

The Relationship between Financial Development and Domestic Investment in Algeria using ARDL Approach

العلاقة بين التطور المالي والاستثمار المحلي في الجزائر باستعمال منهجية الانحدار الذاتي ذات الفجوات الزمنية المتباطئة

BENKREIRA Sara¹, KEDDI Abdelmadjid²

¹ University of Algiers 03, benkreira.sara@univ-alger3.dz,

² University of Algiers 03, keddi.abdelmadjid@univ-alger3.dz,

Received: 06/04/2019

Accepted: 08/05/2019

Published: 31/07/2019

Abstract:

This study aims to analyze the relationship between financial sector development and domestic investment in Algeria during the period (1990-2017). The autoregressive distributed lag model is employed to examine whether financial sector development impact domestic investment in both short-run and long-run.

The findings reveal that broad money ratio has a negative impact on domestic investment in the long and short run. However, both credit provided to private sector and savings to GDP were found to be the key driver of domestic investment in the long run.

Keywords: Financial development; Domestic investment; ARDL; Algeria;

Jel Classification Codes: O16, E220, C32, O55.

ملخص:

تهدف الدراسة إلى تحليل العلاقة بين تطور النظام المالي والاستثمار المحلي في الجزائر خلال الفترة 1990-2017. من أجل قياس أثر التطور المالي على الاستثمار المحلي في المدى القصير والطويل تم تطبيق نموذج الانحدار ذات الفجوات المبطنة.

أظهرت النتائج أن مؤشر الكتلة النقدية إلى الناتج المحلي له تأثير سلبي على الاستثمار المحلي في المدى

Corresponding author: BENKREIRA Sara, benkreira.sara@univ-alger3.dz

القصير والطويل. كما تبين أن إجمالي القروض الممنوحة للقطاع الخاص ونسبة الودائع إلى الناتج المحلي
الحرك الرئيسي على المدى الطويل.

كلمات مفتاحية: التطور المالي الاستثمار المحلي، نموذج الانحدار الذاتي ذات الفجوات المتباطئة، الجزائر

تصنيفات JEL: O55، C32، E220، O160

1. INTRODUCTION

Many economists (Schumpeter1919; Goldsmith Shaw&mackinon1973) argued that a well-developed financial system plays a crucial role in economic growth improvements. Furthermore, the growth endogenous model has identified investment as one important channel that link finance to growth. Investment has been found to have a positive impact in economic growth by improving productivity efficiency and job creation (M.Khan, 1990). Recently many researchers have shifted attention toward the role of financial system in investment process over time and across countries. One of the financial sector functions is mobilizing savings to investment. Therefore, a well-functioning and developed financial may efficiently mobilize available resources for investments. A large and liquid financial system reduces the overall costs and risks of investments which stimulates capital accumulation.

In developing countries, most studies that examined the role of financial sector in promoting investment have emphasized on the importance of the financial system in promoting technological progress and accumulation of capital. According to Levine the level of financial development is a good predictor of capital accumulation and technological change (Levine R. , 1997). Thus, financial development can be considered as a determinant of investment.

At the early 1990s, the Algerian government has implemented important economic reforms. The transition from the centralized-planning economy to market economy included structural reforms to ensure macro-economic stabilization, achieve a sustainable long-term growth, enhance the investment and open the economy to boost competition and develop a competitive financial sector (World Bank, 1994). The main financial

reforms were embarked to liberalize the banking system and reduce the state intervention. Moreover, the reforms have encouraged opening the banking sector to the private investment to enhance the competition level among banks, and enhance the flow of funds through the banking system.

1.2 The research problem

Investment is considered as an important channel through which financial development can stimulate economic growth. Algeria has adopted a drastic reforms and programs to modernize the financial sector and boost domestic investment. In this sense, the problem of the study can be formulated as follows:

Is there a relationship between financial development and domestic investment in long run and short run?

1.3 The research hypotheses

In order to answer this question, this study hypothesizes:

- There is a positive impact of financial sector variables on domestic investment in the long term.
- Financial development can stimulate domestic investment through the channeling of resources from savers to profitable investment activities.

1.4 The research objectives

The main purpose of this study is to examine the relationship between financial sector development and domestic investment, and determine the key driver of domestic investment in Algeria.

1.5 Generalities about financial development and domestic investment

Many economists have been discussing the importance of financial system development in economic growth process. However, investment has been seen as the main channel by which financial development can influence economic growth. Thus, many studies have been done to explore investment behavior and investigate its financial determinants (Mackinnon 1973, Ndikumana 2000). Before reviewing the previous studies, we address to the definition of financial development and domestic investment.

1.5.1 Financial development definition

According to (Ross Levine, 2004), financial development can be defined as increasing the efficiency of financial services provided by the

financial system in order to reduce market frictions, which will affect positively the decisions of saving and investment. (Levine R. , 2004, p. 869)

In other words, financial development happens when financial instruments, markets and intermediaries reduce the effects of information asymmetry and the transactions costs.

1.5.2 Domestic investment definition

Domestic investment can be defined as an expenditure to raise the economy's total capital stock. This is done by the acquisition of additional capital-producing assets that can generate income in the domestic economy. The necessary funds for investment are provided by bank credit and household's savings. (Oyedokun Emmanuel, 2018, p. 132)

Therefore, Domestic investment can be considered as the process that allows different local economic dealers to invest their saving in the local economy in order to obtain productive capital.

1.6 Literature review

Ndikumana Léonce (2000) investigated the relationship between financial development and investment using panel regression. The variables employed in the study were the real per capita gross domestic product(GDP) and gross nominal product per capita, total gross domestic investment and private investment to GDP, the ratio M3 to GDP, total credit to the private sector as a percentage of GDP, total domestic credit provided by the banking sector as a percentage of GDP, and a composite index of financial development. The results showed a positive relationship between domestic investment and many indicators of financial system development. (Ndikumana, 2000)

Lahcene (2004) investigated the impact of financial liberalization on investment and growth in five MENA countries (Egypt, Jordan, Morocco, Tunisia and Turkey). Financial development was measured by the total liquid liabilities of financial intermediaries as a percentage of GDP; deposit money banks assets as a share of total assets; private credit by deposit money bank to GDP; private credit by deposit money to total domestic credit; and a financial liberalization index constructed on the basis of eight main dimensions of financial reforms. The results showed the existence of a negative effect of financial depth on private investment. (Lahcene, 2004)

Nazliuglo(2009) used quarterly data over time period 1987Q1-2007Q2 to investigate the link between financial sector development and investment in Turkey. The ARDL bounds testing approach was employed to measure the long and short-run relationship by using three investment variables and six financial development indicators. The empirical results found a strong positive long-run relationship between investment and financial development indicators and investment decisions are very sensitive to the available credit offered by the financial system. (Nazliuglo, 2009)

Uçan & Ozturk (2011) investigated whether financial development contributes to increase investment in Turkey. Total gross domestic investment and private domestic investment as a percentage to GDP were used to measure investment. Financial development was measured by four variables. The results showed a positive relationship between total domestic investment and all four financial development indicators. (Okay Uçan, 2011)

Ndako (2017) investigated the relationship among financial development, investment in Nigeria. The study employed the standard vector auto-regression framework. The results showed that investment is crucial channel that influences economic growth through financial development. (Ndako, 2017)

Muyambiri (2018) examined the impact of financial development on investment in South Africa over the period (1974-2014). The estimated model is based on the flexible accelerator investment model. The results revealed that the banking sector development has a negative influence on investment. (Brian Muyambiri N. O., 2018)

2. Materials and Method

2.1 Materials

In order to investigate the relationship between financial development and the domestic investment, we have used the annual growth rate of gross capital formation to measure domestic investment. However, financial sector development is measured by three indicators:

Credit provided to private sector to GDP(CREDIT): this indicator

is used to measure the level of financial intermediation in the absence of an efficient financial market in Algeria. It is one of the most widely used measures of financial development (Demirguç-kunt, 2014). Levine & al (2000) argued that financial system that grant credit to private sector can efficiently evaluate the potential entrepreneurs, and ensure risk diversification. (Levine.R, 2000).

Broad money ratio(M2/GDP):it is used to measure financial depth. The ratio of broad money to GDP (M2/GDP) has been used widely as a measure of financial deepening that shows the real size of financial sector. A higher ratio of M2 to GDP implies a larger financial sector and improved financial intermediation. The M2 to GDP ratio is a measure of money supply relative to the size of economy. (Brian Muyambiri N. O., 2017, p. 03).

Gross Domestic savings to GDP(SAV):this indicator is used to measure the financial intermediation efficiency. Hassan &al (2011) confirmed the existence of a positive impact of gross domestic saving over GDP on economic growth in the long-run; this implies that financial development could influence investment through converting saving to profitable investment. (Venancio, 2013).

Investment indicator (Inv): the annual growth rate of gross fixed capital formation is used to measure domestic investment.

Real Gross Domestic Product growth rate (RGDP): the growth rate of real per capita GDP is used as proxy of economic growth.

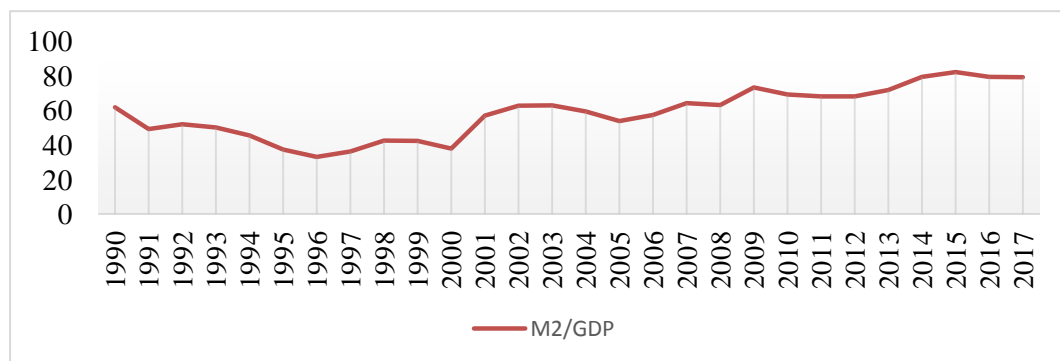
2.1.2 Data source:

The study uses an annual data covering the period (1990-2017). The data set is obtained from the World Bank development indicators and the bank of Algeria reports.

2.1.3 Financial development and domestic investment trend in Algeria

It should be noted that financial system in Algeria remains predominantly bank-based system and characterized by low levels of intermediation, giving that the financial market and financial institutions are emergent (Ishak Hacini, 2018, p. 152). Thus, to evaluate the financial system growth and investment progress in Algeria, a selected financial development and investment indicators are discussed as follows:

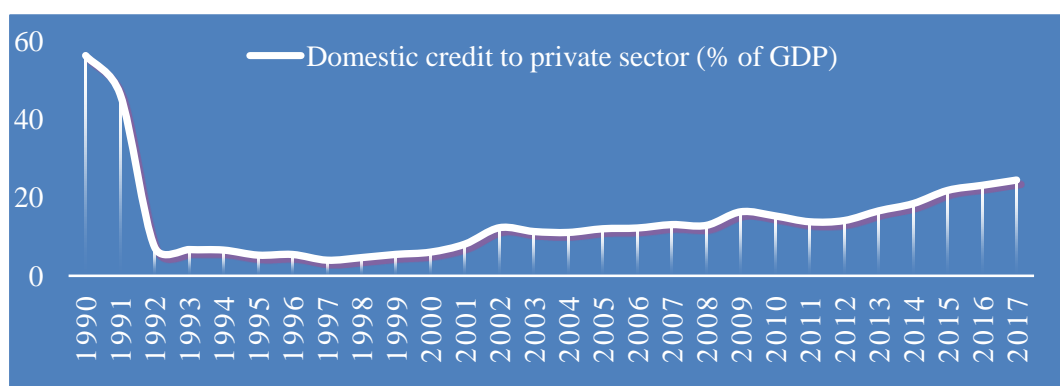
Fig 1. Broad money ratio trend



Source: Bank of Algeria report.2017

Fig 01 shows the evolution of M2 /GDP indicator from 1990 to 2017. We note that this indicator decreased during the period (1990-2000). This decline was due to the application of a strict monetary policy according to the economic program suggested by the International Monetary Fund. Since 1999, it witnessed a remarkable progress as a result of the financial reforms implemented at the end of the nineteen's. The M2/GDP ratio increased to above 60 percent, it was progressively improved reaching its maximum of 83 percent in 2015, since then on steady state, around 79 percent. This growth is the result of the rise of government spending and the evolution of the parallel market.

Fig 2. Trend of credit to private sector to GDP



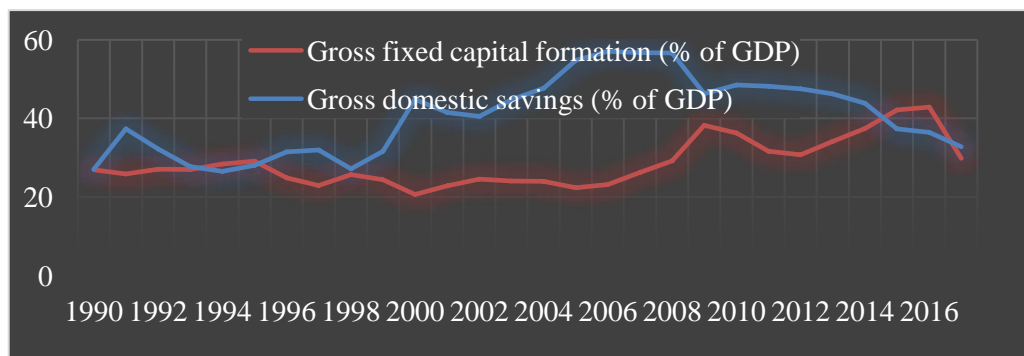
Source: Bank of Algeria report.2017

Figure 2 shows the evolution of credit to private sector as a percentage of GDP during the period (1990-2017). This indicator trend was generally

ascending upwards since 1993 to reach 23.27 in 2017. The increase of credit provided to the private sector is the result of the government policy to stimulate investment by encouraging the creation of small and medium enterprises. Therefore, the government has launched several procedures to involve banking sector in financing private sector under ANGEM, ANSEJ and CNAC programs. (Ishak Hacini, 2018, p. 160)

However, we notice an increase of credit granted to the private sector due to the increase of loans provided to householders in the form of loans to finance other durable goods since 2005. In this period, banks were directed to finance the private sector in which the credit granted to the private sector amounted to 53% of the total loans granted to the economy. Although the government aimed to enhance credit to private sector remains relatively low by international comparison. This is due to the effect of slow structural reforms that hamper the private sector growth, poorly developed infrastructure and the prevalence of state-directed lending. (IMF, 2014)

Fig. 3 Investment and savings trend



Source: World Bank Database, World Development Indicators 2018.

Figure 3 shows a gradual increase trend over the period (1995-2017). The gross fixed capital formation over GDP increased from 24.39% in 1999 to reach its maximum 42.89% in 2016. This is due to the improvements of investment climate to encourage entrepreneurs. Then, it decreased to reach 29% in 2017. On the other hand, gross domestic savings indicator was increasing from 31.61% in 2000 until 57.06% in 2006. Since 2008, the gross domestic savings indicator decreased to reach 32.77% by 2017 due to the financial crisis.

2.2 Methods

The autoregressive distributed lag (ARDL) bounds testing approach developed by (Pesaran et al ,2001) is used to evaluate the co-integration relationship between financial development and domestic investment. This technique is based on the OLS estimation of a conditional unrestricted error correction model. The ARDL model can provide a dynamic error correction model (ECM) by a simple linear transformation which integrates short run dynamics with long run equilibrium without losing information. (Do Thi Thao, 2016, p. 88)

The ARDL bounds test has many advantages comparing with other co-integration techniques. It can perform better than Johansen co-integration test in small sample size. If the stationarity of the variables is not clear, then the use of the ARDL bounds test is appropriate. (H.Pesaran, 2001).

The associated ARDL co-integration test equation can be presented as:

$$\Delta INV_t = \alpha_0 + \sum_{i=0}^n \alpha_{1i} \Delta CREDIT_{t-i} + \sum_{i=0}^n \alpha_{2i} \Delta M2_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta SAV_{t-i} + \sum_{i=0}^n \alpha_{4i} RGDP_{t-i} + \sum_{i=0}^n \alpha_{5i} INV_{t-i} + \sigma_1 CREDIT_{t-1} + \sigma_2 M2_{t-1} + \sigma_3 SAV_{t-1} + \sigma_4 RGDP_{t-1} + \sigma_5 INV_{t-1} + \mu_{1t} \dots (1)$$

All the variables were previously defined, α_0 is a constant, $\alpha_{1i} \dots \alpha_{2i}$ and $\sigma_1 \dots \sigma_5$ are the respective coefficients, and μ_{1t} is the error term.

The above equation is estimated with the null hypothesis of a co-integration relationship, that is:

$$H_0 : \sigma_1 = \sigma_2 = \sigma_3 = \sigma_4 = \sigma_5 = 0 \dots \dots \dots (2)$$

While the alternative hypothesis of the existence of a co-integration relationship:

$$H_1 : \sigma_1 \neq \sigma_2 \neq \sigma_3 \neq \sigma_4 \neq \sigma_5 \neq 0 \dots \dots \dots (3)$$

The null hypothesis indicates the non-existence of the long run relationship. The calculated F-statistic is validated against the lower and upper bound critical values. (H.Pesaran, 2001, p. 300)

If the calculated F-statistics lies between the bounds, the test is significant. However, if it is above the upper bound then the null hypothesis is rejected. If the calculated F-statistic is below the lower bound, we fail to reject the null hypothesis.

If the variables included in the ARDL representations are found to be cointegrated, the following error correction model will be estimated:

$$\Delta INV_t = \alpha_0 + \sum_{i=0}^n \alpha_{1i} CREDIT_{t-i} + \sum_{i=0}^n \alpha_{2i} M2_{t-i} + \sum_{i=0}^n \alpha_{3i} SAV_{t-i} + \sum_{i=0}^n \alpha_{4i} RGDP_{t-i} + \sum_{i=0}^n \alpha_{5i} \Delta INV_{t-i} + \varepsilon_1 ECM_{t-1} + \mu_t \dots \dots (4)$$

All the variables were previously defined; ECM is the error correction term and μ_t is the residual term. The speed of the adjustment parameter is expected to be statistically significant and negative to confirm the existence of a co-integration relationship.

3. Results and Discussion

3.1 The unit root test results

The ARDL bounds test can be used only when the variables are integrated of an order equal to one or less. Hence, the Augmented Dickey Fuller is employed to confirm that all the variables under discussion are integrated of an order to 0 or order 1.

Table 1.Augmented Dickey Fuller unit root test results

Augmented Dickey Fuller						
At level						
	variables	INV	CREDIT	M2	RGDP	SAV
With Constant	t-stat	-2.95	-4.59	-0.76	-3.30	-1.58
	P-value	0.052	0.001	0.814	0.024	0.47
	Result	*	***	No	**	No
With Constant and Trend	t-stat	-2.81	-5.1979	-2.5008	-3.29	-0.80
	P-value	0.20	0.0014	0.3250	0.008	0.95
	Result	*	***	No	*	No
None	t-stat	-1.49	-3.26	0.27	-0.91	-.14
	P-value	0.123	0.002	0.7583	0.311	0.62
	Result	*	***	No	No	No
At First Difference						
	variables	d(inv)	d(CREDIT)	d(M2)	d(RGDP)	l (SAV)
With Constant	t-stat	-12.09		-5.15	-7.46	-5.06
	P-value	0.0000		0.0003	0.000	0.0004
	Result	***		***	***	***
With Constant and Trend	t-stat	-4.82		-5.00	-7.39	-5.08
	P-value	0.0046		0.0023	0.0000	0.0019
	Result	***		***	***	***

The Relationship between Financial Development and Domestic Investment in Algeria using ARDL approach

	t-stat	-11.91		-5.07	-7.61	-5.19
None	P-value	0.0000		0.0000	0.0000	0.00
	Result	***		***	***	***
Result		I(1)	I(0)	I(1)	I(1)	I(1)

Note: *, ** and *** denotes stationarity at 10%, 5% and 1% significance levels respectively. No denotes non significance.

Source: Eviews 10 output

3.2 The ARDL and ECM results

3.2.1 The optimal lag selection

Before testing the long and short run relationship between financial development and domestic investment rate, the optimal lag should be determined using VAR model. The results are reported in table 3.

Table 3. The optimal lag selection criteria

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-348.969	NA	460122.1	27.47038	27.47038	27.28811
1	-275.229	113.4459*	11295.55	23.47922	24.93087*	23.89725
2	-243.322	36.81591	8451.424*	22.94791*	25.60926	23.71428*

*denotes the optimal lag number according to each information criteria at 5%.

Source: Eviews 10 output

The results reported in table 3 show that the optimal lag is one (01) according to (Likelihood Ratio, Schwarz Criteria) information criteria, where (Final Prediction Error, Akaike Information Criterion, Hannan & Quinn Criterion) information criterion determine two(2) as optimal lag.

3.2.2 The Bound Test results

To examine the long run relationship and co-integration between variables, the bounds testing method was applied. The table 4 reports the bounds F-statistic results and t-statistic results.

Table 4. ARDL Bounds tests results

Test statistic	value	K	Co-integration status	
F-statistic	22.12993	4	Co-integrated	
Critical values				
significance	Lower Bounds	I(0)	Upper Bounds	I(1)
10%	2.752		3.994	
5%	3.354		4.774	

1%	4.768	6.67
t-Bounds Test		
t-statistic	value	Co-integration status
	-10.10854	Co-integrated
	Lower Bounds	I(0) Upper Bounds I(1)
10%	-3.14	-4.05
5%	-3.42	-4.36
1%	-3.97	-4.97

Source: Eviews10 outputs

The results show that the calculated F-statistic value of 22.13 is greater than the upper bound critical value of 6.67 at 1% level. Thus, the null hypothesis can be rejected which confirm the existence of long run equilibrium relationship between the investment variable and the exogenous variable.

As suggested by Pesaran et al(2000), t-statistic test should be used to confirm the existence of the long-run relationship between variables. The results show that the calculated t-statistic value -10.11 is greater than the upper bound critical value -4.98 (absolute value) at level 1%. Both F-statistic and t-statistic test show the existence of a long-run equilibrium relationship between variables.

3.2.3 The long-run coefficients and the Error Correction model

The long-run coefficients and the error correction model results are reported in table 5 and table 6 respectively.

Table 5. The long-run coefficients estimation

ARDL (1,0,2,0,1)				
Dependent variable: INV				
Regressors	coefficient	St.error	t-statistic	p-values
CREDIT	0.594732	0.238799	2.490509	0.0234**
M2/GDP	-0.344212	0.134108	-2.566671	0.0200**
RGDP	0.391191	0.193866	2.017847	0.0597***
SAV	0.3003778	0.043281	6.940231	0.0000**
C	2.2117651	3.195639	0.566357	0.5786

Note: *, ** and *** denotes significance at the 10%, 5% and 1% significance levels respectively.

Source: Eviews 10 outputs

The long-run coefficients results reported in table 5 reveal that the coefficients of domestic credit provided to private sector and gross

The Relationship between Financial Development and Domestic Investment in Algeria using ARDL approach

domestic saving are positive and statistically significant at level 5% and 1% respectively. However, the coefficient of broad money ratio was found to be negative and statistically significant. The real per-capita GDP growth rate coefficient found to be positive and statistically significant at 5%.

Table6. The error correction model results

ARDL (1,2,2,1,2)				
Dependent variable: d(INV)				
Regressors	Coefficient	Std.error	t-statistic	Prob-values
D(M2)	-0.355162	0.089636	-3.962266	0.0010***
D(M2(-1))	0.243466	0.071555	3.402515	0.0034
D(SAV)	-0.012189	0.092351	-0.131986	0.8965
Coint Eq(-1)	-1.178167	0.100774	-11.69123	0.00***
R-squared	0.8784	adj.R-squared	0.8313	D.W 1.7417

Source: Eviews 10 outputs

The estimated error correction model results reported in table 6 show that the coefficient of broad money as percentage to GDP is negative and statistically significant at level 1%, while the gross domestic savings as percentage to GDP coefficient was found to be negative and insignificant. Both domestic credit to private sector as a percentage of GDP and real gross domestic product per capita were found to have no significant impact on domestic investment in the short run.

As expected, the ECM term represented as coint Eq(-1) is statistically significant at 1% level and negative with an associated coefficient of -1.18. According to Narayan and Smith(2006), if the value of the lagged error correction term coefficient lies between -1 and -2; then the lagged error correction term procedures weakened fluctuations in the equilibrium path. This means that instead of monotonically converging to the equilibrium path directly, the correction process fluctuates in a dampening way around the long-term value. However, once this process is complete, convergence to the equilibrium path is fast. (Narayan.P, 2006, p. 339)

This implies that about 118% of movements in short-run are corrected within one period to reach equilibrium in the long-run. Moreover, the investment rate requires about nine months to achieve its equilibrium long-run value.

3.2.4 ARDL- diagnostic test

In order to examine the robustness of the specified model diagnostic test are undertaken, where serial correlation, heteroscedasticity, normality and stability of the residuals are tested.

Table 7. serial correlation LM test

Breusch-Godfrey serial correlation		Test LM	
F.statistic	0.5665	Prob F(2,17)	0.5778
Obs* R-Squared	1.31	Prob Chi square	0.4184

Source: Eviews 10 outputs

The results show that the F statistic p-value of 0.58 is greater than 0.05. Thus, the null hypothesis is not rejected .This implies that the residuals are serially uncorrelated.

Table 8. Heteroskedasticity test

Heteroskedasticity test:Breusch-Pagan-Gofrey			
F.statistic	1.6658	prob.F(7,19)	0.1790
Obs*.R-squared	11.42533	Prob Chi square	0.1787

Source: Eviews 10 outputs

As reported in table 7, since the F statistic p-value 0.1790 is greater than 0.05, then we fail to reject the null hypothesis. Therefore, the residuals are have a constant variance.

Table 8.Normality test

Normality Test			
Jarque-Bera	1.163158	p- value	0.559015

Source: Eviews 10 outputs

The results reported in table 8 show that the p value is greater than 0.05. Therefore, we cannot reject the null hypothesis.

The cumulative Sum of Recursive Residuals (CUSUM) and the Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) are used to check the stability of the model.

Figure.1.Plot of CUSUM

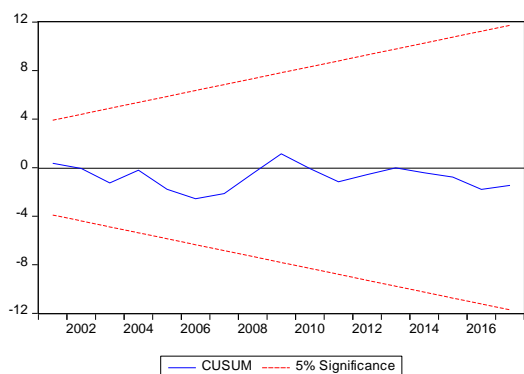
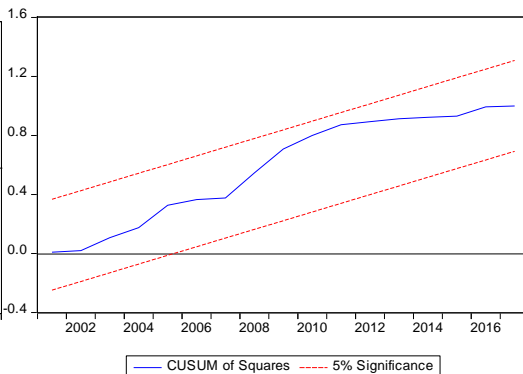


Figure.2.Plot of CUSUM SQUARES



Note: The straight lines represent critical bounds at 5% significant level.

Figure 1 and figure 2 show that CUSUM and CUSUM square statistics revolve in the confidence interval. Therefore, the null hypothesis is not rejected. We conclude that the coefficients are stable.

4. CONCLUSION

This paper attempted to provide an empirical investigation about the relationship between financial development and domestic investment in Algeria during the period 1990-1917. Financial development was measured by three indicators. The gross fixed capital formation annual rate was used to measure investment, while economic growth was measured by the real GDP per capita annual rate. The ARDL bounds co-integration approach was applied to estimate the long and short-run relationship. The findings reveal that private credit ratio and domestic saving ratio have a positive impact on domestic investment in the long-run term.

However, broad money ratio has a negative impact on domestic investment in both long-run and short-run. These findings about the impact of financial depth on domestic investment seem to be consistent with the previous studies (Hacen, 2004; (Ndikumana Léonce, 2015)). This result can be explained by the high level of currency circulated outside of the bank system; this situation may lead to a distortion of credit allocation. Therefore, credit to private sector to GDP and domestic savings can be considered as the key driver of domestic investment in Algeria. Overall, in order to stimulate domestic investment, policy makers should design more effective strategy to improve deepening of financial system and facilitate access to

private credit and encourage domestic saving mobilization.

5. Bibliography List

- Brian Muyambiri, N. O. (2017). Investment Dynamics in Mauritius: Does financial development matter. UNISA Economic Research Working Paper 04/2017 .
- Brian Muyambiri, N. O. (2018). South African's Financial development and its role in Investment. Journal of Central Banking Theory and Practise , 1.
- Demirguç-kunt, A. (2014). Measuring Financial inclusion: the global Findex Database. Policy Research Working Paper .
- Do Thi Thao, Z. J. (2016). ARDL Bounds Testing Approach to cointegration: Relationship International Trade Policy Reform and Foreign Trade in Vietnam. International Journal of Economics and Finance , 08 (08).
- H. Pesaran, Y. (2001). Bounds Testing Approaches to the Analysis of level Relationship. Journal of Applied Econometrics , 16 (3).
- IMF. (2014). Algeria Financial System Stability Assessment.
- Ishak Hacini, K. D. (2018). The evolution of the Algerian Banking System. Management Dynamics in the knowledge Economy , 6 (1).
- Lahcene, A. (2004). Financial Liberalization, Saving, Investment and Growth in MENA countries. Middle East Economics , 06.
- Levine, R. (2004). Finance and Growth: Theory and Evidence. NBER Working Paper Series working paper , 1.
- Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. Journal of Economic Literature , 35 (02).
- Levine, R. L. (2000). Financial Intermediation and Growth: Causality and Causes. Journal of Monetary Economics , 46 (01).
- M. Khan, C. (1990). Private Investment and Economic Growth in Developing Countries. World Development , 18 (1).
- Mashih, A. (1979). An Econometric Model of the role of Financial Institutions in Financing Private Investment in Pakistan. The Pakistan Development Review , 191-214.
- Narayan, P. K. (2006). What determines Migration Flows from Low income to high-income countries? An Empirical Investigation of Fiji-U.S

The Relationship between Financial Development and Domestic Investment in Algeria using ARDL approach

- Migration 1972-2001. Contemporary Economic Policy , 24 (2).
- Nazliuglo, S. (2009). Financial Development and Investement:Co-integration and Causality Analysis for the case of Turkey. International Journal of Economic Perspectives , 03 (02).
- Ndako, U. (2017). Financial Development,Investment and Economic Growth:Evidence from Nigeria. Journal of Reviews on Global Economics, 6.
- Ndikumana Léonce, T. M. (2015). Financing Domestic Investment in African Countries:Does the source of financing Matter? Journal of African Development , 17, 21-44.
- Ndikumana, L. (2000). Financial Determinants of Domestic Investment in Sub-saharan Africa:Evidence of panel data. World Development , 28 (2).
- Okay Uçan, O. O. (2011). Financial Determinant of Investment for Turkey. Journal of Economic and Social Studies , 1 (1).
- Oyedokun Emmanuel, A. K. (2018). Domestic Investment and Economic growth in Nigeria:An empirical investigation. International Journal of Business and Social Science , 9 (2).

6. Appendices

Appendix01. Financial development and domestic investment data

Financial development indicators				Domestic investment indicator
Year	CREDIT	M2/GDP	SAV	INV
1990	56.14	61.78	27.09	26.97
1991	46.28	49.11	37.35	25.86
1992	7.25	51.94	32.20	27.07
1993	6.61	50.10	27.73	27.01
1994	6.48	45.31	26.55	28.40
1995	5.19	37.16	28.01	29.13
1996	5.36	33.00	31.49	24.87
1997	3.90	36.08	32.01	22.95
1998	4.50	42.37	27.21	25.74
1999	5.38	42.02	31.61	24.39
2000	5.96	37.82	44.84	20.67

2001	8.01	56.84	41.51	22.83
2002	12.19	62.72	40.52	24.57
2003	11.22	62.81	44.71	24.08
2004	10.99	59.26	47.66	24.01
2005	11.92	53.82	54.78	22.37
2006	12.11	57.28	57.06	23.16
2007	12.99	64.09	56.66	26.32
2008	12.79	62.98	56.61	29.23
2009	16.26	73.16	46.29	38.23
2010	15.02	69.05	48.45	36.28
2011	13.71	68.05	48.15	31.66
2012	14.02	67.95	47.53	30.79
2013	16.49	71.72	46.19	34.18
2014	18.35	79.30	43.84	37.41
2015	21.71	82.05	37.32	42.16
2016	22.86	79.37	36.44	42.89
2017	24.77	79.11	32.77	29.87

Source: World Bank indicators and Algeria Bank report