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Does financial development impact on growth? Empirical evidence with threshold effect in the MENA Region

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1. Introduction

The role of the financial development in promoting economic growth has been largely studied by many authors. Theoretical and empirical papers show that financial development can boost economic growth by mobilizing saving, exerting control, allocating resources and improving innovation.

Schumpeter (1912) stressed the role of banks in economic growth. He considers that credit, main function of the banker, is the only factor to economic development and therefore it is the source of economic evolution. His "theory of credit and capital" used by Gershenkron and adapted it into the context of developed countries. He considers that underdeveloped countries are more incited to develop their financial system in order to catch the developed countries (thesis of "advantages of backwardness"). This objective can be reached by an efficient state intervention. McKinnon and Shaw (1960), show that underdeveloped countries are characterized by financial repression. The financial repression reduces the ability of the financial system to mobilize savings and allocate it to the most efficient projects hence reducing economic growth. Consequently, a policy of financial liberalization can cut with financial repression and improve the efficiency of the financial intermediaries and thus boost the macroeconomic performance. Other authors suggest that financial intermediaries generate growth effects by offering a certain number of functions. Merton and Bodie support a vital function of the financial system: allocate resources in space and ever time in an uncertain environment. This new literature has shown that financial intermediaries facilitate the hedging, diversifying and reducing risk. They improve economic growth by promoting the capital accumulation and by improving the allocation of resources, selecting efficient projects, exerting corporate control, monitoring managers, mobilizing savings and easing the exchange of goods and services (Levine, 1997). Therefore, a well-functioning financial system can contribute to economic growth in both developed and developing countries.

Over the last two decades, the MENA countries have experienced a wave of liberalization in the financial sector (Ben Naceur et al., 2008). The financial liberalization has an objective to reduce the government intervention on the banking system, liberalize interest rate, promote market allocation of the financial resources, which enhance financial development and, in turn, promote economic growth (McKinnon, 1973; Shaw, 1973).

The aim of this paper is to empirically investigate the nature of the relationship between financial development and economic growth for the case of some MENA countries over the period 1981-2008. Indeed, empirical results show that there is no clear consensus on the direction of causality between financial development and economic growth in MENA region and it is also shown that the findings are country specific (Bolbola et al., 2005 ; Kar and Ağır, 2010). Hence, we extend the analysis to test several measures of financial development which have been proposed by the literature. However, very little is known about the nonlinearity in the association between financial development and growth in the MENA region. This paper contributes to this literature by three aspects. Firstly, analyzing the threshold effect in the impact of the financial development on growth would thus deepen our understanding of financial development process in this region. It would also help clarify financial policy to develop growth. Secondly, in contrast to previous works on the MENA region, we use longer sample period which provides the necessary time frame for a through analysis of the threshold effect. Third, we utilize recent innovations in panel literature as the dynamic behavior of dependant variables and Hensen (1999) methodology which allow us to identify endogenously the structural break.

The rest of the paper is organized as follows. In the next section, we briefly review the literature on development finance-Growth relationship. Section 3 discusses our empirical methodology. In section 4, we describe data and definition of variables. We present also our empirical results. The paper will end up with the conceding remarks and economic policies.

2. The financial development and the economic growth: the threshold effect

Nowadays there is a considerable growing literature on the finance–growth nexus. This literature concluded that there is ample evidence in support of a positive relationship between financial development and economic growth[1]. Other economists suggest that this relationship is very likely to be nonlinear. This non linearity is explained by the fact that the relationship between financial development and the economic growth depends on the financial or the economic growth conditions. Thereby the effect of the financial

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[1] Many studies, cross-country studies or time-series analyses or panel regressions, find this result(see Levine, 1997, 2005, for survey).

development on economic growth may vary with the characteristics if the nature of the economic growth or the characteristics of the financial system.

Saint Paul[2] (1992) shows that interaction between financial intermediaries and technology choices can explain the differences in the stages of development across the countries. He considers that the interaction between technological choices and financial intermediaries create an externality leading to multiple equilibria. If the intermediaries are underdeveloped, agents choose to invest into riskless projects using obsolete technologies. Therefore, there are low incentives to develop new technologies and, in turn, improve capital productivity. But, if the intermediaries are developed, there will be highly specialized and very risky technologies and therefore an efficient financial system is needed. It is a complementary strategy between financial intermediaries and technology because both are instruments that can be used for the risk diversification. Many studies show that the financial system can play a crucial role by bringing the economy towards a "high equilibrium". This result is supported by the fact that a developed economy will benefit from an efficient and sound financial sector. If the country is underdeveloped, the financial system is unable to bring the economy towards a "high equilibrium": the economy is trapped to the underdevelopment with a "low equilibrium". Saint Paul (1992) considers that if we are in presence of underdeveloped financial institutions, they choose unspecialized and therefore lower productive projects. In this case there aren't incentives to create dynamic and efficient financial system. Hence, the underdevelopment pushes the financial intermediaries to choose to finance flexible and unspecialized projects and, in turn, lower productivity and weak economic growth. On the other hand, the existence of developed financial intermediaries allows the financing of projects using more specialized technologies and generating substantial productivity gains. In this case, the economy can converge towards a "high equilibrium" and the financial system generates significant growth effects. Berthélemy Varoudakis[3] (1998) don't find a positive relationship between financial development and economic growth. They explain this unusual result by the existence of the financial threshold effects associated with multiple equilibria.

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[2] Saint Paul, G. (1992) : « Technological Choice, Financial Markets and Economic Development ». *European Economic Review*, vol 38 pp: 763-781

[3] Berthélemy, J.C. and Varoudakis, A. (1998) : « Développement financier, réformes financières et croissance. Une approche en données de Panel » , Revue Economique, Vol (49) n°1 (Janvier) PP: 195-206.

Deidda and Fattouh (2002)[4] develop a model which establishes a non linear and possibly non monotonic relationship between financial development and economic growth. Furthermore Rioja and Valev (2004a) confirm that, the relationship between financial development and economic growth is generally weak or even insignificant at low levels of per-capita income. Whereas, this linkage is positive at high levels of economic growth. They also find that financial development exerts a strong positive effect on economic growth only when it has reached a certain size threshold. Under this threshold, the effect is at most uncertain. Rioja and Valev (2004a) find that the relationship between financial development and the productivity depends on the stage of the economic development. This link is positive only for high-income countries and middle-income countries. However this result is unavailable for the low-income countries.[5]

De Gregorio and Guidotti (1995) and Loayza and Ranciere (2005) find that the relationship between financial development and growth can be negative in the case of developing countries. They explain that by the failure of the financial liberalization. De Gregorio and Guidotti (1995) consider that financial liberalization may have contributed to increase the likelihood of financial crises and thus reduced productivity.

Lee[6] analyzed financial development driven by accumulation of information through "learning by doing". He finds that "financial intermediaries discover good investment opportunities by making loans to industrial projects; they thereby accumulate information that improves the allocation of savings". Poor information makes an initial equilibrium, and thus reducing industrial investment. Hence, the economy may trap in financial underdevelopment. Lee suggests that this trap is informational and can be overcome by the remedies that resolve informational externality. Méon and Weill (2010)[7] find that financial intermediary development is on average associated with more efficiency. However, they find that the relationship between financial development and economic growth is conditional on the level of economic development. If the economic development is low, the impact of financial development on efficiency is weak. This may be negative in the poorest countries.

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[4] Deidda, Luca and Fattouh, Bassam, 2002. "Non-linearity between finance and growth," Economics Letters, Elsevier, vol. 74(3), pages 339-345, February.
[5] "the strong contribution of financial development to productivity growth does not occur until a country has reached a certain income level" (p.139) Rioja and Valev (2004a).
[6] Lee, J. (1996): ''Financial Development by Learning.'' Journal of Development Economics 50: 147–164.
[7] Pierre-Guillaume Méon a, Laurent Weill (2010) :" Does financial intermediation matter for macroeconomic performance?" Economic Modelling 27 (2010) 296–303. Journal homepage: www.elsevi e r.com/locate/ecmod

Menzie D. Chinn and Hiro Ito[8] (2006) suggest that a higher level of financial openness spurs equity market development only if a threshold level of legal development has been attained. They find that trade openness is a prerequisite for capital account liberalization. Whereas banking system development is a precondition for equity market development. The authors have stressed the role of threshold level of general development of legal systems and institutions. They conclude that "the general level of legal development matters more than the level of finance specific legal/institutional development".

Carranza and Galdon-Sanchez (2004) explain the GDP variability pattern of an economy during the development process. They show that per capita output is more volatile in middle-income economies than in both low and high-income economies. They find that, if the model economy is in the early or in the mature stages of development, there is a unique equilibrium. However, in the middle stages of development, multiple equilibria exist. In addition, they prove that in economies with imperfect credit markets, per capita output volatility tends to be higher than in economies with perfect or non-existent credit markets.

The finding of a financial development threshold may have important policy implications. On the one hand, we can verify the non-linearity of the relationship between the financial development and the economic growth relative to the characteristics of the MENA countries. On the other hand, the presence of a financial development threshold may help policy makers to engage an appropriate strategy of development by testing the stage of the economic development. In fact, this appropriate strategy depends on the economic level. That is, if we are in presence of financial underdeveloped countries we can't benefit from a positive link between finance and growth. In this case policy makers can focus on promoting growth by giving more attention the traditional factors of growth (like human capital, capital accumulation, industrialization….). In the opposite case, if the country is above the financial threshold the government can focus on the financial development in order to boost the economic growth.

Along the same line, this paper investigates whether the finance– growth relationship differs along with the financial development degree relative to a set of MENA countries. Specifically, we try to explore whether there exists a financial development threshold in the finance–growth nexus.

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[8] Menzie D. Chinn and Hiro Ito: "What matters for financial development? Capital controls, institutions, and interactions". Journal of Development Economics 81 (2006) 163– 192.

3. Methodology and Analysis

Following lots of studies in empirical growth literature (Levine and Zervos, 1998, Ben Naceur and Ghazouani, 2007), we use a standard dynamic panel model:

$$y_{it} = \alpha y_{it-1} + \beta' X_{it} + \eta_i + u_{it} \qquad i = 1,\dots, N, \quad t = 1,\dots,T \quad (1)$$

y_{it} is the dependant variable that indicates the real GDP per capita. y_{it-1} is the initial GDP per capita that used to control for convergence according neoclassical theory. X is a set of controlling variables that includes the financial development indictor (FinDev). η_i is the country specific effect. u_{it} is the unobserved error term.

To estimate our model, we use the one step GMM-in –system of Blundell and Bond (1998). Indeed, this estimation method allows avoid the endogeneity biases caused by the high correlation between the lagged dependent variable and the error term u_{it} or between some of variables of the X_{it} vector and the specific term η_i. Alternatively the "differences" GMM estimator introduced by Arellano and Bond (1991) corrects also endogeneity biases providing convergent estimators and using the lagged values of the variables as instruments and based on some orthogonality conditions[9]. However, if instruments are weak caused by time persistence of some exogenous variables or by limited dimension of sample, the two-step estimator will be biased (Blundell and Bond, 1998; Ben Naceur and Kandil, 2008). Ben Naceur and Kandil (2008) have proposed the one step GMM-in-system as the most appropriate method where the temporal dimension is large enough[10]. Indeed, this method combines in one system both equations in first differences and in levels (Arellano and Bover, 1995; Blundell and Bond, 1998). Using the most recent difference of regressors as instruments, the new moment conditions are added:

$$E\left[\left(y_{i,t-s} - y_{i,t-s-1}\right)\left(\eta_i + \varepsilon_{i,t}\right)\right] = 0 \quad \text{pour } s = 1$$
$$E\left[\left(X_{i,t-s} - X_{i,t-s-1}\right)\left(\eta_i + \varepsilon_{i,t}\right)\right] = 0 \quad \text{pour } s = 1$$

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[9] Cf. Arellano and Bond (1991) for more details.
[10] Ben Naceur et al. (2008) use GMM-in-system to estimate dynamic panel using sub sample with 6 countries only and sample period large enough.

Finally, we use the over-identifying restrictions test of Sargan in order to test the validity of different instruments. We test also the null hypothesis of absence of serial correlation of the residual.

On the other hand, in order to test the threshold effect of the financial development on economic growth, we proceed by two steps. In the first step, we seek to determine the optimal threshold $\hat{\delta}$ under the hypothesis of its uniqueness using Hensen (1999) approach. In this case, the optimal threshold is estimated endogenously using the trimming procedure. We follow, in the second step, Ben Naceur and Ghazouani (2005) to test the statistical significant of the threshold effect of financial development on growth. For this purpose, we estimate the model (1) in which we introduce in addition to X_{it} two financial development variables which take into account the optimal threshold (I(FinDev > $\hat{\delta}$) and FinDev* I(FinDev > $\hat{\delta}$)). The model becomes as follow:

$$y_{it} = \alpha y_{it-1} + \beta' X_{it} + \lambda_1 I(FinDev_{it} > \hat{\delta}) + \lambda_2 (FinDev_{it} * I(FinDev_{it} \geq \hat{\delta})) + u_{it} \quad (2)$$

Where *I(.)* is an indicator allowing to discriminate between the two cases of the financial development: lower or higher than the threshold of economy jump. Following Ben Naceur and Ghazouani (2005), in the case where either of these two variables coefficients ($\lambda_1 \, and/or \, \lambda_2$) is different from zero, then there is a structural change in the financial development effect on growth.

The following section will present the data and the main empirical results

4. Data and empirical results

We begin by presenting financial indicators and the other economic variables. Next we present the main empirical results.

4.1. Data and variables definitions

In this paper, we investigate whether the financial development has been the threshold effect on growth for five[11] MENA countries: Egypt, Jordan, Morocco, Tunisia and Turkey. Our sample includes relatively homogeneous countries which adopt new financial policy since the two last decades in order to develop the financial system. Growth is measured by the real GDP per capita in "international $" with 2000 as the common base. To explain growth, we use a set of control variables as the log of government expenditure over GDP (lncons), the log of inflation (lninf) and the log of term of trade (lnopen). The time period analyzed is

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[11] We use few countries because of data availability.

from 1981 to 2008. In contrast to the majority of the growth papers, we do not use five-year averages for our data. Indeed, following Ben Naceur and Kandil (2008), we need of the large temporal dimension to apply the one step GMM-in-system. Then, to eliminate business cycle effects, we introduce in regressions year dummies variables which allow us to account for world business cycle impact (Ben Naceur et al., 2008). Data of all variables were collected from World Development Indicators (WDI) of the World Bank.

In order to capture the different aspects of financial development, six different indicators are used[12]:

1- *DEPOSIT MONEY BANK ASSETS / (DEPOSIT MONEY + CENTRAL) BANK ASSETS* (dbacba): Ratio of deposit money bank claims on domestic nonfinancial real sector (as defined above) to the sum of deposit money bank and Central Bank claims on domestic nonfinancial real sector (as defined above)

2- *LIQUID LIABILITIES / GDP* (llgdp): Ratio of liquid liabilities to GDP.

3- *PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP* (pcrdbgdp): Private credit by deposit money banks to GDP, calculated using the following deflation method:

4- *PRIVATE CREDIT BY DEPOSIT MONEY BANKS AND OTHER FINANCIAL INSTITUTIONS / GDP* (pcrdbofgdp): Private credit by deposit money banks and other financial institutions to GDP

5- *BANK DEPOSITS / GDP* (bdgdp): Demand, time and saving deposits in deposit money banks as a share of GDP.

6- *FINANCIAL SYSTEM DEPOSITS* / GDP (fdgdp) : Demand, time and saving deposits in deposit money banks and other financial institutions as a share of GDP.

Table 1 presents the variables used in our empirical investigation and the notation used.

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[12] For the definition and the sources of indicators and data see the annex.

Table 1- The notation of variables

Variables	Notations
Log of government expenditure over GDP	lncons
Log of inflation	lninf
Log of term of trade	Lnopen
DEPOSIT MONEY BANK ASSETS / (DEPOSIT MONEY + CENTRAL) BANK ASSETS	dbacba
LIQUID LIABILITIES / GDP	llgdp
PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP	pcrdbgdp
PRIVATE CREDIT BY DEPOSIT MONEY BANKS AND OTHER FINANCI INSTITUTIONS / GDP	pcrdbofgdp
BANK DEPOSITS / GDP	bdgdp
FINANCIAL SYSTEM DEPOSITS / GDP	fdgdp

4.2. Baseline regressions

The starting point of the empirical analyze is the estimation of six specifications of the model (1). Each specification contains control variables and one measure of the financial development. All specifications are estimated using the one step GMM-in –system. Table 2 presents results of specifications estimations. All specifications are accepted. Indeed, null hypothesis of Fisher global significant test is always rejected (for all specifications the p-values are equal to zero). In addition, the over identification Sargan test confirms the validity of all instruments used in estimations. Also, the test for autocorrelation AR(2) does not reject any specifications. However, growth convergence is verified only for the two first specifications since the coefficient associated to GDP per capita is negative. Moreover, coefficients associated to control variables have signs which are consistent with economic intuition. Indeed, inflation have a negative sign and statistically significant in the third and fourth specification. Thus, there is a negative relationship between inflation and growth. Also, from specifications (1), (2), (5) and (6), we could conclude that the government spending affect negatively growth. This result confirms that public expenditures are current rather than investment spending. In addition, specifications (3), (4), (5) and (6) show that trade openness affect positively growth in MENA countries. However, all indicators of financial development are not significant. This could be explained by the non linearity between financial development and economic growth. In others words, the impact of financial development on growth is not linked to the level of financial development. Then, we seek to estimate, in the second step, growth model taking into account the threshold effect.

Table 2: one-step GMM-in-System without threshold

	(1)	(2)	(3)	(4)	(5)	(6)
Real GDP per capita	-0.0064	-0.0033605	0.00583	0.00557	0.00217	0.00122
	(-0.45)	(-0.52)	(1.28)	(1.60)	(0.40)	(0.20)
Lninf	-0.00600	-0.00801	-0.00983	-0.01031	-0.00824	-0.00833
	(1.47)	(2.03)	(2.22)*	(2.22)*	(2.02)	(2.11)
Lncons	-0.05608	-0.05131	-0.05257	-0.05172	-0.05277	-0.05313
	(2.29)*	(2.53)*	(1.95)	(2.08)	(2.48)*	(2.55)*
Lnopen	0.00771	0.01938	0.01607	0.02272	0.01313	0.01440
	(1.35)	(1.79)	(2.32)*	(2.35)*	(3.43)**	(3.20)**
Dbacba	0.03741					
	(0.85)					
Llgdp		-0.02526				
		(2.10)				
Pcrdbgdp			-0.01527			
			(0.68)			
pcrdbofgdp				-0.03802		
				(1.69)		
Bdgdp					-0.01060	
					(0.67)	
Fdgdp						-0.01481
						(0.84)
Constant	0.17652	0.14178	0.07499	0.05812	0.11474	0.12096
	(1.58)	(3.92)**	(1.42)	(1.07)	(3.48)**	(4.17)**
F statistic	0.000	0.000	0.000	0.000	0.000	0.000
Sargan test	0.682	0.675	0.576	0.712	0.682	0.680
Serial correlation test AR(2)	0.111	0.122	0.112	0.119	0.120	0.121
Observations	132	126	121	126	126	126

The figure in parentheses are t-statistics
* significant at 10%;
** significant at 5%;
*** significant at 1%

4.3. Results of threshold effect of financial development on growth

In order to analyze the impact of the financial development on growth, we start by identifying threshold. As discussed in the methodology, the threshold determination is endogenous. The results of these endogenous thresholds for each financial development indicator are shown in Table 3. On the one hand, results suggest that there is significant switching regime when deposit money bank assets exceed 77.8 % of total deposit bank assets. On the other hand, switching regime occurs when liquid liabilities, private credit by deposit money banks, private credit by deposit money banks and other financial institutions, banks deposits and financial system deposits exceed GDP by 127.016%, 68.038%, 75.833%, 82.382%, 83.694% respectively. These results show clearly that the relationship between financial development and economic growth is nonlinear in case of MENA countries. Therefore, all financial proxies support that the threshold effect can explain the stage of economic development confirming Rostov analysis. We find that countries seem to gain less

from a given level of financial activity. But countries can benefit from the financial development if it exceeds the financial threshold.

In the second step, regressions allow us to examine whether there is a structural change in the impact of the financial development on growth exceeding theses critical values.

Table 3: Results of Endogenous Thresholds

Financial development indicator	Threshold (%)
Dbacba	77.896
Llgdp	127.016
Pcrdbgdp	68.038
Pcrdbofgdp	75.833
Bdgdp	82.382
Fdgdp	83.694

For each indicator of financial development, Table 4 summarizes the results of equation (2), in the methodology section, estimated using the one step GMM-in-system. Given the p-value of Fisher, Sargan and AR(2) tests, we accept all specifications. However, only specification (1) verify growth convergence.

Results are not changed compared to results of table (2). Indeed, inflation and government spending affect significantly and negatively growth. Moreover, trade openness has a significant positive impact on growth.

In addition, our results suggest that there is a nonlinearties in the financial development and growth relationship in MENA countries. The partial correlations between growth and some financial development indicators including private credit by deposit money banks, private credit by deposit money banks and other financial institutions, banks deposits and financial system deposits, become significant and positive when we account for those threshold levels. We can conclude that the relationship between financial development and economic growth is nonlinear.

Table 4: one-step GMM-in-System with threshold

	(1)	(2)	(3)	(4)	(5)	(6)
Real GDP per capita	-0.0078	0.00016	0.0063	0.00689	-0.0027	-0.00176
	(-0.52)	(0.03)	(2.55)	(1.75)	(-0.37)	(-0.27)
Lninf	-0.00698	-0.00414	-0.01280	-0.01320	-0.01041	-0.00980
	(1.64)	(1.65)	(2.58)*	(1.88)	(2.14)*	(2.15)*
Lncons	-0.07534	-0.03964	-0.05739	-0.05311	-0.06068	-0.05804
	(2.30)*	(2.15)*	(2.27)*	(2.28)*	(3.84)**	(3.14)**
Lnopen	0.01680	0.01965	0.01903	0.02341	0.01116	0.01355
	(1.48)	(2.40)*	(1.47)	(1.88)	(3.46)**	(3.18)**
$I(dbacba>\hat{\delta})$	-0.13143					
	(1.39)					
$dbacba* I(dbacba>\hat{\delta})$	0.06158					
	(1.45)					
$I(llgdp>\hat{\delta})$		-0.00501				
		(0.46)				
$llgdp* I(llgdp>\hat{\delta})$		-0.11868				
		(35.27)***				
$I(pcrdbgdp>\hat{\delta})$			-0.06215			
			(1.65)			
$pcrdbgdp* I(pcrdbgdp>\hat{\delta})$			0.04985			
			(3.28)**			
$I(pcrdbofgdp>\hat{\delta})$				-0.06215		
				(1.37)		
$pcrdbofgdp* I(pcrdbofgdp>\hat{\delta})$				0.06307		
				(3.89)**		
$I(bdgdp>\hat{\delta})$					-0.04545	
					(2.56)*	
$bdgdp* I(bdgdp>\hat{\delta})$					0.04841	
					(4.02)**	
$I(fdgdp>\hat{\delta})$						-0.03405
						(3.90)**
$fdgdp* I(fdgdp>\hat{\delta})$						0.02329
						(5.87)***
Constant	0.30688	0.06066	0.09336	0.06234	0.20417	0.17398
	(1.78)	(2.37)*	(2.00)	(1.25)	(3.01)**	(4.01)**
F statistic	0.000	0.000	0.037	0.000	0.000	0.000
Sargan test	0.778	0.796	0.723	0.831	0.785	0.731
Serial correlation test AR(2)	0.131	0.297	0.112	0.120	0.121	0.120
Observations	132	126	121	126	126	126

The figure in parentheses are t-statistics
* significant at 10%;
** significant at 5%;
*** significant at 1%

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5. Concluding remarks and Policy Implications

The paper has analyzed the relationship between economic and financial developments in presence of the threshold effect. This study concerns six MENA countries over the period 1981-2008. The following observations can be concluded from the analysis:

1. The relationship between financial development and economic growth is clearer when we introduce the threshold effect. In fact, financial indicators are insignificant in the absence of the threshold effect. However they are positive and significant when we introduce the threshold effect. This finding match with the recent literature which support the nonlinearity of the relationship between financial development and economic growth.

2. All financial indicators used as proxies for the financial development affect the economic growth by considering the threshold effect. Hence, we can conclude that the overall financial development has a significant effect on the per capita growth.

3. The strong contribution of financial development to economic growth does not occur until a country has reached a certain financial development level. Under such level the contribution of financial development to economic growth is weak. However above this level this contribution is strong.

4. The six MENA countries considered by our analysis have engaged a financial liberalization. Such policy was gradual in order to allow the adequacy between the development of the financial intermediaries and the stability of the macroeconomic environment. Such choice allows these countries to avoid financial instability and probably financial and economic crises.

5. Our findings underscore the importance of the financial development in improving the economic growth. Thereby reforms of the financial system can stimulate economic growth. These reforms should be gradually in order to sound and support the activity of the financial intermediaries. The recent subprime crisis has shown that to benefit from the financial development, banks should be recapitalized. Reforms have to improve the transparency of the financial markets.

As guidance for future work, additional insights would be created by considering the effect of the threshold effects on the channels of financial development to economic growth. For example a further study can consider the role of the total factor productivity and the capital

accumulation. We can also carry on a specific study related to the effect of the stock market on economic growth.

Bibliography:

ARELLANO M., BOVER O., (1995), "Another look at the instrumental variable estimation of error-components models", Journal of Econometrics 68, pp: 29-51.

Arellano, M. and Bond, S. (1991) "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations", Review of Economic Studies, 58, 277–297.

BECK T., LEVINE R., LOAYZA N., (2000), "Financial intermediation and growth: Causality and causes", *Journal of Monetary Economics*, 46(1), pp 31-77.

BEN NACEUR S., GHAZOUANI S., (2005), "Does Inflation impact on Financial sector performance in the MENA region?", Review of Middle East Economics and Finance 3 (3), pp: 219- 229.

BEN NACEUR S., GHAZOUANI S., (2007), "Stock markets, banks, and growth: Empirical evidence from the MENA region", Research in International Business and Finance 21, pp: 297- 315.

BEN NACEUR S., GHAZOUANIS S., OMRAN M., (2008), « Does stock market liberalization spur financial and economic development in the MENA region?", Journal of Comparative Economics, 36(4), pp 673-693.

BEN NACEUR S., KANDIL M., (2008), "The impact of capital requirements on banks' cost of intermediation and performance: The case Egypt", Journal of Economics and Business, forthcoming.

Berthélemy, J.C. and Varoudakis, A. (1998) : « Développement financier, réformes financières et croissance. Une approche en données de Panel », Revue Economique, Vol (49) n°1 (Janvier) PP: 195-206.

Blundell R., Bond S., (1998), "Initial conditions and moment restrictions in dynamic development". Journal of Econometrics 87, 115-43.

Deidda, Luca & Fattouh, Bassam, 2002: "Non-linearity between finance and growth," Economics Letters, Elsevier, vol. 74(3), pages 339-345, February.

Hansen B., (1999) "Threshold effect in non-dynamic panels: Estimation, testing, and inference", Journal of Econometrics, 93, 345-368

Lee, J. (1996): ''Financial Development by Learning.'' Journal of Development Economics 50: 147–164.

Levine R. (1997) « Financial Development and Economic Growth: Views and Agenda ». *Journal of Economic Literature*, Vol (35) N°2 pp : 688-726.

Levine R. et Zervos S. (1998) « Stock Markets, Banks and Economic Growth ». *American Economic Review*. Juin, 88(3), pp : 537-558.

Menzie D. Chinn and Hiro Ito:" What matters for financial development? Capital controls, institutions, and interactions". Journal of Development Economics 81 (2006) 163– 192.

Pierre-Guillaume Méon a, Laurent Weill (2010) :" Does financial intermediation matter for macroeconomic performance?" Economic Modelling 27 (2010) 296–303. Journal homepage: www.elsevi e r.com/locate/ecmod

Saint Paul, G. (1992) : « Technological Choice, Financial Markets and Economic Development ». *European Economic Review*, vol 38 pp: 763-781.

Annex:

dbacba	DEPOSIT MONEY BANK ASSETS / (DEPOSIT MONEY + CENTRAL) BANK ASSETS	label var dbacba "Deposit Money Bank Assets / (Deposit Money + Central) Bank Assets"	Ratio of deposit money bank claims on domestic nonfinancial real sector (as defined above) to the sum of deposit money bank and Central Bank claims on domestic nonfinancial real sector (as defined above)	Raw data are from the electronic version of the IMF's International Financial Statistics, October 2008 (IFS lines 12 and 22, a-d)	1960-2007
llgdp	LIQUID LIABILITIES / GDP	label var llgdp "Liquid Liabilities / GDP"	Ratio of liquid liabilities to GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is liquid liabilities, P_e is end-of period CPI, and P_a is average annual CPI	Raw data are from the electronic version of the IMF's International Financial Statistics, October 2008. Liquid liabilities (IFS lines 55L..ZF or, if not available, line 35L..ZF); GDP in local currency (IFS line 99B..ZF or, if not available, line 99B.CZF); end-of period CPI (IFS line 64M..ZF or, if not available, 64Q..ZF); and annual CPI (IFS line 64..ZF). For Eurocurrenycy area countries (BEF, DEM, ESP, FRF, GRD, IEP, ITL, LUF, NLG, ATS, PTE, FIM), liquid liabilities are estimated by summing IFS items 34A, 34B and 35.	1960-2007
pcrdbgdp	PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP	label var pcrdbgdp "Private Credit by Deposit Money Banks / GDP"	Private credit by deposit money banks to GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is credit to the private sector, P_e is end-of period CPI, and P_a is average annual CPI	Raw data are from the electronic version of the IMF's International Financial Statistics, October 2008. Private credit by deposit money banks (IFS line 22d); GDP in local currency (IFS line 99B..ZF or, if not available, line 99B.CZF); end-of period CPI (IFS line 64M..ZF or, if not available, 64Q..ZF); and annual CPI (IFS line 64..ZF)	1960-2007

pcrdbofgdp	PRIVATE CREDIT BY DEPOSIT MONEY BANKS AND OTHER FINANCIAL INSTITUTIONS / GDP	label var pcrdbofgdp "Private Credit by Deposit Money Banks and Other Financial Institutions / GDP"	Private credit by deposit money banks and other financial institutions to GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is credit to the private sector, P_e is end-of period CPI, and P_a is average annual CPI	Raw data are from the electronic version of the IMF's International Financial Statistics, October 2008. Private credit by deposit money banks and other financial institutions (IFS lines 22d and 42d); GDP in local currency (IFS line 99B..ZF or, if not available, line 99B.CZF); end-of period CPI (IFS line 64M..ZF or, if not available, 64Q..ZF); and annual CPI (IFS line 64..ZF)	1960-2007
bdgdp	BANK DEPOSITS / GDP	label var bdgdp "Bank Deposits / GDP"	Demand, time and saving deposits in deposit money banks as a share of GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is demand and time and saving deposits, P_e is end-of period CPI, and P_a is average annual CPI	Raw data are from the electronic version of the IMF's International Financial Statistics, October 2008. Bank deposits (IFS lines 24 and 25); GDP in local currency (IFS line 99B..ZF or, if not available, line 99B.CZF); end-of period CPI (IFS line 64M..ZF or, if not available, 64Q..ZF); and annual CPI (IFS line 64..ZF)	1960-2007
fdgdp	FINANCIAL SYSTEM DEPOSITS / GDP	label var fdgdp "Financial System Deposits / GDP"	Demand, time and saving deposits in deposit money banks and other financial institutions as a share of GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is demand and time and saving deposits, P_e is end-of period CPI, and P_a is average annual CPI	Raw data are from the electronic version of the IMF's International Financial Statistics, October 2008. Financial system deposits (IFS lines 24, 25, and 45); GDP in local currency (IFS line 99B..ZF or, if not available, line 99B.CZF); end-of period CPI (IFS line 64M..ZF or, if not available, 64Q..ZF); and annual CPI (IFS line 64..ZF)	1960-2007