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## A study on the effectiveness of financial development on economic growth of Morocco

Um estudo sobre a eficácia do desenvolvimento financeiro no crescimento económico de Marrocos

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**Abstract:** Economic growth's theories suggest that a developed financial sector can promote the economy growth. However, the ability of financial sector to boost the economic growth depends on its ability to finance the economy.

This paper investigates the relationship between Morocco's economic growth and financial development (FD). We base our study on the crucial role of banking sector in economic growth in developing countries through their financial intermediation. In order, to verify this relationship the vector error correction model (VECM) is used on secondary data: real GDP per capita (GDP) and a set of explanatory variables representing the financial development sector, specifically the ratio of private sector credit (CPS) and control variables including the share of government consumption (GC), the real interest rate (IR), trade openness (TO), and the inflation rate (INF). Our secondary data collected from several sources (Central Bank of Morocco; Higher Planning Commission and Moroccan Exchange Office) database and covers 56 quarters from 2007Q1 to 2020Q4. The findings support the long- and short-term benefits of financial sector development for economic growth in Morocco.

**Keywords:** economic growth, financial development, private credit to the economy, vector error correction model (VECM), Morocco.

**Resumo:** As teorias do crescimento económico sugerem que um sector financeiro desenvolvido pode promover o crescimento da economia. No entanto, a capacidade do sector financeiro para impulsionar o crescimento económico depende da sua capacidade de financiar a economia.

Este artigo investiga a relação entre o crescimento económico de Marrocos e o desenvolvimento financeiro (DF). Baseamos o nosso estudo no papel crucial do sector bancário no crescimento económico dos países em desenvolvimento através da sua intermediação financeira. Para verificar esta relação, é utilizado o modelo vetorial de correção de erros (VECM) com base em dados secundários: PIB real per capita (PIB) e um

conjunto de variáveis explicativas que representam o sector do desenvolvimento financeiro, especificamente o rácio do crédito ao sector privado (CPS) e variáveis de controlo, incluindo a percentagem do consumo público (PC), a taxa de juro real (IR), a abertura comercial (TO) e a taxa de inflação (INF). Os nossos dados secundários provêm da base de dados do Banco Central de Marrocos e abrangem 56 trimestres de 2007T1 a 2020T4. Os resultados confirmam os benefícios a longo e a curto prazo do desenvolvimento do sector financeiro para o crescimento económico em Marrocos.

**Palavras-chave:** crescimento económico, desenvolvimento financeiro, crédito privado à economia, modelo vetorial de correção de erros (VECM), Marrocos.

## **Introduction**

Economic growth is a long-term process and only structural reforms can lead to its improvement. It is clear that understanding the various factors that influence economic growth is essential to producing sustained growth. Thus, the globalization of the economy and the intense international competitiveness are forcing countries to constantly improve their competitiveness on national and international markets. This is pushing countries to consider the financial sector development as a lever for economic growth. Consequently, the FD sector has become a central topic in economic literature.

Since the first study conducted by Schumpeter (1911), which demonstrated the impact of banking and financial sector on the dynamics of economic growth. According to Schumpeter's empirical research, there is a relationship among financial sector and economic growth, and the banking and financial sectors are essential to this growth because they effectively mobilize deposit funds for borrowers.

In addition, the Keynesian investigation states that the banking and financial sector play a significant role in the periods of crisis due to its potential to weaken the capitalist system. In this context, a well-developed financial sector tends to encourage economic growth, but a poorly developed or inefficient system can seriously impede prospects for economic growth. Levine (1997) emphasizes that an effective financial intermediary can translate into profitable investments that ensure economic growth and development through increasing employment and incomes. In contrast, a contemporary economy without a financial sector is essentially

unavoidable. This sector makes it possible to provide financial mediation and a smooth payment process inside an economy. This allows the financial sector to channel funds by offering financial services and ensuring the best possible use of available financial resources.

Despite the abundance of empirical studies on the relationship between FD and economic growth, the empirical findings vary across countries and time periods and depend on the empirical method used to test this relationship. This paper attempts to verify the following hypothesis: the financial sector would constitute a lever for economic growth in Morocco through its FD.

To carry out this verification process, we have investigated a relevant literature review. Firstly, we summarize the main theories that have identified the link between FD and economic expansion. Then, we empirically verify the presence of a significant effect of FD on economic growth through several studies. The type of investigated economy, the studied period, the degree of development of the examined financial system, and the used empirical approach all influence the empirical findings.

This study investigates the relationship in regard to Morocco. Employing 56 observations for quarterly data from 2007Q1 to 2020Q4. Applying the VECM model as a method enables the capturing of both the short- and long-term relationships between the exogenous factors and the endogenous variable. The findings in this paper broadly agree with what is expected from research on FD and how it affects the economies.

### **Literature review**

Numerous theoretical and empirical research studies have examined the association between FD and economic growth. In fact, from the studies of Bagehot, (1873); Schumpeter (1911); Pagano (1993) to the studies conducted by Schumpeter and Backhaus (2003); Christopoulos and Tsionas (2004); Beck et., al. (2010); Shittu (2012); Seven and Yetkiner (2016); Alagidede and Ibrahim (2017); Hasan, H. (2018), all support the significant and positive effect of FD on economic expansion in the studied countries.

The financial system has become one of the main factors of economic development, according to authors such as Gurley and Shaw (1967), McKinnon (1973) (1991), King and Levine (1993). The authors have confirmed, through their research, that the evolution of the economy of a country depends also on the evolution of its FD that allows to guarantee a continuous and sustained growth through the financing to the economy. The economic growth models most used to explain this correlation are, in particular, the endogenous growth models, authors such as: Greenwood and Jovanovic (1990), Pagano (1993), Bencivenga and Smith (1991), Boyd and Smith (1996), Bose and Cothren (1996), Blackburn and Hung (1998), they have well verified this link. All the investigations conducted by these authors admit that an efficient financial system contributes to economic growth. However, the correlation is generally admitted, the FD, through the granting of credits by banks, allows to ensure the financing of the economy through the mobilization of savings and the improvement of its allocation to investment (King, & Levine, 1993).

Using pooled annual data (5-year cross-sections), Allen and Ndikumana (2000) investigated the association between the FD and economic growth in Central African countries. The results support the hypothesis that the GDP per capita is positively impacted by the FD.

Similarly, Levine et al., (2000) investigated the effect of FD on economic expansion using dynamic panel data of 71 economies from 1960 to 1995. They discovered a strong, positive association between FD and increases in productivity.

Chen (2006) confirmed that the growth of FD in China contributes to its rapid economic growth through two channels: the substitution of loans for government budgetary credits and the mobilization of household savings. The study used data for Chinese provinces from 1985 to 1998 and applied dynamic panels using GMM techniques.

In addition, from 1960 to 2001, Abu-Bader and Abu-Qarn (2008) used the vector autoregressive (VAR) model approach to investigate the effect of FD on Egypt's economic growth. The findings provided compelling evidence that FD and economic growth are causally related in both directions.

Furthermore, the FD boosts investment resources and increases investment efficiency, which both contribute to economic growth. The study of Gries et al., (2009) focused on 16 sub-Saharan African countries, using the VECM model for annual data, provided little support in favor of the finance-led growth theory. On the other hand, it implies that a more equitable set of policies can lessen the shortcomings of the financial systems of sub-Saharan countries.

Shittu (2012) supported the positive impact of FD on economic growth in Nigeria from 1970 to 2010 using the VECM approach. The results revealed that FD had a favorable effect on economic growth. Panel regression was performed by Seven and Yetkiner (2016) covering the period from 1991 to 2011. The findings showed how FD influences economic growth in economies with low, moderate, and high incomes.

Similarly, Ibrahim and Alagidede (2017) provided evidence that FD positively influences economic development for 33 sub-Saharan African nations between 2004 and 2011. Additionally, Hasan (2018) conducted a study in Indonesia, using Johansen cointegration and Granger causality from 1986 to 2014. The findings suggested that FD had a long-term impact on economic expansion.

However, Kar et al., (2011) used the panel causality test approach for 14 countries in the MENA region from 1980 to 2007, they confirmed no clear causality direction between economic growth and FD.

Most previous research on the topic of FD and economic growth has confirmed that highly developed financial systems tend to encourage economic growth, but that prospects for economic growth in high-, middle-, and low-income countries can be severely limited by inefficient financial systems. In this context, FD occurs when financial markets, financial intermediaries, and financial instruments lower, without necessarily eliminating, information acquisition, contract execution, and transaction costs.

Concerning the methodological and conceptual limitations of studies on the association between FD and economic expansion we can note that the measurement of FD is varied from one study to another. Some focus on the size of the financial sector, others on the efficiency of financial institutions. The diversity of indicators leads to contradictory results. Also, previous studies have been analyzed a variety

of phases of the economic cycle, leading to different short- and long-run impacts of FD on economic expansion. In addition, nations differ considerably in terms of their economic, institutional and political structures. The results of a study on one set of countries cannot always be generalized to other contexts.

Furthermore, studies on the link between FD and economic expansion make important contributions, but it is crucial to recognize and mitigate methodological and conceptual limitations in order to interpret the results appropriately. A robust approach often involves the use of a variety of methods, taking into account the diversity of national contexts, and a thorough understanding of the underlying mechanisms.

Nevertheless, a thorough analysis of the literature turns up no evidence of an empirical investigation that looks into how Morocco's FD affects economic growth over the short and long terms. This is the gap that this research aims to fill. Additionally, by using the VECM, which is better appropriate for determining the dynamic relationships between macroeconomic variables, this study builds on the earlier research. The panel data approach used in previous studies is insufficient to fully capture the short- and long-term relationships between macroeconomic variables in a single country. Finally, the study's analytical period is extended to 2020 by using more recent data for Morocco.

### **Overview of Moroccan economic growth and financial system**

Morocco is positioned to follow the Kingdom's economic growth by pursuing a continuous policy of FD and adopting a strategic positioning in line with international practices, primarily those of Europe that present significant opportunities.

Morocco's economic growth is moderate but still erratic. From the supply side, the growth is caused by both moderate non-agricultural growth and significant fluctuations in agricultural productivity, which are mostly related to precipitation.

In fact, agricultural production represents an undeniable economic and social importance in Morocco, accounting for approximately 38% of all national employment. Additionally, this industry adds about 14% to the nation's GDP (gross domestic product), though the exact percentage varies by region. In some regions,

the agricultural sector makes up a sizeable portion of the overall economic activity. Following two successful years of cereal harvesting, in 2019 the yield decreased by 5.8% due to the dry weather, bringing the PIB's worldwide growth rate down to 2.5%.

On the other hand, non-agricultural growth is characterized by a moderate pace that increased to 2.9% in 2017 and 2018 and then to 3.8% in 2019. This growth has been primarily driven by improvements in the energy, industrial, and service sectors.

The Kingdom of Morocco, one of the main emerging African nations, has a fast-growing economy and has earned the title of "emerging economy". Thus far, Morocco's economic growth has been rather modest despite high public investment rates (about 30% of GDP) and a dynamic economic policy. In fact, the nation works to strengthen the Moroccan economy's resistance to agricultural volatility. In this regard, significant reforms have thus been implemented as part of a sector-specific diversification strategy (decompensation of essentials, industrial fuel and gas, reduction of agricultural fiscal sector, reform of the Value-Added Tax (VAT), new industrial development plan). Positive external factors (strong oil prices, good pluviometry) have made it easier for these reforms to be adopted. In order to find new sources of economic growth, Morocco has also decided to complement its system of free zones (Tanger) and sector-specific development plans (agriculture, tourism, fishing, and competitive areas) with a regional development strategy aimed at sub-Saharan Africa.

Regarding the financial sector importance in Moroccan economy, bank financing remains the main source of funding for the country's economy. According to official figures from the Moroccan Central Bank and current data, there are 91 credit institutions in Morocco, including 24 banks, 27 financing societies, 6 offshore banks, 12 microcredit associations, 20 payment establishments, the deposit and management fund and the Central Guarantee Fund.

The banking system in Morocco underwent significant restructuring and change following the country's independence. In fact, during the course of the last several years, it has been apparent that adaptation to these changes is required. These changes are primarily related to the new financing needs of the domestic economy, the opening up of external operations to international trade, and the introduction of financial and technological innovation.

Morocco has undertaken important structural reforms aimed at establishing the pillars of sustained economic growth to ensure the well-being of the population. these reforms include improving the business environment, opening up trade and liberalizing productive sectors. The financial system, particularly the banking sector, is a part of this reform dynamic because of its critical role in stimulating growth.

In fact, Banks constitute a lever for economic expansion in developing countries through their FD. this is the case of Morocco.

### **Methodology**

A system of simultaneous equations representing the interrelationships between the variables is necessary for analyzing the behavior of many time series variables. This model, if its equations have variable intervals, is referred to as the dynamic simultaneous equations model.

A cointegrated VAR model is the VECM.

A VAR model of order  $p - 1$  on the differences between the variables plus an error-correction term generated from the estimated cointegrating link comprise the VECM.

The classic VAR model is generally estimated with stationary variables. Considering that most variables are not stationary at level, for making it stationary and remove unit root, generally, the first difference is used. However, the differentiation would lead to the loss of information offered by the long-term. Researchers (Engle and Granger, 1987; Granger, 1981, 1983, 1986) will propose including long-term dynamics into the stationary model.

A long-run statistical association between two or more temporal series is described by the notion of co-integration in economics and statistics named VECM. It implies that while these series may exhibit short-term variances, they exhibit a common long-term trend. Otherwise put, the series are connected in a way that prevents them from irreversibly diverging.

Let's assume that you have  $p$  cointegrated endogenous variables  $(Y_1, Y_2, \dots, Y_p)$  and that the cointegration vectors in the VECM model are  $r$ .



The general form of a VECM model is as follows:

$$\Delta Y_t = \alpha ECM_{t-1} + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \dots + \beta_p \Delta Y_{t-p} + \beta_0 + \varepsilon_t \quad (1)$$

Where:

$Y_t$  : is a p-sized vector that contains the differences between the variables at time t;

$ECM_{t-1}$ : It refers to short-term adjustments to disequilibrium estimates of long-term equilibrium errors;

$\alpha$ : is a matrix of error correction coefficients;

$\beta_1; \beta_2; \dots; \beta_p$  : are coefficients of lag matrices;

$\varepsilon_t$  : a vector of size p containing the errors at time t.

Our econometric approach will involve VECM modeling that relates real GDP per capita (GDP) to the ratio of private sector credit (CPS) and a set of control variables, namely the share of government consumption (GC), the real interest rate (IR), trade openness (TO) and the inflation rate (INF).

The choice of variables for the model was based on previous empirical studies of economies at a similar level of development to Morocco, or those that have experienced sustained economic growth thanks to successful FD.

The study used the functions of the form log linear as developed in equation (1):

$$LGDP_t = \alpha + \beta_1 LCPS_t + \beta_2 LGC_t + \beta_3 LIR_t + \beta_4 LTO_t + \beta_5 LINF_t + \varepsilon_t \quad (2)$$

$\alpha$ : the intercept

$\beta_i$ : the coefficients to be estimated;  $i= 1, 2, \dots, 5$ .

$\varepsilon_t$ : the error term

$t$ : refers to the time dimension.

## Results and discussion

To investigate the association between FD and Moroccan economic growth, the study begins with the descriptive statistics of all variables. Next, unit root tests are used to confirm that all variables are integrated in the same order before the VECM technique is applied.

## Descriptive statistics

The table (1) shows the data summary statistics, all variables have a positive average. GDP per capita (GDP) has an average value of 52538,281. This reveals that over the last 19 years Morocco's GDP per capita has grown by 52538,281 on average.

In addition, the Jarque-Bera test shows that all the variables are normally distributed, the probability is above 0,05, except for Inflation rate.

**Table 1:** Data summary statistics

variables	Label	Mean	Median	Std. dev.	Skewness	Kurtosis	Jarque-Bera	Probability
GDP per capita (current prices)	GDP	52538,281	52939,517	7054,481	-0,134	1,862	3,133	0,209
Monetary sector credit to private sector (current prices)	CPS	177671,279	185464,018	38911,318	-0,599	2,617	3,625	0,163
General government final consumption expenditure (current prices)	GC	13361,038	13096,961	2173,726	-0,647	3,271	4,001	0,135
Real interest rate (%)	IR	5,826	6,02	0,616	-0,676	2,488	4,789	0,091
Trade openness (% gdp)	TO	0,404	0,409	0,03	-0,178	1,943	3,953	0,208
Inflation rate	INF	0,06	0,292	0,862	-0,931	3,404	8,321	0,016

In this study we have financial and economic data where values may vary over several orders of magnitude for this reason the logarithmic transformations are used to normalize the data and to get unbiased estimators (De Kroon et al., 2000, Manning and Mullahy, 2001).

### Unit root test:

We proceed with the Augmented Dickey-Fuller (ADF) strategy starting with the tests performed on the model with intercept and trend, then the model with intercept and finally the model without intercept nor trend. Each time a coefficient is not significant, it is removed in the next sequential step. This strategy is based on rejecting or accepting the unit root hypothesis (appendix 1).

The following table summarizes the results of this test for each variable:

**Table 2:** ADF unit root test

Variables	Label	Order of integration
Gross Domestic Product	LGDP	I(1)
Credit facilities to Private Sector	LCPS	I(1)
Government Consumption	LGC	I(1)
Real interest rate	LIR	I(1)
Trade openness	LTO	I(1)
Inflation	LINF	I(1)

Source: The author's computation (2022)

The results of the non-stationarity test show that the variables of our model are integrated at the same order. Therefore, a test of Co-integration in the sense of Johanson is necessary.

### Co-integration test:

Using the information criteria (Akaike and Schwarz), we calculate the number of lags  $p$  in the VAR( $p$ ) model. The selection consists in retaining the lag that minimizes these information criteria. The following table summarizes the main results.

**Table 3:** Results of selection of the optimal lag p

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1613.712	NA	3.45e+22	68.92390	69.16009	69.01278
1	-1386.999	385.8939	1.05e+19	60.80847	65.46179	61.43063
2	-1333.853	76.89192	5.44e+18*	60.07886	64.14931	61.23429*
3	-1306.940	32.06693	9.83e+18	60.46552	63.95312	62.15424
4	-1249.601	53.67843*	6.14e+18	59.55751*	62.46224*	61.77950

Source: The author's computation (2022)

According to table (3) the information criteria (Akaike and Schwarz) show the smallest lag value  $p = 4$  for the VAR model with level variables.

We proceed to the Johansen test under two hypotheses: Existence of a constant in the long-term relationship and not in the data (no deterministic trend).

The lag retained is 4, so we will proceed to the Johansen test on a VECM (3) because a VAR order  $p$  corresponds a VECM order  $p - 1$  (Lütkepohl, 2005).

To perform the trace test, it is necessary to specify first the specifications to be retained. In our case all the processes are DS without drift so we retain the second specification whose results are mentioned in the Table (4):

**Table 4:** Results of Johanson trace co-integration test

Hypothesized: No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.781427	186.5019	94.95712	0.0000
At most 1 *	0.581471	115.0321	70.04141	0.0000
At most 2 *	0.534089	74.09475	50.15493	0.0000
At most 3 *	0.415310	38.19798	22.26597	0.0005
At most 4 *	0.204579	12.97432	11.34090	0.0388
At most 5	0.046070	2.216769	4.239706	0.1611

Source: The author's computation (2022)

For a significance level of 5%, the hypothesis of the existence of four co-integration relationships between the variables of the model is accepted.

### VECM estimation:

According to the above results, there are at least five co-integration relationships between the variables of the model. Thus, we can estimate a VECM (3) model. The following table (5) summarizes the estimation results of the VECM (3) model which is statistically valid (Appendex 2 and 3):

**Table 5:** Results of VECM (3) estimation

Standard errors in ( ) ; t-statistics in [ ]

<b>Long-term coefficients</b>	<b>LGDP(-1)</b>	<b>LCPS(-1)</b>	<b>LGC(-1)</b>	<b>LIR(-1)</b>	<b>LTO(-1)</b>	<b>LINF(-1)</b>	<b>C</b>
	1.000000	0.148474	0.172177	-0.877592	-1.174203	-0.166172	5.518719
		(0.03009)	(0.13195)	(0.22947)	(0.11933)	(0.03257)	
		[ <b>4.93503</b> ]	[ <b>3.90491</b> ]	[ <b>-3.82445</b> ]	[ <b>-9.83998</b> ]	[ <b>-5.10232</b> ]	
<b>CointEq1</b>	-0.097116						
	(0.10455)						
	[-1.96887]						
<b>Short term coefficients</b>	D(LGDP(-1))	D(LCPS(-1))	D(LGC(-1))	D(LIR(-1))	D(LTO(-1))	D(LINF(-1))	<b>C</b>
	-0.172197	0.032203	0.089389	-0.079562	-0.177312	-0.050887	0.011724
	(0.24781)	(0.02069)	(0.02225)	(0.17974)	(0.44498)	(0.02079)	(0.01665)
	[-0.69489]	[ <b>2.55629</b> ]	[ <b>-2.73120</b> ]	[-0.44265]	[-0.39847]	[ <b>-2.44725</b> ]	[ 2.70436 ]
	D(LGDP(-2))	D(LCPS(-2))	D(LGC(-2))	D(LIR(-2))	D(LTO(-2))	D(LINF(-2))	
	-0.332542	0.036138	0.089446	0.030154	0.070388	-0.027958	
	(0.28762)	(0.02072)	(0.02726)	(0.18040)	(0.41829)	(0.01981)	
	[-1.15618]	[ <b>2.74430</b> ]	[ <b>2.70289</b> ]	[ 0.16715 ]	[ 0.16828 ]	[ <b>-2.41118</b> ]	
	D(LGDP(-3))	D(LCPS(-3))	D(LGC(-3))	D(LIR(-3))	D(LTO(-3))	D(LINF(-3))	
	-0.699629	0.017327	0.209950	-0.005420	0.601673	-0.023325	
	(0.45759)	(0.01959)	(0.13067)	(0.14754)	(0.51199)	(0.01857)	
	[-1.52896]	[ <b>2.88456</b> ]	[-1.60666]	[-0.03674]	[ 1.17516 ]	[ <b>-2.25632</b> ]	
	<b>R-squared</b>				0.494750		
	<b>Adj. R-squared</b>				0.139204		
	<b>Sum sq. resids</b>				0.024423		
	<b>S.E. equation</b>				0.030076		

According to the results of the statistically valid VECM estimation (table 5), we note that all the coefficients of the long-run relationship are significant. The t-statistics of this variables are significant, so in the long term, the private sector credit and government consumption have a positive effect on economic growth in Morocco, but the interest rate, the trade openness and the inflation rate have a negative effect.

The findings support that there is a positive correlation between the growth rate of real GDP per capita and FD, as measured by the ratio of private sector credit. Loayza and Ranciere (2006) also found, in their panel study of countries, the existence of a significantly positive relationship between the FD and economic growth. Shittu (2012), using the VECM approach applied to time series data from 1970 to 2010 in Nigeria, also found that FD has a positive impact on economic growth in Nigeria in the long run. Similarly, using data from 1986 to 2014, Hasan,

H. (2018) shows that there is a long-term association between FD and economic growth in Indonesia. In the same vein, the estimation output indicates a coefficient  $\text{CointEq1}$ , defined as the speed of adjustment of the model in the long run, is equal to  $-0.097116$  which is significantly negative. Therefore, we can see that there is a long-term equilibrium between the variables under study. It is stated that the "feed back" effect causes the GDP shocks to correct by 9.7%; alternatively, the force of rappel has a value of  $-0,097$ , indicating that even though the reaction is relatively small, there is a tendency for the variables to return to the equilibrium over time. To put it another way, a negative coefficient in the error correction term indicates that the system tends to correct imbalances by moving back toward equilibrium over time. More the coefficient is close to zero (in this case,  $-0,097$ ), the slower and less significant the correction.

Additionally, there exists a favorable short-term correlation between the ratio of private sector and economic growth. In addition, in an VECM model, the mean number of time intervals required for the system to return to equilibrium over an extended period of time following a shock is indicated by the mean lag, in this study:  $1/|-0.097|$ , it takes 10.3 quarters (about two years and two months) to return to the equilibrium in the long run.

These results are consistent with theoretical postulates and with studies conducted by Levine, et al., (2000) for a panel of 71 economies for the period 1960 to 1995. In contrast, Loayza and Ranciere (2006), using dynamic panel data, the authors confirmed that FD has a short-term negative impact on economic growth. While Gries, Kraft & Meierrieks (2009), in a study focusing on 16 sub-Saharan African economies using the VECM approach, provide limited proof in favor of the finance-led growth theory. According to their research, adopting a more balanced approach may help reduce the weaknesses of the financial systems in sub-Saharan economies. Also, the share of government consumption in GDP (PC) impact positively the Moroccan economic growth in the short term but the impact of inflation rate is negative.

In addition, the financial sector is one of the stimulating factors for the growth of the economy. The financial sector development allows better fulfilment of critical functions such as the collection of household savings and the granting of credit to individuals and businesses.

## Conclusion

The relationship between FD and economic growth is still a topic of research and debate in the economic literature, both theoretically and empirically. On the one hand, economists had come to terms with the notion that a developed financial sector was necessary to support economic growth. On the other hand, a number of studies did not share the same results. Several theories of causality have been developed in respect to the relationship between FD and economic growth, including the "supply-leading" theory, which holds that the growth of the financial sector drives economic growth, and the "demand-following" theory, from which economic growth encourages the FD, even in the case of a neutral approach or no relationship at all between the financial sector and economic growth, as well as the "demand-following" approach.

Theoretically, there is a clear positive correlation between FD and economic growth, but the unanimity about the causal relationship is far from being compromised. Indeed, it is widely acknowledged that FD drives growth, which in turn drives FD. It is very helpful to emphasize that the findings about the relationship between FD and growth are mitigated, this leads to a lack of consensus.

It is appropriate to mention that for a considerable amount of time and in every country in the world, the banking system has served as the almost exclusive source of funding for the economy. As a result, the banking system, which makes up the majority of the financial system and intervenes in it, is only one factor among several that are involved in the financing process and, consequently, in economic development.

In the case of Morocco, the financial system is also made up of credit institutions, which take the shape of banks and other financial institutions rather than the financial market. However, over an extended period of time, the bank continues to be the institution that plays a crucial role in the national economy. Morocco's banking sector is the main source of financing for the country's economy, and its operations are seen by many as a primary driver of economic growth, by allocating the surplus to investment, it plays a significant role in the stimulation of growth.

The main limitations of this research relate to the availability and quality of the data, which can hamper the accuracy of the conclusions. More granular data and longer time series could make the analysis more robust. The analysis could take adequate account of the specific Moroccan context, by including cultural, institutional and political factors that could influence the relationship between FD and growth.

In this respect, an analysis of longer time series could provide a better understanding of the relationship between FD and economic growth over time. Also, the use of more advanced econometric models, such as nonlinear autoregressive distributive lag (NARDL) models, could help to address the problems of non-linearity and to better decompose the positive and negative effects of variables. A comparison of the relationship between FD and economic growth in Morocco with other countries in the MENA region could help to contextualize the results and identify specific regional factors.

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## Appendix

### Appendix 1 : Unit root results

Unit root Test			LGDP	LCPS	LGC	LIR	LTO	LINF
ADF	Trend & Intercept	ADF statistic (table) =3,18	T-statistic =2,062	T-statistic =2,062	T-statistic =2,18	T-statistic =2,062	T-statistic =2,062	T-statistic =2,062
	Intercept	ADF statistic (table) =2,89	T-statistic =1,46	T-statistic =2,46	T-statistic =1,29	T-statistic =3,46	T-statistic =3,46	T-statistic =3,46
	None	At 5% level	P-Value =0,4942	P-Value =0,4942	P-Value =0,6351	P-Value =0,4942	P-Value =0,4942	P-Value =0,4942
Cointegration order			I(1)	I(1)	I(1)	I(1)	I(1)	I(1)

### Appendix 2 : Diagnostic tests

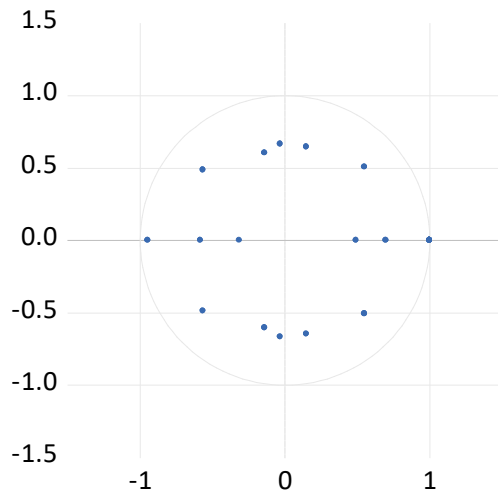
Regarding to the results of the robustness tests (table below), we note the absence of errors autocorrelation and of heteroscedasticity, thus, the model is valid.

#### Diagnostic Analysis

Diagnostic test	p-values	Result
Autocorrelation LM tests	0.4772	No evidence of serial correlations
White Heteroskedasticity Tests	0.5643	No evidence of heteroscedasticity
Normality test	0.7295	Residues are normally distributed

### Appendix 3 : Stability test

#### Inverse Roots of AR Characteristic Polynomial



Indeed, the estimated VECM (3) model is globally good and explains 54.54% of the dynamics of the real growth rate of the Moroccan economy by the development of the financial market and the other control variables, from 2007Q1 to 2020Q4.