policy. Washington, DC: World Bank and Oxford University Press.

Fama, E. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of Finance*. Vol.25.Issue 2, pp. 383-417

Goldberg, M., & Levi, M., (2000). The European Union as a country portfolio. *European Journal of Political Economy*. Flight. 16, pp. 411-427.

Gunther, J. & Robinson, J. (1999). Industry mix and lending environment variability: What does the average bank face? *Economic and Financial Review*. pp. 24-31.

Kamgna, S. Y. (2007), Economic diversification in central Africa. MPRA Paper No. 9602, posted 18 Jul 2008 01:50 UTC. Online at https://mpra.ub.uni-muenchen.de/9602/

Kydland, F. & Prescott E. (1982). Time to Build and Aggregate Fluctuations. *Econometrica*. Vol.50. pp. 1345-1370

Lane, P.R. & Milesi-Ferretti, G. M. (2010). The Cross-Country Incidence of the Global Crisis, *International Monetary Fund* WP/10/171

Lintner, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *Review of Economics and Statistics*.

Markowitz, H.M. (1959). Portfolio Selection. New York: Wiley Press.

Méon P. G. & Weill, L. (2003). European integration and diversification of macroeconomic risks. *International Economy*, No 93, pp. 117-134.

Meryem C. & Chams-Eddoha M. (2024). Factors of Organizational Resilience: A Systematic Literature Review.

Ngangoue, F. (2016). Planning and Organizing Economic Diversification in Central Africa. *Congolese Management Review*. Vol. Issue1 (21, 22).pp. 45-87.

OECD (2020). Main Economic Indicators. Vol. 2020 (10). OECD Publishing, Paris. Available online: OECD.

Petit, M., Barghouti, S. (1992). *Diversification: Challenges and Opportunities*, in Barghoti, S., Gaebus, L. & Umali, D. (edited by), Trends in Agricultural Diversification: Regional Perspectives. World Bank Technical Paper #180, Washington, DC: The World Bank.

Romer, P.M. (1990). Endogenous Technological Change. *Journal of Political Economy*, Vol. 98, pp. 71-102.

Sharpe, William F. (1964).Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *Journal of Finance*.Vol. 19. Issue 3, pp. 425-42

Sindu, K., Ghassan, B. & Ngenoh, E. (2021). Correlations between fragility and poverty: A micro-level analysis in Kenya, African Economic Research Consortium Working Papers.

World Bank (2017). Annual Report 2017.

WTO (2020). Annual Report 2020. Available online: WTO.