

Can Exports of Goods and Services Be Considered an Engine of Economic Growth in Côte d'Ivoire?

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Abstract

Openness to international markets is a key factor in a country's economic development. The relationship between exports of goods and services and economic growth has been extensively researched in recent years and is considered essential for developing and enhancing economic growth. This article, therefore, examines the relationship between exports of goods and services as an engine of economic growth in Côte d'Ivoire for the period 1965-2023. Using the ARDL model, the results confirm the hypothesis that exports have a positive effect on economic growth in the long run and a negative effect in the short run. The country must opt for a policy targeting its merchandise exports to boost economic growth.

Keywords

Exports, International Trade, Economic Growth, Cointegration, ARDL, Causality

1. Introduction

One of the topics of interest in international economics among development economists is the influence of openness to foreign trade on economic growth. Trade liberalization is considered a source of convergence and a key element for the development of growth and development strategies. One of the key elements of the Washington Consensus was the openness of the economy (Williamson,

1990). Following the Washington Consensus, many international organizations encourage countries to open up their economies through trade as a way to stimulate growth. Hence, institutions, such as the International Monetary Fund (IMF) and the World Bank (WB), made trade liberalization a major condition for granting financial aid and/or economic assistance to developing countries in dire need of financial breathing space.

For these institutions, foreign trade (trade openness) is an engine of growth since it creates jobs, reduces poverty, and opens up economic prospects. According to the [World Bank \(2023a\)](#), trade liberalization increases economic growth by 1.0 to 1.5 percentage points on average, which translates into an increase in income of 10% to 20% after a decade. Since 1990, trade has raised incomes by 24% globally, and by 50% for the poorest 40% of the population. As a result, since then, more than a billion people have been lifted out of poverty through economic growth supported by better business practices.

There are numbers of ways in which rapid export expansion and outward orientation can contribute to increased economic growth. Thus, even if the export sector grows at the expense of other sectors, a positive effect will be felt on overall production. [Hesse \(2008\)](#) asserts that “in several developing countries where domestic demand is often very weak, exports of goods and services remain one of the few channels that contribute significantly to the growth rates of income per capita”. Hence, increase in exports may lead to increase of national income.

Growth models used to comprehend economic performance usually focused on factors such as productive capital, labor, and technology while overlooking to some extent the role of other economic policies, such as trade policy. However, since the successful adoption and implementation of trade openness policies by emerging economies such as China, Brazil, India and East Asian countries in the 1985s, theoretical and empirical analyses have focused on the process of trade openness to recognize its role in economic growth and development. The expected results of these policies have been achieved and served as a basis for the implementation of economic policy recommendations within the ideology of the Washington Consensus ([Asselain & Blancheton, 2005](#)).

Like emerging countries, export of goods and services is a national opportunity since it enables countries to earn foreign currencies. Thus, the decline in exports of goods and services can lead to an increase in poverty as the living conditions of the population deteriorate and government revenues decline, thereby leading to a fall in the imports of capital goods.

In West Africa, Côte d'Ivoire has historically pursued outward-oriented policies, with exports remaining a major source of foreign exchange and growth financing. Indeed, the post-independence Côte d'Ivoire economy was opened to foreign capital and labor. This openness contributed to some extent to the strong GDP growth of 7.2% per year on average, leading to the so-called Ivorian miracle. During that period (1960-1980), exports of goods and services represented more than 70% of total trade. However, this performance was not sustained, and growth

rate fell to 2.2 percent during the 1980s following the fall in coffee and cocoa prices in 1979. This, greatly destabilized the Ivorian economy, reversing economic growth and transforming the Ivorian economic miracle into an economic mirage.

The country entered a period of economic recession and had to call the Bretton Woods institutions for financial assistance together with an economic package. Although with the assistance of the Bretton Woods institutions it was expected that the country would recover and enter a period of sustained economic growth, what we observed after the economic program was ups and downs. This trend of the GDP was like that of the exports of goods and services as if they were moving together.

From this backdrop, could we infer that exports of goods and services were the engine of growth in Côte d'Ivoire? This study seeks to investigate the economic growth and exports of goods and services nexus in Côte d'Ivoire.

The main objective of this study is therefore to contribute to a better understanding of the relationship between exports of goods and services and economic growth in Côte d'Ivoire. Specifically, this study seeks to:

- Determine the short and long-run dynamics of exports of goods and services and economic growth nexus in Côte d'Ivoire.
- Determine the causality, if any, between exports of goods and services and economic growth in Côte d'Ivoire.

In line with the above objectives, it is hypothesized that: 1) Exports of goods and services have a positive and significant impact on economic growth in Côte d'Ivoire. 2) Exports of goods and services cause Ivorian economic growth.

The rest of the paper is structured as follows: Section 2 presents the stylized facts, while selected brief empirical literature on the exports of goods and services and economic growth nexus was reviewed in Section 3. Section 4 briefly explains the methods of analysis and presents the data to be used and its source. Section 5 discusses the empirical results and concludes the article.

2. Stylized Facts

2.1. Exports of Goods and Services and GDP Growth in Côte d'Ivoire

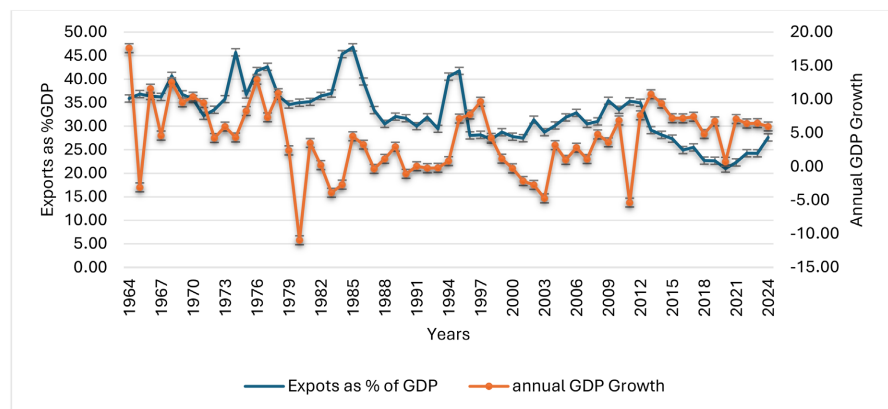
From the mid-1960s to 2023, exports and economic growth in Côte d'Ivoire have experienced a quasi-synchronized evolution. From 1965 to 1967, exports experienced a rather modest growth from 36.40% to 45.69%. We also observe a decline in the level of exports over the period up to 1980 of 35.17%. This decline in the level of exports is due to the deterioration of the terms of trade. From 1980 to 1984, Ivorian exports experienced a sharp increase from 35.17% to 46.77%. This is due to the effect of different strategies, such as the implementation of structural adjustment programs.

As for GDP, it showed a considerable growth from 1965 to 1976 compared to exports as a percentage of the GDP, increasing respectively from -3.10% to 12.91%, before recording a decline until 1980 of -10.95%, under the effect of in-

ternal economic factors in Côte d'Ivoire, such as import substitution strategies, the Value Added Tax (VAT) applied to exported products to protect emerging companies.

In 1989, exports experienced a significant decline that lasted until 1994 from 31.68% to 28.05%, due to the difficulties that Côte d'Ivoire faced during this period. The devaluation of the CFA franc in 1994 revitalized the Ivorian economy, promoting economic growth and a relatively small increase in exports as a percentage of GDP. However, in 2002, economic growth in Côte d'Ivoire recorded a slowdown with a rate of -2.73% at the same time, the share of exports to GDP also declined due to the political crisis that took place that year.

A similar phenomenon was observed in 2011, with a further decline in growth and export due to the post-election crisis. Annual growth rate recorded a decline and stood at -5.37% , while exports stood at 34.98% for exports. These different levels of growth and exports had a negative impact on various sectors of the Ivorian economy. However, since 2012, high global commodity prices and socio-political stability have allowed exports to contribute to economic growth up to 2015, increasing to 7.19%. A comparative analysis of GDP and export trends in Côte d'Ivoire reveals a positive correlation between exports and economic growth (**Figure 1**).



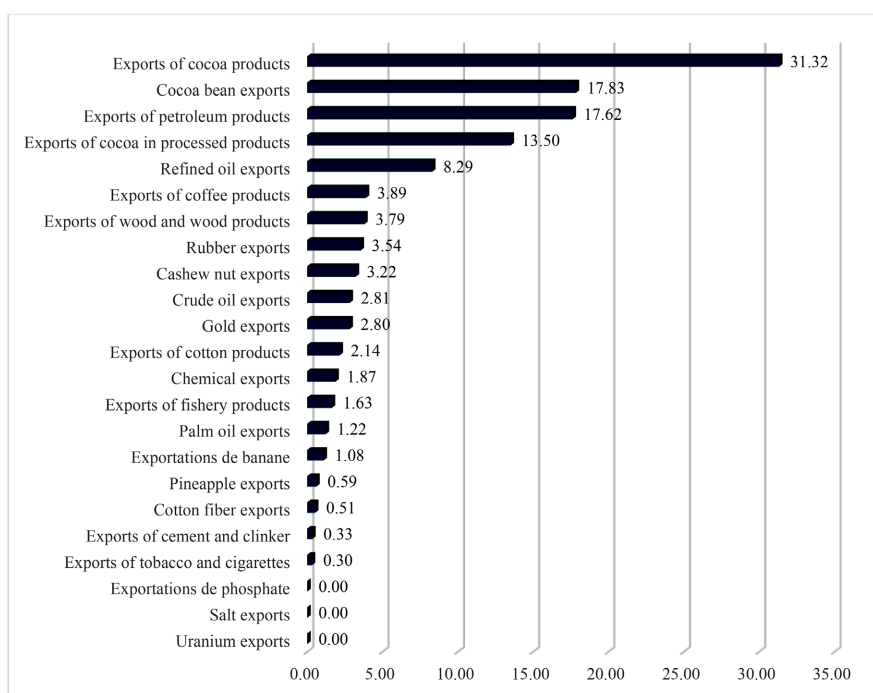
Source: Author, based on WDI data, 2024.

Figure 1. Trend of Exports (% of GDP) and growth in of Côte d'Ivoire from 1964 to 2024.

In a nutshell, from the mid-1960s to 2023, exports and economic growth in Côte d'Ivoire have evolved in a broadly synchronized manner. Beyond correlation, several mechanisms explain the co-movement: i) commodity price shocks (e.g., cocoa, oil) that directly affect export revenues and public finances; ii) macroeconomic adjustment episodes—most notably the January 1994 CFA franc devaluation—which improved price competitiveness and boosted export sectors; and iii) socio-political disruptions (2002 conflict; 2010–2011 post-election crisis) that temporarily reduced production capacity, interrupted logistics and port operations, deterred investment, and tightened financial conditions, thereby depressing both exports and GDP.

2.2. The Structure of the Ivorian Exports of Goods and Services

Figure 2 shows average shares of each product in the total exports over the period ranging from 1964 to 2023. This figure highlights the state of the structure of Ivorian exports. Twenty-three (23) major product groups make up the basket of goods exported by Côte d'Ivoire. Côte d'Ivoire's export basket is dominated by primary commodities with limited domestic processing. Cocoa beans and petroleum products account for a significant share of exports, alongside rubber, cashew, coffee, and wood products. Continued reliance on raw commodities heightens exposure to terms-of-trade volatility and underscores the importance of value addition and diversification.



Source: Author using data from [BCEAO \(2023\)](#).

Figure 2 Share of each product in exports (average over the period 1964-2023).

3. Literature Review

3.1. Theoretical Review

The theoretical anchorage of the economic growth and exports of goods and services nexus is rooted in several economic theories and models including the Export-Led Growth (ELG) Hypothesis, which posits that exports are a key driver of economic growth. The idea is that exports lead to increased productivity, economies of scale, and foreign exchange earnings, which in turn stimulate economic growth ([Kravis, 1970](#); [Balassa, 1978](#)). The neoclassical growth model emphasizes capital accumulation (gross fixed capital formation, i.e. GFCF) and labor. Moreover, their model assumes that countries with higher levels of trade and exports tend to experience faster economic growth ([Solow, 1956](#); [Swan, 1956](#)); the Endog-

enous Growth Theory highlights innovation and human capital accumulation (Romer, 1986; Grossman & Helpman, 1991); and finally, the New Trade Theory which points to increasing returns and market structure, emphasizes the role of increasing returns to scale and monopolistic competition in promoting trade and economic growth (Krugman, 1979; Helpman & Krugman, 1985).

The above theoretical anchorage has remained a broad spectrum for the economic growth and exports of goods and services nexus. It has not always been tailored down to see the extent to which it matches the economic realities of developing countries, especially those in West Africa. It is in that line, that investigating this nexus in the case of Côte d'Ivoire (a West African country) in a context of an increasing youth population (working age population as a percentage of total population), low and volatile investment (usually below the threshold of 20% of GDP set up by the ECOWAS Commission as part of their convergence criteria), dwindling foreign direct investment towards Africa which has been consistently below 3% of GDP since 1994 (N'Zué & Kouadio, 2024), Government consumption expenditures which from Keynesian theory argues that it stimulates economic growth by increasing aggregate demand, particularly during times of economic downturn (Keynes, 1936). Moreover, from the fiscal policy theory, it can influence economic growth by altering the level of aggregate demand and supply (Blanchard, 2006). While from the endogenous growth theory, it can affect economic growth by influencing the accumulation of human capital, innovation, and technological progress (Barro, 1990; Sala-i-Martin, 1997).

Another factor that is often time overlooked when investigating the above nexus is the terms of trade. The terms of trade (TE) are the ratio of the Index of export prices over the Index of import prices time 100. The theoretical anchorage of the relationship between economic growth and terms of trade (TE) is rooted in several economic theories and models. Indeed, Prebisch-Singer Hypothesis in the 1950s, suggests that the terms of trade tend to deteriorate over time for developing countries, as the prices of their primary commodity exports decline relative to the prices of manufactured goods imported from developed countries (Prebisch, 1950; Singer, 1950). In that line of thinking, the structuralist Theory developed by Furtado (1961) and Sunkel (1969), emphasizes the role of structural factors, including the terms of trade, in shaping economic growth and development in developing countries it is important to also indicate that some neoclassical growth models, the Solow model, as well as some endogenous growth models, such as the Romer model suggest that an improvement in the terms of trade can lead to increased economic growth by raising the returns to capital and labor (Solow, 1956) and by promoting technological progress and innovation (Romer, 1990).

The inclusion of the above factors in the economic growth and exports of goods and services as applied to Côte d'Ivoire makes our work original.

In a nutshell, the control variables used in this study are grounded in the following theoretical anchors: i) GFCF reflects capital deepening in Solow-Swan models; ii) government consumption (G) captures Keynesian demand manage-

ment and long-run growth effects through human capital and innovation; iii) working-age population (POP) proxies the labor input and potential human capital accumulation in endogenous growth; and iv) terms of trade (TE) reflect external price shocks consistent with the Prebisch-Singer and structuralist views of commodity-exporting economies.

3.2. Empirical Review

Empirical evidence on the trade-growth nexus is mixed across countries and time horizons. Several studies support Export-led growth (ELG), while others find growth-led exports, reciprocal causality, or negative short-run effects driven by adjustment costs, exchange-rate dynamics, and sectoral asymmetries.

3.2.1. Positive Effects of Exports on Growth: Export-Led Growth

Saminirina and Adamson (2013) studied the relationship between exports and economic growth in Madagascar. The econometric analysis over the period under review shows that a 10% increase in exports leads to economic growth of 0.95%.

The study by *Kpemoua (2016)* analyzed the impact of exports on economic growth in Togo as well as the existence of a causal relationship between these exports and economic growth. The data covers the period ranging from 1960-2014. The empirical results reveal a positive and significant relationship in the long term between exports and economic growth and a causality à la Toda and Yamamoto, running from exports to economic growth.

Hye, Wizarat and Lau (2016) investigated the long-run relationship between trade openness and economic growth in China using data from 1975-2009 in an autoregressive distributed lag (ARDL) setting. The empirical results indicated that trade openness is positively related to long-term and short-term economic growth.

Ijirshar (2019) conducted a study on the impact of trade openness on the economic growth of the ECOWAS Member States using secondary data ranging from 1975 to 2017. He found that trade openness has a positive effect on the growth of the ECOWAS Member States in the long term, but mixed effects in the short term.

Keho (2017, 2019) examined the relationship between exports and economic growth in Côte d'Ivoire, Malaysia, Pakistan and South Africa. His results favored the export-led growth hypothesis for Malaysia and Pakistan and the export-led growth hypothesis for South Africa. He concluded at the end of his study that export promotion strategies were not necessarily effective means for stimulating economic growth. In the same vein, *Kouakou and N'Zué (2020)* emphasized the importance of export diversification, noting that while diversification promotes short-run growth, specialization may yield stronger long-run benefits.

Ali (2021) investigated the relationship between trade openness and economic growth in sub-Saharan Africa using data ranging from 1981 to 2019. The results of his study showed that trade openness has a positive effect on economic growth in sub-Saharan Africa.

3.2.2. Exports-Driven Economic Growth

Bakari & Mabrouki (2016) analyzed the impact of agricultural exports on economic growth in Tunisia for the period 1988-2014. The results of his study showed that agricultural exports have a positive and significant effect on economic growth. Using the Granger causality test, he proved that economic growth caused agricultural exports.

Keho (2017, 2019) examined the relationship between exports and economic growth in Côte d’Ivoire, Malaysia, Pakistan and South Africa. He found that his results favored the growth-led export hypothesis for South Africa.

3.2.3. Exports and Growth: A Reciprocal Relationship

N’Zué (2003) analyzed the causal relationship in the Granger sense between export expansion and economic growth in Côte d’Ivoire and possible implications for job creation. The results of the study revealed that despite the lack of cointegration between exports and economic growth, there was a circular relationship between them.

Aktar et al. (2008) examined the ELG hypothesis in the Republic of Türkiye. The period considered for the study ranged from 1980-2007. The results showed evidence supporting the hypothesis that there is a two-way long-run and short-run causal relationship between export growth and real GDP growth in Türkiye.

Kumari and Malhotra (2014) examined the relationship between exports and GDP per capita in India over the period ranging from 1980 to 2012. They found no evidence for an export-led growth hypothesis, especially for the long term.

3.2.4. Negative Relationship between Exports and Economic Growth

Fatima et al., (2020) investigated the impact of trade openness on gross domestic product (GDP) growth. He proposes to consider human capital accumulation (HCA) as an additional dimension of economic trade integration. The results indicate an intriguing indirect relationship between trade openness and GDP growth. When HCA is considered as an intermediary variable, trade can have a negative impact on GDP growth in countries with low levels of HCA.

The conceptual framework is best depicted by **Figure 3** which indicates that these variables taken all together in the specified model have an impact on economic performance. Then, the question is whether Export has the most significant impact.

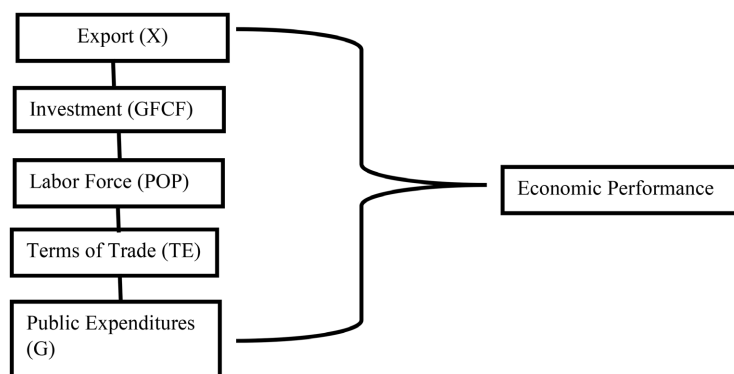


Figure 3. Conceptual framework of the relationship between Export and growth.

4. Methods of Analysis and Data

Following similar studies in the literature, we started from a general production function with two production factors. The general form of this model is:

$$Y = F(K, L) = AF(K, L) \quad (1)$$

where Y = Total output, K = Capital, L = Labor and A = Technological progress. We specify a Cobb–Douglas-based growth equation of the following general form:

$$Y = AK^\alpha L^\beta \quad (2)$$

By applying the logarithmic transformation to Equation (2), we obtained:

$$\ln Y = \ln A + \alpha \ln K + \beta \ln L \quad (3)$$

where A , K , and L are as previously defined. A capture the changes due to innovation and the dynamic distribution of labor and capital factors between the different production systems. A could also be said that it captures the effect of exports and other control variables that influence the production process. Several authors including Kumari, and Malhotra, (2014), and Kpemoua (2016) included in their works the exports variable among the factors that influence economic growth.

Therefore, the factor A can be written as follows:

$$A = X \cdot Z \quad (4)$$

(where X = export; and Z = other factors contained in A).

By replacing A in Equation (3), we obtain the following:

$$\ln Y = \ln(X \cdot Z) + \alpha \ln K + \beta \ln L \quad (5)$$

$$\ln Y = \ln X + \ln Z + \alpha \ln K + \beta \ln L \quad (6)$$

The final specification to consider is Equation (6). Y , K , L , and X are as previously defined. Z represents the other control variables i.e. terms of trade (TE), public expenditure (G).

Thus, the general form of the specification to consider is as follows:

$$GDP_t = F(X_t, GFCF_t, POP_t, TE_t, G_t) \quad (7)$$

Consequently, the model to be estimated could be written as follows:

$$\ln GDP_t = \alpha_0 + \delta_1 \ln X_t + \delta_2 \ln G_t + \delta_3 \ln GFCF_t + \delta_4 \ln POP_t + \delta_5 \ln TE_t + \varepsilon_t \quad (8)$$

To estimate equation 8, we first examine time-series properties using ADF and PP unit root tests, then apply the Pesaran-Shin-Smith bounds test for cointegration. Given a mix of $I(0)$ and $I(1)$ variables, we estimate an $ARDL(p, q)$ error-correction model capturing short- and long-run dynamics. Model diagnostics include autocorrelation, heteroskedasticity, normality, and stability (CUSUMSQ). The $ARDL(p, q)$ error correction model is specified below:

$$\begin{aligned} \Delta \ln GDP_t = & \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta \ln GDP_{t-i} + \sum_{i=0}^q \alpha_{2i} \Delta \ln X_{t-i} + \sum_{i=0}^q \alpha_{3i} \Delta \ln GFCF_{t-i} \\ & + \sum_{i=0}^q \alpha_{4i} \Delta \ln G_{t-i} + \sum_{i=0}^q \alpha_{5i} \Delta \ln POP_{t-i} + \sum_{i=0}^q \alpha_{6i} \Delta \ln TE_{t-i} + \sum_{i=0}^q \alpha_{7i} \\ & + b_1 \ln GDP_{t-1} + b_2 \ln X_{t-1} + b_3 \ln GFCF_{t-1} + b_4 \ln G_{t-1} + b_5 \ln POP_{t-1} \\ & + b_6 \ln TE_{t-1} + \varepsilon_t \end{aligned} \quad (9)$$

This representation assumes a cointegration relationship between the series and allows us to capture the short and long-term effects of the explanatory variables on GDP.

Annual data for 1965-2023 are compiled from: World Development Indicators (GDP, labor/POP), BCEAO statistical databases (exports of goods and services, public expenditure, GFCF), and external sector series for constructing the terms of trade. The terms of trade (TE) are defined as the ratio of the export price index to the import price index; in practice, we rely on BCEAO external accounts and supplementary international price indices to proxy the ratio, consistent with OECD and IMF methodological guidance. The working-age population (POP) proxy follows the conventional 15 - 64 age range used by international statistical standards. It is measured in millions of people.

5. Empirical Results and Discussion

This section analyzes the empirical results obtained. **Table 1** shows that all the coefficients of the correlation matrix are significant at the 5% threshold. We distinguish: i) correlations between the dependent variable ($\ln GDP$) and each explanatory variable, which are generally strong and indicate association but not causation, and ii) inter-correlations among explanatory variables themselves, which are relatively weaker on average. Together with VIF diagnostics, this suggests multicollinearity is monitored and does not critically impair estimation, although vigilance is warranted for highly related fiscal and external variables.

Table 1. Results of test correlation matrix.

	$\ln GDP$	$\ln X$	$\ln GDCF$	$\ln G$	TE	POP
$\ln GDP$	1.000					
$\ln X$	0.928*	1.000				
	(0.000)					
$\ln GDCF$	0.669*	0.391*	1.000			
	(0.000)	(0.002)				
$\ln G$	0.964*	0.824*	0.760*	1.000		
	(0.000)	(0.000)	(0.000)			
TE	0.428*	0.658*	-0.296*	0.326*	1.000	
	(0.001)	(0.000)	(0.023)	(0.012)		
POP	0.940*	0.924*	0.510*	0.874*	0.566*	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

*Asterisk indicates significant coefficients. Source: Author, based on data from BCEAO (2023) and World Bank (2023b).

Table 2 shows the results of the VIF test, which highlights the relationship between the different independent variables. The mean of the VIF test indicates that our variables are highly correlated with each other. With an average of 9.56.

Table 2. Results of test VIF.

Variable	VIF	1/VIF
<i>lnG</i>	14.760	0.0678
<i>lnGDCF</i>	11.280	0.089
<i>POP</i>	9.900	0.101
<i>lnX</i>	9.410	0.106
<i>TE</i>	6.840	0.146
Mean VIF	9.560	

Source: Author, based on data from BCEAO (2023) and World Bank (2023b).

Table 3 provides information on the descriptive statistics of the endogenous variable and the explanatory variables used in this study. From this table, it can be observed that the average GDP of Côte d'Ivoire during the study period amounts to 16,900 billion CFA francs. Over this 59-year period, the minimum GDP was 4.710 billion CFA francs, while the maximum value reached 36,100 billion CFA francs. Exports, on the other hand, did not significantly change over the period considered. On average, exports recorded an amount of 3860.59 billion CFA francs, with a maximum level of 7510.34 billion CFA francs in 2023 and a minimum level of 790.12 billion CFA francs in 1965. The variable G represents public expenditure. Observing this variable indicates that the Ivorian state spent an average of 11589.44 billion CFA francs from 1965 to 2023. During this period, Côte d'Ivoire spent the most in 2023, with an expenditure of 24045.51 billion CFA francs, compared to a minimum expenditure of 3,883.45 billion CFA francs. This situation could be attributed to the global health crisis. Gross fixed capital formation (GFCF), which represents government investment, averaged 2849.993 billion CFA francs, with a minimum value of 1211.38 billion CFA francs and a maximum investment of 7082.03 billion CFA francs. As for the terms of trade (TE), they had an average value of 136.6788 during the study period, with a minimum of 58.66 and a maximum of 299.51. Finally, regarding the last variable in the study, the working-age population, the statistics show that, on average, 7,628,266 million people were of working age during the study period.

From the results of **Table 4** of the Augmented Dickey-Fuller (ADF) unit root tests and the Phillips-Perron (PP) test, we conclude that the variables presented in **Table 3** lead to similar results. Our variables are all integrated of order one (1), except for two variables that are level stationary. Indeed, the unit root tests confirm that the variables *lnGDP*, *lnX*, *lnGFCF*, *TE* and *lnG* are stationary after

a first differentiation I(1), while the variables *POP* is level stationary and therefore I(0). Therefore, we also confirm that no series is integrated of order two I(2) or more. In summary, our series are integrated of different orders, namely they are integrated of order 1 [I(1)] or of order zero [I(0)], and this information allows us to test for cointegration using the Bounds Test of Pesaran et al. (2001).

Table 3. Descriptive statistics for the variables of interest.

Variable	Obs	Mean	Std. dev.	Min	Max
GDP	59	1.69e+13	8.29e+12	4.71e+12	3.61e+13
X	59	3860.585	1967.557	790.120	7510.340
GFCF	59	2849.993	1711.537	1211.380	7082.030
G	59	11589.440	5017.923	3883.450	24045.510
TE	59	136.679	64.064	58.663	299.518
POP	59	7628266.000	3919350.000	2246830.000	1.47e+07

Source: Author’s calculations based on data from BCEAO (2023) and World Bank (2023b).

Table 4. Results of the unit root tests using the “Augmented Dickey Fuller” and “Philip Perron” tests.

Variable	ADF		PPerron		Décision
	Level	First difference	Level	First difference	
lnGDP	-2.191 (0.209)	-4.528* (0.000)	-1.790 (0.385)	-4.531* (0.000)	I(1)
lnX	-2.211 (0.202)	-9.081* (0.000)	-2.396 (0.142)	-9.162* (0.000)	I(1)
LnGFCF	0.145 (0.969)	-5.759* (0.000)	-1.254 (0.650)	-5.830* (0.000)	I(1)
TE	-1.596 (0.485)	-6.202* (0.000)	-1.755 (0.403)	-6.181* (0.000)	I(1)
lnG	-1.652 (0.455)	-6.469* (0.000)	-1.655 (0.454)	-6.493* (0.000)	I(1)
POP		-7.237* (0.000)		-4.769* (0.000)	I(0)

Source: Author’s calculations based on data from BCEAO (2023) and World Bank (2023b). *: significant at 1%; **: significant at 5%; ***: significant at 10%. The values in parentheses () indicate the critical values associated with the different thresholds.

The bounds test indicates cointegration among GDP and the covariates (Table 5). Indeed, the calculated Fisher statistic (7.659) is higher than the upper bound values at the 1%, 2.5%, 5%, and 10% critical thresholds. This result clearly con-

firms both short- and long-term dynamics between GDP and the explanatory variables.

Table 5. Test of cointegration between the variables of interest for $ARDL(1,1,1,1,0,1)$.

H0: No long-run relationship		
F-statistics K = 5	F = 7659 I (0)	I (1)
Critical value at 1%	3.41	4.68
Critical value at 2.5%	2.96	4.18
Critical value at 5%	2.62	3.79
Critical value at 10%	2.26	3.35

Source: Author's calculations based on data from BCEAO (2023) and World Bank (2023b).

Table 6 presents the results of the estimated model. The ARDL model reveals both short-run and long-run dynamics between exports of goods and services and economic growth in Côte d'Ivoire. The model diagnostics indicate robustness, with explanatory power - Adjusted $R^2 = 0.787$, no autocorrelation (Breusch-Godfrey $p = 0.770$), no heteroskedasticity (White test $p = 0.438$), and normally distributed residuals (Jarque-Bera $p = 0.234$). The error correction term (-0.359) is negative and highly significant indicating cointegration among the variables. Thus, there exists a long-run equilibrium and a relatively fast speed adjustment (35.9%) toward equilibrium after short-run shocks. In other words, 35.9% of any deviation from the long-run path is corrected within one period.

Table 6. Results of the estimated $ARDL(1,1,1,1,0,1)$.

Variable	Dependent variable: Gross domestic product (GDP)	
	Coefficient	
	Long run Dynamics	
<i>CointEq</i> (-1)	-0.359*** (0.000)	
<i>lnX</i>	0.267*** (0.000)	
<i>lnGFCF</i>	0.024 (0.649)	
<i>lnG</i>	0.505*** (0.000)	
<i>TE</i>	-0.001*** (0.001)	
<i>POP</i>	0.000*** (0.002)	
	Short Run Dynamics	
$D(\ln X) - 1$	-0.104*** (0.018)	
$D(\ln GFCF) - 1$	0.065*** (0.006)	

Continued

$D(\ln G) - 1$	0.126**(0.018)
$D(POP) - 1$	0.000** (0.025)
C	4.538*** (0.000)
R-Square = 0.825; Adjusted R-Square = 0.787	
F-Stat. (Prob.) = 0.000; Durbin-Watson = 1.892	
Autocorrelation test (Breusch-Godfrey) p -value F = 0.770	
Heteroskedasticity test de (white)P-value F = 0.438	
Normality test (Jarque Bera) P-value F = 0.234	

Source: Author, based on data from BCEAO (2023) and World Bank (2023b). Asterisks, *, **, *** indicate significance at 1, 5 and 10%, respectively.

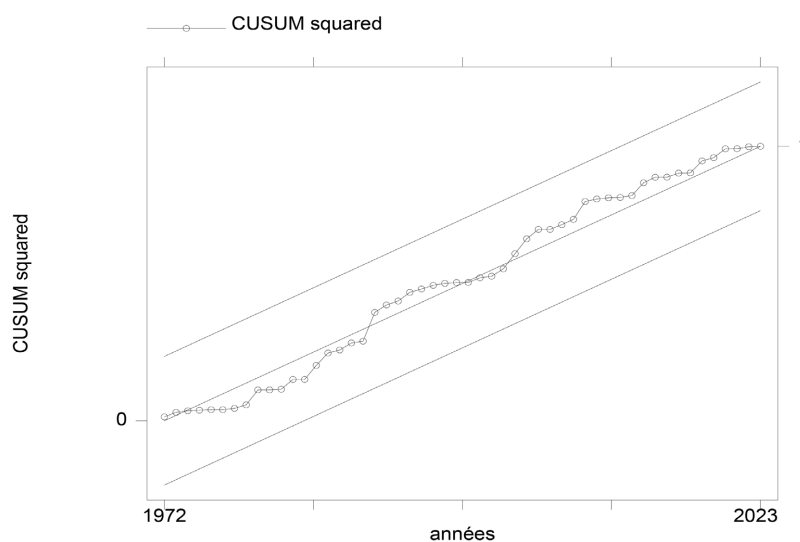
The model exhibits both short-run and long-run dynamics. Long-run estimates show that exports significantly and positively affect GDP. Specifically, a 1% increase in exports leads to a 0.267% increase in GDP affirming the export-led growth hypothesis, and demonstrating the role of exports of goods and services in the Ivorian economy. Government consumption and labor also contribute positively. The presence of a cointegration relation is an indication of causality in at least one direction. Thus, our findings clearly indicate that exports of goods and services cause economic growth in the long-run.

Conversely, the terms of trade variable exhibit a small but significant negative effect (-0.001), consistent with the vulnerability of commodity-dependent economies to adverse price movements. Thus, a 1% increase in the terms of trade variable will lead to a decline of GDP to the tune of 0.001%. A deterioration of the terms of trade will therefore be detrimental to the country's economic growth. Surprisingly, gross fixed capital formation (investment) does not show a significant long-run impact, which may reflect *investment efficiency gaps* including project appraisal and selection weaknesses, implementation delays, and governance constraints. Cross-country assessments find average inefficiencies of around 30 percent in public investment processes, implying that a given volume of capital expenditure may not translate into commensurate productive capacity. These patterns are consistent with positive short-run contributions of investment (through demand effects) but muted long-run productivity gains when efficiency is low.

In the short run, exports have a negative and significant effect on GDP (-0.104). These effects can arise from several mechanisms. First, *adjustment costs* associated with reallocating resources toward tradables (e.g., capacity expansion, compliance with standards, logistics) may temporarily reduce measured output. Second, *exchange-rate and price dynamics* can generate a J-curve pattern: following competitiveness changes or external shocks, the trade balance (and activity linked to exports) may initially deteriorate before improving as quantities adjust

and contracts renew (Trofimov, 2024; Bahmani-Oskooee & Ratha, 2004; Alessandria & Choi, 2019). Third, *sectoral asymmetries* are common in commodity-dependent economies, where positive price shocks transmit with lags and volatility can depress near-term activity in non-export sectors. Recent ARDL and (non-linear) ARDL evidence for developing economies documents such short-run asymmetries even when long-run relationships are favorable.

Thus, in the short-run exports of goods and services do not cause economic growth. Investment and public consumption both show positive and significant short-run effects, highlighting their immediate contribution to economic activity. The labor force also maintains a small but statistically significant positive impact. The Cumulative Sum of Squared (CUSUMSQ) curve (Figure 4) remains entirely within the upper and lower bounds from 1972 to 2023, indicating no overshoot. The model therefore appears stable throughout the period, and thus, there is no structural instability.



Source: Authors.

Figure 4. Test of model stability.

The above findings are consistent with prior empirical studies on trade and growth in Côte d'Ivoire and other developing economies. Indeed, Keho (2017) demonstrated that trade openness positively influences both short- and long-run growth, particularly when supported by capital formation. While this study confirms the positive role of exports, the insignificance of investment in the long-run may point to structural inefficiencies or delayed capital productivity. Kouakou and N'Zué (2020) emphasized the importance of export diversification, noting that while diversification promotes short-run growth, specialization may yield stronger long-run benefits. The positive long-run impact of exports observed here may reflect the dominance of key sectors such as agriculture and mining, which continue to drive growth despite short-term volatility. Bardi and Hfaiedh (2021) found similar results for exports and public consumption in a

panel setting.

At a broader level, [Dollar \(1992\)](#) and [Sachs and Warner \(1997\)](#) argued that outward-oriented economies tend to grow faster due to increased efficiency, technology transfer, and access to global markets. The results of this study reinforce this narrative, particularly for Côte d'Ivoire, where exports remain a vital source of foreign exchange and development financing.

6. Conclusion and Policy Implications

The main objective of this study was to contribute to a better understanding of the relationship between exports of goods and services and economic growth in Côte d'Ivoire. We use an ARDL model to conduct our investigation with data spanning from 1965 to 2023. Findings support the export-led growth hypothesis in the long run for Côte d'Ivoire, with short-run negatives plausibly explained by adjustment costs and J-curve dynamics. Exports of goods and services could therefore be considered a driver of economic growth in Côte d'Ivoire. Moreover, our results reveal causality running from exports of goods and services to economic growth. Thus, knowledge of the country's exports of goods and services information could help better predict the country's growth trajectory.

The empirical evidence suggests several policy recommendations:

- Strengthen export capacity and logistics: Actions or policies are needed to enhance infrastructure, improve market access and value addition to amplify the long-run benefits of trade.
- Diversify export and add value domestically: By reducing the reliance on a narrow set of commodities, the country can mitigate terms-of-trade exposure.
- The country should improve investment efficiency by addressing possible bottlenecks in capital allocation and project execution to unlock the long-run potential of investment.
- Policymakers should leverage well-targeted public spending to stimulate both short- and long-run growth.

Lastly, the country should invest in human capital by expanding and upskilling the labor force with a view to sustaining growth and improving productivity.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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