Capital account liberalization, financial development, and Growth: Panel Data Analysis for Maghreb Arab Countries

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Abstract— **This paper provides an empirical analysis on the role of financial integration on economic growth via channel of financial development. Our empirical investigation on a sample of three Maghreb countries (Algeria, Morocco and Tunisia) and, using panel data analysis for the period 1980-2012. The estimation results show that the liberalization of the capital account is a good factor to promote economic growth, but only in those economies whose financial sector has reached a certain level of development.**

Index Terms— **Capital account liberalization, Financial development, Economic growth, Maghreb countries, The panel data econometrics.**
   JEL codes: F36, F43, O55, C23

I. INTRODUCTION

The international financial system is characterized by a process of financial globalization, liberalization and privatization, which brings us to the phenomenon of international financial integration. The appearance of the latter, which is often associated with growth of trade and financial flows, has accelerated significantly over the past two decades. Economic theory suggests that capital mobility has the potential to achieve the best return on savings, to borrow at more favorable rates, and diversify the country's specific risk. There are also more subtle benefits related to the impact of capital account liberalization on the efficiency and development of the country's financial system. Recent works on the importance of financial development for economic growth highlight the potential value of this channel.

In this context, the study of the relationship between financial integration and economic growth still is of particular interest. Some economists suggest that the liberalization of the capital account positively affects growth S. Fischer (1998), Mr. K. Obsfeld and Rogoff (1998), L. Summers (2000), B. Eichengreen (2001). However, other authors like D. Rodrik (1998), J. Bhaghwati (1998) J.Stiglitz (2002) consider that financial openness, in some cases, can be very dangerous.

The econometric methodology used in this paper is distinguishes by the use of panel data. The addition of the individual dimension to the usual time dimension is of major interest for the analysis of time series. Thus, our goal in this work is to test the correlation between capital account liberalization and economic growth while focusing on the role of financial sector development. To do this, the second part of this article will discuss the liberalization of the capital account of the theoretical and empirical interface, and its relationship with the economic growth. The econometric validation will be

announced in the third section. Our results will be the subject of the fourth section.

II. LITERATURE REVIEW

The relationship between capital account liberalization, financial development and macroeconomic performance has been the subject of many econometric studies:

In their study *Klein and Olivei G. (1995/2006)* adopt a slightly different method compared to other work done in this domain. They interest first on the role of financial integration on financial development and then analyze the impact of this development on economic growth. For a sample of 80 developed and developing countries over the period 1986-1995, the liberalization indicator used is "Share," the authors observe that the liberalization of capital movements positively affect financial development, as regards the effect of financial integration on economic growth, they conclude a beneficial effect of the liberalization of capital movements on economic growth but only for industrialized countries.

On a wide range of developed and developing countries, *De Gregorio (1999)* studied the relationship between financial integration, financial development and economic growth. Using a large number of indicators of financial development and financial integration over the period 1960-1993, the results of the study indicate that there is a positive relationship between the degree of financial integration and financial development economic growth. The author also found that the beneficial impact of financial openness on economic growth mainly due to the deepening of the financial system.

In his study, *Baillu (2000)* analyzed the impact of private capital flows on economic growth for a sample of 40 developing countries over the period 1975-1995. The author concluded that capital inflows promote economic growth beyond the simple effects they produce on the level of investment, but only in economies whose banking sector has reached a certain level of development. And according to this study, it would be the combination of financial depth and the flow of capital that would affect growth.

The purpose of Article *Edwards (2001)* is to empirically analyze the relationship between capital mobility and economic performance in the global economy. The author is particularly interested in two related questions: (a) that there is evidence that a higher mobility of capital is associated (after adjustment for other factors) with stronger growth? (b) What is the relationship between capital mobility and growth is different for emerging and developed countries? by Using two economic performance measures: growth of GDP and the growth of total factor productivity in the 1980s and for a sample of sixty-two countries, the results of Edwards suggests that the effects of the liberalization of account capital on economic performance depends on the degree of development of an economy.

More recently, *J. Butkiewicz and H.Yanikkaya (2008)* show that the full opening of the capital account affect positively and significantly economic growth in developed countries. In contrast, in the case of developing countries, the results show that financial openness has no effect on growth. As S. Edwards (2001), the authors emphasize that the effects on growth depend on the economic development of countries and their ability to attract capital flows from long-term (including IED), and they highlight the importance of "quality" of human capital. In their study, the authors used data on one hundred to fourteen developed and developing countries (excluding their sample countries in transition by considering them as countries exporting oil) and the period from 1970 to 1997.

The document of *Brezigar-masten and AL (2010)* provides an empirical analysis of the role of financial integration and financial development on economic growth of thirty-one European countries for the period 1996-2004, and that, by distinguishing between periods of financial crises and "in a normal period". The results of the study confirm a positive

and significant effect of financial integration and financial development had on economic growth. These estimates also show that the degree of financial openness tends to reduce the financial crises contraction effect.

III. THE LIBERALIZATION OF THE CAPITAL ACCOUNT IN THE MAGHREB REGION: AN OVERVIEW

Before turning in detail to the empirical validation, it is useful to present the growth and level of development and integration of the financial systems of the three Maghreb countries.

Economic growth

Taking advantage of the reforms of economic liberalization and privatization implemented in different economic branches from the early 90s, economic growth has boomed in recent years some. Table (2.1) presents some basic data on these three countries of the Maghreb region.

**Table (2.1): Statistics on the Maghreb countries in 2014**

Country	GDP (billion **USD**)	GDP per capita (USD)	Inflation rate (%)	OPEC Y / N	WTO Membership Year
Algeria	227,80	5.886	3,2	Yes	/
Morocco	122,55	3.392	1,1	Not	1995
Tunisia	49,12	4.467	5,7	Not	1995

Source: IMF - World Economic Outlook Database -

Financial development:

The governments of the Maghreb countries have launched in the last decade of upgrade programs and restructuring of their financial systems to create the ideal conditions for the growth and development of their banks and financial markets for greater participation and a greater role in the economy. The following diagram shows the level of financial development in the three Maghreb countries, measured through the indicator "Domestic credit to the private sector".

Figure (2.1): Financial development in the three Maghreb countries, as measured by "domestic credit to the private sector", 1990-2012
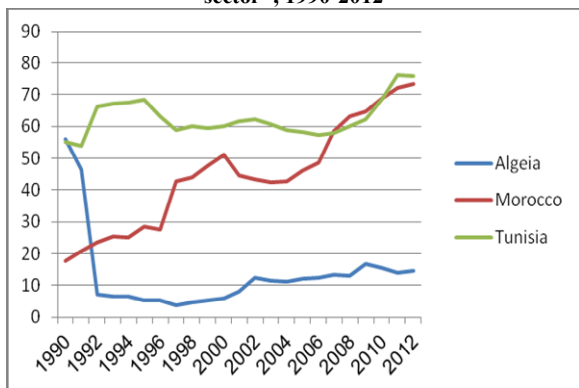
Source: World Development Indicators (WDI)

From the graph, we see that there are significant differences between financial development levels of the countries of the region. Indeed, the financial systems of Tunisia and Morocco have spent from a small initial position of financial development at considerable financial deepening process in

recent years. This can be explained by the inexistence of stock markets before the transition to a market economy. Compared to these two countries, the financial system of Algeria remains shallow.

The liberalization of the capital account

The revival of the Arab Maghreb Union (AMU) becomes an indispensable and crucial step to strengthen economic growth in the region. The following figure shows the dynamics of the process of financial integration in the three countries of the AMU during the period 1990-2012

Figure (2.2): Dynamics of financial integration in the Maghreb countries (1990-2012)
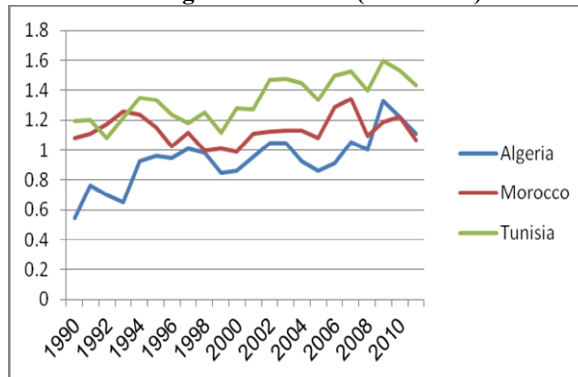
Source : Lane and Milesi-Ferretti database

We can observe that from the 90s, these countries have made considerable progress in the context of improving their integration levels with the exception of Algeria that has begun to make progress that at the end of the 90s due to the security

crisis that lived the country. Despite the economic and financial integration between Maghreb countries is an option that can guarantee the greatest economic gains, it is not a realistic strategy for those countries, at least in the short term.

3. EMPIRICAL INVESTIGATION TEST

This econometric analysis attempts to examine, based on panel data, the impact of capital movements on economic growth in the three Maghreb countries namely Algeria, Morocco and Tunisia while emphasizing the role of the financial sector in the relationship between financial integration and economic growth, and that, during the period 1980-2012. The benefit of estimates conducted on panel data relative to estimates in instant cuts from the temporally series analysis is to take into account the temporal and individual dimensions of data.

3.1 The methodology of the study

In this part, we will deal econometrically the relationship between financial integration and economic growth. To do this, we will use the methods of estimating panel data. Indeed, there are several methods for estimating panel data, namely, an estimate by estimation by ordinary least squares, estimation with fixed effects; or estimation with random effects. Given that the technique (OLS) may be biased if the inherent heterogeneity of the country is neglected, the tests showed that generally models with fixed or random effects provide a better fit. It should so, what is the right model for our sample (fixed effect model or random effects). To do this, we will conduct an analysis of the Hausman test of specification

***Test of Haussman*:** The Hausman test (1978) compares the estimators fixed effects model with those obtained using the random effects model. Divergence of estimators indicates the presence of a correlation between the explanatory variables and the individual effects. This correlation is tested by the following hypothesis:

$$H_0: E(\alpha_i/X_i) = 0$$
$$H_1: E(\alpha_i/X_i) \neq 0$$

H_0 Indicates that the model can be specified with random individual effects and we retain in this case the estimator MCG.

The alternative hypothesis H_1, indicates that the model must be specified with fixed individual effects and then we retains *Within* estimator.

3.2 Model specification

By inspiring on different studies realized in this wake, we specify the model of our study as follows:
Growth = ƒ (FI, FD, X) + εit
$GDP_{it} = \alpha + \beta\,FI_{it} + \delta\,FD_{it} + \gamma\,X_{it} + \varepsilon it$
Or:

GDP_{it} : Represents the endogenous variable of the model "economic growth", it is measured by gross domestic product per capita of country i in period t.

FI_{it} : represents financial integration measured by Kaopen indicator, a qualitative indicator developed by Dr. H. Chinn

and Ito (2002), it measures the degree of openness of the capital account transactions.

FD_{it} : represents financial development. In our study, we focused on two indicators of financial development namely:
Credit granted to the private sector as a percentage of GDP (DCSP): This indicator refers to financial resources provided to the private sector, including through loans, purchases of securities other than shares, trade creditors and other receivables that constitute claims to repay. It reflects the level of financial development of the country. Indeed, more the financial system is developed, more growth is high.
The broad money as a percentage of GDP (M2): a liquidity indicator, which represents the currency and quasi money as a percentage of GDP. It reflects the level of financial development.

X_{it} : represents the matrix of control variables. Indeed, the model is complemented by a series of macroeconomic variables usually introduced controls in such estimates. These are :
The inflation rate (INF): This indicator is measured by the annual change in the consumer price index. He is chosen as a proxy to capture the level of macroeconomic stability of a country.
Trade openness (OPEN): This indicator measures the degree of openness of the economy. It corresponds to the sum of exports and imports reported to GDP.
εit : the error term.
The complete formulation of our model is as follows:

$$GDP_{it} = \alpha + \beta\,FI_{it} + \delta_1\,DCPS + \delta_2 M_2 + \gamma_1\,INF + \gamma_2\,OPEN + \varepsilon_{it}$$

4. ESTIMATION RESULTS AND INTERPRETATIONS:

We present in this section the estimation results of our growth equation, at first we carried out the Hausman test by using EViews 6.0 software. The following table presents the main results of the Hausman test.

Table 01: Test Hausman specification

P-Value	Valeur du test (Chi-Square.Statistic)
0.0000(*)	194.066879

(*) denotes the level of significance at the threshold of 5%
Source: personal elaboration from the estimation results

According to the estimation results, the Hausman test statistics indicate that $X^2(3) = 194.066879$. The P-value is less than the 5% level of confidence, so the estimates retained for the model of our study will those of the individual fixed effects model.
The following table presents the estimation results of the fixed effect model:

Table 2: Results of the panel estimation with effects specific fixed

Dependent variable: growth in real GDP per capita (GDP)	
Période : 1980-2012 ; T = 33 ; N = 3 ; Total panel observations : 33×3 = 99Obs	
Explanatory variables	**Regression**
Constant	-1457.319 (-2.978863)
FI	3.06E-07 (1.063368)
DCPS	-8.069840 (-1.225572)
M2	26.81487 (3.084144)
OPEN	38.24965 (4.793957)
INF	-27.14377 (-2.097222)
R^2	0.649848
Adjusted R- squared	0.622913
Prob (F- statistic)	0.000000 24.12669

Notes: The statistics that are in parentheses:
*** Significant the threshold 1% at most, ** Significant the threshold 5% at most, and * significant the threshold 10% at most.
Source: personal elaboration from the estimation results

The coefficient of determination (R 2) is 61.32%, the explained variance represents approximately 61% of the total variance, so there is a strong relationship between the explanatory variables and endogenous variables.
The value of the probability of the Fisher statistic is 0.0000; it means that the model is overall significant.

The indicator representing financial integration between the three countries of the Maghreb region (IF) is positive but insignificant sign. This result indicates that there is no significant effect of financial integration in economic growth in these countries.

The DCPS variable that expresses the credits granted by banks and other financial intermediaries to the private sector is not significant and negative. This result means that despite the financial and banking reform implemented in the Maghreb region, the private sector does not affect significantly economic growth in this region, and this can be explained the absence of a market financial and banks specialized in financing investments.

We also find that the M2 variable significantly and positively affects economic growth. More specifically, the increase in liquidity, carried out by the banks - because of the implementation of the liberalization of the banking and financial sectors in the Maghreb region - a relatively involved in stimulating economic growth.

The indicator (OPEN) appears with a positive and significant sign. This result indicates that trade openness contributes positively to economic growth in those countries but with a rate that is very low, and that, because of the reduced volume of trade transactions between them.

The coefficient associated to inflation rate is negative but insignificant. This can be explained by macro economic instability in some countries of the region. This is complies with theoretical predictions made on the subject [*Schneider and Frey (1985), Urata and Kawai (2000) and Ngouhouo (2005)*]. Indeed, high inflation may introduce distortions in the choice of productive investment by disadvantaging investments which will negatively impact economic growth.

CONCLUSION

The integration of the Maghreb has become a vital economic necessity in a complementary context. The revival of the Arab Maghreb Union (AMU) could be a powerful lever to lend credibility to the partnership with the European Union and to enhance the attractiveness of the region for FDI flows, for its positive effects on regional stability and expansion of the market size. Today, despite a clear complementarity between the economies of Maghreb, the economic and trade inter maghrébins remain low in relation to their foreign trade with the European Union.
In this work, we tried to see how the development of the financial system is a key determinant of long-term growth in developing countries and, therefore, an indirect transmission channel between the liberalization of the capital account and economic growth in these countries. Based on an estimate by the econometric techniques of panel data for a sample of three

countries in the MENA region (Algeria, Tunisia, Morocco) over the period 1980 to 2012, we are reaching the conclusion that financial integration, the development of the financial sector, macro economic policies and open trade can play a leading role in the growth of real GDP. Specifically, the results show that financial integration can help to promote economic growth only in economies whose financial sector has reached a certain level of development. These results suggest that the financial sector plays a central role with regard to the ability of international capital flows to promote economic growth in these countries.

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