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Investment-Financial Intermediation Nexus in Ivory Coast: Evidence from an Ardlbounds Testing Approach

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Abstract

The aim of this paper is to examine the impact of bank intermediation on investment in Ivory Coast, over the period from 1983 to 2015. Methodologically, this study applied the ARDL method to explore the nature of the relationship between our explanatory variables and investment in Ivory Coast. The study indicates some major results. In both the short and long term, bank credit granted to the private sector and bank deposits have a positive influence on investment in Côte d'Ivoire. However, the financial depth is not conducive to investment. It is possible that the lack of control in the management of banking risks means that financial products do not benefit investment.

Keywords: Financial development; private investment; ARDL; Ivory Coast

JEL Classifications: C13; C32; E22; E44

1. Introduction

Since the work of McKinnon (1973) and Shaw (1973) proposing financial liberalization policies as a solution to improve economic growth in developing countries, numerous studies have been conducted on the relationship between financial development and economic growth. In theory, the arguments in favour of a favourable effect of financial development on growth are based on the idea that financial development makes it possible to make resource allocation more efficient, improves risk management and ultimately increases capital productivity, and also increases the amount of savings and investment.Financial development would have a positive impact on economic development (McKinnon (1973); King & Levine (1993); Pagano (1993); Neusser & Kugler (1998); Levine &Schmukler (2004); Calderon & Liu (2003)). It is recognized that the financial sector influences growth through two channels: capital accumulation and productivity improvement. As such, five main functions are generally associated with the financial system. These include savings mobilization, resource allocation, risk management, transaction facilitation and corporate monitoring (Barry, 2012). Empirically, however, the results are more nuanced. The meaning and extent of the relationship between financial development and growth may depend on income (Deidda & Fattouh, 2002) or the level of financial development (Shen & Lee, 2006). These studies therefore confirm a non-linearity between financial development and growth. Studying the relationship between banks, financial markets and economic development, Beck & Levine (2003) conclude that the development of the banking system and the financial market can be beneficial to economic growth if a few conditions are met. Thus, Deidda & Fattouh (2002) obtain a non-linear relationship in an endogenous growth model with financial intermediation. As a result, the effect of intermediation on economic growth is ambiguous, especially when the level of development of the banking sector is low.

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Under the aegis of major international institutions, the majority of sub-Saharan economies have been engaged in financial liberalization programmes since the mid-1980s. In addition to interest rate liberalization, many other measures have been put in place in Africa as part of financial reforms (restructuring of banks, abolition of direct monetary control, strengthening supervision). On sub-Saharan Africa, Reinhart & Tokatlidis (2003) argue that financial reforms have had very little impact on economies. The main reason for this failure is the existence of imperfect and incomplete markets, information asymmetries and an unstable economic environment that is not conducive to the private sector.

After more than two decades of liberalization in WAEMU, overall, the situation of banks is satisfactory in the banking system. The ratio of bank loans to GDP increased from 11.63% in 2001 to 26.73% in 2013 (BEI, 2016). Between 2001 and 2007, the average annual growth rate of the loan ratio was 13.7%. At the same time, the average real interest rate on bank loans in 2015 was 10.7% in the Union compared with 5.81% in Morocco. According to the World Bank database (2017), the investment rate in Côte d'Ivoire was 21% in 1965, 24% in 1980, 8% in 1990, 10% in 2000, 12% in 2010 and 20% in 2015. Over the same period, the credit granted to the private sector as a proportion of GDP was 19.8% in 1965, 40.7% in 1980, 36.4% in 1990, 15.06% in 2000, 16.3% in 2010 and 22.01% in 2015.

From the above, the central problem of this study revolves around the following fundamental question: to what extent does banking intermediation stimulate investment in Côte d'Ivoire? Thus, the general objective of this study is to analyse the effect of banking intermediation on investment in Côte d'Ivoire. Specifically, it will examine the effect of private sector credit and bank deposits on investment. In relation to our objectives, we assume the following two assumptions. First, there is a positive long-term relationship between bank intermediation and the investment rate in Côte d'Ivoire. Second, an increase in financial savings is favourable to investment.

This study is not lacking in interest and challenge. Indeed, financing constraints on the economy remain a central issue in sub-Saharan Africa, particularly in WAEMU countries where they go hand in hand with bank overliquidity. This research is part of a long theoretical and empirical development regarding the role of banks in developing countries. Like those conducted before it, this study aims to highlight the importance of banking intermediation and investment in the development process to political and monetary authorities, banks, entrepreneurs and households.

Methodologically, the study uses an Autoregressive Distributed Lag Model (ARDL). For the ARDL Bound testing approach, lagged dependent variables and lagged independent variables can be introduced in the model. Indeed, such a modelling takes into account reaction times and inertia effects. This hypothesis seems reasonable in the case of monetary variables that influence the macroeconomic aggregates with a delay. This study contributes in the empirical literature on the link between bank intermediation and investment in Ivory Coast on the 1983-2015 period. The results obtained from this study are the following. In the short term, capital requirements have a negative effect on investment. In the short and long term, bank credit granted to the private sector and bank deposits have a positive influence on investment in Ivory Coast. The rest of this document is structured as follows. Section 2 is devoted to literature review. Section 3 describes the methodology adopted in the study. The results of the estimates are presented in Section 4 and Section 5 is reserved for conclusion.

2. Literature Review

This section reviews the theoretical and empirical literature on the relationship between banking intermediation and investment.

2.1. Review of Theoretical Literature on the impact of Banking Intermediation on Investment

The theoretical evidence of financial intermediation was provided at the end of the 1950s on the basis of a study of a financial market economy. The pioneering work of Goldsmith (1955) and Gurley & Shaw (1955) highlights the rise of institutionalization of the financial intermediation process in the U.S. economy. Building on the work of Gurley and Shaw, Hicks (1975) characterizes market economies with two modes of financing: the direct financing model and the indirect financing mode. The latter method of financing will be extensively developed in the work of McKinnon (1973) and Shaw (1973).According to these authors, financial deepening implies not only greater capital productivity, but also a higher savings rate and therefore a higher volume of investment.

They argue that policies that lead to financial repression (control that results in a negative interest rate) reduce the incentive to save and, therefore, directly reduce investment and growth. At the macroeconomic level, a robust and effective financial system promotes growth by channelling resources to their most productive uses and a more efficient allocation of resources. A deep and sound financial system can also benefit growth by increasing the savings rate and overall investment. Financial development can also accelerate the rate of accumulation of physical capital. Financial development also promotes growth by enhancing competition and encouraging innovative activities that can stimulate dynamic efficiency. According to Demirgüç-Kunt and Levine (2008), the overall function of a financial system is to reduce transaction and information costs that hinder economic activity, and its five core functions are to (i) produce ex-ante information on possible investments and allocate resources; (ii) monitor investments and provide governance means for companies after providing financing; (iii) facilitate exchange, diversification and risk management; (iv) mobilize and pool savings; and (v) facilitate the exchange of goods and services. The efficiency of a financial system refers to its ability to perform the five basic functions and financial development refers to an improvement in the efficiency of a financial system. The pioneering work dates back to King and Levine (1993), who examined the relationship between financial depth, measured by total liquid liabilities, and three measures of growth, namely, real GDP per capita growth, capital stock growth, and total productivity growth. Using data from 77 countries over the period 1960-1989, the authors find a statistically significant relationship between financial depth and these three measures of growth.

For its part, the study by Levine and Zervos (1998) indicates that the initial level of banking development and stock market activity have a statistically significant relationship with the average growth rate, the growth rate of the capital stock and the productivity growth rate of 47 countries over the period 1976-1993. King and Levine (1993) show that financial development is a good indicator of future growth. More recently, Levine (2003) confirmed the existence of a strong and positive contribution of the exogenous component of financial development to economic growth.

2.2. Review of Empirical Literature

The analysis of the relationship between finance and economic growth has been the subject of several empirical studies. While the financial sphere influences the real sector of the economy, the impact is not homogeneous across countries, regions and income levels. Studies conducted in China (Shan & Jianhong, 2006), India (Ray, 2013), Greece (Dritsakis & Adamopoulos, 2004) and Nigeria (Odeniran and Udeaja, 2010) show a positive impact of finance on economic growth. But in crisis or low-income countries, the impact of financial intermediation on economic growth is much more nuanced (Pınar & Damar, 2006; Riaoja and Valev, 2004; Barajas, Çami & Yousefi, 2012). In any case, the sense of causality between finance and growth differs between countries and levels of development.

In a sample of OECD countries from 1976-1992, Laroche et al (1995) study the causal link between financial development and economic growth. The results indicate that in the Granger sense, financial development causes economic growth. For the United States, Germany, the Netherlands and Great Britain, Rousseau and Wachtel (2011) indicate that financial development also causes economic growth, as finance has enabled trade and industry to develop.

In the case of developing countries, there is no shortage of studies. In the case of Latin American countries, over the period 1950-1985, De Gregorio and Guidotti (1995) show a negative relationship between financial development and the long-term economic growth rate. Based on the database of Levine and Schmukler (2004), Huang and Lin (2009) detect a non-linearity in the relationship between financial development and growth, and show that the positive effect of financial development on growth is higher in low-income countries than in rich countries. For their part, Collier and Gunning (1997) replicate King and Levine's sample, and show that the effect of financial deepening on growth is positive in Africa, but smaller than in other developing countries. Out of a sample of 28 African countries (including the three Maghreb countries), Savvides (1995) finds that the "quasi-currency / GDP" ratio has a positive impact on growth. Odedokun (1996) studies a panel of 71 countries, 21 of which are in sub-Saharan Africa. It concludes that financial intermediation has a positive effect on investment and growth in the sample countries outside sub-Saharan Africa. The positive effect of the financial sector on growth for only about one-third of the sub-Saharan African countries in the sample.

Rexiang and Rathanasiri (2011) analyze the relationship between financial intermediation and economic growth in Sri Lanka over the period 1977-2008. The results of the study reveal that financial intermediation has an impact on long-term economic growth, but with a small amplitude. In addition, the study reveals that financial intermediation promotes growth through productivity rather than capital accumulation. In Ghana, several studies on the link between the financial sector and the real sector indicate that financial development promotes private investment (Asante, 2000 ; Asare, 2013; Frimpong and Marbuah (2010); Eshun et al. 2014)). Onodugo, Kalu & Anowor (2013) achieve the same results in the case of Nigeria. Recent studies highlight the contribution of the financial sector to investment and economic growth in most developing countries (Esso, 2010; Hassan, Sanchez, & Yu (2011); Pan &Wang (2013)).

In the UEMOA region, some studies on the impact of finance on growth exist. Raffinot & Venet (1998) sought to establish a relationship between financial deepening and GDP growth rates for a sample of seven UEMOA countries. On panel data, the results reject any influence of the deepening financial sector on the GDP growth rate. But when considering each country individually, the financial deepening variables are quite well correlated with growth. Only Niger has no significant causal link.

In accordance with the typology established by Patrick (1966), Burkina Faso, Senegal and Togo experienced "demand-following" phenomena, while Benin, Mali and Côte d'Ivoire were in a so-called "supply-leading" configuration. Igue Babatounde (2013) studies the link between the efficiency of financial intermediation and economic growth in a panel of seven UEMOA countries over the period 1990-2008, Guinea Bissau being excluded from the analysis for unavailability of data. Using the DEA (Data Envelopment Analysis) method, the results indicate a positive impact of the productive efficiency of the banking system on economic growth in the area.

3. Model Specification and Methodology

In this section, we first present the specification of the model and then present the methods for estimating short- and long-term coefficients.

3.1. Model Specification

To examine a potential long-term relationship between a set of variables, studies use Engle-Granger's (1987) two-step method and Johansen and Juselius' (1990). These two tests require that all variables be integrated in the same order. In addition, these tests are not appropriate for small samples (Cheung & Lai, 1993). For all these reasons, we adopt the ARDL Bound approach proposed by Pesaran et al (2001). Our choice is based on several considerations. First, it is possible to test the existence of a long-term relationship even if the integration orders are different, but the differences do not exceed 1. Second, the Bound test generally provides unbiased estimates of valid long-term coefficients and T-statistics even if some repressors are endogenous. Third, it allows good results to be obtained even with small samples and deals jointly with long-term dynamics and short-term adjustments. The potential long-term relationships between banking intermediation and investment or other variables are estimated by a non-constrained error correction model as follows:

$$\begin{aligned}\Delta INVR_t = a_0 &+ \sum_{i=1}^{p} b_i\,\Delta INVR_{t-1} + \sum_{i=0}^{q1} c_i\,\Delta CREDG_{t-1} + \sum_{i=0}^{q2} d_i\,\Delta DEPG_{t-1} + \sum_{i=0}^{q3} e_i\,\Delta DEPH_{t-1} \\ &+ \sum_{i=0}^{q4} f_i\,\Delta CAR_{t-1} + \sum_{i=0}^{q5} g_i\,\Delta CHR_{t-1} + \sum_{i=0}^{q6} h_i\,\Delta INTC_{t-1} + \sum_{i=0}^{q7} i_i\,\Delta IMPCRE_{t-1} + \sum_{i=0}^{q8} j_i\,\Delta GDP_{t-1} \\ &+ k_i INVR_{t-1} + l_i CREDG_{t-1} + m_i DEPG_{t-1} + n_i DEPH_{t-1} + o_i CAR_{t-1} + p_i CHR_{t-1} \\ &+ q_i INTC_{t-1} + r_i IMPCRE_{t-1} + s_i GDP_{t-1} + \varepsilon_t \end{aligned} \quad (1)$$

Where $INVR$ is the ratio between gross fixed capital formation and GDP. This variable represents the rate of investment in an economy. $CREDG$ is the domestic credit to GDP ratio. This variable represents the bank intermediation rate used in this study. $DEPG$ is the ratio between bank deposits and GDP. Deposits collected by commercial banks represent an indicator that reflects the level of development of banking intermediation. The variable $DEPH$ is an indicator of financial depth, measured by the ratio (M2-M1)/GDP.

This indicator makes it possible to assess the level of development of financial intermediaries. The CAR variable represents equity as a percentage of GDP. It results from banking regulation because the banks' own capital level shows the banks' ability to cope with different shocks. The CHR variable measures the change in the US dollar exchange rate as a function of the CFA franc. The $INTC$ variable represents the intermediation cost, obtained by differentiating between lending and deposit rates.

The variable $IMPCRE$ measures overdue credits as a percentage of total domestic credit. This variable reflects credit risk. Finally, GDP is the GDP growth rate, an important variable for investment. In addition, a_0 represents the constancy, Δ the difference operator, p et $q1, q2, q3, q4, q5, q6, q7\ etq8$ are the optimal delays, and ε the error term. According to Pesaran et al (2001), the ARDL model is specified as $ARDL(p, q1, q2, q3, q4, q5, q6, q7, q8)$.The first part of equation 1 with $b, c, d, e, f, g, h, iandj$represents the short-term dynamics while the second part with $k, l, m, n, o, p, q, rands$ represents the long-term dynamics. The test for verifying the existence of long-term relationships between variables is the F-test. The null hypothesis of non-cointegration between the variables is specified as follows:

$$H_0 : k = l = m = n = O = p = q = r = s = 0 \quad (2)$$

Which means there is no long-term relationship and the alternative hypothesis is that:

$$H_0 : k \neq 0, l \neq 0, m \neq 0, n \neq 0, O \neq 0, p \neq 0, q \neq 0, r \neq 0\ ets \neq 0 \quad (3)$$

If the Fisher statistic is greater than the critical value of the test then the null hypothesis of no cointegration is rejected at the 5% and 10% threshold, according to the order of integration of the variables.

3.2. Estimation of Long-term Coefficients

If the existence of the long-term relationship is established according to the F-statistic, then the second step is to estimate the coefficients of the long-term and short-term relationship. The long-term relationship is considered as the stationary equilibrium while the short-term relationship is assessed by the magnitude of the deviation from the stationary equilibrium. The long-term coefficients are estimated from the following model:

$$\begin{aligned} \Delta INVR_t = \beta_0 &+ \sum_{i=1}^{p} \beta_1\, \Delta INVR_{t-1} + \sum_{i=0}^{q1} \beta_2\, \Delta CREDG_{t-1} + \sum_{i=0}^{q2} \beta_3\, \Delta DEPG_{t-1} + \sum_{i=0}^{q3} \beta_4\, \Delta DEPH_{t-1} \\ &+ \sum_{i=0}^{q4} \beta_5\, \Delta CAR_{t-1} + \sum_{i=0}^{q5} \beta_6\, \Delta CHR_{t-1} + \sum_{i=0}^{q6} \beta_7\, \Delta INTC_{t-1} + \sum_{i=0}^{q7} \beta_8\, \Delta IMPCRE_{t-1} \\ &+ \sum_{i=0}^{q8} \beta_9\, \Delta GDP_{t-1} + \varepsilon_t \end{aligned}$$

(4)Where $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \beta_7, \beta_8 et \beta_9$represent the long-term coefficients of the model.

3.3. Estimation of Short-term Coefficients

The existence of the long-term equilibrium relationship implies that an error correction mechanism exists. In order to estimate the parameters of the short-term dynamics, the error-correction model associated with the long-term relationship is:

$$\begin{aligned} \Delta INVR_t = \beta_0 &+ \sum_{i=1}^{p} \beta_1\, \Delta INVR_{t-1} + \sum_{i=0}^{q1} \beta_2\, \Delta CREDG_{t-1} + \sum_{i=0}^{q2} \beta_3\, \Delta DEPG_{t-1} + \sum_{i=0}^{q3} \beta_4\, \Delta DEPH_{t-1} \\ &+ \sum_{i=0}^{q4} \beta_5\, \Delta CAR_{t-1} + \sum_{i=0}^{q5} \beta_6\, \Delta CHR_{t-1} + \sum_{i=0}^{q6} \beta_7\, \Delta INTC_{t-1} + \sum_{i=0}^{q7} \beta_8\, \Delta IMPCRE_{t-1} \\ &+ \sum_{i=0}^{q8} \beta_9\, \Delta GDP_{t-1} + \pi ECT_{t-1} + \varepsilon_t \end{aligned}$$

(5)

Where $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \beta_7, \beta_8 et \beta_9$represent the short-term coefficients of the model and π is the coefficient associated with the error-correction term delayed by one period, ECT_{t-1}which captures the adjustment rate. The magnitude of π indicates how quickly the balance is restored.

4. Empirical Results

The empirical analysis follows the following approach. First, we indicate the source of the data and the description of the variables. Second, we apply unit root tests to the series to study the stationarity of the variables. Third, we estimate the long-term and short-term coefficients.

4.1. Data and Variables Description

The empirical study uses Côte d'Ivoire's annual data for the period 1983 to 2015. The choice of this study period is fully explained by the availability of data for this study. The study data are mainly from the Central Bank of West African States (BCEAO, 2017) and the World Bank (WDI). The examination of Table 1 shows both the dynamics of the banking sector and the private sector over the period 1983-2015.First, with regard to the banking sector, the table shows that the average level of deposits and loans amounts to 18.78 and 30.24% of GDP respectively. The private sector dynamics represented by the evolution of private investment in relation to GDP shows that over the period 1983-2015, private investment reached a maximum value of 24% of GDP against a minimum value of 8% for an average of 12.42%. Although these values are higher than those reported by the change in deposits relative to GDP, they remain significantly lower than those of the change in credit relative to GDP.In addition, there is a high average intermediation cost of around 7%. The descriptive analysis of the growth rate of the USD/XOF exchange rate shows a high volatility of the exchange rate, through the standard deviation of this variable which is 19.35 while the average of this variable is 3.09.

Table1. Descriptive Statistics

Variables	Observations	Mean	St. Dev	Minimum	Maximum
INVR	33	12.24	3.97	8.00	24.00
DEPG	33	18.78	3.94	13.00	18.79
CREDG	33	30.24	11.09	17.00	51.00
IMPCRE	33	5.03	2.67	2.00	11.00
GDP	33	2.27	3.88	-4.00	11.00
CAR	33	3.36	1.16	2.00	6.00
CHR	33	3.09	19.35	-22.00	96.00
DEPH	33	8.51	2.167	4.00	12.00
INTC	33	7.36	0.86	6.00	10.00

Source: Author, based on data from BCEAO (2017) and WDI (2017)

4.2. Unit Root Tests

This test is based on the Dickey-Fuller test Augmented and confirmed or invalidated by the Philipe-perron (PP) test, which has the particularity of assuming stationarity as a null hypothesis. The test results are summarized in Tables 2 and 3. It follows that only the CHR and GDP variables are stationary (Table 2) in level according to the Dickey Fuller Augmented ADF statistic while all the other variables are not and therefore the unit root assumption is verified. As a first difference, as Table 3 shows, all our variables are stationary. We can now perform the cointegration test using the Bound test approach.

Table 2.Results of the stationarity tests at level

Variables	At the level			Decision
	T-Statistics	Critical value	Probability	
INVR	-2.93	-4.27	0.1671	Non-stationary
CREDG	-0.32	-4.27	0.9865	Non-stationary
DEPG	0.17	-4.27	0.9967	Non-stationary
IMPCRE	-3.14	-4.27	0.1149	Non-stationary
CAR	-1.51	-4.27	0.8022	Non-stationary
CHR	-5.28	-4.27***	0.0008	Stationary
DEPH	-2.51	-4.27	0.3209	Non-stationary
INTC	-2.66	-4.27	0.2584	Non-stationary
GDP	-3.50	-3.21*	0.0562	Stationary

Source: Author, based on data from BCEAO (2017) and WDI (2017)
Note: ***, **, and * represent the significance levels of 1%, 5% and 10% respectively.

Table 3.Results of stationarity tests in first difference

Variables	In first difference			Decision
	T-Statistics	Critical value	Probability	
DINVR	-5.350423	-4.28***	0.0007	Stationary
DCREDG	-4.157990	-3.56**	0.0134	Stationary
DDEPG	-7.101253	-4.28***	0.0000	Stationary
DIMPCRE	-6.079845	-4.28***	0.0001	Stationary
DCAR	-4.847644	-4.28***	0.0026	Stationary
DCHR	-	-	-	-
DDEPH	-4.886478	-4.29***	0.0024	Stationary
DINTC	-6.718102	-4.28***	0.0000	Stationary
DGDP	-	-	-	-

Source: Author, based on data from BCEAO (2017) and WDI (2017)
Note: ***, **, and * represent the significance levels of 1%, 5% and 10% respectively.

4.3. Result of the Bound Cointegration Test

The results of the bound test are recorded in Table 4. Note that the bound cointegration test allows to know if there is cointegration between the variables.

Table4. Bound cointegration test

Test Statistic	Values	Number of explanatory variables
F-statistic	4.536394	**8**
Significance	I(0) Bound	I(1) Bound
10%	1.95	3.09
5%	2.22	3.39
2.5%	2.28	3.7
1%	2.79	4.1

Source: Author, based on data from BCEAO (2017) and WDI (2017)

The null hypothesis of no cointegration is here tested against the alternative hypothesis. The calculated Fisher statistic is higher or larger than the critical value of the test, so the null hypothesis of no cointegration is rejected at the 5% and 10% threshold. For the 2.5% and 1% thresholds, there is cointegration between the variables. Thus, we can conclude that there is cointegration between the variables of our model at the 5% and 10% threshold.

4.4. Estimates and Interpretations of Short and Long term coefficients

This section is reserved for the presentation of estimates of short- and long-term coefficients and their economic interpretations. Table 5 shows that in the short term, the variables CREDG, DEPG, GDP, DEPH and CAR significantly explain the evolution of the endogenous variable INVR. The variables representing bank depth and the change in the deposit rate are significant at the 1% threshold, while the other variables are only significant at the 5% threshold. Finally, analysis of the signs of coefficients associated with the variables indicates that an increase in equity and financial depth reduces the investment rate.

Table 5.Estimation of short-term dynamics.

Variables	Coefficients	T-Statistics	Probability
D(CREDG)	0.173564	2.532997**	0.0214
D(DEPG)	0.685321	3.709072***	0.0017
D(GDP)	0.255356	2.809182**	0.0121
D(DEPH)	-1.172285	-4.948384***	0.0001
D(CAR)	-1.332677	-2.252388**	0.0378
D(CHR)	0.030871	1.229339	0.2357
D(INTC)	0.989939	1.283912	0.2164
D(IMPCRE)	-0.260545	-1.018894	0.3225

Source: Author, based on data from BCEAO (2017) and WDI (2017)

Note: ***, **, and * represent the significance levels of 1%, 5% and 10% respectively.

The results of the long-term dynamics estimation are presented in Table 6. The results indicate that the CREDG, DEPG, GDP and DEPH variables significantly explain the evolution of the endogenous variable INVR.

Table 6.Estimation of long-term dynamics

Variables	Coefficients	T-Statistics	Probability
CREDG	0.168782	3.123393***	0.0062
DEPG	0.666440	5.152121***	0.0001
GDP	0.521385	4.683237***	0.0002
DEPH	-1.638293	-5.946378***	0.0000
CAR	-0.040970	-0.062324	0.9510
CHR	0.005714	0.185485	0.8550
INTC	-1.122060	-1.083536	0.2937
IMPCRE	-0.253366	-0.986995	0.3375

Source: Author, based on data from BCEAO (2017) and WDI (2017)

Note: ***, **, and * represent the significance levels of 1%, 5% and 10% respectively.

Regarding the effect of the growth rate on investment, the results indicate that in both the short and long term, there is a positive relationship between the GDP growth rate and the private investment rate, but with a strong amplitude in the long term.

With regard to variables related to banking intermediation, bank credit to the private sector and bank deposits have a positive impact on investment in Côte d'Ivoire. From the perspective of the endogenous money supply, the credit supply responds to a credit demand linked to the implementation of a project benefiting economic growth. Moore (1988) and Aglietta (1999) explain, by the way, that the specificity of the banking function is not found in a particularity of the microeconomic behaviour of the banking firm. It is in line with the logic of monetary creation. As for bank deposits, according to McKinnon & Shaw's (1973) theory of financial liberalization, its increase may favour the supply of bank credit. Regarding the influence of capital requirements, they have a negative impact on the investment rate in Côte d'Ivoire in the short term. This result is contrary to that of Naceur and Kandil (2013), for whom the increase in banks' minimum capital positively influences the credit offer. In Côte d'Ivoire, in managing their liquidity, banks may reduce the amount of credit granted to the economy in order to comply with regulatory requirements.

As for the inverse relationship between financial depth and investment rate, the underdevelopment of the Ivorian banking sector may weigh on growth. Poor management of banking risks and lack of control over financial products do not benefit investors. In this context, the requirement for banking regulation leads to a reduction in the supply of credit, which ultimately has a negative impact on investment. In Africa, Hugon (2007) explains that banks' behaviour slows down the economic circuit, with high profitability, because of the oligopolistic structure of the market, they prefer to keep idle capacity rather than lend part of the savings collected from customers.

5. Concluding Remarks

In this study, our objective was to examine the impact of bank intermediation on investment in Ivory Coast, on the period from 1983 to 2015. At the methodological level, we used the Bound test developed by Pesaran et al (2001). The study arrived at important results. In both the short and long term, bank credit granted to the private sector and bank deposits have a positive influence on investment in Côte d'Ivoire. However, the financial depth is not conducive to investment. It is possible that the lack of control in the management of banking risks means that financial products do not benefit investment.

In total, these results provide a number of policy implications. First, the accommodating policy initiated by the Central Bank of West African States (BCEAO) must be continued. BCEAO must reduce its minimum reserve ratios in order to encourage bank lending to the private sector. In addition, the control of banking risks is useful to increase the share of banks in the financing of the activity. Secondly, the capacity of banking professionals in risk management needs to be strengthened in the context of an increasingly complex economy.

References

Aglietta, M. (1999).L'économie Mondiale 2000. La decouverte.

Asante, Y. (2000). Determinants of Private Investment Behaviour.African Economic Research Consortium (AERC): Nairobi, Kenya, 2000.

Asare, E. (2013).The impact of financial liberalization on private investment in Ghana. International Journal of Business and Finance Research, 7, 77–90.

Banque Européenne d'Investissement (2016). Tendances récentes dans le secteur bancaire en Afrique Subsaharienne : du financement à l'investissement. Rapport de mars 2016

Barajas, A., R. Çami, & Yousefi, S.R. (2012). The finance and growth nexus re-examined: do all countries benefit equally?. IMF Working Paper, WP/13/130.

Barry, M. D. (2012). Développement financier et croissance économique: études théoriques et applications sur économique l'UEMOA et la CEDEAO. Economies et finances, Université de Franche-Comté: 1-214.

Beck, T., & Levine, R. (2003). Stock Markets, Banks, and Growth: Panel Evidence. NBER Working Paper No. w9082

Calderon, C., &Liu, L. (2003). The direction of causality between financial development and economic growth. Journal of Development Economics,72 (1), 321-334

Cheung, Y. W.,&Lai, K. (1993). A fractional cointegration analysis of purchasing power parity. Journal of Business and Economic Statistics, 11(1), 103-12.

Collier, P., &Gunning, W.J.(1997). Explaining African Economic Performance. Mimeo.

Deidda, L., &Fattouth, B. (2002). Non-linearitybetweenFinanceandGrowth.EconomicsLetters,74,339-345

De Gregorio, J. D., & Guidotti, P.E. (1995, Mars). Financial development and economic growth. *World Development, 23*, 433-448.

Demirgüç-Kunt,A.,&Levine, R. (2008). Finance, Financial Sector Policies, and Long-Run Growth. Policy Research Working Paper WPS4469. The World Bank, Washington, DC.

Dritsakis, N.,& Adamopoulos, A. (2004). Financial development and economic growth in Greece: An empirical investigation with Granger causality analysis. International Economic Journal, 18(4), 547-559.

Engle, F. R.,&Granger, C.W.J.(1987). Co-Integration and error correction: Representation, estimation, and testing. Econometrica, 55(2), 251–76

Eshun, M.E., Adu, G., &Buabeng, E. (2014). Financial Determinants of Private Investment in Ghana. International Journal of Finance and Economics, 3, 25–40.

Esso, L. J. (2010). Re-examining the Finance-Growth Nexus: Structural Break, Threshold Cointegration and Causality Evidence from the ECOWAS. Journal of Economic Development, 35(3), 57-58.

Frimpong, J.M., &Marbuah, G. (2010). The Determinants of Private Sector Investment in Ghana: An ARDL Approach.*European Journal of Social Sciences,* 15 (2), 250-261.

Goldsmith, R. W. (1955). Financial Structure and Economic Growth in Avanced Countries. in National Bureau Committee for Economic Research, Capital Formation and Economic Growth, Princeton, University Press.

Gurley, G., &Shaw, E.(1955). FinancialAspectsofEconomicDevelopment.AmericanEconomic Review,45,515-538.

Hassan, M. K., Sanchez, B., &Yu, J. (2011). Financial Development and Economic Growth: New Evidence from Panel Data. The Quarterly Review of Economics and Finance, 51, 88-104.

Hicks, J. (1975). Capital And Time. Economica

Huang, H.-C., &Lin,S-C.(2009). Non-linear finance–growth nexus. Economics of Transition, *17*(3), 439-466.

Hugon, P. (2007). Rentabilité du secteur bancaire et défaillance du financement du développement, le cas de la CEMAC. *Revue Tiers Monde,* 48(192), 771-788.

Igue, B.C. (2013). Intermédiation financière et croissance économique: une approche basée sur le concept d'efficacité-X appliquée à la zone UEMOA. Actualité Economique, 89 (1), 7-37.

Johansen, S., &Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration with Applications to Demand for Money. Oxford Bulletin of Economics and Statistics*,* 52, 169-210.

King, R. G., &Levine, R. (1993). Finance, entrepreneurship, and growth: Theory and evidence. Journal of Monetary Economics, 32(3): 513–42.

Laroche,A., Lemoine, E. ,Millien, A., Prats, F., & Zhang, Y-J. (1995). Croissance et Marché Financier : Une Approche Empirique. Economie Internationale*,* 64, 39-60

Levine, R.,&Schmukler, S. (2004). Internationalization and the evolution of corporate valuations. Mimeo. Universitu of Minnesota (Carlson School of Management).

Levine, R., &Zervos, S. (1998). Stock Markets, Banks, and Economic Growth.*American Economic Review*, 88 (3), 559-586.

Levine, R. (2003). More on finance and growth: More finance, more growth?. Federal Reserve Bank of St. Louis Review, 85, 31–46.

Mckinnon, R. (1973). Moneyard Capital in Economy. Washington Dc: The brookoing Institution.

Moore, B. J. (1988). The Endogeneity Of Money. Scottish Journal Of Political Economy*, 35*(3), 291-294.

Naceur, S. B.,&Kandil, M. (2013). Basel capital requirements and credit crunchin the mena region.Imf Working Paper, wp/13/160.

Neusser, K., &Kugler, M. (1998). Manufacturing growth and financial development: evidence from OECD countries. Review of Economics and Statistics, 80(4), 638-46.

Odedokun, M. O. (1996). Alternative Econometric Approaches for Analyzing the Role of the Financial Sector in Economic Growth: Time-Series Evidence from LDCs. Journal of Development Economics*,* 50(1), 119-146

Odeniran, S.O.,&Udeaja, E.A. (2010). Financial sector development and economic growth: Empirical evidence from Nigeria. Central Bank of Nigeria Economic and Financial Review, 48(3), 91-124

Pagano, M. (1993). Financial Markets and Growth: an Overview. European Economic Review*, 37*, 613-622.

Pan, H., &Wang, C. (2013). Financial development and economic growth: A new investigation. Journal of Economic Development, 38(1), 27-46.

Patrick, H. (1966). Financial Development and Economic Growth in Underdeveloped Countries.Economic Development and Cultural Change*, 14*(2), 174-189

Pesaran, M. H.,Shin, Y., &Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of applied econometrics, 16(3), 289-326.

Pinar, A.O., &Damar, H.E. (2006). Financial Sector Deepening and Economic Growth: Evidence from Turkey. MPRA Paper 4077, University Library of Munich, Germany, revised Nov 2006.

Phillips, P. C., &Perron, P. (1988). Testing for a unit root in time series regression. Biometrika, 75(2), 335-346

Raffinot, M., et B. Vénet (1998). Approfondissement financier, libéralisation financière et croissance : le cas de l'Union économique et monétaire ouestafricaine (UEMOA). Contribution au Colloque de l'AFSE, Paris.

Ray, S. (2013). Does Financial Development Promote Economic Growth in India. International. Journal of Economic Practices and Theories, 3(3).140-151.

Reinhart C., &Tokatlidis, I. (2003). Financial liberalization: The African experience. Journal of African Economies, 12, 53-88.

Rexeang W.,&Rathanasiri, R.A. (2011). financial intermediation and economic growth: A lesson from Sri Lanka ICBI 2011. Faulty of Commerce and Management Studies

Rioja, F., &Valev, N. (2004). Finance and the Sources of Growth at Various Stages of Economics Developpment. Oxford University Press*, 42(1)*, 127-140.

Rousseau, P., &Wachtel, P (2011). What is happening to the impact of financial deepenning on economic growth?.Economic Inquiry*, 49*, 276–288.

Savvides, A. (1995). Economic Growth in Africa. World Development*, 3*(23), 449–458.

Shan, J., &Jianhong, Q. (2006). Does Financial Development lead to Economic Growth? The case of China. Annals of Economics and Finance, 1, 231–250

Shaw, E. (1973). Financial Deepening in Economic. Oxford University press.

Shen, C., & Lee, C. (2006). Same Financial Development yet Different Economic Growth-Why? Journal of Money Credit and Banking*,* 38, 1907-1944

WDI (2017). World development indicators, 2017.