

## **AN ECONOMETRIC ESTIMATION OF THE LINK BETWEEN FINANCIAL DEVELOPMENT AND INTERNATIONAL TRADE IN Côte d'Ivoire**

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### **Abstract**

*The aim of this paper was to analyze empirically the link between financial development and international trade growth in Cote d'Ivoire using time series data covering the period of 1980-2014. The Error correction model and cointegration method were implemented to capture the short and long run dynamics of this relationship respectively. To make the empirical investigation, we examine long-run equilibrium (cointegration) relationship among variables by using Johansen (1988), and Johansen and Juselius (1990) procedure. We also performed Ordinary Least Squares method (OLS) which shows that the link between financial development and international trade is very weak and negative in Cote d'Ivoire. Moreover, the study reveals a positive and significant effect of gross domestic saving on international trade. The paper finally suggests that local authorities should promote domestic exporters by facilitating their access to private credit. This important structural reform will help financial sector to offer the best possible support to economic growth.*

*Keywords: Financial development, International trade, Cote d'Ivoire, Cointegration, Error correction model*

## INTRODUCTION

The issue of relationship between financial development and international trade has been often regarded as an important determinant impacted income and growth performance across countries. As we know, classical theories of international trade explain the comparative advantage of countries through their differences in technology and factor endowments. For those theories, trade is profitable because it allows countries to export goods for which production process uses more intensively the relatively abundant factors of the economy and import goods for which the production process uses more intensively the relatively rare factors of the economy (Heckscher-Ohlin model). Krugman and Obstfeld (1994) however consider that countries engage in international trade in order to benefit from economies of scale. Regarding financial development, several theoretical studies have attempted to substantiate how financial development can stimulate economic growth. Schumpeter (1912) argued that the well functioning of banks stimulates technological innovation and accelerate growth. Levine (2005) emphasizes that financial intermediaries through five functions they play, stimulate growth through capital accumulation and factor productivity. These five functions cover the production of information on the projects and the allocation of resources to the most profitable projects; investment monitoring and control on business management; facilitation of financial and commercial transactions, and improving risk management; the mobilization of savings and; the facilitation of trade in goods and services. Since the primary works of Bagehot (1873), Hicks(1969), Schumpeter (1912); and number of studies like Gurley and Shaw (1967); King and Levine (1993a,1993b,1993c); Diamond (1984); Levine (2005); Levine and Zervos (1996); Beck, Demirgüç-Kunt and Levine(2000); Chinn and Ito (2005) have been conducted to show the positive impact of financial development on the overall economic performance in general, and on economic growth in particular. Is there a unique directional relationship between financial development and trade flows or bidirectional link? The empirical and theoretical literature provides controversial opinions about this question. Most studies show bi-directional link between these two variables, however supply-leading and demand-following hypotheses are largely accepted by the researchers. Concerning the first hypothesis (supply-leading hypothesis), Kiendrebrego (2012) demonstrated that the financial sector development is a major determinant of international trade patterns. The second one (demand-following hypothesis) confirmed that growth of trade sector influence positively financial services (Kiendrebrego, 2012). Moreover, the research line regarding the relationship between international trade and finance might be understood as related to this vast field of research dealing with the relationship between financial development and economic growth. More

generally, the various functions accomplished by the financial system might be determinant in the pattern of specialization of a capitalist economy in several ways.

In the literature, some works have insisted on the degree of access to banking services because firms with tangible assets access more easily to loan despite the less developed financial sector. These firms might get some better shares of international exports. In fact, the existence of high developed financial sector in a country facilitates external financial services demand by firms. But according to the nature of production activities (food products, manufactured products...), the quality of property rights protection and the type of scale returns of the firms, they benefit differently from external financial services and therefore hold some unequal shares of exports. If we view the problem in this side, instead of analyzing the causal effect linkage between financial development and international trade, we can focus on the structure of foreign trade. This orientation has help policy makers and researchers to take into account the question of output growth and introduced the resources allocation problem in the national economy. For less income countries such as Cote d'Ivoire, the causal effect direction remains ambiguous. As we know, since the end of the 1999s Côte d'Ivoire has been embroiled in a series of armed conflicts. Political instability reigned from the putsch of December 1999 to the unsuccessful coup d'état on 19 September 2002, which turned into an armed rebellion that split the country in two, interspersed with spiraling violence (Akindès, 2004; 2009). The economic recovery after Cote d'Ivoire's 2010 post-election crisis was vigorous. This dynamism economic activity of Cote d'Ivoire is explained by the performance of the primary and tertiary sectors. Also the international trade has played a significant role because the countries is the net exporter of raw material and mineral resources (cocoa bean, coffee, petroleum...etc). In this context is there any long run relationship between international trade and financial development? Or what are the main determinants of international trade growth in Cote d'Ivoire? Or what are the implications of financial sector? About the relationship between international trade and financial development our objective is to understand the specific implication of these questions for less income country like Cote d'Ivoire. The remains of our study are organized as follow. Section 2 presents the review of the relevant literature of the research by elucidating financial and trade theory. A theoretical approach based on document exploitation supported by most recent data and case studies is used to address the question. Section 3 clarifies the econometric model, the data sources and the methodology applied to explore the long run relationship between international trade and financial development. Section 4 explains, discusses, analyzes and interprets the results obtained from the empirical investigations. Then the last section elucidates the summary of findings, concluding remarks and policy of the study.

## LITERATURE REVIEW AND EMPIRICAL FRAMEWORK

This part of our paper is divided in three subsections. First, the literature about financial development and structure of international trade is addressed. We provide the empirical evidence as well as its subsequent theoretical Explanations. The second subsection details and explores theoretical and empirical literature about Asset tangibility, property rights protection and exports share. Then we finally highlight the current debate on whether Trade development increases the demand in financial services or inversely.

### Financial development and structure of international trade

Many papers have explored the linkage between financial development and international trade but the debate can be separated in two main lines. Some academicians' research deals with the effect of financial development on international trade, while others base theirs analyze on the reverse causality between these two macro variables. Beck (2002) is the one who explored the possible relationship between financial development and international trade. In so doing, he utilized the conclusions of the works of Baldwin (1989), Kletzer and Bardhan (1987); and Baldwin and Krugman (1989). The empirical work of Beck (2002) was built on sample of 65 countries over the period 1966-95, and estimations was conducted by cross-country generalize method of moment (GMM) techniques and modern dynamic panel techniques (Arellano and Bond (1991); Arellano and Bover (1995)). He tests the hypothesis that countries with a higher level of financial development experience higher export shares and trade balances in manufactured goods. Another empirical test was builds on the assumption that the production of manufactured goods exhibits higher scale economies than the production of agricultural goods or the provision of services. For Beck (2002) developed countries provide financial intermediaries with lower search costs that improve the access to external finance in favor of their firms. Given this easy access to financial resources, these countries often are net exporters of high return to scale. Beck empirical results confirm the idea that financial development impact positively exports of manufactured goods. Then manufactured goods have higher returns to scale than agricultural foods or provision of services. So, high quality of the financial system pushes the economy towards specialization in high added value of goods and services. Furthermore, financial development contributes to reallocate the resources, trade shares and productions between the different industries in an economy. Moreover in his second study, Beck (2003) verified successfully the hypothesis that countries with better developed financial sectors have higher exports and trade balances in industries that rely more on external financing. Indeed, if in every paper, the methodology used by Beck leads to some goods results but it doesn't help to understand concretely the relationship in each of the countries in the

sample. After Beck (2002, 2003) other academicians have viewed the effects of financial development on international trade (Slaveryd and Vlachos (2005); Ju and Wei (2005); Wynne (2005); and Becker and Greenberg (2005)). Their main results link with those of Thorsten Beck. Concerning developing countries, Gries and al. (2009) found a weak significance relationship between trade openness and economic development. They argued that financial system reform could have a small effect on trade sectors if there is not an effective and appropriate relationship between financial area and real sectors. Using a sample containing developed and developing countries, Ma and Cheng (2005) confirm a strong effect of financial crisis on international trade. Their empirical finding pointed out the negative short-run effect of currency crisis on international trade. In the order, Zghidi and Abida (2014) used a generalized method of moment (GMM) applied to panel data relative to three north Africa countries (Tunisia, Morocco, Egypt) and concluded that the influence of trade openness on economic growth is more significant in presence of some better underlying financial conditions and institutions. Demetriade and James (2001) found out that the link between bank credit and economic growth is broken in several Sub-Saharan African countries. Implementing VECM model to data running 18 African countries, these authors showed that financial system development follows economic growth. In fact, reluctance of African banks and malfunctioning of credit markets reduce significantly access to credit for local companies, particularly the exporters. In sum, Demetriade and James (2001) pointed out this paradoxical situation. Although the demand for financial services can arise from economic growth, the majority of competitive African companies continue to have difficulties in accessing to loans.

### **Asset tangibility, property rights protection and exports share**

Hur and al. (2006) argued that countries with higher financial development acquire higher export shares in industries that possess more intangible assets. In addition, if such industries are more dependent on the external finance, the impact of the financial system on export shares is more important. In other words the dependence on external finance and the level of use of intangible assets affect the extent to which the higher financial development influences the export shares. We can also notice that economies with higher property rights protection experiment higher shares in industries with more intangible assets. On contrary, the countries with less developed financial system (or equivalently say countries with a lower level of legal protection), have higher export shares in industries with more tangible assets (Braun, 2003; Classens and Laeven (2003)). In reality, even if a country has a lower financial development, the importance of tangible assets could facilitate the access to credit for export firms. This might therefore lead

them to get greater export shares. Otherwise, the tangibility of assets reduces the agency problem and also helps firms in less developed countries to overcome the high export cost.

### **Trade development increases the demand in financial services**

Authors like Yongfu and Temple (2005); Slaveryd and Vlachos (2002); Aizenman (2003); Aizenman and Noy (2004a, 2004b); Ginebri, Giacomo, Petrioli, and Sabani (2001) have performed many works to analyze the reverse relation between financial development and international trade. These authors considered that increases in goods market openness are typically followed by sustained increases in financial depth. Rajan and Zingales (2003) argue that trade openness, especially when combined with openness to capital flows, weakens the incentives of incumbent firms to block financial development in order to reduce entry and competition. Furthermore, the relative political power of incumbents may decrease with trade as well. Thus, these authors argue that trade has a beneficial impact on financial development. Braun and Raddatz (2005) explored the political channel further. They demonstrated that countries in which trade liberalization reduced the power of groups most interested in blocking financial development saw an improvement in the financial system. When on the other hand, trade opening strengthened these groups, external finance suffered. In addition, the study of the impact of trade development on the demand in financial services is known as the demand-following hypothesis. In the developed countries, the existence of high developed industries often compels firms to ask some well-developed financial services. In an others words, financial sector follows the change observed in the trade area (Baltagi et al., (2009); Klein and Olivei (2008); Do and Levchenko (2007)). Moreover, the increase in external financial services demanded by exporter improves the quality of local financial system. On contrary in lower developed countries, firms meet a lot of difficulties to entry into foreign markets as the level of sunk cost is relatively high. Given, these firms have very little connection with external financial networks, they can't cope with the large sunk costs required to enter in this type of market. Facing a weak level of external financial services, the commercial activities of such firms' weakly impacts the expansion of financial sector. This analysis is confirmed by several empirical studies (Balgati et al, (2009); Klein et Olivei (2008); Huang et Temple (2005); Do et Levchenko, (2007)). Using dynamic panel estimation technique, Baltagi et al. (2009) find out that the trade openness is a significant determinant of banking system development both in developing and industrialized countries. In Fact, in developed countries, the high-technology industries, better-organized firms and sectors with increasing returns to scale have some export activities very dependent on possessing important financial resources. So the countries with these comparative advantages will have some export activities that reinforce the development of

financial sector. Concerning the bi-directional causality test, we can underline the empirical work of Kiendrebeogo (2012). This author measured financial sector by the private credit and the broad measure of the money (M2) while the international trade flow was evaluated by the manufacturing trade. He used data of 21 developed countries from 1961 to 2010. The research of Kiendrebeogo (2012) suggested that financial development is not a very determinant factor in increasing in financial sector. Generally, in developed countries, the impact of financial services on trade area is stronger than in the poor countries. According to his conclusion, the direction of causality between financial development and trade flow vary across the samples of countries.

## RESEARCH METHODOLOGY

### Model specification

In the line with Ordinary Least Square (OLS) estimation technique is used in this study. The choice technique (OLS) was due to its simplicity, convenience and has been successfully used by other studies and gives out the meaningful results Koutsoyiannis, (1973). However parameters obtained using this OLS technique are best, linear and unbiased.

Therefore the private credit equation can be expressed as follow:

$$f(RGDP, PRC, GDS, EXR, INF) \quad (1)$$

Where:

$GRT$  = Growth rate in term of trade.

$PRC$  = Denotes financial development proxy of domestic credit to private sector as a percentage of GDP.

$RGDP$  = Logarithmic of growth in real GDP per capita.

$GDS$  = Gross domestic saving.

$EXR$  = The real exchange rate variable calculated from nominal exchange rates and consumer price index.

$INF$  = The inflation rate which represents the Consumer Price Index.

Thus the causal relationship between financial development and international trade model can be specified in a linear relationship through a regression equation as follow:

$$GRT = \beta_0 + \beta_1 PC + \beta_2 RGp + \beta_3 GDS + \beta_4 EXR + \beta_5 INF + \varepsilon_t \quad (2)$$

### Statement of Hypotheses and Decision Rule

Hypothesis testing is important for any scientific research. To this end, we will test the following hypotheses in line with our main objectives:

$H_0$ : Financial development does not have significant impacts on international trade in Cote d'Ivoire.

$H_1$ : Financial development has significant impacts on international trade in Cote d'Ivoire.

The above hypotheses will be tested at the 0.05 level of significance. The null hypothesis will be rejected if the probability at which the t-value is significant is less than the chosen level of significance. Otherwise, the null hypothesis will be accepted.

### Investigation methodology

In this subsection, we first examine the data to ensure that the equations we estimate are not spurious, so it's important to test for nonstationarity. In order to overcome this problem, we use the method developed by Dickey and Fuller (1979) and Phillips-Perron (1988) to test the existence of unit root in order to establish the properties of individual series. The augmented Dickey Fuller (ADF) test for unit autoregressive root tests the null hypothesis regression follows the equation (3) written bellow:  $H_0 : \delta = 0$  against the one side alternative  $H_1 : \delta < 0$  in the regression:

$$\Delta Y_t = \beta_0 + \delta Y_{t-1} + \gamma_1 \Delta Y_{t-1} + \gamma_2 Y_{t-2} + \dots + \gamma_p Y_{t-p} + \mu_t \quad (3)$$

Under the null hypothesis,  $Y_t$  has a stochastic trend; under the alternative hypothesis  $Y_t$  is stationary. Note that the lag length  $p$  can be estimated using the *BIC* or *AIC*. Also the *ADF* statistic does not have a normal distribution, even in large sample. Second, after we confirmed that all the variables are integrated in the same order of integration, the long-run relationship between economic variables is tested by performing cointegration method. We utilize the procedure used by Johansen (1988), and Johansen and Juselius (1990) which applies maximum likelihood to a vector auto regression (*VAR*) model assuming that the errors are gaussian. In general, economic variables which are stationary are called *I (0)* series and those which are to be differenced once in order to achieve its stationary are called *I (1)* series. With this cointegration test still error correction is better than and being adopted. In fact, if  $X_t$  and  $Y_t$

are cointegrated, the first difference of  $X_t$  and  $Y_t$  can be modeled using a VAR, augmented by including  $Y_{t-1} - \theta X_{t-1}$  as an additional regressor:

$$\Delta Y_t = \beta_{10} + \beta_{11}\Delta Y_{t-1} + \dots + \beta_{1p}Y_{t-p} + \gamma_{11}\Delta X_{t-1} + \dots + \gamma_{1p}\Delta X_{t-p} + \alpha_1(Y_{t-1} - \theta X_{t-1}) + \mu_{1t} \quad (4)$$

$$\Delta X_t = \beta_{20} + \beta_{21}\Delta Y_{t-1} + \dots + \beta_{2p}Y_{t-p} + \gamma_{21}\Delta X_{t-1} + \dots + \gamma_{2p}\Delta X_{t-p} + \alpha_2(Y_{t-1} - \theta X_{t-1}) + \mu_{2t} \quad (5)$$

The term  $(Y_t - \theta X_t)$  is call the error correction term and measures the adjustment speed between the short-run and long-run disequilibrium with negative sign. The combine model in equation (3) and (4) is call vector error correction model (VECM). In VECM, past values of  $Y_t - \theta X_t$  help to predict the futures values of  $\Delta Y_t$  and/or  $\Delta X_t$ .

## EMPIRICAL RESULTS AND INTERPRETATION

### Empirical results

We start by analyzing the summary of descriptive statistics of the variable, so the results are presented in table 1. Sample mean, standard deviation, skewness and kurtosis, and the Jacque-Bera statistic and  $p$ -value have been reported. The high standard deviation of exchange rate (EXR), growth of trade (GRT) and private credit (PRC) with respect to the mean is an indication of the high volatility.

Table 1. Summary Statistics of the Variable (1980-2014)

	GRT	PRC	RGDP	GDS	EXR	INF
<b>Mean</b>	76.63264	24.26702	-1.163897	19.32724	104.6249	4.807355
<b>Median</b>	76.36664	18.29846	-0.734635	20.25685	101.0767	3.349414
<b>Maximum</b>	95.06973	42.26380	8.196630	27.32870	133.2500	26.08157
<b>Minimum</b>	55.34852	12.22776	-14.76849	10.38363	77.24500	-0.805880
<b>Std. Dev.</b>	11.37522	10.73861	4.366614	4.098414	14.71536	5.119026
<b>Skewness</b>	-0.189066	0.489210	-0.394399	-0.621060	0.508455	2.441305
<b>Kurtosis</b>	2.232017	1.494822	4.583581	3.037349	2.278923	9.976170
<b>Jarque-Bera</b>	1.068639	4.700012	4.564483	2.252040	2.266337	105.7391
<b>Probability</b>	0.586068	0.095369	0.102055	0.324321	0.322011	0.000000
<b>Sum</b>	2682.142	849.3457	-40.73640	676.4534	3661.872	168.2574
<b>Sum Sq. Dev.</b>	4399.454	3920.803	648.2888	571.0980	7362.418	890.9507
<b>Observations</b>	35	35	35	35	35	35

All variables exhibit a positive mean return. Also the sum squared deviation row presents the net change over the sample period. In term of skewness, growth rate of trade real income per

capita and gross domestic saving exhibit a negative skewness which implies that they have a long left tail so the distribution is skewed left. Private credit ratio, inflation and real exchange rate have return distributions that are positively skewed imply that they have a long tail to the right and the degree of right skewness increases. All the variables are relatively normally distributed as indicated by the p values of Jarque Bera statistic.

We second run the univariate augmented Dickey-Fuller (*ADF*) and Phillip-Peron (*PP*) unit root tests for each variable that enters the multivariate model following the methodology implemented by (Dickey & Fuller, 1979) and (Phillips–Perron, 1988) testing for the significance of trend and no trend with non-stationary and assuming that the choice of lags is based to guarantee non-residual autocorrelation. The results over the period are reported in table 2. The overall test shows that we fail to reject the non stationary null hypothesis base on *ADF* and *PP* test at level. However the tests indicate that all variables contain a unit root at level while they are all first difference stationary. Thus, according the empirical foundation, we conclude that all variables follow the  $I(1)$  process.

Table 2: Unit Root Tests

Test/variables	ADF statistics		Phillips-Perron Statistics	
	No trend	Trend	No trend	Trend
<b>Level</b>				
GRT	-1,269	-2,046	-2,046	-2.046
PC	-1,536	-0,339	-0,500	-0.501
RGP	-4,573***	-5,406***	-5,489	-5.490***
GDS	2,674	2,719	2,797	-2.797
EXR	-2,754	-2,598	-2,768	-2.768
INF	-4,361**	-4,554*	-4,505**	-4.505
<b>First différence</b>				
$\Delta$ GRT	-5,298***	-5,234	5,378***	-5.236***
$\Delta$ PC	-4,489***	-4,854***	-4,327***	-4.831***
$\Delta$ RG	-8,561***	-8,405***	-11,795***	-13.245***
$\Delta$ GDS	-6,021***	-5,923***	-6,117***	-5.925***
$\Delta$ EXR	-5,798***	-5,702***	-5,942***	-5.708***
$\Delta$ INF	5,941***	-5,833***	-11,022*	-10.844***

The  $\Delta$  denotes first-difference derivation. The asterisks \*, \*\*, and \*\*\* denote statistical significance at 1%, 5%, and 10% levels, respectively. McKinnon (1980) critical values are used for rejection of the null unit root.

Turning to the cointegration test, we follow the popular procedure developed by Johansen (1988) and Johansen and Juselius (1990). As we mentioned earlier the method is based on the statistic values such us maximum eigenvalue ( $\lambda_{max}$ ) the trace statistics ( $\lambda_{trace}$ ) or the likelihood ratio (*LR*).These statistics are utilized to detect the number of cointegrating

vectors between stock price index (*GRT*) and its determinants. The results are depicted in table 3 below.

Table 3: Johansen cointegration test (sample 1980-2014)

Null Hypothesis	Alternative Hypothesis	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
$r \leq 0$	$r = 1$	0.791386	147.8925	117.7082	0.0002	51.71983	44.49720	0.0070
$r \leq 1$	$r = 2$	0.605382	96.17268	88.80380	0.0132	30.68464	38.33101	0.2882
$r \leq 2$	$r = 3$	0.561135	65.48805	63.87610	0.0364	27.17757	32.11832	0.1782
$r \leq 3$	$r = 4$	0.436718	38.31048	42.91525	0.1339	18.94119	25.82321	0.3093
$r \leq 4$	$r = 5$	0.321885	19.36928	25.87211	0.2595	12.81848	19.38704	0.3429
$r \leq 5$	$r = 6$	0.180048	6.550806	12.51798	0.3937	6.550806	12.51798	0.3937

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level, \* denotes rejection of the hypothesis at the 0.05 level, \*\*MacKinnon-Haug-Michelis (1999) p-values; Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level; \* denotes rejection of the hypothesis at the 0.05 level; 0.05 level, \*\*MacKinnon-Haug-Michelis (1999) p-values

Finally, after getting the long-run cointegration relationship using (Johansen, 1988) and (Johansen and Juselius, 1990) procedure, the error-correction model (*ECM*) can be expressed and estimated with a more appropriate dynamic simple. Thus, an error correction term lagging one period error-correction term ( $ECT_{t-1}$ ) is carry out to capture the long run relationship by attempt to correct deviations from the long run equilibrium path. Its coefficient can be interpreted as the speed of adjustment or the amount of disequilibrium transmitted each period to amount of growth of trade (*GRT*) with appropriate lag order  $k=4$  for the periods 1980-2014.

### Interpretation of results

In so doing, we performed univariate augmented Dickey-Fuller (ADF) and Phillips-Peron (PP) unit root tests for each variable that enters the multivariate model. The results over the period 1980-2014 reported in Table 2 fail to reject the null hypothesis at level based on the tests mentioned above. But the overall test shows that all variables are stationary at first difference and treated as integrated  $I(1)$  process according to the literature. Turning to the long-run analysis, we performed the cointegration test using Johansen (1988) and Johansen and Juselius (1990) procedure. The result demonstrated that growth rate in term of trade (*GRT*),

domestic credit to private sector as a percentage of GDP (PRC), logarithmic of growth in real GDP per capita (*RGDP*), gross domestic saving (GDS), *Real Exchange rate (EXR)* and inflation (*INF*) are cointegrated at the 5% level of significance. The trace statistics ( $\lambda_{trace}$ ) tests identify one and two statistically significant vectors respectively ( $\lambda_{trace} = 147.89$ ) and ( $\lambda_{trace} = 96.17$ ). Moreover maximum eigen statistic test displays one cointegrated vector ( $\lambda_{max} = 51.72$ ) see Table 3 above. Second, the long run estimated result for the multiple parameters regression specified to capture the effect of financial development on trade growth in Cote d'Ivoire between 1980 and 2014, is presented in Table 4.

Table 4: The regression estimation in long run

Dependent Variable: GRT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRC	-0.554134***	0.179703	-3.083609	0.0045
RGDP	-0.036128	0.353712	-0.102141	0.9193
GDS	1.919362***	0.447542	4.288674	0.0002
EXR	0.202564	0.153153	1.322627	0.1963
INF	-0.524625**	0.287373	-1.825591	0.0782
C	34.27062	20.47787	1.673544	0.1050

$$R^2 = 0.63, \bar{R}^2 = 0.57, \text{Prob}(F - \text{stat}) = 0.000013, F - \text{statistic} = 9.937, DW = 0.71, n = 35$$

The asterisks \*\*\*, \*\* and \* implies statistically significant at 1%, 5% and at 10% level respectively.

The empirical results show that financial development measured by domestic credit to private sector, affect negatively the trade growth. This effect is unexpected regarding the economic theory. In fact, in Cote d'Ivoire's context, the link between financial development and international trade is very weak and negative. The structure of external trade (of goods) in Cote d'Ivoire is dominated by primary raw material exports. The exporters of agricultural products are mainly multinational corporations. These companies finance their activities either by self-financing or foreign financial market. In other words the contribution of local financial market to international trade is practically inexistent. Furthermore we found a positive and significant effect of gross domestic saving on trade at the conventional level 1%, 5% and 10%. This implies that gross domestic saving plays a major role in financing local production and the procurement of goods and services from abroad. This also proves that the reinforcement of local production capacity in particular agricultural sector increases export possibilities. The results show that all

estimated parameters are statistically significant at the standard level 1%, 5% and 10% excluding real growth per capita and real exchange rate. The obtained  $R^2$  in the model of 0.63 implies that the explanatory variables included in the model explain more than 63 percent of all variations in trade growth performance. The Probability of rejecting the model specification given by Prob (*F-statistics*) of 0.000013 reflects that the model is well specified. In case the model is adjusted the  $\bar{R}^2$  will be reduced to 57 percent, which is still preferable in explaining the model variation and thus according to the result we can accept the null hypothesis that the international trade performance of cote d'Ivoire follows the long run process. Third, we analyze the short run dynamic effect by performing the error-correction model (ECM) and can be expressed and estimated with a more appropriate simple dynamic representation. Results on Table 5 represent the estimation of the over parameterized model as well with lag length  $k = 4$ .

Table 5: Estimated regression model in short run  $k = 4$ 

Dependent Variable: DGRT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.154906	5.668467	1.085815	0.3092
DPRC(-4)	1.960925	0.989812	1.981108	0.0829
DRGDP(-1)	-0.539958	0.474710	-1.137448	0.2883
DGDS(-2)	-0.688864	0.948821	-0.726021	0.4885
DEXR(-2)	0.416070	0.279668	1.487729	0.1751
DINF(-4)	0.913818	0.453897	2.013271	0.0789
ECM(-1)	0.096439	0.090804	1.062049	0.3192

Note: Log likelihood = 78.01734 imply that the model is not significant at all.

The asterisks \*\*\*, \*\* and \* implies statistically significant at 1%, 5% and at 10% level respectively.

The result also displays an incorrect sign (positive) not meaningful and relatively low ( $ECT_{t-1}$ ) coefficient (0.096439). This implies that financial development has not effect on international trade growth in Cote d'Ivoire in short run.

## CONCLUSION AND POLICY IMPLICATIONS

The main focus of this study was to examine the effect of financial development on international trade in Cote d'Ivoire using the recently time series data covering the period of 1980-2014. In order to test the stationarity of our data base, the unit root method was performed. Then the

cointegration test proposed by Johansen (1988), and Johansen and Juselius (1990) was conducted to appreciate the existence of the long-run relationships of the variables. Moreover the short-run dynamics of the long-run trade growth function is investigated by computing an error-correction model (ECM) with lags length  $k = 4$  and report a relatively weak absolute value of Log likelihood statistics see Table 5.

In view of the long-run analysis, we implement the cointegration test using Johansen (1988), and Johansen and Juselius (1990) technique. The result demonstrated that growth rate in term of trade (*GRT*), domestic credit to private sector as a percentage of GDP (*PRC*), logarithmic of growth in real GDP per capita (*RGDP*), gross domestic saving (*GDS*), *Real* Exchange rate (*EXR*) and inflation (*INF*) are cointegrated at the 5% level of significance. Indeed, our empirical outcomes from ordinary least square methodology reveal that the link between financial development and international trade is very weak and negative in Cote d'Ivoire. This can be explained by the fact that the exporters of agricultural products are mainly multinational corporations. Hence these companies finance their activities either by self-financing or foreign financial market. Likewise, we found a positive and significant effect of gross domestic saving on trade. Therefore, gross domestic saving plays a major role in financing local agricultural production (increasing implicitly domestic export opportunities) and the procurement of goods and services from abroad. Finally, the study suggests that local authorities should promote domestic exporters by facilitating their access to private credit. This important structural reform will help financial sector to offer the best support possible to economic growth. In future research, we could concentrate on defining the content of this reform.

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