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Does the Development of Financial Services Improve Export Diversification? The Case of the Cemac Zone

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The main objective of this paper is to analyze the effect of financial services development on export diversification in the countries of the Economic Community of Central African States.
Methodology: We applied the two stage least squares estimation method on a panel model to capture the effects of financial services on Theil's export concentration index. The sample comprises five countries observed over the period from 2007 to 2022.

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Results: The results show that, the development of financial services and the increase in intra-regional trade in this community promote export diversification. In addition, increased investment and access to electricity are key to export diversification in this region.
Recommendation and conclusion: Hence the need for these countries to implement policies conducive to trade liberalization and investment promotion in the CEMAC zone. Economic liberalization and investment development are essential to export diversification.

Keywords: Financial development; export diversification; central african economic and monetary community; two stage least squares.

1. INTRODUCTION

In recent years, African countries have found that diversifying their exports and economies is the best way to cope with multiple crises and prosper in the global economy [1]. What's more, it provides a buffer against the vagaries of the economic climate, exacerbated by unstable commodity prices. There are many opportunities for these countries to transform, diversify, and become more competitive [2]. De. Similarly, the Food and Agriculture Organization of the United Nations [3] maintains that, in the absence of export diversification in developing countries, declining and fluctuating export earnings have hurt income, investment, and employment. As a result, the risks of investing in other sectors and value chains are spread over a wider portfolio of economic sectors, resulting in higher revenues [4]. According to Romer [5], diversification can be seen as a factor that contributes to improving the efficiency of other factors of production [6]. In addition, diversification helps countries to protect themselves against terms-of-trade deteriorations by stabilizing export earnings. In addition, diversification can be inter-industry, i.e. it enhances the development of export sectors to reduce countries' dependence on a few basic products [7].

For some years now, the development of financial services has been at the heart of economic development policies in African countries, as it is a fundamental instrument enabling them to transform development potential into real opportunities. The development of financial services enables the private sector in general and producers in particular in African countries to truly implement economic choices. The development of financial services makes it possible to operationalize non-conventional financing mechanisms for the benefit of producers, while at the same time extending and modernizing the spectrum of financial products and services on offer. It enables us to offer producers more innovative, business-focused products that are likely to improve the operational efficiency and competitiveness of small and medium-sized enterprises.

These new currents of thought, spurred on by Structural Adjustment Programs, place the development of the financial sector and the diversification of exports at the heart of the development process, certainly because of the crucial role it is assigned. Governments and development partners are giving pride of place to aid projects designed to promote the development of financial services. Its role raises the question of whether the development of financial services should contribute to diversifying and upgrading export models, attracting investment in growth sectors, and fostering innovation in domestic industries, productivity, and exports. These facts are increasingly relevant in the context of trade liberalization and preferential agreements, where countries are called upon to derive maximum benefit from the development of their exports to create jobs and balance their trade balances.

2. LITERATURE REVIEW

Older growth theories have focused on labor, capital, and institutions as growth drivers. However, these theories had difficulty integrating finance as a growth factor. Several studies have therefore focused on the mechanism of economic development through the development of the financial system.

Although the development of financial services has become a crucial issue, problems remain in terms of data availability as well as an adequate framework for theoretical development. From a macroeconomic point of view, Goldmith's original article [8], highlighting the relationship between financial development and economic development, aroused great interest in the issue [9,10,11].

Economists agree that there is a relationship between financial development and economic development. The development of financial systems contributes to economic development [12]. Recent surveys show that access to the financial system has a direct bearing on innovation. An analysis of countries shows that finance has an impact on growth through productivity gains [13]. It has also been shown that the development of the financial system plays an important role in cushioning the impact of external shocks on the local economy [14].

In addition to debates about the role of finance in economic development, existing studies have also shown the relative importance of financial markets over time [8,15].

For Schumpeter, banks play an important role in economic development. The Schumpeterian thesis points to the impact of banks on the production of growth [16]. It has been established that better development of banks and financial markets is a prerequisite for rapid growth [17,18]. Improving the functioning of banks could lead to a better allocation or redistribution of resources and boost growth [19,20]. Banks have a significant causal effect on productivity and growth, helping to boost overall GDP. Some researchers argue that the size of the banking sector can be considered a good indicator of future growth, especially when focusing on long-term projects [18].

As macroeconomic indices show, mature financial systems have a very positive long-term impact on economic growth (Demirgüç-Kunt & Levine, 2008) [18]. These various illustrations point to a consensus that the relationship between banking penetration and poverty stems from the fact that households maximize profits rather than income, their objective being to synchronize income flows with consumption needs. For some authors, the lack of use of financial services can maintain the vicious circle of poverty and, in turn, contribute to an increase in inequality [21,22,23].

Furthermore, diversification allows the risks associated with investments to be spread over a wider portfolio of economic sectors [4], which can lead to job creation and higher incomes. For Romer [5], diversification can be seen as a factor that contributes to improving the efficiency of other factors of production and the development of value chains.

For Kletzer & Bardhan [24], financial development plays an important role in the diversification of financing for industries with this need. They put forward a theoretical model that analyzes the role of institutions, financial markets, and other instruments in channeling resources to exporting firms. Their model is based on Heckscher-Ohlin, with two countries and two sectors using two factors of production. Also, Ruffin [25] shows that the relationship between financial development and trade is characterized by the uncertainty of financial markets on foreign trade activities, resulting from exchanges on world markets through payments, exchange rates, and uncertainties on marketing costs.

Economic theory points to the existence of a multitude of factors that are likely to promote improved export diversification [26]. However, depending on the assumptions made about product categories, market size, and market type, it appears that the majority of developing countries struggle to benefit from the gains of international trade due to the low competitiveness of their exports [27,28]. It is therefore essential to focus on the determinants that can enable these nations to develop their level of diversification on a national and regional level to be more competitive on the international market.

Several empirical studies have shown that export diversification helps to stimulate growth in per capita income. Love (1986), for example, suggested that a country should avoid heavy reliance on exports of a limited number of products, as this diminished its ability to partially offset fluctuations in certain export sectors with more stable ones.

For example, Romer [5] saw diversification as a factor of production, while Acemoglu & Zilibotti [4] argued that diversification could increase earnings by spreading investment risk over a wider portfolio. However, more recent studies have focused on the existence of a non-monotonic relationship between diversification and growth.

Interestingly, the work of Imbs & Wacziarg [29] raises the important question of whether this U-shaped curve would also apply to export diversification. Klinger & Lederman [30] have shown that this is indeed the case. Using disaggregated export data, the authors found that, overall, diversification increased in less

developed countries, but declined when the country exceeded a certain middle-income level. In addition, Klinger & Lederman [30] analyzed the relationship between new export products and level of development. In this particular case, they found that the number of new export products followed an inverted U-shaped curve about income, indicating that economies become less concentrated and more diversified as income increases. Cadot & al, [31] propose a revisited decomposition of Theil's concentration index that directly presents the extensive and intensive (new products or new markets) margins of export diversification. To analyze how the two margins evolve as a function of GDP per capita, the authors established a vast database covering 156 countries. They also found a hump-shaped relationship (inverted U curve) between economic development and export diversification, a finding corroborating those of Klinger & Lederman [30].

In practice, various empirical studies have shown that growth and/or factor productivity are positively rather than negatively linked to economic diversification. Some recent empirical studies highlight the role of export sophistication in the growth process [32,33].

However, some studies have pointed out that the preferences obtained by exporters through regional integration lead to diversification and the development of sophisticated exports, even in products in which the country does not have a comparative advantage.

3. METHODOLOGY AND DATA

3.1 Model Specification

The analysis of the effect of financial development on export diversification is part of the general economic literature on the link between financial development and export diversification. Thus, the following export demand function forms the theoretical basis of the econometric model specified in this analysis.

$$X_{i,t} = A\left(EP_{e,x} / P^{*}_{i,m}\right)^{\delta}_{i,t} W^{\lambda}_{i,t} \quad (1)$$

Here, $X_{i,t}$ is the level of exports, A is a constant, *E* is the measure of the nominal exchange rate as the foreign price of the domestic currency while $P_{e,x} / P^{*}_{i,m}$ is the ratio of domestic export prices to import prices as represented by the real exchange rate and measured by $\left(EP_{e,x} / P^{*}_{i,m}\right)$. The term *W* is the level of world income. Linearization of this equation gives:

$$LnX_{i,t} = \alpha + \delta\left(LnE + LnP_{e,x} - LnP^{*}_{i,m}\right)_{i,t} + \lambda LnW_{i,t} \quad (2)$$

$$\left(\frac{\dot{X}}{X}\right)_{i,t} = \delta_{i,t} + \lambda_1 Tréel_{i,t} + \lambda_2\left(\frac{\dot{W}}{W}\right)_{i,t} + \varepsilon_{i,t} \quad (3)$$

In this relationship, $\left(\frac{\dot{X}}{X}\right)$ indicates the level of export diversification, $Tréel$ the real exchange rate and $\left(\frac{\dot{W}}{W}\right)$ the growth rate of world real income. To capture the role of financial development in the export diversification model, we can include indicators of financial development as well as other determinants of export diversification $(Z_{i,t})$ in equation (3) as follows:

$$\left(\frac{\dot{X}}{X}\right)_{i,t} = \delta_{i,t} + \lambda_1 Tréel_{i,t} + \lambda_2\left(\frac{\dot{W}}{W}\right)_{i,t} + \lambda_3\, Developpement\ Financier + \beta \cdot Z_{i,t} + \varepsilon_{i,t} \quad (4)$$

In this equation, *i* represents the index associated with each country, *t is* the index associated with time, ε represents the error term, and β' the various coefficients. To better understand the two aspects of export diversification, Theil's concentration index, which integrates the horizontal and vertical aspects of this process, will be used as a measure of export diversification. All the variables in this study are presented in the following table.

In this study, we use data from several countries observed over a specific period. Thus, the integration of the various indicators and variables contained in the previous table into equation (4) leads to the formulation of the following panel model:

$$\text{(Theil export concentration index)}_{i,t} = \alpha + \beta_1\,\text{(Share of intra-trade)}_{i,t} + \beta_2\,\text{(Financial development)}_{i,t} + \beta_3\,\text{(Investment liberalization)}_{i,t} + \beta_4\,\text{(GFCF \% GDP)}_{i,t} + \beta_5\,\text{(Electricity access rate)}_{i,t} + \beta_6\,\text{(Property rights)}_{i,t} + \beta_7\,\text{(Real GDP)}_{i,t} + \beta_8\,\text{(Political instability)}_{i,t} + \delta_i + \mu + \varepsilon_{ti,t} \quad (5)$$

Table 1. Presentation of variables

Variables	Descriptions	Sources
Financial Development	The Financial Development Index (FD) is an index of countries according to the depth, access, and efficiency of their financial institutions and markets.	IMF 2023
Share of intra-regional trade	Defined as the sum of a country's intra-regional exports and imports about the region's total intra-regional trade.	UNCTAD, 2023
Export concentration	Measured by the Theil index of export concentration. This indicator represents the sum of the intensive and extensive margins of the agricultural product diversification process. Values range from 0 to 1.	BACI, 2023
Customs duties	Indicators measuring tariff barriers about the level of import and export taxes.	UNCTAD, 2023
Trade liberalization	Measures the absence of restrictions preventing individuals from acting as buyers or sellers on an international scale. Values range from 0 to 100.	Heritage Foundation 2023
Investment liberalization	Measures the absence of restrictions that might prevent individuals from investing internationally. Values range from 0 to 100.	Heritage Foundation 2023
Political instability	Political stability gives a perception of the probability of destabilization of the government through non-constitutional means. Its values range from -2.5 to +2.5.	WGI, 2023
Investments	They refer to capital accumulation, measured by gross fixed capital formation as a percentage of GDP.	WDI, 2023
Infrastructure	Infrastructure will be measured by the rate of access to electricity as a percentage of the total population.	WDI, 2023
Property rights	Indicator measuring the right held by a natural person or legal entity to dispose of property of any kind under the conditions laid down by law.	WDI, 2023
Real GDP	This variable measures the size of the market, taking into account the weight of the economy and returns to scale.	WDI, 2023

Source: Authors based on data from (WDI, 2023; BACI, 2023; UNCTAD, 2023 and Heritage Foundation, 2023).

This model is plagued by several econometric problems. These include the endogeneity problem, which may be due to the omission of relevant explanatory variables in this model, given the multitude of determinants of export diversification. The same applies to the existence of double causality between certain indicators such as GDP and diversification [29]. Similarly, export diversification is a dynamic process. Thus, the level of diversification at the present moment depends on its level at the last moment. This generates a memory effect, which necessarily requires past values of this indicator to be taken into account, and which can be a source of endogeneity. Faced with these difficulties, the ordinary least squares estimation method proves inadequate to provide relevant results, hence the use of the Double Least Squares method, which resolves this endogeneity problem.

3.2 Study Data

This study examines the effect of regional trade integration on export diversification in the countries of the Economic Community of Central African States. The data covers 10 member countries of this community, and the study period is from 2007 to 2022. The data are taken from the WDI 2023, WGI 2023, UNCTAD 2023, BACI 2023, and Heritage Foundation databases.

3.3 Analysis and Interpretation of Results

This sub-section is devoted to presenting and interpreting the results of this study's estimates, carried out using the Double Least Squares method.

3.4 Presentation of Estimation Results

Three tables summarize the econometric analyses carried out in this work. These include the table of descriptive statistics for the variables in the econometric model used.

Following this presentation of the descriptive statistics table, it is also important to present the correlation matrix of these different variables.

Table 2. Descriptive statistics for the variables used

Variables	Mean	Std.Dev.	Min	Max
Theil index	0.634	0.161	0.304	0.899
FinDev	0.088	0.016	0.052	0.121
Real GDP	23.343	0.403	22.754	24.314
Trade liberalization	4.038	0.074	3.854	4.134
Investment liberalization	3.652	0.359	2.708	4.094
Natural resource rents	0.243	0.124	0.057	0.560
Total population	15.432	1.156	13.712	17.043
GFCF	0.297	0.139	0.127	0.780
Access to electricity	0.510	0.278	0.063	0.903
Political stability	-0.529	0.599	-1.726	0.385
FDI	0.061	0.078	-0.048	0.373

Source: Authors based on Stata 15.
FDI= Foreign Direct Investment

The correlation matrix above helps to justify the results of the econometric estimations carried out in this work.

3.5 3-2 Analysis and Interpretation of Estimation Results

Econometrically speaking, both estimated specifications are globally significant, as the statistics associated with the Hausman endogeneity test are below 10%, revealing the absence of the endogeneity problem in these estimates. However, regarding the validity of the instruments used in these estimates, all the probabilities associated with the Sargan/Hansen over-identification test allow us to conclude that the instruments used are valid since the critical probabilities associated with these tests are all greater than 10%. As for the choice between the fixed-effects and random-effects models, it appears that the Hausman test, which has a probability greater than 10%, does not allow a choice to be made between these two types of models.

From an economic point of view, it is vital to highlight the fact that among the financial development indicators used in this work, GDP is significantly and negatively linked to export concentration in CEMAC countries. As the overall financial sector develops, access to credit improves for companies, enhancing their ability to increase production, productivity, and the share of exports of products versus primary products, resulting in increasing export diversification. The same applies to population, Foreign Direct Investment (FDI), and Gross Fixed Capital Formation. However, taking into account the existence of natural resource rents and political instability does not influence the diversification of exports from CEMAC countries. Furthermore, these results can be justified by the fact that, despite the efforts of CEMAC countries to promote the reduction of tariff barriers in the trade sector to improve export diversification, these exports are largely made up of commodities and raw materials. Thus, there are still other non-tariff barriers in the research and development sector that compromise the process of diversifying Central African exports.

This finding is similar to that of Bollaert et al, [34], who conclude that the positive externalities of rapid growth in the development of financial services are conducive to a democratization of the supply of financial services likely to help SMEs mobilize the funds they lack to finance the diversification of their exports.

Based on the following findings, it is of paramount importance for CEMAC countries to implement a set of initiatives conducive to investment development and trade liberalization. Hence the following recommendations:

- Promote economic liberalization in its three aspects: trade liberalization, investment liberalization and financial liberalization in CEMAC.
- Accelerate the process of structural transformation in CEMAC countries, through the transition from the production of commodities to the production of high value-added goods and services.
- Stimulate the development of financial intermediation in CEMAC countries.

Table 3. Correlation matrix for the variables used

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Theil index	1.000										
FinDev	0.035	1.000									
Real GDP	-0.881	0.024	1.000								
Trade liberalization	-0.070	0.312	0.175	1.000							
Investment liberalization	0.027	-0.133	-0.167	-0.223	1.000						
Natural resource rents	0.646	0.052	-0.689	0.067	-0.300	1.000					
Total population	-0.333	-0.292	0.433	-0.047	0.107	-0.562	1.000				
GFCF	0.249	0.186	-0.273	0.224	-0.404	0.328	-0.207	1.000			
Access to electricity	-0.463	0.401	0.373	0.243	-0.034	-0.024	-0.583	-0.120	1.000		
Political stability	-0.021	0.304	-0.120	0.211	-0.117	0.424	-0.828	0.169	0.752	1.000	
FDI	0.064	0.242	-0.162	0.063	-0.103	0.174	-0.174	0.447	0.040	0.141	1.000

Source: Authors based on Stata 15.

Table 4. Estimation results for the econometric model

	2SLS (FE)	OLS (FE)	OLS (RE)
VARIABLES	Theil index	Theil index	Theil index
FinDev	-2.481*	-1.283**	1.557***
	(1.438)	(0.517)	(0.423)
Real GDP	-0.321***	-0.133**	-0.0866*
	(0.113)	(0.0646)	(0.0516)
Trade liberalization	0.134	0.0365	0.258**
	(0.207)	(0.110)	(0.110)
Investment liberalization	-0.0911	-0.0243	0.0533
	(0.0638)	(0.0385)	(0.0358)
Natural resource rents	0.0567	0.146	0.290***
	(0.188)	(0.126)	(0.107)
Total population	-0.621***	-0.386***	-0.0945***
	(0.207)	(0.117)	(0.0183)
GFCF	-0.343**	-0.155	-0.0701
	(0.135)	(0.0980)	(0.0703)
Access to electricity	1.655***	0.645*	-0.411***
	(0.565)	(0.353)	(0.0839)
Political stability	0.00256	-0.0207	-0.0648**
	(0.0480)	(0.0259)	(0.0256)
FDI	-0.385**	-0.105	-0.198**
	(0.160)	(0.0896)	(0.0997)
Constant	17.00***	9.179***	2.874**
	(3.643)	(2.184)	(1.144)
Observation	55	80	80
R-square		0.675	
Number of countries	5	5	5
Model selection (Hausman test)		0.0022	0.0022
Endogeneity test (Hausman)	0.4675	0.4675	
Over-identification test (Sargan/Hansen)	0.1730	0.1730	

*NB: For these results, *** denotes significance at 1%; ** for significance at 5% and * *corresponds to significance at 10%.*

4. CONCLUSION

In conclusion, the results of our study enable us to formulate economic policy recommendations for CEMAC countries, focusing on the development of the financial sector, because as the overall financial sector develops, access to credit improves for companies and strengthens their ability to increase the share of manufactured exports over primary products, resulting in greater export diversification.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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