Is financial integration good for economic growth in Maghreb countries?

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Abstract :

The purpose of this paper is to test empirical relationship between financial integration and economic growth in three Maghreb countries (Algeria, Morocco, and Tunisia) using cointegration time series and Granger Causality methods. The study of this relationship has always been of particular interest (McKinnon and Shaw 1973; Alesina and al 1994; De Gregorio 1996; Edwards 2001; Agénor 2001; Prasad and al.2003; Dhrifi 2009). The results are mitigated and can be classified into two categories: negative and positive effects. As a matter of fact, some authors have showed that capital account liberalization hasn't a significant effect on economic growth (Grilli and Milesi-Ferretti 1995; Rodrick 1998; Kraay 1998; O'Donnell 2001; Edison and al. 2002). On the contrary, several theoretical and empirical studies assert that capital account liberalization can help countries to improve significantly their economic growth rate (Gurley and Shaw 1955, McKinnon 1973; Quinn 1997; Levine and Zervos 1998; Chan-Lau and Chen 2001; Bekaert and al. 2005; Levchenko and al. 2008; Mensi and al. 2010, Hassana, Sanchezb & Yu 2011). The estimation results show that financial integration is a good factor in fostering economic growth in Maghreb countries.

Keywords: *Financial integration, economic growth, Maghreb countries, cointegration time series.*
JEL Code: *F36, O40, C20.*

Introduction

Since the 1990s, developing countries have undertaken a series of reforms in order to liberalize their commercial and financial transactions. The aim was to achieve some sort of financial integration among the member states. One of the main benefits of this integration concerns the development of the financial sector that will allow domestic financial markets to become more sophisticated. In recognition of these potential benefits, Maghreb countries have taken advantage of the favorable market environment -characterized by abundant liquidity- to loosen obstacles to capital mobility, implement structural policies and modernize banking and financial regulation in order to strengthen their financial systems.

In this context, the study of the relationship between financial integration and economic growth has always been of particular interest (*McKinnon and Shaw 1973; Alesina and al 1994; De Gregorio 1996; Edwards 2001; Agénor 2001; Prasad and al. 2003; Dhrifi 2009*). Some economists consider that international financial openness hasn't significant effects on economic growth *(Kraay 1998; Chari A & Henry P 2001; Edison and al. 2002*); others indicate that capital account liberalization affect positively economic growth (*Lane & Milesi-Ferretti 2003; Klein et Oliver 2008; Ben Salha & al. 2008; Xiu Yang 2010*).

The purpose of this work is to highlight the link between financial integration process and economic growth in three Maghreb countries (Algeria, Morocco, and Tunisia) and to address the existing ambiguity by studying the following issue: ***is financial integration good for economic growth in Maghreb countries?***

Our empirical evidence is based upon studies undertaken by (*Darrat & Pennathur 2002, De Gregrio José 2006, Brezigar-Masten & al., 2008*), and using cointegration time series method during the period 1970-2009, we end up by estimating that financial integration affects positively economic growth in Maghreb countries.

The work is structured as follows. In the first section, we try to offer an overview of the literature and a theoretical discussion about the link between financial integration and economic growth. Section two describes our empirical methodology and data collection. Then, in section three,

we test empirically the economic growth effects of financial integration in the three Maghreb countries (Algeria, Morocco, and Tunisia). Finally, section four presents the estimation results.

1) Literature review

An overview of the literature shows that several studies have explored the link between financial integration and economic growth. Despite the existence of numerous contributions over this link, results remain conflicting about whether integration plays a positive or a negative role in real economic growth.

◈ Using different empirical tests, many studies highlighted the importance of financial integration for economic growth. *King and Levine* (*1993 b*) indicate that several studies show that financial development is important to promote economic growth, even after controlling for a variety of indicators such as physical capital accumulation that have been usually considered as determinants of growth. *Obstfeld (1994)* indicates that financial integration can stimulate economic growth by improving the allocation of capital through risk sharing. In practice, empirical analyses use either *proxy variables for government restrictions on capital flows* or *measures of actual international capital flows*. The *Quinn's (1997)* study is one of the first works that deals with the relationship between capital account liberalization and economic growth. *Quinn (1997)* uses his own *proxy* variable to measure capital account restriction degree. Quinn's empirical estimates using a cross-section of 58 countries, over the period 1960 to 1989, give credit to the argument that capital account liberalization has a strongly significant effect on real per capita GDP growth.

Similarly, *Klein and Olivei (1999)* find that the effect of open capital accounts on financial deepness and economic growth in a cross-section of countries over the period 1986-1995 is statistically significant and economically relevant. But, this result is largely driven by the developed countries included in the sample. Furthermore, *Edwards (2001)* investigates the effects of capital mobility on economic growth by using a new cross-country data set. The author finds that the link between capital account openness and GDP growth is positive in countries that have an advanced domestic financial market; however, capital account liberalization affects growth negatively at very low levels of local financial development.

Levine (2001) shows that financial integration can strengthen domestic financial systems leading to more investment, better efficiency in the allocation of capital and higher growth. Moreover, studying the effects of financial globalization on developing countries, Prasad & al., *(2003*) argue that positive effects of financial integration on growth arise only when financial integration is combined with an appropriate institutional framework. They demonstrate that sound macroeconomic policies and improved institutions are crucial for a country to attract less volatile and growth-enhancing capital flows.

On the other side, *Brezigar-Masten & al., (2008)* studied the nonlinear effects of financial development and international financial integration on economic growth in Europe using both macro and industry-level data. Estimation results reveal evidence of significant non-linear effects, with less developed European countries gaining more from financial development. In contrast, international financial integration effects become significant at higher levels of financial development. Besides, data show that monetary integration in Europe contributed significantly to a higher degree of financial integration.

Theoretical models have identified a number of channels (direct and indirect) through which international financial integration can promote economic growth in developing countries. As such, financial integration can stimulate growth directly through risk sharing; Moreover, indirect positive effects of international financial integration on economic growth

could come through its effect on the development of domestic financial markets. This can be true via two channels (*Brezigar-Masten & al., 2008*):

- First,increased competition between foreign financial intermediaries can lead to reduced intermediation cost and can stimulate demand for funds which tends to increase the size of domestic financial markets. Moreover, financial integration can affect domestic markets through the improvements of institutional framework; in other words, improved regulation and corporate governance can enhance the overall stability and reduce asymmetric information problems.

- Second, by allowing access to foreign financial market in form of direct lending by financial intermediaries.

The economic literature suggests that financial development and capital flows liberalization are determining factors of economic growth because they provide a favorable support for financial integration between countries. In this regard, capital flows play a crucial role, in terms of promoting economic growth and increasing the flows of domestic and foreign investment (*Alessandrini 2010*, p3-4). In general, integration helps domestic financial systems to allocate resources optimally across industrial sectors in a way which improves the overall diversification of the economy and lowers its volatility (*Manganelli & Popov, 2010*).

◈ In contrast, many studies show that capital account liberalization hasn't a significant effect on economic growth. The *Grilli and Milesi-Ferretti (1995)* study has not confirmed the robust long-term effect of international financial integration on growth. In their empirical studies, they use a large sample of developing and developed countries and ended up by showing that the financial integration hasn't significant effects on economic growth. *Kraay (1998)* have not found a robust long-term growth effect of the IMF's restrictions measure on openness. In addition, *Edison & al. (2002)* combine six measures of financial integration with different econometric techniques (OLS, DLS, Dynamic Panel methods) to test how the effect of financial development on growth may depend on financial, institutional and policy factors. Their analysis does not produce robust results, which indicates that financial integration does not significantly affect growth.

◈ Finally, we can say that the impact of financial integration on economic growth continues to be one of the most debated issue among economists. This debate is certainly controversial (*González-Páramo 2010*): one extreme opinion sustains the idea that integrated financial systems improve the allocation of productive resources, foster entrepreneurship and innovation, enhance market discipline, and help countries insure against macroeconomic fluctuations (*Bailliu J. 2000; Bekaert, Harvey & Lumblad 2003; Alfaro & Charlton 2007; Brezigar-Masten & al., 2010*); while, at the other extreme, it is argued that the free flow of capital widens the wealth gap between rich and poor countries and exposes domestic financial systems to the risk of instability (*Chan-Lau & Chen 2001; Nabi & Rajhi 2002; Bouabdellah & al. 2002; Eozenou 2008*). In sum, financial integration gives an access opportunity to world capital markets, provides for a better allocation of savings and investment, and offers more sophisticated instruments to manage risks better. Also, as financial integration process has brought new global challenges to financial systems, it then prepares them to strengthen their macroeconomic fundamentals, revise their legal and regulatory frameworks, and improve the international financial architecture, by adopting a more active role within the global community of central banks, regulators and other authorities.

A large and growing body of work is summarized in Table 1.

2) Financial integration in the Maghreb countries

Integration is essential for the region's development, both in terms of trade and internal cooperation, and for the Maghreb's relations with its external partners, notably the European Union (*Darrat & Pennathur 2002; p 80)*. The Arab Maghreb Union (AMU) was founded on February 1989, when the five member states (Algeria, Libya, Morocco, Mauritania, and Tunisia) signed the constituting treaty. This treaty has the following objectives[1]:

- Progressive implementation of free movement of capital, services, and persons between member states;
- Adoption of a common policy in economic, industrial, financial, agricultural, and commercial terms;
- Establishment of a free trade area with the dismantling of all trade tariff and non tariff barriers among member countries;

[1] Official website of the Arab Maghreb Union: http://www.maghrebarabe.org/fr/uma.cfm, 12/11/2011.

- Creation of a unified custom space with the adoption of a common external tariff with other countries;
- Strengthening the economic partnership in the Maghreb.

Table 1: Summary of evidence on financial integration and economic growth

Studies	Countries	Period	Liberalizatio n measures	Methods	Empirical results
Quinn (1997)	65 20 dvanced countries, 45 emerging economies)	1958-1989	IMF; QUINN index	Cross-section regressions	Capital account liberalization has a positive effect on economic growth
Klein & Oliver (1998)	93	1986-1995	IMF; SHARE	Cross-section; OLS; 2SLS	Capital account liberalization affects positively and significantly economic growth.
Bailiu (2000)	40 developing countries	1975-1995	IMF	Dynamic panel data; GMM; OLS	International capital flows promote economic growth.
Edwards (2001)	61 to 65 (emerging economies and advanced countries)	1975-1997	IMF; NUYCO index; QUINN index	Weighted LS; Weighted TSTS	Capital account openness has positive effects on growth in advanced economies and negative effects at low levels of local financial development.
Edison & al. (2002)	57	1980-2000	IMF; QUINN measure	OLS; 2SLS; GMM; dynamic panel; cross-section	International financial integration does not significantly affect economic growth.
Bekaert & al. (2005)	95 and 75 countries	1980-1997	IMF; QUINN measure	OLS; GMM; cross-section;	Equity market liberalizations increase real economic growth.
Brezigar-Masten & al. (2007)	31 European countries	1996-2004	IMF	GMM; cross-country panel	Financial integration affects positively economic growth.
Honig (2008)	122	1970-2005	IMF; QUINN (1997); Chinn and Ito (2007)	OLS; instrumental variables	Capital account liberalization has significant positive effect on economic growth.
Xiu Yang (2010)	83 (44 developed countries and 39 emerging)	1960-2008	IMF measure	GMM	Financial integration promotes real economic growth.
Hassana, Sanchezb, Yu (2011)	166 countries	1980-2007	Proxy measures	VAR Cross section	Positive relationship

- **"IMF"** restriction measures on capital transactions published by the *International Monetary Fund* in its *Annual Report on Exchange Arrangements and Exchange Restrictions*.
- **"QUINN index"** measures capital account liberalization's intensity; it's comprised between 0 and 4.
- **"SHARE"** represents the proportion of years in which the country had liberalized capital account.
- **"NUYCO index"** measures the *degree of capital mobility*; it can take values goes from 0 through 4, with increments of 0.5. A higher value of this index denotes a higher degree of capital mobility.
- **"OLS":** Ordinary Least Squares estimator. **"2SLS":** Two-Stage Least Squares estimator.
- **"Weighted LS":** Weighted Least Squares. **"Weighted TSLS":** Weighted Three Stages Least Squares.

To strengthen monetary and financial linkages between the five member states, several multilateral economic and financial agreements have been signed on issues relative mainly to regional trade and tariffs, investment guarantees, tax provisions, interbank relationships, and financial settlements. Also, Maghreb region needs to develop a strong institutional framework and make additional progress on trade liberalization and facilitation to foster integration.

In other words, financial integration within Maghreb countries, as for other African countries, can yield benefits via three channels. First, it provides a powerful incentive for domestic financial reforms. Second, it increases the efficiency and profitability of the financial institutions by increasing their scale of operations. Third, it ensures the growth of indigenous financial institutions into regional and global players by increasing their competitiveness competencies in the area of globalization (*The African Development Bank*).

The remainder of the paper is organized as follows. Section 3 shows the empirical analysis on the effects of financial integration on economic growth in Maghreb countries. The first part of this section descries the data and the econometric methodology; while the second part presents the model of this study. Section 4 gives the empirical results.

3) Empirical analysis

3.1 Methodology and data

3.1.1 Descriptive data

Our empirical investigation is based on annual time series data over the period 1970-2009, which represents the longest possible period for which consistent data are available for all variables. Data are selected from the International Financial Statistics (IFS) published by the International Monetary Fund, the CNUCED, UNCTAD stat, the Statistical Economic and Social Research and Training Centre for Islamic Countries (SESRIC), and The Chinn-Ito index.

3.1.2 Methodology

We use the recent developments in time series econometrics to analyze and determine causal relationships between financial integration and economic growth in the three Maghreb countries (Algeria, Morocco, and Tunisia); we examine long-run equilibrium relationship among their respective per capita GDP. This approach will be applied over three stages: we, first, test the stationarity of the variables in the model (Unit Roots tests) for the three countries. Then, we investigate whether the variables are actually cointegrated in long term by using the Johansen cointegration approach. Finally, we test Granger Causality among variables.

3.2 Regression specification

From the examination of theoretical and empirical literature review, aimed to study the effect of financial integration on economic growth, we specify the model of our study. It is as follows:

$$\boldsymbol{Y_{i,t} = \alpha\ FDI_{i,t} + B\ M2_{i,t} + \delta\ Topen_{i,t} + \lambda\ Kaopen_{i,t} + \varepsilon_{i,t} \qquad i = \{1, \ldots, N\}}$$

where $Y_{i,t}$ is the endogenous variable of the model; it represents the logarithmic growth in real GDP per capita for country i in year t. Analysis covers the period 1970–2009. $M2_{i,t}$ represents Money Supply as a share of per capita GDP; it measures the development of financial system. $FDI_{i,t}$ represents Foreign Direct Investment as a share of GDP; it's used to measure the inflows of capital. $Topen_{i,t}$ variable represents Trade Openness of the 3 Maghreb countries; it measures the openness degree of financial system. $Kaopen_{i,t}$ variable measures the extent of openness in capital account transactions. $\varepsilon i,t$ is the error term.

4) Empirical results

Using the econometric methods outlined above, this section presents regression results about the relationship between international financial integration and economic growth. Table 2 assembles the results from the Augmented Dickey-Fuller and Phillips-Perron tests over the estimation period 1970-2009.

Table 2: Unit Root Test Results (sample period: 1970–2009)

ADF Test		PP Test	
"in 1st Differences"	**t-Statistic**	**"in 1st Differences"**	**t-Statistic**
Lny_a	-3.843***	**Lny_a**	-4.067***
Lny_m	-8.895***	**Lny_m**	-9.156***
Lny_t	-3.962***	**Lny_t**	-3.894***
Lnx_a	-4.851***	**Lnx_a**	-4.859***
Lnx_m	-4.961***	**Lnx_m**	-4.861***
Lnx_t	-4.346***	**Lnx_t**	-4.249***
Lnz_a	-12.072***	**Lnz_a**	-11.762***
Lnz_m	-9.998***	**Lnz_m**	-13.266***
Lnz_t	-7.917***	**Lnz_t**	-19.609***
Lnopen_a	-5.104***	**Lnopen_a**	-4. 079***
Lnopen_m	-6.119***	**Lnopen_m**	-6.119***
Lnopen_t	-4.851***	**Lnopen_t**	-4.998***
Kaopen_a	-10.719***	**Kaopen_a**	-9.952***
Kaopen_m	-6.000***	**Kaopen_m**	-6.251***
Kaopen_t	-6.000***	**Kaopen_t**	-6.000***

A: Algeria, M: Morocco, T: Tunisia, Y: Gross Domestic Product, X: Money Supply (M2) to per capita GDP, Z: Foreign Direct Investment (FDI) to GDP, OPEN: Trade Openness.

***: variable stationary at significant levels at 1%, 5%, and 10%.

From the Table 2, we observe that both ADF and PP tests suggest that all variables representing the three Arab Maghreb countries are nonstationary in level (i.e., all series contain unit roots). These variables become stationary at 1st differences in both ADF and PP tests. Thus, each variable is integrated of the first-order, commonly dubbed as I (1).

Table 3: The Johansen Cointegration test results (sample period: 1970–2009)

Null hypotheses	**The Trace Test**				**The Maximal Eigenvalue Test**			
	Alternative hypotheses	**Test statistics**	**CV (5%)**	**CV (1%)**	**Alternative hypotheses**	**Test statistics**	**CV (5%)**	**CV (1%)**
Panel A: Cointegrating system Y_A, Y_M, Y_T								
$r = 0$	$r \geq 1$	32.52**	29.79	30.45	$r = 1$	22.31**	21.13	21.86
$r \leq 1$	$r \geq 2$	10.20	15.49	19.93	$r = 2$	8.65	14.26	18.52
$r \leq 2$	$r = 3$	1.55	3.84	6.63	$r = 3$	1.55	3.84	6.63
Panel B: Cointegrating system M2_A, M2_M, M2_T								
$r = 0$	$r \geq 1$	37.29**	29.79	35.45	$r = 1$	25.15**	21.13	23.86
$r \leq 1$	$r \geq 2$	14.14	15.49	19.93	$r = 2$	11.65	14.26	18.52
$r \leq 2$	$r = 3$	0.53	3.84	6.63	$r = 3$	0.53	3.84	6.63
Panel C: Cointegrating system FDI_A, FDI_M, FDI_T								
$r = 0$	$r \geq 1$	18.95	29.79	35.45	$r = 1$	11.59	21.13	25.86
$r \leq 1$	$r \geq 2$	7.36	15.49	19.93	$r = 2$	5.74	14.26	18.52
$r \leq 2$	$r = 3$	1.61	3.84	6.63	$r = 3$	1.61	3.84	6.63
Panel D: Cointegrating system Topen_A, Topen _M, Topen _T								
$r = 0$	$r \geq 1$	18.85	29.79	35.45	$r = 1$	11.34	21.13	25.86
$r \leq 1$	$r \geq 2$	7.50	15.49	19.93	$r = 2$	6.67	14.26	18.52
$r \leq 2$	$r = 3$	0.82	3.84	6.63	$r = 3$	0.82	3.84	6.63

Panel E: Cointegrating system Kaopen_A, Kaopen _M, Kaopen _T								
$r = 0$	$r \geq 1$	27.74	29.79	35.45	$r = 1$	18.63	21.13	25.86
$r \leq 1$	$r \geq 2$	9.11	15.49	19.93	$r = 2$	8.23	14.26	18.52
$r \leq 2$	$r = 3$	0.87	3.84	6.63	$r = 3$	0.87	3.84	6.63

r denotes the number of the cointegration rank.

** Rejection of the hypothesis at the 5% level.

Besides, table 3 reports the Johansen test results. Panel A presents the GDP cointegration results of the three countries, panel B gives the results for the supply money, panel C reports the capital inflows using Johansen test, panel D presents cointegration trade openness results, and panel E reports kaopen cointegration test.

The observation that we can check from the table above is that both the trace and the maximal eigenvalue statistics of the cointegration test are sufficiently large to reject the null hypothesis in the three panels at the 5% level of significance; this result applies only for GDP (Y variable) and M2. This means that the cointegration approach shows a strong long-run relationship between economic growth and the development of banking system for the three countries.

On the other hand, cointegration tests of the five variables for each country give us the following results:

Algeria: Y = 0.132 M2 – 0.205 FDI + 2.974 Topen - 0.402 Kaopen

Morocco: Y = 0.120 M2 + 0.285 FDI - 1.909 Topen + 0.007 Kaopen

Tunisia: Y = 0.259 M2 – 0.471 FDI + 0.941 Topen + 0.578 Kaopen

From regression results, we observe that regarding Money Supply variable (M2), the coefficient is always positive and significantly different from zero for the three Maghreb countries; this may justify the positive effect of the development of banking and financial system on economic growth of concerned countries. Therefore, it can be argued that these results support the hypothesis that increased financial integration leads to increase development of domestic banking system. Likewise, we can say that trade openness is positively associated to real per capita GDP in Algeria and Tunisia; while, it is negative in Morocco.

We can check also the observation that Foreign Direct Investment (FDI) is an important factor which contributes to increase economic growth of Morocco; however, the contribution of FDI in Algerian and Tunisian economic growth is negative. Moreover, results show that *Topen* (which is one of important components of financial integration) promotes economies of these 2 countries. Besides, the openness of capital account transactions (*Kaopen*) affects positively economic growth of Morocco and Tunisia; nevertheless, its impact on Algerian economic growth is negative.

After testing variables stationarity and examining the cointegration relationships between them, we test the Granger Causality for the variables pertaining to each Maghreb country. We deduce that financial development and financial integration causes economic growth in the Maghreb countries and not the opposite. Finally, we can assert that countries with higher initial per capita GDP have a developed and deepened banking and financial system.

Conclusion

After reviewing theoretical and empirical literature on the relationship between financial integration and economic growth, this paper examines empirically this relationship in three Maghreb countries using cointegration time series method over the period 1970-2009. Financial integration, mainly reflected in increased competition in domestic markets, has contributed to a more developed local financial system.

Although the results are not robust, the evidence suggests that there is a positive relationship between the degree of financial integration and economic growth. We assert that even though some variables are unsuccessful in explaining economic growth of Maghreb countries, the analysis indicates that these variables (such as trade openness and foreign direct investment) are important factors to increase economic growth. In sum, the main result is that the beneficial effects of financial integration on growth come mainly through fostering the development and the deepening of domestic financial system.

Finally, we can say that although the economy of each Maghreb country has achieved, these recent years, significant steps leading them to achieve higher level of development, it remains nevertheless that these countries should elaborate

structural economic policies especially on the commercial, banking and financial plans. They must also remove all obstacles to free movement of persons, goods and capital, then create a common currency and establish a free trade area.

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Appendix

Table 4: Description of the variables (Available for all countries from 1970 through 2009)

Variable	Definition	Source
GDP growth	Growth of real per capita gross domestic product.	Intarnational Financial Statistics (IFS); The Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC).
FDI (% of GDP)	Direct Foreign Investment flow as % of GDP. This variable measures the inflows of capital in countries.	CNUCED UNCTADstat
M2 (% of GDP)	Money and quasi money (M2) as % of GDP: comprises the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government. This variable measures financial market development.	IFS SESRIC Data base
Topen (% of GDP)	Trade Openness (Export and import volume of goods and services) as a share of GDP. This variable measure the openness degree of domestic banking and financial system.	SESRIC Data base
Kaopen	This variable measures the extent of openness in capital account transactions.	The Chinn-Ito index 2009