Institutional Development and Financial Deepening, Evidence from the Middle East and North Africa Region (MENA)

BADRY Hechmy (PhD)
University of Tunis el Manar,
Faculty of Economic Sciences and Management of Tunis,
Department of Quantitative Methods, Tunisia
Badrihechmi2013@gmail.com

Abstract
This article aims to estimate the effect of the institutional development on financial deepening in MENA countries over the period 1996-2013. Drawing on Demetriades and Luintel (1996) and Ito (2005), the econometric approach used is based on the GMM. The autocorrelation test of errors of Arellano & Bond (1991) and over-identification test of Sargan on dynamic panel data showed considerable delay in this group of countries in terms of financial development compared to other several emerging countries of Asia and Latin America, and shows the negative effect of the low level of institutional development on financial deepening.

Indexing terms/Keywords
Financial deepening, Institutional development, MENA, GMM.

Academic Discipline and Sub-Disciplines
Econometric, Economic and Finance Discipline

SUBJECT CLASSIFICATION
Economic Subject Classification

TYPE (METHOD/APPROACH)
Econometric Analysis

1. INTRODUCTION
The considerable delay in the financial sector in MENA countries compared to some emerging countries of South East Asia (Malaysia, South Korea countries and Latin America can be explained by the weak institutional development.

Some studies show the important role of different political systems (Laporta et al, 1996), the institutional framework (Engemant & Sokoloff, 1996; Chinn & Ito, 2002), the development of telecommunications infrastructure, computing and sectoral policies (Merton, 1992) on the quality and structure of financial institutions in a country.

The objective of this study is to analyze the impact of the institutional and legal development of the MENA countries on their financial development through five sections. The second section recalls the main theoretical and empirical outcomes of the relationship between institutional development and financial deepening. Section three presents the empirical analysis, followed by a description and a discussion of results in section four. Section five concludes.

2. REVIEW OF THE THEORETICAL AND EMPIRICAL LITERATURE
The literature on the relationship between financial development and institutional development can be divided into three schools of thought, as she uses the legal system, political factors or social capital to explain the level of financial development.

2.1. Legal system and financial system: the theory of law and finance
Taking account of the legal and institutional framework can help explain the difference in the level of financial development observed between countries. In a country where the legal and judicial system strictly enforces the rights of private property, execution of contracts between economic agents and the protection of legal rights of investors, shareholders and investors, the financial markets are growing (La Porta et al, 1998; Beck & Levine, 2004). Indeed, such a system will restore confidence among the various economic agents (depositors, shareholders, investors). Investors will increase their deposits with financial institutions, and this can lead to the higher levels of investment. According to the study of Wurgler (2000), countries where the rights of creditors and shareholders are respected, benefit from an efficient allocation of credit against those countries where these rights are not respected. So fewer the judicial and legal system of a country is developed, plus savings and investment levels are low than Investors and shareholders are “afraid”; which results under the financial development and reducing economic growth. By collecting data on firms in 20 countries love (2000) shows
that financial constraints are more developed in countries where the legal and judicial system is broken (origin of legislation, effectiveness of the legal system, risk of expropriation, corruption.). The study of La Porta et al (1998) show that the common law is more inclined to promote financial development, compared with other legislations (French civil rights English and Scandinavian).

2.2. Importance of political factors

Political factors can play a major role in determining the level of financial development in a country. When a group of people holds power, it creates an environment (political, institutional, and economic) that is profitable to him. The work of Rajan & Zingales (1998) show that when the ruling class of a country is strongly constituted landowning aristocrats, financial markets are poorly developed. But when the power is largely owned by the businessmen (traders, business leaders, industrialists, etc.), financial markets develop. Indeed, the business need financial resources to boost their economic activities. They will therefore establish a climate or an environment conducive to the attraction of capital based on the thesis of Gunnar Myrdal (1963), Touna mana (2006) shows that it is necessary and desirable to establish a "strong state" and kill the "soft state". Corruption, mismanagement, incompetence and inefficiency of public services, administrative delays, Failure to respect the laws, misappropriation of public funds that characterize a "soft state" slashing financial development in many African countries. Indeed, in a "soft state", the political powers may destabilize the functioning of financial markets since they borrow excessively from financial institutions without repaying the credit.

2.3. The role of social capital

In the social science literature, the term social capital has several connotations. The terms usually used in the definition are: cooperative norms (Putnam, 1993; Knack & Keefer, 1997), confidence (Putnam, 1993; Knack & Keefer, 1997) and networks that enable people to act collectively (Putnam, 1993). The effectiveness of a market economy based on perfect information. Financial markets are imperfect (Stiglitz & Weiss, 1981) and characterized by information asymmetries between lenders and borrowers.

In the presence of imperfect information situation in the financial markets, the moral qualities (confidence, loyalty, etc.) can play an important role in financial development. Many exchanges between economic agents are made on the basis of confidence that enables a considerable reduction of transaction costs, costs of monitoring and information costs (Fukuyama, 1996). So confidence is the natural complement of institutions (Knack & Keefer, 1997). The loss of confidence of economic agents (depositors and lenders), resulting from the fear of non repayment of the loaned capital and distrust of institutions and financial contracts, leads to a decrease in lending to the economy, also the narrowness of the financial markets.

It is clear that the confidence of economic agents against established financial contracts and the economic and institutional environment plays a major role in the development of financial markets even in case of non compliance with laws (Calderon, Chang, Galindo, 2001). By analyzing the effect of confidence on financial deepening in areas of northern and southern Italy, studying Guiso et al (2004) found that in areas where confidence between economic agents is high, individuals have easy access to credit, investment rates are high, and the use of informal financial market is weak. The development and success of informal finance in many countries are based on family, community and social ties and confidence between these individuals.

3. EMPIRICAL ANALYSIS

3.1. Estimating dynamic model

The basic equation used for the econometric estimates is based on the work of Demetriades & Luintel (1996) and Ito (2005) on financial development.

The dynamic equation is presented as follows:

$$FD_{it} = \alpha FD_{i,t-1} + \beta ID_{i,t} + \gamma X_{i,t} + u_t + \nu_t + \epsilon_{i,t} \quad (1)$$

Where:
- $FD_{it}$: financial development in country i at time t;
- $ID_{it}$: institutional development in country i at time t;
- $X_{i,t}$: a vector of control variables such as GDP per capita (PIB), inflation (INF), a composite index of financial liberalization (FLI);
- $u_t$: the country-specific effect;
- $\nu_t$: specific temporal effect;
- $\epsilon_{i,t}$: the error term.
3.1.1. The composite index of financial development (FD)

Several financial development indicators have been identified in the literature since the work of King & Levine (1993). But due to the availability of statistical data, this study makes use only of these financial development indicators: the money supply to GDP ($M_2$ / GDP), and, private sector credit to GDP (PSC / GDP). We know that financial development refers to a strong mobilization of savings and the financing of the economy by the financial institutions. $M_2$ / GDP captures the mobilization of savings, while (PSC / GDP) is used to measure the financing of the economy. These two indicators were built from statistical data of the World Bank. To capture overall financial development, it seemed appropriate to calculate the composite index; the latter is obtained in the following manner:

\[
FD_t = \frac{1}{2} \left( \frac{M_2_t}{PSC_t} + \frac{PSC_t}{PIB_t} \right) \tag{2}
\]

3.1.2. The index of financial liberalization (FL):

We used the index of financial liberalization International Monetary Fund, which in fact is calculated as the sum of 7 indicators: credit control; interest rate controls; Barriers to entry; banking supervision; privatizations; exchange control and regulation of Financial Markets.

3.1.3. The index of institutional development (ID):

Institutional Development Index is a composite index of five institutional development indicators: Institutional Development Index is a composite index of five institutional development indicators previously used by Kaufmann and al (2007): Control of Corruption (CC), political stability (PS), rule of law (RL), regulatory quality (RQ), and government effectiveness (GE). and which is obtained as follows:

\[
ID_t = \frac{1}{5} (CC_t + PS_t + RL_t + RQ_t + GE_t) \tag{3}
\]

3.1.4. Macroeconomic variables

Macroeconomic variables considered in the context of this work are: GDP per capita and inflation:

- GDP per capita: GDP per head which captures economic growth can pose a causality problem. However, the use of GMM overcomes this difficulty. Indeed, some studies have shown that economic growth affects financial development (Schumpeter, 1992; King & Levine, 1993; Beck, Levine & Loayza, 2000) while others (Joan Robinson, 1952) revealed the opposite.

- Inflation (Inf): Taking into account inflation in the analysis due to the fact it is likely to influence economic decisions especially in terms of placement. Indeed, a high inflation rate may discourage the use of financial intermediation, and encourage investment in real assets (such as real estate, gold, oil, etc.). The level of inflation is often considered an indicator of financial repression, particularly because of seigniorage (McKinnon, 1973). These data come from WDI.

The data used in this study came mainly from the World Bank database.

3.2. Estimation method: GMM

Dynamic models are characterized by the presence of one or more lagged values of the endogenous variable among the explanatory variables. In this model, the presence of the lagged dependent variable does not allow use the standard econometric techniques.

The estimation of dynamic models by traditional methods (OLS and Within) gives biased and not converging estimations because of the correlation between the lagged endogenous variable and the residual term. To circumvent this difficulty, various techniques exist such as the FMPLS method (Fully Modified Ordinary Least Squares) initially proposed by Philips and Hansen [1990], the DOLS method (Dynamic Ordinary Least Squares) of Saikkonen [1991] and Stock and Watson [1993], and the Generalized method of Moments (GMM) developed by Arellano and Bond [1991].

Pedroni [1996] and Kao and Chiang [1999] showed that, in the case of panel data, the first two techniques lead to estimators asymptotically distributed as a standard normal distribution. However, Kao and Chiang [1999] argue that the estimate by OLS in finite sample, has a bias problem and that FMOLS estimator does not improve substantially the OLS estimator. They then conclude in terms of superiority of DOLS estimator, in the estimation of cointegration relationships on panel data.

The GMM method can not only take into account the heterogeneity of countries but also to treat the problem of endogeneity of variables, which necessarily arises when studying the relationship between institutional development and financial deepening.
The procedure Arellano-Bond [1991] consists in rewriting the initial equation in first differences, eliminating the individual fixed effects, and to use as instruments for differentiated series their own lagged levels. This method improves the estimate by instrumental variables of Anderson and Hsiao [1982] by reference to a set of orthogonality conditions defining optimal GMM estimators. It solves Moreover, the delicate choice on the list of instruments.

it should be noted that this first version omits a set of orthogonality conditions that can be found by considering a system constituted of two equations. In the equation in first differences, the variables are instrumented with their values in level lagged by at least one period. In contrast; in the level equation, variables are instrumented by their first differences. The resulting system of equations is estimated simultaneously using the GMM.

Blundell and Bond [1998] tested this method using Monte Carlo simulations. These authors found that the estimator of GMM system is more efficient than the GMM-difference of Arellano-Bond [1991]. This last produces biased estimators for small samples. The bias is even more important that the variables are persistent over time, the specific effects are important and that the time dimension of the panel is low.

The efficiency of the GMM estimator based on the assumptions that there are no 2nd order autocorrelation in the errors of the equation in first differences and that the instruments are valid. To test the validity of the lagged variables as instruments, Arellano and Bond [1991] Arellano and Bover [1995] and Blundell and Bond [1998] suggest the test of over-identification of Sargan. To test the hypothesis of non-correlation of error terms, these authors suggest a second order autocorrelation test, because by Construction the first term difference in error is correlated in the first order, but it is not to be in second order.

To summarize we can say that, GMM methods in dynamic panel have several virtues: they solve the problems of simultaneity bias, reverse causality and omitted variables. The GMM is better than the OLS estimator. There are two forms of GMM estimators in dynamic panels: the first difference GMM estimator and the GMM estimator system.

The model Arellano and Bond [1991] propose an GMM estimator first difference. It involves taking for each period the first difference of the equation to be estimated to eliminate specific country effects, and instrument thereafter the explanatory variables of first difference equation by their values level lagged one period or more. The model of Blundell & Bond (1998) determine a GMM estimator system that combines the first difference equations with the level equations where the variables are instrumented by their first differences. The GMM estimator system seems better than the first difference GMM estimator since it gives biased results in the case of finite samples when instruments are weak.

For all these reasons, we chose here, and according to the most current empirical work for the implementation of the estimate recommended by Blundell and Bond [1998].

4. RESULTS AND DISCUSSION

We started with the autocorrelation test errors, the Sargan over-identification test and stationary test panel data. In a second step we conducted the estimation of results by the method of Arellano & Bond (1991).

The Hansen test does not reject the hypothesis of validity of the lagged variables in levels and in differences as instruments. The error autocorrelation test involves not reject the hypothesis of autocorrelation of errors.

4.1. Stationarity test panel data of Im-Pesaran-Shin

We have chosen to use the stationary test of Im-Pesaran-Shin(2002) (IPS) which is the most used due to certain relative advantages it has compared to other stationarity tests. For example, unlike the test Levin & Lin (1992), the IPS test authorizes under the alternative hypothesis an heterogeneity of the autoregressive root and an heterogeneity regarding the presence of a unit root in the panel.

ADF stationarity tests are applied separately for each country in the model, and the model can be written:

\[ \Delta Y_{it} = \alpha_i + \rho_1 Y_{it-1} + \sum_j \beta_{ij} \Delta Y_{it-j} + \epsilon_{it} \]  
\[ \Delta Y_{it} = \alpha_i + \rho_1 Y_{it-1} + \delta_1 + \sum_j \beta_{ij} \Delta Y_{it-j} + \epsilon_{it} \]

Where:
- \( \alpha_i \) is the individual effect,
- \( \epsilon_{it} \rightarrow N(0, \sigma^2) \), \( i=1,2...N; t=1,2...T \)

The IPS test consists in testing the hypothesis of non stationarity for all country:

\( H_0 : \rho_1 = 1 \)
Against hypothesis of stationarity for at least one country:

$$H_1: \rho_i < 1$$

IPS-t statistic is the average of N-ADF individual statistics. The results of the IPS test (2002) stationary panel are shown in the following table.

### Table 1. Im-Pesaran-Shin stationarity test

<table>
<thead>
<tr>
<th>Variable</th>
<th>FD</th>
<th>FL</th>
<th>ID</th>
<th>GDP</th>
<th>INF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model without trend</strong></td>
<td>I(1)</td>
<td>I(1)</td>
<td>I(1)</td>
<td>I(1)</td>
<td>I(1)</td>
</tr>
<tr>
<td><strong>Model with trend</strong></td>
<td>I(0)</td>
<td>I(0)</td>
<td>I(0)</td>
<td>I(0)</td>
<td>I(0)</td>
</tr>
</tbody>
</table>

Notes: I(0) means that the series is stationary in panel at the 5% threshold. I(1) means that series is not stationary in panel;

We note that all series are non-stationary when the trend is not taken into account, and they are stationary around a deterministic trend.

### 4.2. Results of the model Arellano and Bond

#### 5.2. Table 2. Arellano and Bond estimate model

| Variable | Coefficient | Standard error | \(t_{cal}\) | \(P>|t_{cal}|\) |
|----------|-------------|----------------|-------------|-----------------|
| FD\_lagged | 0.431* | 0.08211 | 5.24 | 0.001 |
| FL | 0.00062* | 0.00021 | 2.88 | 0.001 |
| ID | -0.00311** | 0.0002 | -15.55 | 0.074 |
| GDP | 0.00061* | 0.00021 | 3.11 | 0.001 |
| INF | 0.000001 | 0.000023 | 0.045 | 0.317 |
| constant | 0.03251* | 0.0053 | 6.2 | 0.000 |

Sargan test of over-id. Restrictions: \(prob>chi2=0.1324\)

Arellano-Bond test for AR(2) in first differences: \(z=-3.4\) pr>\(z=0.0287\)

Arellano-Bond test for AR(1) in first differences: \(z=-2.72\) pr>\(z=0.0082^*\)

6.2. Note: *, ** mean respectively coefficient significant at the 5% and coefficient significant at the 10% level.

The lagged endogenous variable is statistically significant, assuming a positive sign, which proves that there is a dynamic relationship in the model.

The financial liberalization coefficient is positive and significant, this result supports the thesis of McKinnon and Shaw that the liberalization policy promotes financial deepening.

The low level of institutional development of the MENA countries, affects negatively and significantly their level of financial development. Indeed, corruption, political instability, inefficient government actions, the unreliability of the regulatory framework for financial activities that characterize these countries in the MENA region contribute to its financial underdevelopment.
An increase in the level of GDP per capita has a positive and significant effect on financial development, this result supports the “Demand following” thesis of Patrick[1966] where financial development is a consequence of economic growth.

A high inflation rate has a positive effect on financial development but not significantly.

The over-identification test instruments Sargan (P = 0.1324) does not authorize the rejection of the assumption of validity of the lagged variables in levels and differences as instruments. Similarly, There are an absence of autocorrelation of order two errors (P = 0.9287); but errors autocorrelation is present at Order 1 (P = 0.0082) as is the expected outcome for the GMM is better.

5. CONCLUSION

To conclude it should be noted that most MENA countries could improve the level of financial development if the level of institutional development was also high. Unfortunately this is not the case. MENA countries have an interest in implementing strategies that support the fight against corruption and political stability and improve the effectiveness of government actions and the quality of the regulatory framework.

Thus, this study shows the importance of having adequate institutional infrastructure. Control of corruption, respect for democratic principles, respect for laws and the legislature are important elements related to the success of any financial policy promoting sustainable economic growth.

REFERENCES


