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REGULAR ARTICLE

EFFECT OF AGRICULTURAL AND NON-AGRICULTURAL EXPORTS ON ECONOMIC GROWTH IN IVORY COAST

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ABSTRACT

The objective of this paper is to assess, empirically, the effects of agricultural and non-agricultural exports on economic growth in Ivory Coast. The data used are those of the World Bank (World Development Indicators) and the Central Bank of West African States and cover the period from 1985 to 2015. The analysis of the data required the use of the AutoRegressive Distributed Lag (ARDL). It emerges from the study that the agricultural exports have positive and significant effects on the Gross Domestic Product. However, this rate appears to be increasingly weak in long term. On the other hand, the non-agricultural exports have a positive but not significant effect on economic growth in short term. Nevertheless, in the long run, they improve the country's economic performance. Moreover, the Gross Fixed Capital Formation stimulates the economic wealth generation. Finally, the trade openness negatively affects the economic development. Therefore, the Ivorian government, while giving priority to improving the competitiveness of export products, must apply a diversification policy in order to reduce the risks of deterioration in the terms of trade.

Keywords: Exports; Economic growth; Ivory Coast
JEL: C01; O47; Q00

INTRODUCTION

Ivory Coast, an exporter of primary products, is heavily dependent on agriculture in the formation of its wealth. Indeed, agriculture contributes to 22.3% of GDP and accounts for 47% of the country's overall exports (62% excluding oil). It employs 46% of the country's working population and is an important source of income for two thirds of the Ivorian population according to **Banque Mondiale (2016)**.

However, dependence on world prices of agricultural raw materials plunged the country into a deep crisis from 1980 to 1993. This crisis was characterized by a sharp drop in economic growth, a significant drop in per capita income, worsening internal and external imbalances (deterioration of the balance of payments, growing public deficits) according to **AISA (2015).** This underperformance of the agricultural sector, which makes a significant contribution to national GDP, can be explained by the low level of agricultural productivity, the slump in production, the low purchase prices of agricultural products and an inequitable distribution of the rebates generated by the various sectors. In addition to these causes, there are significant post-harvest losses, the low level of conservation and processing of agricultural products, the general ageing of orchards, insufficient use of quality inputs and the poor mastery of modern cultivation techniques. Moreover, the cost of inputs remains high and research results are not always accessible and sufficiently valued. Similarly, agricultural actors are insufficiently supervised and have limited access to credit and to regional and international markets **(Kouakou, 2017).** Finally, the agricultural sector suffers from the isolation of many production areas. In addition, the industrial processing of agricultural production remains insufficient to drive strong economic growth, substantially improve added value and absorb local production **(AISA, 2015).**

To cope with this situation, Ivory Coast has been engaged since 1994 in a process of diversification of its economy under the aegis of the Bretton Woods institutions, including the IMF and the World Bank. Today, export production accounts for nearly 40% of export earnings and supports the country's agro-industrial development. These exports are also dominated by agricultural products (about 60%) and non-agricultural products (about 40%) according to **Zamble (2015).**

However, despite these achievements and according to **AISA (2015),** diversification has not yet had a significant effect. Competition and international legislation constitute a hindrance to the development of other sectors of the economy. Moreover, world economies are marked by vulnerability to the dynamics of external trade. In this context, it is necessary to assess the contribution of agricultural and non-agricultural exports to Ivory Coast's economic growth. Specifically, it is necessary to estimate the causal link between agricultural and non-agricultural exports and economic growth in Ivory Coast.

DATA AND METHODS

Theoretical and conceptual frameworks

Several studies have been carried out by economists to show the relationship between economic growth and exports.

Michaely (1977) tested the hypothesis that rapid export growth accelerates a country's economic growth. He examined Spearman's rank correlation coefficient between the growth rates of two series that represent, respectively, the average size of annual changes in the ratio of exports to GNP and the average annual change in the ratio of GNP per capita. He concludes that for a number of countries in his sample, this correlation is significant. **Balassa (1978)**, following Michaely's lead, also uses Spearman's rank correlation coefficient to test the correlation that might exist between different export and economic growth ratios for a group of developing countries over the 1960-73 period. He concludes that the addition of exports to the explanatory variables, on the GNP side, increases the overall significance of the model. In addition, the coefficient on exports is found to be statistically significant. **Feder (1983)** notes that the contribution of exports to GDP growth exceeds the simple change in its volume. He constructs two production functions, one for the export sector, and other for the domestic sector. Feder's regression results cover the period 1964-1973 for a sample of 31 countries, 19 of which are defined as semi-industrialized and 22 marginally semi-industrialized. The conclusion of its results asserts that there is a substantial productivity gap between exports and non-exports in addition to the differential due to externalities.

Similarly, **Jlidi (1996)**, in his study on exports, imports and economic growth, shows, after decomposing total exports into manufacturing exports on the one hand and raw materials on the other, that the first type of exports (manufacturing products) generates more externalities than the second. One of the probable explanations for the difference between the externalities generated by each type of export may be the fierce competition on the world market for finished goods. It concludes that the long-term growth of developing countries depends largely on the stability and performance of their export sectors (manufacturing and intermediate inputs) in favourable global conditions. **N'Zue (2003)** has carefully studied the Granger causal relationship between export expansion and economic growth in Ivory Coast and finds its effects on employment creation. He indicates that although there is no cointegration between exports and economic growth, there is a circular relationship between them. **Kpemoua (2016)**, empirically, analysed the impact of exports on economic growth in Togo as well as the existence of a causal relationship between exports and economic growth by applying a model based on a neoclassical production function. The data cover the period 1960-2014. The methodological approach used is based on cointegration and causality techniques. The empirical results show a positive and significant correlation at the threshold of 1% in the long term between exports and economic growth and a causality in the sense of Toda and Yamamoto, of exports to economic growth. According to all these previous studies, exports are an important source of economic growth.

Data collection

The data relating to the variables: Gross Domestic Product per Capita (GDP), Gross Fixed Capital Formation (GFCF) and trade openness (OC) were calculated from data taken from the World Development Indicators (World Bank), while agricultural exports (XA) and non-agricultural exports (XNA) were taken from the database of the Central Bank of West African States. The study covers the period from 1985 to 2015. The choice of this study period is necessary in order to avoid series with missing data. All model variables are in natural logarithms (Appendix 1).

Method of analysis

The analysis is based on the neoclassical growth model originally developed by Solow in 1956. This neoclassical production function is specified in terms of traditional inputs such as labour (L) and capital (K) and is written (Eq. 1):

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

Taking into account the specificity of the present study, the ARDL model of **Pesaran et *al.* (2001)** was used.
The ARDL (AutoRegressive Distributed Lag) model is one of the time-shift models. The use of this model is justified by the fact that it takes into account both the short-term and long-term relationships of the variables tested. The advantage of the ARDL method, in contrast to the latter, can be found at two levels. On the one hand, it can be applied to any degree of integration of the variables used: pure I (0), pure I (1) or mixed. On the other hand, it has superior statistical properties for small samples. To do this, the ARDL model used is as follows (Eq. 2).

$$GDP = f(GFCF, XA, XNA, CO) \quad (2)$$

The long-term equation can be written as follows (Eq. 3):

$$LGDP_t = \alpha_0 + \emptyset \sum_{i=1}^{p} LGDP_{t-i} + \alpha_1 \sum_{i=0}^{q} LGFCF_{t-i} + \alpha_2 \sum_{i=0}^{q} LXA_{t-i} + \alpha_3 \sum_{i=0}^{q} LXNA_{t-i} + \alpha_4 \sum_{i=0}^{q} LCO_{t-i} + \varepsilon_t \quad (3)$$

The equation for the cointegrating relationship is obtained from the following error correction model (Eq. 4):

$$\Delta LGDP_t = \alpha_0 + \emptyset_{1j} \sum_{i=1}^{p} \Delta LGDP_{t-i} + \alpha_{1i} \sum_{i=0}^{q} \Delta LGFCF_{t-i} + \alpha_{2i} \sum_{i=0}^{q} \Delta LXA_{t-i} + \alpha_{3i} \sum_{i=0}^{q} \Delta LXNA_{t-i} + \alpha_{4i} \sum_{i=0}^{q} \Delta LCO_{t-i} + \lambda ECM_{t-i} + \varepsilon_t \quad (4)$$

With ECM_{t-1}, the error correction term (Eq. 5)

$$ECM_{t-1} = LGDP_t - \alpha_0 - \emptyset \sum_{i=1}^{p} LGDP_{t-i} - \alpha_1 \sum_{i=0}^{q} LGFCF_{t-i} - \alpha_2 \sum_{i=0}^{q} LXA_{t-i} - \alpha_3 \sum_{i=0}^{q} LXNA_{t-i} - \alpha_4 \sum_{i=0}^{q} LCO_{t-i} \quad (5)$$

Taking into account the short and long-term effects, the ARDL representation is as follows (Eq. 6):

Table 1: Variables used

Variables	Descriptions	Expected effect
GDP	Gross Domestic Product per capita expressed in US Dollar	
GFCF	Gross fixed capital formation: this variable is a "proxy" for the investment	+
XA	Agricultural exports expressed in volume	+
XNA	Non-agricultural exports expressed in volume	+
CO	Commercial opening expressed in US Dollars ((Import + Export)/GDP)	+

Source: Author (based on theory)

$$\Delta LGDP_t = \alpha_0 + \alpha_1 \sum_{i=1}^{p} \Delta LGDP_{t-i} + \alpha_2 \sum_{i=0}^{q} \Delta LXA_{t-i} + \alpha_3 \sum_{i=0}^{q} \Delta LXNA_{t-i} + \alpha_4 \sum_{i=0}^{q} \Delta LCO_{t-i} + \beta_1 LGDP_{t-1} + \beta_2 LXA_{t-1} + \beta_3 LXNA_{t-1} + \beta_4 \Delta LCO_{t-1} + \varepsilon_t \quad (6)$$

Where:
Δ first difference operator;
α_0 a constant;
$\alpha_1 \ldots . \alpha_4$ short-term coefficients;
$\beta_1 \ldots . \beta_4$ long-term coefficients;
$\varepsilon_t \sim \text{iid}(0, \sigma)$ an error term (white noise);
λ the restoring force towards balance.
Table 1 presents the variables of the study.

RESULTS AND DISCUSSION

Economic growth trends in Ivory Coast

According to Figure 1, the period from 1985 to 2015 is marked by varying degrees of fluctuation in the annual growth rate. Indeed, the first decades of the country's independence were marked by a period of strong growth justified by the coffee and cocoa boom. However, from 1985 onwards, *Ivory Coast* experienced a severe economic crisis due to the fall in the prices of these main export products on the international market. This weakened its economy until 1990.

From 1990 onwards, the structural adjustment programme imposed by the Bretton Woods structures, including the International Monetary Fund, began to take effect, leading to a slight recovery until 1998, when the country fell into a military crisis and economic decline resumed.

From 2000 onwards, the economy rebounded again due to a noticeable stability but was quickly slowed down from 2002 onwards by a socio-political crisis. From 2002 to 2005, peace agreements were signed and the economy recovered slightly.

From 2005 to 2010, the Ivorian economy returns to positive growth rates. However, from 2010 to 2011, Ivory Coast experiences a severe post-electoral crisis. This weakened all economic activities. Moreover, it is the most severe crisis that this country has experienced because the growth rate was negative (-5%).

From 2011 to 2015, the economy recovered to achieve the marvellous performance of the double-digit growth rate (over 10%) and remained somewhat stable, before declining slightly and stabilizing at 8% from 2015 onwards.

Agricultural and non-agricultural exports trends in Ivory Coast

From 1985 to 2010, *Ivory Coast* gradually increased its export volume of agricultural products, reaching a peak in 1990 according to Figure 2. From 2010 to 2014, agricultural exports remained stable. However, the period 2015 is marked by a drop in export volumes due to the effect of climate change, which causes seasonal variations and the appearance of devastating caterpillars. According to this same figure, exports of non-agricultural products increased over time. However, this increase was strong from 1994 onwards because of the policy of diversification of export products implemented by the Ivorian government under the Structural Adjustment Programme.

Descriptive characteristics of the variables

Table 2 shows that variables such as non-agricultural exports and trade openness are more volatile compared to other variables. Moreover, the variables in the study follow a normal distribution law (Prob > 5%).

Variables such as gross domestic product, gross fixed capital formation, non-agricultural export and trade openness are all stationary in first difference and are included in first order, while the variable such as agricultural export remains stationary at the level (Table 3). The series are thus integrated at different orders. This renders Engle's and Granger's cointegration test (multivariate case), as well as Johansen's, ineffective, but makes the cointegration test at the bounds of **Pesaran et *al.* (2001)** appropriate.

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With regard to Table 4, the optimal delay number of the ARDL model is 4, as the AIC and SC information criteria are at their minimum value. Moreover, this makes it possible to estimate the ARDL model.

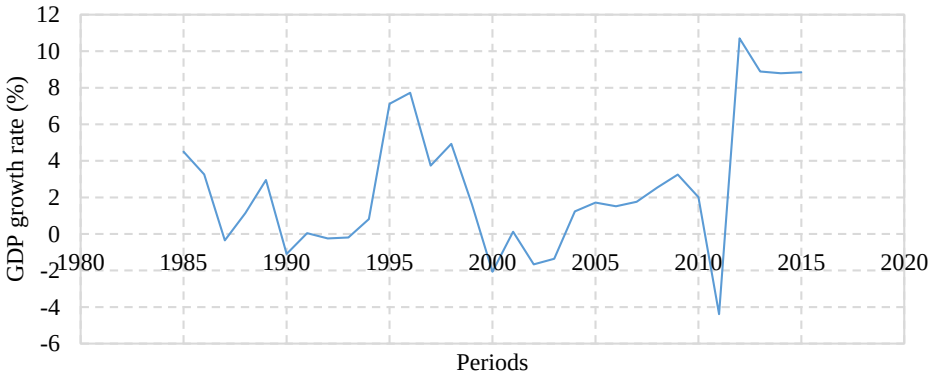

Figure 1: Change in annual GDP growth rate from 1985 to 2015, (%)
Source: Author, estimation using Eviews software.

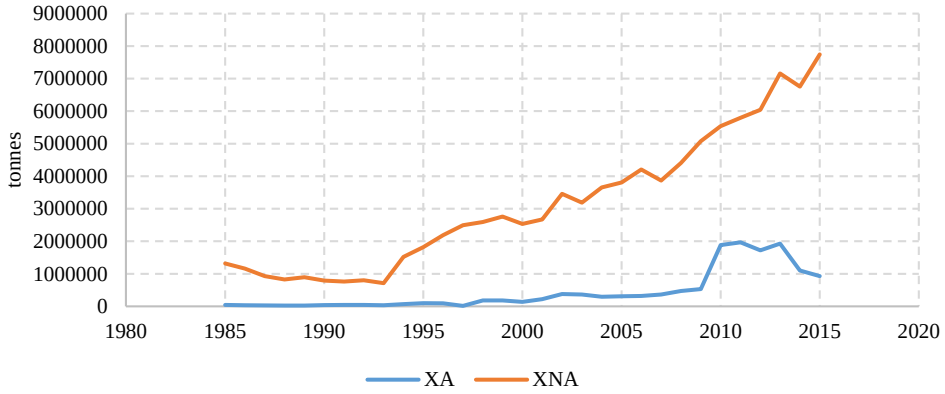

Figure 2: Evolution of agricultural and non-agricultural exports in tonnes over the period 1985-2015
Source: Author, estimation using Eviews software.

Table 2: Descriptive analysis of the variables used

	LGDP	LGFCF	LCO	LXA	LXNA
Mean	7.199415	2.430310	16.29572	12.06866	14.70933
Median	7.180922	2.441029	16.33933	12.12087	14.79737
Maximum	7.402426	2.971941	16,80513	14.49250	15.86215
Minimum	7.037612	2.110633	15.71302	9.598863	13.47756
Std.Dev.	0.096132	0.233446	0.361728	1.478349	0.763264
Skewness	0.512859	0.641897	-0.272761	0.125854	-0.260177
Kurtosis	2.387816	2.749632	1.691272	1.865136	1.780027
Jarque-Bera	1.843038	2.209797	2.596719	1.745394	2.272174
Probability	0.397914	0.331244	0.272979	0.417823	0.321073
Sum	223.1819	75.33960	505.1672	374.1283	455.9892
Sum Sq. Dev.	0.277239	1.634914	3.925406	65.56550	17.47716
Observations	31	31	31	31	31

Source: Author, estimation using Eviews software.

Table 3: Results of stationarity tests (ADF & PP)

VARIABLES	LEVEL		DIFFERENCE 1rst		STATEMENT
	ADF	PP	ADF	PP	
LGDP	-0.83	-0.21	-3.61	-3.62	I(1)
	(0.95)	(0.98)	(0.04)*	(0.04)*	
LGFCF	-1.45	-1.67	-4.96	-4.95	I(1)
	(0.82)	(0.73)	(0.00)*	(0.00)*	
LXA	-4.50	-4.47	-	-	I(0)
	(0.00)*	(0.00)*			
LXNA	1.83	-3.03	-4.61	-5.12	I(1)
	(0.98)	(0.13)	(0.00)*	(0.00)*	
LCO	-0.78	-1.24	-4.62	-4.60	I(1)
	(0.95)	(0.88)	(0.00)*	(0.00)*	

Note: * indicates that these tests are significant respectively at the 5% threshold;
(.) the values in brackets are the different probabilities
Source: Author, estimation using Eviews software.

Table 4: Results of delay number determination

Delay	AIC	SC
0	-2.17	-1.93
1	-7.71	-6.27
2	-7.74	-5.10
3	-9.30	-5.46
4	-11.68*	-6.64*

Note: * indication of the order of the criterion
Source: Author, estimation using Eviews software.

Table 5: ARDL model (1,2,0,3,2)
Dependent Variable: LGDP
Method: ARDL
Sample (adjusted): 1988 2015
Included observations: 28 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LGFCF LXA LXNA LCO
Selected Model: ARDL (1, 2, 0, 3, 2)

Variables	Coefficient	Std. Error	t-statistic	Prob.*
LGDP(-1)	0.289764	0.157772	1.836599	0.0862
LGFCF	0.159022	0.020089	7.915872	0.0000
LGFCF(-1)	-0.045540	0.032219	-1.413457	0.1779
LGFCF(-2)	0.075389	0.025384	2.969919	0.0095
LXA	-0.009184	0.005014	-1.831612	0.0869
LXNA	0.002586	0.035314	0.073219	0.9426
LXNA(-1)	-0.001905	0.039108	-0.048706	0.9618
LXNA(-2)	0.075899	0.034811	2.180325	0.0456
LXNA(-3)	0.039018	0.020032	1.947805	0.0704
LCO	-0,142075	0.068777	-2.065719	0.0566
LCO(-1)	0.091950	0.086697	1.060591	0.3057
LCO(-2)	-0.258159	0.085926	-3.004438	0.0089
C	8.091700	1.830391	4.420750	0.0005
R^2	0.973046	Mean of the variable		7.179543
R^2 Adjusted	0.951484			
Akaike Criteria	-5.001424			
Schwarz Criterion	-4.382901			
Stat of Fisher	45.12602			
Fisher's Probability	0.000000			

Source: Author, estimation using Eviews software.

Estimation of the ARDL model. The coefficient of determination (R^2) is 0.973046. This implies that 97.30% of the variation in Gross Domestic Product is explained by the independent variables (Table 6). The value of the coefficient of the restoring force is between 0 and 1 in absolute value. The statistical difference between the variables is eliminated at 71.02% in the study period.
The ARDL model (1,2,0,3,2) is the most optimal among the 19 others presented because it offers the lowest AIC value (Figure 3).

Based on the test results recorded in Table 7, the probabilities associated with the various diagnostic tests are all greater than 5%. The null hypothesis is rejected. There is therefore an absence of autocorrelation of errors, homoscedasticity and normality of errors. The model is then specified, stable and validated.

Terminal cointegration test

Table 8 shows that the F-calculated (3.961271) is higher than the highest value of **Pesaran et *al.* (2001)** at the 5% threshold. Consequently, there is a long-term relationship between the Gross Domestic Product per capita and its determinants in Ivory Coast.

The simple inter-variable correlation matrix (Table 8) shows a relationship between the variable such as trade openness and variables such as agricultural and non-agricultural exports, as the degree of association exceeds 0.50. The correlation matrix is based on a simple correlation between variables. There is also a likely multicollinearity between agricultural exports and trade openness, between non-agricultural exports and trade openness, and between non-agricultural exports and agricultural exports.

The results of the Toda-Yamamoto causality test presented in Table 9 indicate that there is a unidirectional causal relationship at the 5% and 10% threshold for trade openness and agricultural exports respectively.
There is also a unidirectional relationship between Gross Domestic Product and non-agricultural exports. In addition, there is a causal relationship in the Toda-Yamamoto sense between the dependent variable and the independent variable such as non-agricultural exports at the 5% threshold. The same is true between variables such as trade openness and non-agricultural exports at the 10% threshold.

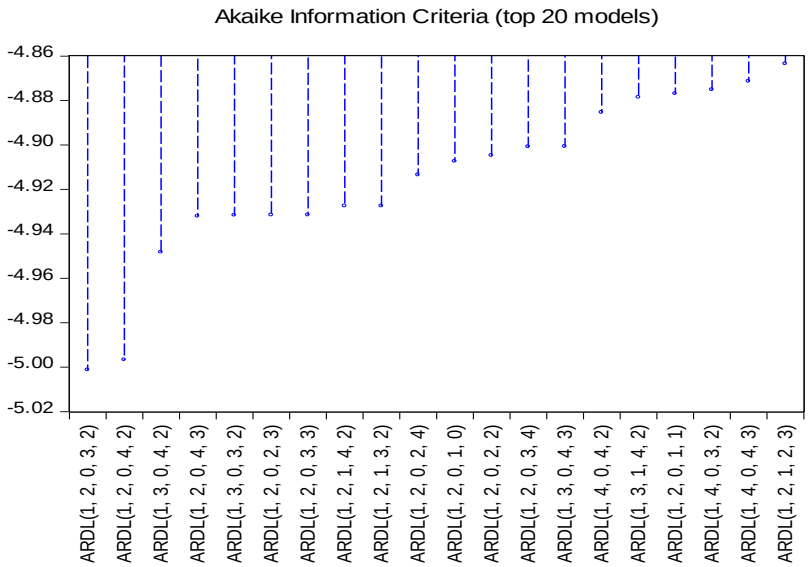

Figure 3: AIC graphical values
Source: Author, estimation using Eviews software.

Table 6: ARDL model diagnostic test results (1,2,0,3,2)

Test Hypothesis	Tests	Values (Probabilities)
Autocorrelation	Breusch-Godfrey	2.46 (0.10)
Heteroskedasticity	Breusch-Pagan-Godfrey	1.07 (0.43)
	ARCH	0.69 (0.60)
Normality	Jarque-Bera	0.90 (0.63)
Specification	Ramsey (Fisher)	0.22 (0.82)

Source: Author, estimation using Eviews software.

Table 7: Results of the cointegration test of **Pesaran et *al.* (2001)**

Variables	LGDP, LGFCF, LXA, LXNA, LCO	
F-Stat Calculated	3.961271	
Critical threshold	Lower terminal	Top terminal
1%	3.29	4.37
5%	2.56	3.49
10%	2.2	3.09

Source: Author, estimation using Eviews software.

Table 8: Simple correlation matrix between variables

	LGDP	LGFCF	LCO	LXA	LXNA
LGDP	1.000000	0.286781	-0.778639	-0.645479	-0.587134
LGFCF	0.286781	1.000000	0.187254	0.246528	0.412640
LCO	-0.778639	0.187254	1.000000	0.885983	0.945356
LXA	-0.645479	0.246528	0.885983	1.000000	0.911469
LXNA	-0.587134	0.412640	0.945356	0.911469	1.000000

Source: Author, estimation using Eviews software.

Table 9: Results of the causality test in the sense of Toda-Yamamoto

k	d_{max}	Dependent variables	Explanatory or causal variables (probabilities) LGDP	LGFCF	LCO	LXA	LXNA
4	1	LGDP	-	1.95 (0.37)	1.59 (0.45)	2.23 (0.32)	0.82 (0.66)
		LGFCF	4.38 (0.11)	-	2.1 (0.23)	0.93 (0.62)	1.44 (0.48)
		LCO	17.46 (0.00)*	1.10 (0.57)	-	5.56 (0.06)**	4.02 (0.13)
		LXA	0.44 (0.79)	0.04 (0.97)	0.39 (0.82)	-	0.58 (0.74)
		LXNA	18.69 (0.00)*	1.37 (0.50)	4.81 (0.08)**	1.45 (0.48)	-

Note: (.): Probabilities (p-value); *: significant at 5%; **: significant at 10%; and values = statistics from $\chi 2$; k: optimal lag of the level VAR (AIC); $dmax$: maximum order of integration of the variables.
Source: Author, estimation using Eviews software.

Short-term coefficients

The results of the short-term coefficients summarized in Table 10 show that agricultural exports have positive and significant effects on gross domestic product, although the effect remains small. Thus, when agricultural exports increase by 1%, per capita gross domestic product increases by 0.35%. These results justify the importance of agriculture in the Ivorian economy.

Moreover, there is a positive and significant relationship between Gross Domestic Product and Gross Fixed Capital Formation (Investment) at the 1% threshold. A 1% increase in gross fixed capital formation stimulates economic growth by 0.16%.

It is also noted that non-agricultural exports have a positive but not significant effect on Gross Domestic Product.

Finally, trade openness has a negative and statistically insignificant coefficient on gross domestic product. However, when it is lagged by one period, it has a positive and significant impact on gross domestic product. Thus, a 1% increase in trade openness leads to a 0.25% increase in GDP. These results could be explained by the fact that the beneficial effects of trade openness fade away very quickly and that there is a deterioration in the terms of trade in most developing countries, which base their exports mainly on primary products.

Table 10: Short-term coefficients

Dependent variable: LGDP		
Variables	Coefficients	Probability
D(LGFCF)	0.159021	0.0000
D(LGFCF(-1))	-0.075405	0.0252
D(LXA)	0.354193	0.0453
D(LXNA)	-0.002608	0.9432
D(LXNA(-2))	-0.039024	0.1001
D(LCO)	-0.142109	0.0536
D(LCO(-1))	0.258203	0.0162
CointEq(-1)	-0.710249	0.0000

Souce: Author, estimation using Eviews software.

Long-term coefficients

According to Table 11, the sign of the coefficient associated with non-agricultural exports is positive and significant at the 1% threshold. In the long run, when non-agricultural exports grow by 1%, gross domestic product also increases by 0.16%. This result is in line with that of **Tokplonou and Ahodode (2009)**. These authors found a positive and statistically significant long-term influence of non-agricultural exports on Benin's economic growth. Moreover, they encourage policies to implement an export diversification policy and not to focus exclusively on agricultural commodities.

The correlation between agricultural exports and long-term GDP is positive and significant. A 1% increase in agricultural exports accelerates economic growth by 0.013%. However, this rate appears to be increasingly weak. This is due to the increasing number of countries exporting the same agricultural commodities such as coffee, cocoa, cotton etc., and the growing number of countries exporting the same agricultural products **(Douillet, 2012)**.

In the long term, trade openness has a significant negative impact on economic growth at the 1% threshold. A 1% increase in trade openness leads to a 0.43% decrease in gross domestic product per capita. This means that trade in its current state negatively affects economic growth. Foreign trade is not a proven source of growth for Ivory Coast in the case of our study. These assertions are similar to those of **Zahonogo (2017)**. Also, other authors such as **Agbahoungba and Thiam (2018)** have analysed the effects of trade opening in the ECOWAS zone. Indeed, in their respective works, the authors concluded that there is a threshold beyond which international trade negatively affects the economic performance of sub-Saharan African countries.

Finally, the long-term coefficient associated with gross fixed capital formation is positive and statistically significant at the 1% threshold. The 1% increase in gross fixed capital formation leads to GDP growth of 0.27%.

This result justifies the importance of investment in the formation of a nation's wealth (**Diagne and Fall, 2007**).

Table 11: Estimation results of long-term coefficients

Dependent variable: LGDP		
Variables	Coefficients	Probability
LGFCF	0.265928	0.0000
LXA	0.012931	0.0384
LXNA	0.162760	0.0013
LCO	-0.434059	0.0000
C	11.392978	0.0000

Source: Author, estimation using Eviews software.

CONCLUSION

The main objective of this study is to assess the contribution of agricultural and non-agricultural exports to the economic growth of Ivory Coast between 1985 and 2015.

The results show that agricultural exports have positive and significant effects on the gross domestic product, even if this effect is less in the long term, due to the volatility of agricultural commodity prices. Moreover, gross fixed capital formation (Investment) stimulates economic growth, but its impact is more interesting in the long term. On the other hand, non-agricultural exports have a positive but not significant effect on GDP because of the non-competitiveness of these manufacturing products and because of unfair and disproportionate competition on international markets for finished products. Nevertheless, in the long run, they improve the country's economic performance.

Finally, trade openness, in its current state, negatively affects the economic performance of Ivory Coast, a country exporting primary products. In fact, the beneficial effects of trade opening are fading away very quickly because of the deterioration in the terms of trade.

As a recommendation, the Ivorian government should diversify its export basket in order to minimize the variability of export revenues, reduce the risks of deterioration in the terms of trade and sustain economic growth.

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Appendix 1: Data used in the study

PERIODS	GDP	GFCF	XA	XNA	CO
1985	1639.95874	11.7710855	44609	1318100	8093456.13
1986	1629.99567	11.8174755	34760	1160400	7399921.37
1987	1565.43783	11.7696985	28199	929100	6947917.32
1988	1527.15612	11.4848529	22501	826500	6669285.52
1989	1517.06964	10.3175226	26851	895700	7232421.17
1990	1448.03364	8.50214187	41609.8	793012.4	7213622.83
1991	1398.22024	8.57419991	42569.3	763073.9	7244427.65
1992	1346.79807	8.50242173	43057.9	801362.7	7901110.75
1993	1298.84419	9.3454645	35135.9	713229	7539980.24
1994	1266.5316	11.5492123	68908.8	1522420	9835523.25
1995	1314.11994	13.6861231	96089	1819297	11080445.7
1996	1372.7902	14.8080272	91554	2188326	11024398.5
1997	1382.62159	13.9048381	14748	2495623	12080004.1
1998	1410.73839	14.3236227	183665	2592600	12130499.2
1999	1396.99955	13.9981885	182488	2758513	12476198.5
2000	1336.42961	10.2724728	137192	2534366	12454482.7
2001	1310.28647	8.64096849	221171	2669423	12533091.8
2002	1264.22231	10.0705501	377130	3456184	13869536.8
2003	1224.96834	8.25346592	364937	3189550	13306806.9
2004	1218.12035	9.34926236	296500	3655377	15227289.9
2005	1216.20847	9.16693807	309520	3809246.33	17221939.4
2006	1210.66821	9.78809632	319800	4206857.08	17777502.4
2007	1207.08719	11.6147757	366219	3865586.91	17070013.6
2008	1211.62384	10.9386765	473900	4409963.64	17016838.7
2009	1223.51062	10.8710167	532000	5077175.36	18098079.5
2010	1219.7491	12.3165364	1883039.97	5539717.56	19168975.2
2011	1138.66496	8.95112015	1967935.29	5797514.61	19047085.5
2012	1229.7782	12.1067893	1720960.82	6041005.82	19878196.1
2013	1305.70923	16.9953189	1930508.95	7157155.79	17600909.4
2014	1384.91035	18.8791961	1102138.89	6752676.31	14052251.3
2015	1469.73018	19.5297912	931132.75	7741831.83	14153737.6