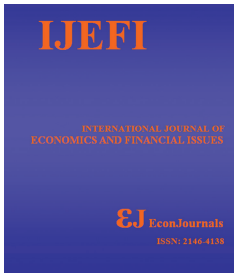

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Financial Development and Economic Growth: The Empirical Evidence of the Southern Mediterranean Countries

Mohamed Aydi[1], Abdelkader Aguir[2]*

[1]Faculty of Economic Sciences and Management of Sousse, Tunisia, [2]BETA Lab UMR 7522 University of Lorraine and UR MOFID UR 13-ES60, France. *Email: abdelkader.aguir@univ-lorraine.fr

ABSTRACT

This paper analyzes empirically the links between financial development and the economic growth of the (squared multiple correlation). The study is based on a vector autoregression approach: The Johansen tests for cointegration and vector error correction model models. The debate on the relation between the financial sphere and the real economic sphere was very ambiguous some studies have shown a positive association between these two spheres while others presented the opposing view perfectly. On the basis of the data relative to the PSM, observed during period 1981-2014, we tried to show there is or not a positive relationship between the financial development and the economic growth. This relationship and increasingly intense for the role of the banking development and and refers to an innovation effort and modernization of the financial system.

Keywords: Financial Development, Economic Growth, Southern Mediterranean Countries, Vector Autoregression Approch
JEL Classifications: G10, O47

1. INTRODUCTION

The theoretical debates on the sense of causality between the financial development and the economic growth, were marked by a significant advance progress. Two currents of the literature come to intervene: One shows the favorable effect of the development of the banking sector and the financial market on the economic growth, while the other supports the opposite view perfectly. The actions of openings and revitalizing the financial system generally and the banking system in particular are causing financial instability and spread of banking crises which were translated by a decline of the economic growth which is due to the importance of the envisaged costs.

The positive effect of financial development on economic growth was initially studied by the authors of the school of financial repression namely McKinnon (1973) and Shaw (1973) and the authors of the liberal school namely Keynes and Hicks. These authors showed that an efficient financial system, dynamic and renovated is at the; origin of a capital accumulation, of a stimulation of the investment and then for economic development. The adverse effect of development of the banking system and the financial market on the economic growth was derived from recent banking and financial crises in the context of a financial liberalization policy. On the one hand, the strong information asymmetry characterizing the financial markets, may be the cause of a unsuccessful in coordinating the allocation of savings to investment.

This information asymmetry companion can distort investors' expectations who prefer to invest in less risky than in another universe uncertain and risky. This taking into account the investor's degree of risk aversion, imperfect financial markets and high transaction costs. This dysfunction of the financial market and the inefficient intermediation can only slow economic growth.

Moreover, the recent crises of banking insolvency have plunged economies for the periods of recession. This experience gave us an example of the negative influence of the development of the banking sector onto the macroeconomic performance. These banking dysfunctions can be transformed into banking or financial crises generating huge costs for the whole economy.

The absence of consensus regarding the effect of the development of banking and financial market on economic growth brings us

to verify this relation for Tunisia. To address this problem, a theoretical study and an empirical validation appear to be useful. To do this, we propose to use the time series methods based on unit root tests and cointegration Johansen and the Granger causality test. The advantage of cointegration test is the detection of a stable long-term relationship between financial development and economic growth.

The rest of the article is organized as follows, section 2 reviews the literature. Then, the section 3 describes the data and defines the variables used. Then, the section 4 exposes the methodology, followed by the presentation of the results in the section 5. Finally, the section 6 is reserved for the conclusion and for the implications of economic policy.

2. LITERATURE REVIEW

Several studies (cross-sectional data, panel data and time series) have focused on the nature of the relationship between financial development and economic growth. The results of these studies depend essentially on the nature of the selected sample.

Table 1 shows the chronological list of empirical studies on time series, which demonstrated the link between finance-growth.

2.1. Summary of the Main Empirical Research

We are interested in the review of the empirical literature to work on time series because this article is based on a technique of time series of PSM countries to study the impact of financial development on the economic growth.

Research on the time series are particularly relevant when we want to estimate the sense of the causality between the financial development and the economic growth.

The first empirical works of time series reported to Gupta (1984) and Jung (1986) uses the Granger causality tests and the VAR model "vector auto regressive" in level.

By estimating the specification of a vector error correction, Demetriades and Hussein (1996) tests Demetriades and Hussein (1996) tests the link of long-term causality between the development of the financial intermediation and the growth of the real gross domestic product (GDP) per capita, respectively 16 and 10 developing countries. These authors support strongly the presence of a bidirectional causality and the existence of a reverse causality, very low, from the growth to the financial development, with results highly varied between economies. Luintel and Khan (1999) detects on the contrary a bidirectional connection between the financial development and the economic growth of all the countries of the sample. They explain the gap with the results of Demetriades and Hussein (1996) used longer time series and use a multivariate approach (rather than two variables). The presence of a bidirectional causality between the financial development and the growth, for developing economies, is questioned by Xu (2000).

Xu (2000) on a sample of 41 developing countries between 1960 and 1993 demonstrated the presence of a positive effect of financial development in the long term, but short term is unfavorable, on the economic performance of most developing countries. It uses a multivariate approach VAR that allows the identification of long-term cumulative effects of financial development on GDP growth and the effects of the investment, by taking into account dynamic, short-term interactions, between variables. Focusing on the case study of Malaysia between 1960 and 2001, Ang and McKibbin (2007) indicated that, contrary to the results (profits) obtained by Xu (2000), this growth is at the origin of the development of the long-term banking sector, and not the opposite. Similar conclusions are established by Abu-Bader and Abu-Qarn (2006) for a sample of five countries in the MENA region, between 1960 and 2004. These authors show that the long-term relationship establishes between the financial development and the growth for the economies of these countries, is either bidirectional, or going from growth to the development of the financial system. Ozturk (2008) reviewed the literature on finance-growth nexus and investigate the causality between financial development and economic growth in Turkey for the period 1975-2004. The empirical findings in the paper show a two way causality (bidirectional) between financial development and economic growth.

The existence of causality in both sensesd between the finance and the growth is rarely validated for the case of the developed countries. Based on the error correction model Rousseau and Wachtel (1998) show that the dominant direction of the long-term causality in 5 industrialized countries studied, is the one part of the financial development to economic growth, not the reverse.

Through a vector error correction model (VECM) analysis Arestis et al. (2001) obtain the same conclusion for the same group of countries (5 industrialized countries), after the integration of stock market development indicators. They show, besides, that it is the banks who contribute most (the most significant and the most important) to the process of growth in these countries compared to the stock market (for two of five studied countries, the effect of the development of the stock market on the growth is negative). Neusser and Kugler (1998) confirm these results by the application of Granger and Lin causality test (1995) for a sample of 13 countries of the OECD between 1970 and 1991. These authors estimate the relation finance - growth by penetrating of two variables via, respectively, into the GDP of the financial system and into the made GDP. Having analyzed the empirical work to defend the presence of a linear relationship between financial development and growth, we try to apply the techniques of time series on our samples. Acaravci et al. (2009) review the literature on the finance-growth nexus and investigate the causality between financial development and economic growth in sub-Saharan Africa for the period 1975-2005. Using panel co-integration and panel GMM estimation for causality, the results of the panel co-integration analysis provide evidence of no long-run relationship between financial development and economic growth. The empirical findings in the paper show a bi-directional causal relationship between the growth of real GDP per capita and the domestic credit provided by the banking sector for the panels of 24 sub-Saharan African countries. The findings imply that African countries can accelerate their economic growth by improving their financial systems and *vice versa.*

Table 1: Financial development and growth: A selective review of the main empirical research

Authors	Number of the country(s)	Period	Methodology	Variables	The empirical results
Studies on cross-sectional data					
Goldsmith (1969)	35 countries	Annual data between 1949 and 1963	OLS and graphical analysis	The variables of financial development and economic growth	The presence of a positive relationship - albeit statistically weak - between financial development and growth
Atje and Jovanovic (1993)	94 countries	Annual data between 1960 and 1985	MCO	The variables of development of stock markets and economic activity	Significant positive effect of the development of stock markets on the level and the growth of the economic activity
Harris (1997)	39 countries	Annual data between 1980 and 1988	Double least squares (DMC)	The variables of the development of the stock market and the growth	The hypothesis the stock-exchange activity allows the explanation of the growth is (partially) supported. The stock market development effects on growth is low in least developed countries. It is, however, significant for the developed countries
Levine and Zervos (1998)	42 countries	Annual data between 1976 and 1993	MCO and GMM	The variables of the banking sector and the growth of the real GDP per capita	The banking sector development contributes positively to the growth of real GDP per capita
Levine and Zervos (1998b)	47 countries	Annual data between 1976 and 1993	MCO	The levels of market liquidity and the variables of the banking sector, the growth of the real GDP per capita, the productivity and the physical capital stock	The initial levels of market liquidity and banking sector development are positively and significantly correlated to the future growth of the real GDP per capita, the productivity and the physical capital stock. No strong impact about the size of the stock markets on the sources of growth was detected

(*Contd...*)

Table 1: (*continued...*)

Authors	Number of the country(s)	Period	Methodology	Variables	The empirical results
Levine (1999)	49 countries	Annual data between 1960 and 1989	GMM	The variables of the financial intermediation and the economic growth	Presence of a strong and significant positive correlation between the development of the financial intermediation explained and the growth
Ram (1999)	95 countries	Annual data between 1960 and 1989	MCO	The variables; ratio of the liquid liabilities and the economic growth	The correlation between the financial development (ratio of the liquid liabilities) and the growth is weakly negative or negligible
McCaig and Stengos (2005)	71 countries	Annual data between 1960 and 1995	GMM	The ratio of the liquid liabilities, the credit to the private sector and the economic growth rate	Positive effect of the finance on the growth when the financial development is measured by the ratio of the liquid liabilities or that of the credit to the private sector. The correlation between both variables is much lower when we describe the financial development by the asset ratio of commercial banks on the sum of this one with the asset of the central bank
The panel data studies					
Beck et al. (2000b)	77 countries	The quinquennial average data between 1960 and 1995	GMM on dynamic panel	The variables of financial intermediation, the growth of productivity and the real GDP per capita, the capital accumulation and the savings	Significantly positive and strong effect of the development of the financial intermediation on the growth of productivity and the real GDP per capita. Although less robust positive effect of this one on the capital accumulation and the growth of the savings

(*Contd...*)

Table 1: (*continued...*)

Authors	Number of the country(s)	Period	Methodology	Variables	The empirical results
Levine et al. (2000)	74 countries	The quinquennial average data between 1960 and 1995	GMM on dynamic panel	The variables of the financial intermediation and the growth of the real GDP per capita	The existence of a correlation significantly positive between the development of the financial intermediation and the growth of the real GDP per capita
Lopez and Spiegel (2002)	101 countries	The quinquennial average data between 1965 and 1990	GMM on dynamic panel	The variables of the financial development and the economic growth	Significantly beneficial contribution of the financial development to the long-term growth. Short-term ambiguous relation
Calderon and Liu (2003)	109 countries	Data averaged over 5-10 years between 1960 and 1994	VAR models on panel, Geweke's decomposition and Granger causality	The variables of development of the financial intermediation and the economic growth	Bidirectional causality between the development of the financial intermediation and the growth. Effect of the financial development on the growth stronger in developing countries, compared with the industrialized economies. The financial development affects the growth by acting essentially on the productivity growth
Beck and Levine (2004)	40 countries	The Quinquennial average data between 1976 and 1998	GMM on dynamic panel	The variables of development of the financial intermediation, the stock markets liquidity and the economic growth	The development of the financial intermediation and the stock markets liquidity allow the promotion of the growth
Loayza and Ranciere (2004)	75 countries	Annual data between 1960 and 2004	The PMG estimator (PMG) on dynamic panel	The variables of the financial intermediation and the economic growth	A relation significantly is positive in the long term, between the development of the financial intermediation and the growth, coexists with a short-term negative relationship in most countries in the sample

(*Contd...*)

Table 1: (*continued...*)

Authors	Number of the country(s)	Period	Methodology	Variables	The empirical results
Stengos and Liang (2005)	66 countries	The quinquennial average data between 1961 and 1995	Semi-parametric partially linear models	The variables of financial development and economic growth	Non-linear relationship between financial development and growth. Relation which depends on the financial development indicator used
Saci et al. (2009)	30 developing countries	The quinquennial average data between 1988 and 2001	GMM on dynamic panel	The variables of the banking development, the economic growth and the market capitalization	No effect or significantly negative of the banking development on the growth when we control the development of the stock market. Significantly positive effect of stock market development
Hassan et al. (2011)	Country with low or average income	The quinquennial average data between 1980 and 2007	MCO, weighted least squares, VAR model Granger causality, FIR and variance decomposition	The development of financial intermediation and economic growth	Positive relationship between the development of the financial intermediation and the long-term growth
AL-Malkawi and Abdullah (2011)	13 countries of the MENA region	Annual data between 1985 and 2005	Pooled OLS, fixed effects model, random effects model	The variables of development of the financial intermediation and the growth	Positive relationship between the development of the financial intermediation and the growth
Kar et al. (2011)	15 countries of the MENA region	Annual data between 1980 and 2007	VECM model, MMG, Hurlin technique (2008) and approach of Kónya (2006)	The variables of financial development and the economic growth	The direction of causality between financial development and growth varies according to the financial development indicator used, as well as between the countries of the studied sample
Time series studies					
Gupta (1984)	14 developing countries		Quarterly data between 1961 and 1980	VAR model and Granger causality tests	The variables of the finance and the economic growth	The results show a causality which goes of the finance towards the growth. They support, in certain cases, the presence of reverse causality. A mutual causality is proved however rarely

(*Contd...*)

Table 1: (*continued...*)

Authors	Number of the country(s)	Period	Methodology	Variables		The empirical results
Jung (1986)	56 countries		Annual data between 1950 and 1981	VAR model and Granger causality tests	The variables of the finance and the economic growth	Causality which goes of the financial development towards the growth in the least developed countries. A causality in the inverse sense for the developed countries
Arestis and Demetriades and Luintel (1997)	Germany and the United States		Quarterly data between 1979 and 1991	VECM model and Johansen cointegration	The financial development the real GDP	Causality goes from financial development to real GDP for Germany, but in the opposite direction for the United States
Arestis et al. (2001)	5 industrialized countries		Quarterly data between 1972 and 1998	VECM model and Johansen cointegration	The variables of the intermediation of banks, stock markets and economic growth	The financial development of banks and stock markets promotes growth. It is the banks who contribute in a more significant and more important way to the growth process, compared with stock markets
Thangavelu and Ang (2004)	Australia		Quarterly data between 1960 and 1999	VAR model and Granger causality	The economic growth, the variables of the banking sector and the variables of development of the stock market	The growth causes the development of the banking sector (according to Granger), while the development of the stock market causes the growth
Ang and McKibbin (2007)	Malaysia		Annual data between 1960 and 2001	VECM, Johansen cointegration, Granger causality and ACP	The economic growth and the development of the banking sector	A long-term relation which goes from the growth to the development of the banking sector and not the opposite

Source: Established by the authors from the literature review. VECM: Vector error correction model, VAR: Vector autoregression, OLS: Ordinary least squares, GMM: Generalized method of moment, GDP: Gross domestic product, PMG: Pooled mean group, FIR: Finite impulse response

3. DATA AND METHODOLOGY

3.1. Description of Data

To examine the empirical connections between financial development and economic growth, we collect data for the real GDP per capita, the internal credit supplies in the private sectors, the market capitalization, M2/GDP and the inflation as the control variables, for a period from 1981 to 2014 with 34 observations. The variables of economic growth and the inflation are obtained from the World Bank database and the financial development variables of the database elaborated by Beck, Demirgüç-Kunt and Levine in 2013. The variable "GDP" design real GDP per capita. The GDP is the sum of gross value added generated by the productive sectors of an economy. It measures the efforts of economic output. Its relative variation from 1 year to another reflects the economic growth rate. This variable is the dependent variable of the model.

The variable "CISP" indicates the credit to the private sector report to GDP the amount of the credit assigned to the private sector by banks and other nonbank financial institutions.

This ratio allows the level of activity of banking and non-banking financial intermediaries in the exercise of their function of channeling savings. It reflects the way in which domestic assets are distributed between the public and private sectors. It is based on the assumption that the more developed financial systems are those who attribute the most credits to private firms. The variable "CB" means the ratio of market capitalization (market cap): This ratio measures the size of the stock market. It is equal to the total value of parts quoted in stock exchange reported to the GDP. The use of this indicator supposes the existence of a positive correlation between the size of the stock market and its development. However, this is not always obvious. A wide stock market is not necessarily effective in the performance of his duties. It can, moreover, be developed strongly despite a small size (this one being explained by the presence of taxes preventing an adequate quotation in stock exchange, rather than a low efficiency of the market in the exercise of his functions).

The variable "LIQ" indicates the liquid liabilities in the GDP: It is the ratio of the liquid liabilities of the economy in the GDP. This indicator takes into account the money supply (M2) and the liquid liabilities of financial institutions. The liquid liabilities is a measure of the financial depth or the global size of the financial system.

The variable "Infl" indicates the Inflation rate. It is the variable which represents the macroeconomic politics. It is introduced into the model to get the impact of the macroeconomic stabilization on the economy. The inflation is a factor of worsening of the growth because it has a negative it has a negative impact on the actual value of the portfolio and the purchasing power of household incomes and thus on the growth. We use the consumer price index as the indicator which measures the inflation rate.

3.2. Methodology

The main interest of this study is to analyze the impact of the financial development and the economic growth by using the models: VECM introduced by Johansen (1988) and the VAR model is proposed by Sims (1980). The advantage of the Johansen and Joselius cointegration procedure (1990) is that she allows on one hand testing the existence of one or several relations of cointegration between the various series. Secondly, the method of Johansen is a multivariate test which allows to determine the number of cointegration relationships between the selected series.

Thus, this approach avoids the two step test applied in Engel-Granger procedure which allows to have a one cointegration relationship. This approach also has the advantage of taking into account the problem of simultaneity. Finally, the hypothesis of exogenous variables is not supported and it is not necessary to impose restrictions on the estimated coefficients to determine the short-term relationships.

Let us consider a VECM model based on annual data for pib = (cisp, cb, liq, infl) given by:

$$\Delta y_t = \alpha\beta' y_{t-1} + B_0 + \sum_{i=1}^{p} B_i \Delta y_{t-i} + \varepsilon_t \quad (1)$$

Where Δ is the first difference of the operator, B_0 is a column vector of 4 dimensions of determinist constant terms and B_i=i=1,…, P indicate matrices of order 4 of the short-term information parameters. $\alpha\beta'$ is a matrix of order 4 of the long-term information parameters, Where α represent the speed of adjustment of the balance and β contains the long term or equilibrium coefficients. ε_t denotes a four-dimensional vector of residuals where ε_t~iid(0,Ω).

The rank $(\alpha\beta) = r$ is the number of cointegrating vectors which can vary according to the country and to the nature of the variable tested. If $r = 0$, the time-series variables are not cointegrated, in this case, the variables must first be differentiated and we have the VAR in the difference.

In the first stage, we use the traditional unit root testing of augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests to verify the stationarity of all the variables. Secondly, we apply other similar tests as endogenous break unit root tests of Lee and Strazicich breaks (2003; 2004) to avoid "spurious emissions" of conventional unit root tests.

We proceed in the second stage to determine the length of delay of the VAR of the VECM models using the information criterion Schwartez (CIS), for variables growth rate of GDP per capita, internal credits supplies in the private sector, market capitalization, liquid liabilities and inflation rate contains a unit root. Then we apply the Johansen cointegration test to determine the number of cointegrating vectors (rang $[\alpha\beta'] = r$) using two different statistics: The trace statistic and the maximal eigenvalue statistic. In the third step, the estimated VECM between variables real GDP per capita, the domestic credit to private sector, market capitalization, examining the impulse response functions (IRF) obtained by estimating the previous VECM.

4. EMPIRICAL RESULTS

4.1. Results of the Unit Root Tests

The ADF unit root tests, PP and KPSS variable on each level and in first difference has been made, and this for all countries in the sample. The test results are reported in Table 2. The statistics of ADF, PP and KPSS suggest that all variables are integrated of order 1, I(1). Except for the cases of Egypt; liquid liabilities and variable inflation rates which are stationary in level I(0) at the 5% threshold and 10% respectively. The variable inflation rate seems to be integrated I(0) to the same tests in the case of Jordan and Lebanon.

The history of the series, liquid Liabilities and inflation rate in time, show that for every country the series are not really fixed trend in the level. The Figure 1 indicates a presence of ruptures in all the series of variable liquid liabilities and inflation rate.

The distribution of the series of variables presented by the Figure 1 confirms the non-stationarity. It indicates in fact, the existence of a trend for the majority of the series. It also indicates the high probability existence of one or several structural rupture. This incites us to make the test of Lee and Strazicich (2003). Which

Table 2: Stationarity test ADF, PP and KPSS (variables: GDP, CISP, LIQ, CB and INF)

Country	Real GDP per capita			Domestic credit to private sector			Market capitalization			Liquid liabilities to GDP			Inflation rate		
	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS
Variables in levels															
Egypt	−0.714	−1.383	0.700**	−1.735	−2.056	0.372*	−1.595	−1.637	0.484**	−3.522**	−3.488**	0.283	−2.729*	−2.656*	0.405*
Israel	−0.436	−0.349	0.695**	−1.064	−0.986	0.527**	−2.375	−2.375	0.553**	−0.483	−0.510	0.634**	−1.765	−1.996	0.462**
Jordan	−1.283	−0.42	0.372**	−2.288	−2.039	0.672**	−2.019	−2.101	0.403*	−2.687*	−1.713	0.535**	−3.685***	−3.475**	0.244
Lebanon	−2.286	−2.335	0.622**	−0.987	−1.098	0.589***	−2.593	−2.052	0.16	−0.905	−0.760	0.579**	−3.346**	−3.335**	0.227
Morocco	1.435	1. 334	0.653**	0.013	0.051	0.647**	−1.178	−1.275	0.645**	−0.646	−0.603	0.658**	−2.387	−2.146	0.663**
Tunisia	1.07	1.159	0.657**	−1.255	−2.549	0.359*	−2.348	−1.468	0.512**	0.573	−0.231	0.641**	−1.315	−1.720	0.448*
Turkey	−0.416	−0.194	0.68**	4.039	4.081	0.49**	−0.551	−2.614	0.730***	0.258	0.404	0.688**	−2.205	−2.375	0.399*
Variables in first differences															
Egypt	−4.678***	−4.688***	0.156	−3.946***	−0.3967***	0.291	−5.418***	−5.418***	0.115	−5.832***	−5.845***	0.276	−9.509***	−9.509***	0.222
Israel	−5.136***	−6.206***	0.155	−6.425***	−6.828***	0.373*	−6.253***	−6.489***	0.110	−5.115***	−5.111***	0.104	−4.868***	−8.186***	0.5**
Jordan	−3.446*[b]	−4.328***	0.28	−5.128***	−3.734***	0.320	−6.779***	−6.745***	0.094	−2.873*	−4.888***	0.130	−6.728***	−15.367***	0.5**
Lebanon	−4.802***	−4.763***	0.086	−5.653***	−5.653***	0.186	−3.269**	−3.269**	0.07	−4.305***	−4.203***	0.174	−8.638***	−10.889***	0.175
Morocco	−11 .428***	−10.441***	0.32	−6.18***	−6.165***	0.119	−4.902***	−4.867***	0.067	−6.730***	−6.711***	0.042	−4.569***	−13.918***	0 .376*
Tunisia	−6.689***	−5.693***	0.37*	−1.109	−5.235***	0.088	−4.236***	−6.153***	0.296	−4.263***	−5.573***	0.181	−9.169***	−9.798***	0.5*
Turkey	−6.364***	−7.813***	0.119	−3.697**[b]	−3.657**[b]	0.455*	−7.012***	−15.804***	0.308	−4.404***	−4.266***	0.188	−7.791***	−8.307***	0.107

ADF: Augmented Dickey-Fuller, PP: Phillips-Perron, KPSS: Kwiatkowski-Phillips-Schmidt-Shin, GDP: Gross domestic product. *,** and *** Indicate an acceptance of the hypothesis at the threshold of 10%, 5% and 1% respectively. [b] denotes the stationary with Trend and intercept. the length of delay in all the tests was selected according to the information criterion Schwartez

will allow us to test the stationarity in the presence of structural rupture. The conventional unit root tests (ADF, PP and KPSS) are not able to reject the null hypothesis when the structural repture are present. These tests conduct their critical values are assuming no rupture under the null hypothesis.

Consequently, in the presence of a unit root with rupture, they tend to reject the null hypothesis suggesting that the time series is stationary around trend when it is non-stationary with a rupture. For this reason, we conduct tests for endogenous rupture in unit root.

Christiano (1992), Perron and Vogelsang (1992), Zivot and Andrews (1992) have developed methods to determine a repture point and to test the presence of a unitarian root when the process has a constant broken or trendy and demonstrated that their tests are robust and efficient than the conventional unit root tests. To avoid this problem and to examine the potential presence of rupture, we use in this paper the LM unit root test with two breaks endogenous proposed by Lee and Strazicich (2003; 2004). This result seems to be affected by ruptures under the null hypothesis.

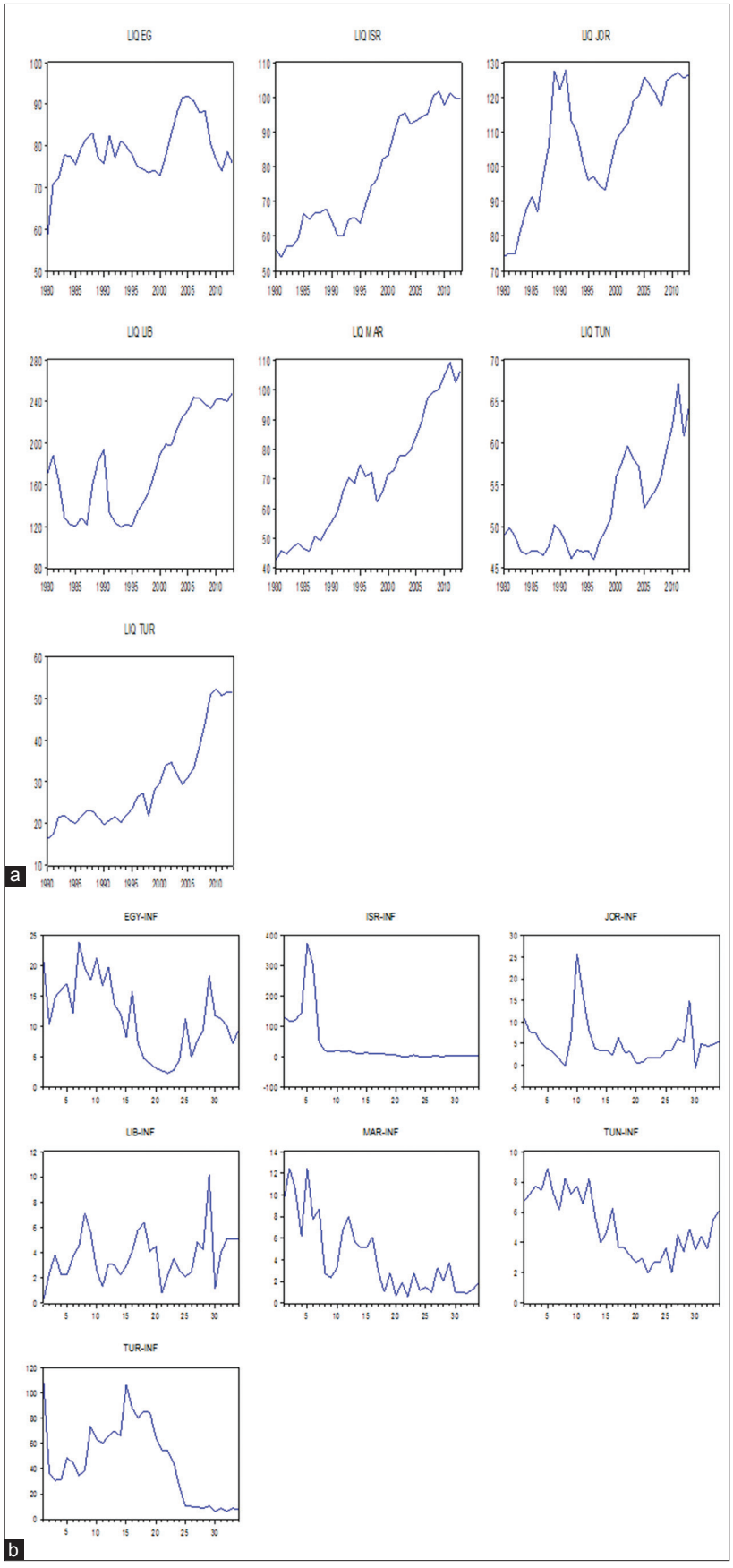
We find that significant structural ruptures provided for both series: Liquid liabilities and inflation rate. Concerning unit root tests ADF, PP, KPSS and LM, the results conclude in favor of the unit root I(1) for all series in all countries.

4.2. Johansen Cointegration Test

The study of the cointegration allows to test the existence of a long-term stable relationship between the variables integrated of order 1 I(1). There are several tests of cointegration, the most general being that of Johansen. Whatever the chosen test, it has meaning only on stationary series in first difference. Consequently, the analysis of the cointegration allows to identify the true relationship between variables, by searching the existence of a cointegration vector and by eliminating its effect if necessary. Two series x and y are called cointégrées if following both conditions are verified: They are affected by a stochastic trend of the same order of integration and a linear combination of these series and a linear combination of these series can be reduced to a series of order of integration lower.

Finally, the Johansen cointegration test uses two statistics: Statistics trace and the maximum eigenvalue whose order is d'exterminé by the Schwarz criterion (SC). The unit root tests ADF, PP, KPSS and LM (Lee and Strazicich) prove that all variables contain a unit root, then we test cointegration in each VECM using both the trace and the maximum eigenvalue. Results of the application of Juselius (1990) and Johansen approach are presented in Table 3. The Table 3 includes the ranks given in the first line, the number of cointegrating vectors in line 2, eigenvalue and track statistics for each selected country. The critical value is mentioned using asterisks. The null hypothesis is that the number of cointegrating relationship is equal to r, which is given in the "maximum rank" observed in the first row of Table 3. The alternative is that there are more cointegration relationships r. We reject the null hypothesis if the trace statistic is greater than the critical value. We begin by testing H0: r 0. If the null hypothesis is rejected, we repeat for H0: r = 1. The process continues for

Figure 1: Evolution of the series of variable by country. (a) Variable interest: Liquid liabilities (LIQ). (b) Variable interest: Inflation rate (INF)



r = r = 2... 3 = 4 and r. The process ends when a test is not rejected. Existing of one or several cointegration vectors explains that the variables have a long-term relationship and we should continue to use VECM.

The results of cointegration show that there are at least two cointegration vectors with an interception and/or trend in all the countries. Therefore, we can conclude that there are at least two cointegrating vectors for all the selected countries. Based on the results of Johansen cointegration tests, we conclude that the VCEM can be applied to all countries specifically for even the answers the impulse responses of the domestic credit provides private and market capitalization on economic growth sectors (Table 4).

Table 3: The unit root test with two breaks of Lee and Strazicich

Series	One-break				Two breaks					
	Model A		Model B		Model A			Model B		
	t-stat	break	t-stat	break	t-stat	break		t-stat	break	
Liquid liabilities to GDP										
Egypt	−2.230	2004	−4.385	2005*	−2.472	2004	2007	−5.674***	1999	2010
Israel	−3.576**	2009	−17.25***	2009	−3.587**	1995	2009	−17.911***	1984	2009
Jordan	−4.239***	1985	−6.082***	1985	4.039**	1985	1996	−6.790***	1984	1989
Lebanon	−3.993**	1989	−4.302*	2004	−4.224*	1988	2005	−5.852***	1997	2007
Morocco	−4.249***	2006	−4.809**	2000	−4.927***	1997	2006	−6.421***	1989	2004
Tunisia	−3.257*	1985	−2.750	1993	−3.384*	1985	2008	−17.114***	1986	2010
Turkey	−1.855	1998	−5.812***	2010	−1.994	1992	1998	−8.865***	2004	2010
Inflation rate										
Egypt	−4.103**	2005	−4.36 0*	2006	−5.329***	1997	2007	−7.157***	1995	2008
Israel	−5.190***	2005	−5.014**	1990	−5.787***	1987	2005	−7.396***	2000	2009
Jordan	−3.367*	2010	−4. 188*	1987	−3.730**	1985	2010	−4.375*	1987	2001
Lebanon	−6.679***	1991	−6.880***	1992	−6.932***	1992	1997	−8.530***	1995	2000
Morocco	−4.847***	1994	−4.887**	1991	−5.126***	1994	2000	−5.916***	1996	2002
Tunisia	−3.283*	1991	−5.015***	1987	−4.188**	1988	1998	−6.053***	1987	1998
Turkey	−4.471***	2006	−7.282***	2004	−6.644***	2006	2009	−10.335***	2004	2009

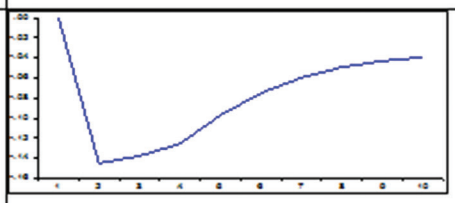
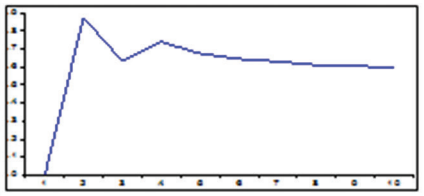
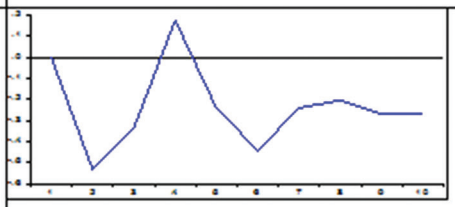
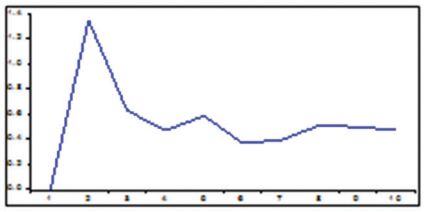
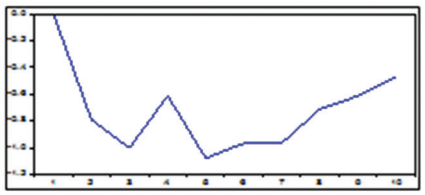
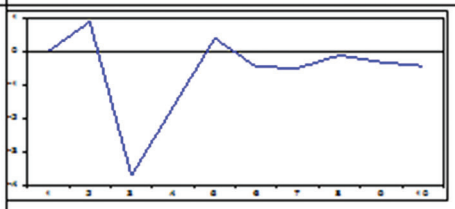
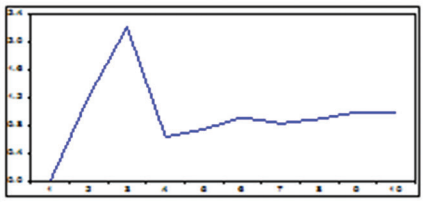
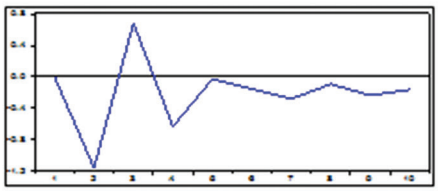
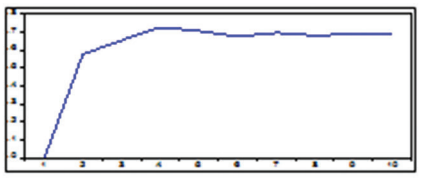
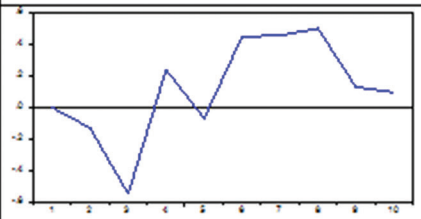
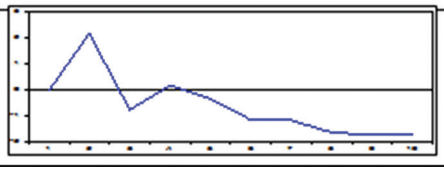
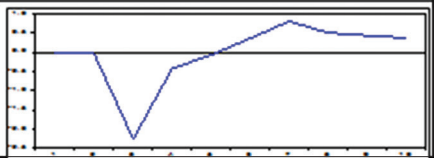
Model A: Change in the interception. Model C: Change in the constant and the trend. The critical values for the unit root test LS with a break are indicated in Lee and Strazicich (2004, Table 1). The critical values for the unit root test LS with two breaks, which appear in Lee and Strazicich (2003, Table 2), depend on the location of the rupture. *,**,*** indicate the level of signification respectively at 10%, 5% and 1%. GDP: Gross domestic product

Table 4: Results of Johansen cointegration test (variables: GDP, CISP, LIQ, CB and INF)

Country	r=0		r≤1		r≤2		r≤3		r≤4	
	1	2	1	2	1	2	1	2	1	2
Egypt										
Trace statistic	80.23644***	106.5183***	41.94786	60.36584*	20.04274	35.90485	6.920876	17.42934	1.515200	4.320857
Max-Eigen stat	38.28858**	46.15243***	21.90512	24.46099	13.12186	18.47552	5.405675	13.10848	1.515200	4.320857
Israel										
Trace statistic	76.00426**	85.80266*	47.56137*	53.52832	20.79332	25.90573	5.938574	10.83198	0.333081	4.067754
Max-Eigen stat	28.44289	32.27434	26.76804*	27.62259	14.85475	15.07375	5.605492	6.764229	0.333081	4.067754
Jordan										
Trace statistic	95.67284***	117.1330***	56.47780***	65.87977**	31.77948**	40.05070*	12.25967	20.46788	3.371765*	8.140777
Max-Eigen stat	39.19505*	51.25328***	24.69832	25.82907	19.51981*	19.58282	8.887900	12.32711	3.371765*	8.140777
Lebanon										
Trace statistic	91.68223***	130.8359***	45.18321*	77.03425***	21.06532	37.11210	7.825086	16.17432	0.310289	5.807031
Max-Eigen stat	46.49901***	53.80161***	24.11789	39.92215***	13.24024	20.93778	7.514796	10.36729	0.310289	5.807031
Morocco										
Trace statistic	79.29406***	103.5950***	36.13360	53.67280	18.38017	28.59204	7.466910	16.18721	0.044629	5.616787
Max-Eigen stat	43.16046***	49.92217***	17.75343	25.08075	10.91326	12.40483	7.422281	10.57042	0.044629	5.616787
Tunisia										
Trace statistic	88.95627***	101.9829***	51.15970**	60.64219*	19.29113	26.31669	5.585769	12.52694	0.501403	2.813502
Max-Eigen stat	37.79658**	41.34072**	31.86856**	34.32550**	13.70536	13.78975	5.084366	9.713433	0.501403	2.813502
Turkey										
Trace statistic	84.34933***	111.6427***	47.10472*	74.25474***	21.02951	39.46615	7.886801	19.48983	0.029780	7.612779
Max-Eigen stat	37.24461**	37.38793*	26.07521*	34.78860**	13.14270	19.97632	7.857021	11.87705	0.029780	7.612779

1: Model with one interception, 2: Model with an interception and a linear trend, r: Number of cointegrating vector. ** and *** indicate the reject of the null hypothesis at the threshold of 10%, 5% and 1% respectively. The length of delay in all the tests was selected according to the information criterion Schwartez. GDP: Gross domestic product

Figure 2: Domestic credit shock provided to the private sector and market capitalization

Country	GDP response to the variation of CISP	GDP response to the variation of CB
Egypt		
Israel		
Jordan		
Lebanon		
Morocco		
Tunisia		
Turkey		

5. THE EFFECT OF THE DOMESTIC CREDIT SHOCKS PROVIDED TO THE PRIVATE SECTOR AND MARKET CAPITALIZATION ON ECONOMIC GROWTH

To evaluate the effect of the domestic credit shocks provided to the private sector and market capitalization on economic growth for Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey. We use IRF and analyze the impact of these shocks on the economic growth of countries in the region. The two columns of Figure 2 respectively describe the impact of the domestic credit shocks provided to the private sector and market capitalization.

5.1. Domestic Credit Shock (CISP)

Figure 2 shows that the domestic credit shock (CISP) (first column) have a significant negative effect on economic growth in Egypt, Israel, when they have a positive effect only to Jordan. The effect of the shocks on the economic growth for Morocco and Tunisia, is however not significant. In fact the shape of the impulse response curve is volatile close to zero, sometimes positive and sometimes negative. For the case of Lebanon and Turkey the impact is mixed, what is positive in first period become negative for the second period for stabilizes in the sixth period in Lebanon is still negative in Turkey.

5.2. Market Capitalization Shock (CB)

The shocks on market capitalization (the second column) has a significantly positive effect on the economic growth for Egypt, Israel, Lebanon and Morocco, the shock is triggered in the first period to reach a maximum value in the second period and creates a peak, to gradually return to its equilibrium position from the third period.

The effect of shocks on the economic growth for Jordan and Tunisia, is however not significant. Indeed, the shape of the impulse response curve generally remains close to the abscissa axis of value zero order. For Turkey, the triggering of the impulse response in half of the second period, has reached a significantly negative maximum value for created a peak in the third period and return to its equilibrium the end of the period.

The main results for the impulse responses show that a shock on domestic credit provides private sectors and market capitalization influences positively or negatively the economic growth has short term, the answers are clearer for credits that essentially affects the economies of the region, as do not incur a great tradition of the stock change.

6. CONCLUSION

The released results of our estimate shows that there is a long-term relationship between financial development and economic growth. Indeed functions of impulse responses shows that a shock on the domestic credit variable relating to the private sector has a significant effect on economic growth that a shock on the stock capitalization, but overall, the financial sector in the countries of the region PSM continues to play a less important role than in other economies with similar income levels, but we notice considerable écarts between the countries of the region in terms of financial sector development level. The financial systems in the region remain dominated by banks, and financial intermediation is still in the development stage according to the international standards. However, the banking sector does not occupy an important place in the stimulation of economic development. In spite of the privatizations, the participation of States in bank's capital continues to be higher than in the other countries of similar level.

The countries of the region PSM have to develop strategies to promote innovation, competition and the expansion of coverage of the financial sector. By considering the particular situation of each of the countries, such strategies could include opening bank markets to foreign and local new entrants and promoting better credit culture of the credit to facilitate the access to the finance, associated with more effective prudential supervision. In most of the countries, all this must be completed by legal and institutional reforms in the domains of the accounting, auditing, financial probity and corporate governance, in order to promote transparency and accountability.

Stock markets in the region are relatively new, and the market capitalization, the value of exchanges and companies quoted remain low compared with high income countries. Globally issuing shares and bonds is still a little used method of fund-raising in the region, leaving the banking sector without competition.

Concerning policy implications, we must draw proposals based on the results. It is clear that improving the performance of the financial system in the region is absolutely essential in order to allow financial development as a growth stimulant. Therefore, PSM need to improve the credit allocation process through the privatization of domestic banks, by strengthening credit regulation and by increasing competition in the banking sector. In addition, a prerequisite appears to be that the regulatory infrastructure is well developed and that measures are being taken to reduce the extreme volatility of stock prices in order to allow the stock market in the PSM regions to stimulate economic growth.

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