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# **Financial Liberalization, Banking Crisis and Economic Growth in MENA Region: Do Institutions Matter?**

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## **Abstract**

The main purpose of this study is to investigate the interaction between financial liberalization, banking crisis and economic growth by taking into consideration the role of institutions. Our sample covers ten Middle East and North African (MENA henceforth) observed during the period 1990-2013. Using a dynamic panel data framework, our findings reveal that financial liberalization increases the likelihood of systemic banking crisis at the initial stages of financial reform, but there is a threshold level after which financial liberalization can have a positive impact on economic growth by reducing the probability of crisis. The results also suggest that all indicators of institutions play a less significant role in economic growth.

**Keywords:** Economic growth, financial liberalization, institutions and MENA countries

**JEL Classification:** E44, G21, G28, F36

## 1. Introduction

Since the pioneering works by McKinnon (1973) and Shaw (1973), it has been widely acknowledged by scholars and policymakers that financial liberalization leads to more economic development (Kapur (1976), Galbis (1977), Bencivenga and Smith (1991), Levine (1997)). During the last three decades and following the declaration of the authors of “*Financial Repression School*”<sup>1</sup>, an increasing number of countries have started the implementation of a financial liberalization program as a new strategy to boost their economic growth (Tornell et al, 2004; Bekaert et al, 2005)..

Theoretically, the positive effects of financial liberalization could be transmitted to economic growth through two main channels which are saving and investment (Venet, 1994). In fact, the liberalization of the credit rates has led to an increase of the financial savings which in turn has stimulated the investment activities and hence economic growth (De Melo (1986), Bandiera et al. (2000), Khan and Hasan (1998), Hermes (2005), Achy (2005). On the other hand, financial liberalization was also demonstrated by various studies to have several negative effects on economy as a whole. In some case of studies, financial liberalization was considered as responsible of the emergence of new banking behavior like high risk appetite and the speculative behavior (Kindleberger 1978, Miotti and Plihon 2001, Llewellyn 2002, Kaminsky & Reinhart, 1999, Caprio and Klingebiel, 1996).). Furthermore, financial liberalization opened the financial sectors to external shocks and it increased uncertainty and competition between banks and also between banks and non-banks as well (Demetriades and Luintel (2001), Bertrand et al. (2007), Cubillas and Gonzalez (2014). All these transformation in the banking sector has increased the fragility of banks and has led to several banking crises (Fisher and Chenard (1997), Hermosillo and Pazarbasioglu (1997), Demirgüç Kunt and Detragiache (1998), Fsher, Gureye and Ortigz (1997), Eichengreen and Arteta (2002), Hamdi et al (2013). Hakimi et al. (2011), Majerbi, and Rachdi (2014).

Given the conflicting results on the real impact of financial liberalization on economic growth, many empirical studies have tried to explain why some countries have experienced banking crises and why some other have not in the aftermath of the implementation of liberalization program.

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<sup>1</sup> McKinnon (1973) and Shaw (1973)

These studies revealed the crucial role of the institutions in triggering or limiting or even stopping banking crisis. By institutions we mean rule of law, regulatory quality, control of corruption, political stability, institutional context.

In this paper, we aim at exploring the interactions between financial liberalization, banking crises and economic growth in the presence of indicators of the quality of institution for the case of ten Middle East and North African (MENA henceforth) countries observed during the period 1990-2013. Generally, papers on MENA countries have been focused on the role of financial sector development on growth (Ben Nacer and Ghazouani, 2007, Ben Naceur et al. 2008) and the consequence of liberalization of growth (Achy 2006, Gammoudi and Cherif 2015). However, to the best of our knowledge there is no published paper yet that investigated the association between liberalization, crises and growth by taking into consideration the quality of institutions. Therefore this paper is the first attempt to fill the gap. To reach this goal, we perform an econometric model based on the System General Method of Moment (SGMM) estimation. The empirical results indicate that banking crisis has a negative impact on economic growth whereas financial liberalization appears to enhance growth. We also find that all indicators of institutions play a less significant role in economic growth.

The remainder of this paper is as following: literature review is given in section 2, in section 3 we present the econometric method and we discuss the major findings while section 4 concludes.

## **2. Brief literature Review**

The relationship between financial liberalization and economic growth has been a subject of debate by many academic researchers. Since the early 1970s and following the recommendations of the authors of “*Financial Repression School*”, notably McKinnon (1973) and Shaw (1973), many countries have launched a program of financial liberalization. According to those authors, financial liberalization is considered as a key of dynamic and modern financial system and rapid growth.

However, despite the McKinnon (1973) and Shaw (1973)’ recommendations, the empirical studies investigating the association between financial liberalization and growth have provided

some conflicting results. In fact, researchers of the so called “*Neo-Structualist School*” have found that financial liberalization increase the likelihood of banking crises and could harm the natural level of growth. For example, the study by Demirgüç-Kunt and Detragiache (1998) analyzed the linkage between financial liberalization and banking crises for a sample of 53 countries during the period 1980-1995. Their results indicate that the likelihood of banking crises is more important in liberalized financial systems. However, in the presence of high quality of institutional environment, the impact of financial liberalization on a fragile banking sector is weaker. In the same line of idea, the relationship between financial liberalization and the occurrence of banking crises was tested by Kaminsky and Reinhart (1999). They analyze 76 currency crises and 26 banking crises for 20 countries during 1970 to mid-1995. Their result reveals that that financial liberalization often precedes banking crises. Similarly, Ahmed (2013) investigated the relationship between financial liberalization, financial development and economic growth for a panel of 21 countries in Sub-Saharan Africa (SSA) during the period of 1981–2009, By performing dynamic panel data and Generalized-Method-of-Moments (GMM) method, results indicate that there is a negative association between financial liberalization and economic growth. Furthermore, Ahmed’s findings show that financial liberalization does not exert a positive effect on financial development in SSA region

In another mixed results, the study by Bumann et al. (2013) provided a meta-analysis related to the relationship between financial liberalization and economic growth in more 60 empirical studies. Findings indicate that on average, financial liberalization acts positively on the economic growth but the effect remains not significantly. They also find that studies conducted from 1970s reveal a less significantly association between financial liberalization and economic growth more than studies using data from the 1980s. More recently, Hamdi and Jlassi (2014) focused on whether capital flows trigger banking crises and threat economic stability and growth. To this end, they used a sample of 58 developing countries during the period 1984–2007. Contrary to the previous study which are based on dummy variable or index of financial liberalization, this research has used two common financial liberalization indicators (*defacto and dejure*). The major finding of this study is that financial liberalization is not the first and unique raison for the occurrence of banking crises. Banking crises in those developing countries are more explained by

the foreign debt liabilities and foreign direct investment liabilities which remain to increase the likelihood of banking crises.

The inconclusive relationship between financial liberalization, banking crises and economic growth has motivated many empirical researches to explore other factors that could explain this confusing outcome. Therefore, scholars have asked why some countries have experienced crises and slow growth following the liberalization of their financial sector while some others have seen rapid growth. As a response, researchers turned to the macroeconomic and institutional context on which the program of financial liberalization was adopted. Obviously, it was shown that when financial liberalization is implemented in a stable macroeconomic context and in a favorable institutional environment economic growth will be enhanced remarkably. However, the adoption of these reforms in a country with a weak quality of institutions and in an uncertain universe will slowdown the level of economic growth economic (North 1989, Demirgüç-Kunt and Detragiache (2005), Ranciere et al. (2006). The study by Bonfiglioli et al. (2004) analyzed the effects of financial liberalization and banking crises on growth using a sample of 90 countries observed in the period 1975-1999. The econometric strategy performed in this study is the GMM dynamic panel data. In this research, financial liberalization leads on average to more economic growth. However, banking crises is seemed to impede growth. This negative effect is less significant in countries with high quality of institutions and in an open financial system. In another case study, Edwards (2007) investigated the adequacy between financial reforms and the robustness of the economy to accommodate radical changes. Based on a dataset of Latin America region during the period of 1970-2004, results indicate that the economy of those countries was not able to receive this sharp reversal and the occurrence of banking crises in this region was very costly in term of economic growth. Similarly, study of Ben Gamra (2009) on 6 major emerging East Asian countries over the period 1980–2002, focused on the intensity and the sequence of financial liberalization. His results indicate that partial liberalization leads to more growth than full liberalization.

Recently, the linkage between institutions and growth has been investigated by Siddiqui and Ahmed (2013). Data of 84 countries performed with panel OLS and GMM-based estimation method reveals that favorable institutions positively affect economic growth. In another recent

study, Gammoudi and Cherif (2015) analyzed how financial liberalization, in particular capital account openness and political institutions impacts foreign direct investment (FDI) in the Middle East and North Africa (MENA) region. In this study, FDI is considered an important key of rapid growth. To this end, they used a sample of 17 MENA countries over the period 1985 to 2009. The empirical strategy performed in this study is the GMM estimator. Results show that the capital account liberalization attracts more FDI when the host country known a political stability. Findings indicate also, that countries with high quality of institutions, less corrupted and enforcing propriety rights are able to attract more FDI. To conclude, all these recent studies supported the idea that qualities of institutions have a stronger effect on long term growth than in the short run (Acemoglu et al. (2001, 2002), and Acemoglu and Johnson (2005)).

### 3. Econometric methodology

#### 3.1. Data and methodology

The present research explores 10 MENA countries including: Algeria, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria and Tunisia observed during the period 1990-2013; hence we have a total of 240 observations. In this initial step we will identify the factors that affect growth by including financial liberalization and crises. The model is expressed as follows:

$$Growth = f(FL, Crises, M)$$

$$Growth_{it} = \beta_0 + \beta_1 FL_{i,t} + \beta_2 Crises_{i,t} + \beta_3 M_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where: *Growth* denotes the real GDP per capita growth. *FL* is an index of financial liberalization. *Crises* are the crisis dummy for country *i* at time *t* (Cf. Table 1). *M* represents the vector of explanatory variables including: inflation (*Inf*), trade (*Tade*), government size (*GSize*) and population (*Pop*).  $\varepsilon$  is the error term. A definition of all the variables and their sources is provided in Appendix 1.

In the second step, we introduce the variable (*Inst*) to the model in order to assess the role of institutions in triggering or limiting a banking crisis. This variable refers to the quality of institutions in a given country. Therefore, the model will take the following new expression:

$$\text{Growth} = f(\text{FL}, \text{Crises}, \text{Institution}, M)$$

$$\text{Growth}_{it} = \beta_0 + \beta_1 \text{FL}_{i,t} + \beta_2 \text{Inst}_{i,t} + \beta_3 \text{Crises}_{i,t} + \beta_4 (\text{FL}_{it} * \text{Inst}_{it}) + \beta_5 M_{i,t} + \varepsilon_{i,t} \quad (2)$$

The variable Institution includes some indicators such as Law and order (*Lawor*), Corruption (*Cor*), internal conflicts (*Intconf*), Democratic accountability (*Demacc*), External conflicts (*Extconf*), socioeconomic conditions (*Socecoc*) and Investment profile (*Invespro*). ( $\text{FL}_{it} * \text{Inst}_{it}$ ) represents the interaction between financial liberalization and the quality of institutions.

The aim of this paper is to estimate whether financial liberalization and institutional environment explain why banking crises occur in some MENA countries. To this end we investigate the problem of the possible endogeneity and reverse causality by means of the system Generalized Method of Moment (GMM) estimator in dynamic panel data models initially proposed by Arellano and Bover (1995) and later by Blundell and Bond (1998). This method could be considered as the suitable one used in this kind of research as it has a lower bias and higher efficiency than other estimators if certain persistence exists in the series (Soto, 2009).

## 3.2. Empirical results

### 3.2.1. Descriptive statistics and correlation matrix

In the empirical section, we start our analysis by providing some descriptive statistics for all the variables described above including means, maximums, minimums and standard deviation. The results exposed in Table 1 show that the average level of growth and inflation are 2.34 % and 7.53% respectively while the average level of trade is 74.539 % with a maximum of 154.64% and a minimum of 29.29%. For variables which reflected the quality of institutions, we find that corruption reached an average of 2.531% with a minimum of 1% and a maximum of 4%. The average level of law and order is 4.11%; with a maximum value is 6% while its minimum value is 1%. The average value of investment profile is 7.22%; its maximum value is 11.5% while its minimum value is 1.08%. For the external conflict variable, the average level is 9.48%; its minimum value is 0 % and 12 % as maximum value.

**Table 1: Summary statistics**

VARIABLES	Observations	Mean	Std.	Min	Max
Growth	240	2.431	4.405	-8.947	35.371
Gsize	240	17.708	7.434	10.285	76.222
Inf	240	7.534	11.103	-3.846	80.742
Trade	240	74.539	25.749	29.296	154.645
Pop	240	1.889	3.577	-44.408	11.180
Crises	240	0.068	0.253	0	1
Fl	240	1.113	0.435	1	2
Intconf	240	9.095	2.243	1.5	12
Demacc	240	2.833	1.370	0	6
Lawor	240	4.117	1.147	1	6
Cor	240	2.531	0.859	1	4
Extconf	240	9.482	1.768	0	12
Invespro	240	7.227	2.155	1.08	11.5
Socecoc	240	5.807	1.505	1	11

Table 2 presents the correlation coefficients of the variables used in our models. The correlation matrix gives information on the level (high or low) and the nature (positive or negative) of linkage between the variables. The Table 2 reveals a weak correlation between the different variables and this is enough condition to reject the existence of multicollinearity problem.

**Table 2: Correlation Matrix of institutional measures**

	Growth	Gsize	Inf	Trade	Pop	Crises	FL	Intconf	Demacc	Lawor	Cor	Extconf	Invespro	Socecoc
Growth	1.0000													
Gsize	-0.3112	1.0000												
Inf	-0.3207	-0.1084	1.0000											
Trade	0.0960	0.3915	-0.2774	1.0000										
Pop	-0.2974	0.2826	0.1521	0.4245	1.0000									
Crises	-0.1511	-0.2375	0.4503	-0.1567	0.0074	1.0000								
FL	0.1941	0.1450	-0.5189	0.5538	0.1021	-0.4491	1.0000							
Intconf	0.2261	0.0225	-0.4615	0.3678	-0.1433	0.0107	0.3965	1.0000						
Demacc	-0.0768	0.2344	0.0992	0.3476	0.3026	0.2045	0.0630	0.0083	1.0000					
Lawor	0.1559	0.2762	-0.5305	0.1987	-0.2448	-0.3000	0.5214	0.3437	-0.1505	1.0000				
Cor	-0.1703	0.3381	0.2548	0.3653	0.3602	0.3431	0.0023	0.2422	0.3477	0.1251	1.0000			
Extconf	0.1166	-0.1397	-0.0345	0.0732	-0.2256	0.0256	0.2198	0.4022	-0.0242	0.2856	0.0877	1.0000		
Invespro	0.3203	-0.0728	-0.6106	0.1433	-0.4419	-0.3050	0.5542	0.3328	-0.0051	0.4397	-0.1611	0.3224	1.0000	
Socecoc	0.0500	-0.3648	0.0863	-0.1477	-0.2333	0.2475	-0.1545	0.4862	-0.2250	0.2787	0.1773	0.3289	0.0381	1.0000

It appears from the correlation matrix that government size, inflation and population are negatively correlated with growth. Similarly, crisis is also negatively linked to growth. At a first glance, we can conclude that crises hamper economic growth in MENA countries. However, trade is positively associated with economic growth such as financial liberalization. Here we can

draw a second important result which is that unlike crises, FL appears to boost economic growth in MENA region. In the next section, we will see whether the econometric model will confirm the validity of these conclusions or not.

### ***3.2.2. Output of the model***

We use the GMM in system (SGMM) since it has been proved to improve the GMM estimator in the first differenced (DGMM) model in terms of bias and root mean squared error. According to Blundell and Bond (1998) the SGMM estimator performs better than the DGMM estimator because the instruments in the Level model remain good predictors for the endogenous variables in this model even when the series are very persistent (Bun and Windmeijer, 2010). This allows the introduction of more instruments, and can dramatically improve efficiency. It builds a system of two equations-the original equation as well as the transformed one-and is known as SGMM. This approach has been widely used in the studies on economic growth.

Broadly, the Arellano and Bond test for autocorrelation has a null hypothesis of no autocorrelation and is applied to the differenced residuals. The test for AR (1) process in first differences usually rejects the null hypothesis. The test for AR (2) in first differences is more important, because it will detect autocorrelation in levels. The validity of the instruments is tested using a Sargan test of over-identifying restrictions and a test of the absence of serial correlation of the residuals. The Sargan test has a null hypothesis of “the instruments as a group are exogenous”. Therefore the higher the p-value of the Sargan statistic the better the results are.

The results of equation 1 are displayed in table 3 below and the specification tests are reported at the bottom of the tables.

Equation 1 has been tested in three phases. In the first one, we just had a look at the factors that influence economic growth in MENA countries beyond financial liberalization and crises. We find in column 1 that government size affects negatively and significantly level of growth at the level of 5% while trade and inflation exert a negative but non-significant impact on GDP per capita. We also find that population contributes positively and significantly to the economic growth.

When we introduced the variable FL the output (column 2) remains the same as in Model1 but the most important result is that financial liberalization appears to have a positive and significant impact on economic growth. This result is similar to the conclusions of the previous studies found by Levine (2001), Levine (2006), Bumann *et al.* (2013), Hakimi *et al.* (2011), etc. In the third step, we introduced the variable crises to see their impact on growth (column3) and unsurprisingly the variable appears to affect economic growth negatively and significantly at the level of 5%. The signs of the other variables rest unchanged. This result joints most of the studies that reveal the disastrous impacts of crises (banking, currency, systemic or economic) on economic growth notably Barro, (2001), Hutchison and Noy, (2005), Demirgüç-Kunt, Detragiache, and Gupta, (2006).

**Table 3: Result of SGMM (Eq.1). Dependent variable is Economic Growth (Growth)**

	Model 1	Model 2	Model 3
L.Growth	-0.259 (1.95)**	-0.509 (2.19)**	-1.906 (3.48)***
Gsize	-1.133 (1.77)*	-6.728 (1.60)*	-5.506 (1.73)*
Inf.	-0.079 (1.05)	-0.078 (0.41)	-0.119 (0.56)
Trade	-0.039 (0.54)	-0.328 (1.25)	0.504 (1.01)
Pop	5.097 (1.23)*	3.344 (1.32)	6.160 (0.91)
FL.		3.176** (0.83)	2.165** (0.76)
Crises			-4.935* (0.66)
<i>Nb. of Obs</i>	240	240	240
Wald test $\chi^2$	32.18***	20.44***	22.23***
AR (2) test	0.465	-0.404	0.866
P-value AR (2) test	0.642	0.683	0.386
<i>Sargan test</i>	7.721	6.782	6.935
P-value Sargan test	1.000	1.000	1.000

*The numbers in parentheses are t-statistics. \*, \*\*, and \*\*\* indicate rejection of the null hypothesis at the 1, 5, and 10 percent levels of significance, respectively*

*Estimation method is GMM-in-System estimator. AR (2): test of null of zero second-order serial correlation, distributed  $N(0, 1)$  under null. The null hypothesis is that errors in the first difference regression exhibit no second-order serial correlation. Sargan: Sargan test for validity of over-identifying restrictions, distributed as indicated under null. This test of over-identifying restrictions is asymptotically distributed as  $\chi^2$  under the null of instrument validity.*

In the second phase of analysis, we estimated equation 2 which includes different variables that refer to the quality of institutions as well as its interaction with the variable FL. As we mentioned previously, the aim of introducing institutional variables is identify their role in occurring a crisis. The different results are displayed in table 4 and the joint significance test for these terms and the specification tests are reported at the bottom of the tables.

**Table 4: Result of SGMM (Eq.2). Dependent variable is Economic Growth (Growth)**

	<b>Model1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model6</b>	<b>Model 7</b>	<b>Model 8</b>	<b>Model 9</b>
L.Growth	-0.238 (1.83)*	-0.177 (1.77)*	-0.122 (2.38)**	-0.224 (1.86)*	-0.174 (2.36)**	-0.106 (2.32)**	-0.32 (3.95)***	-5.704 (2.37)***	-0.677 (1.69)*
Inf	-0.439 (-1.38)	-0.456 (3.52)***	-0.475 (-1.44)	-0.507 (4.22)***	-1.142 (-1.22)	-0.208 (-0.6)	-0.403 (-0.92)	-1.086 (-1.23)	-2.782 (1.61)*
Trade	0.001 (-0.01)	-0.033 (-0.38)	-0.06 (-0.52)	-0.059 (-0.36)	0.017 (-0.21)	-0.127 (-1.04)	-0.018 (-0.22)	1.125 (1.29)	-0.192 (-1.03)
Gsize	-0.297 (-0.29)	-0.687 (-0.54)	-0.162 (-0.23)	-1.552 (-0.87)	-0.799 (-0.46)	-1.117 (-0.44)	-0.382 (-0.4)	1.363 (1.65)*	-0.385 (-1.4)
Pop	-2.164 (2.45)**	-2.333 (3.59)***	-2.133 (1.82)*	-1.205 (-0.84)	-1.448 (-1.01)	-2.293 (2.19)**	-1.719 (2.69)***	3.439 (-0.66)	5.262 (1.85)**
Fl	9.252 (-0.84)	5.273 (-1.26)	0.482 (-1.38)	1.684 (-0.98)	-6.275 (-0.1)	2.67 (-0.64)	2.97 (-0.41)	2.136 (-0.66)	-1.235 (-1.44)
Crises	-9.792 (-0.71)	-1.544 (-0.2)	-4.861 (-0.69)	-4.218 (-0.27)	-10.709 (-0.5)	-5.64 (-0.78)	-1.091 (-0.16)	-5.635 (-0.53)	-2.523 (-1.59)*
<i>Institutional variables</i>									
Intconf	-0.352 (-0.78)							-2.193 (1.61)*	-1.722 (-0.63)
Demacc		1.756 (1.99)**						1.192 (0.44)	0.658 (-1.29)
Lawor			2.855 (2.20)**					3.143 (1.84)*	1.59* (-0.823)
Cor				-0.603 (-0.15)				-4.232 (2.32)**	-1.313 (1.58)*
Extconf					3,378 (-1,3)			-8.734 (-1.03)	-1.143 (2.05)**
Invespro						1.567 (-1.34)		3.442 (1.78)*	-2.564 (-0.54)
Soecoc							-3.176 (1.07)	-1.158 (-0.98)	-3.176 (-1.07)
<i>Interaction terms</i>									
Fl*Intconf	-5.774 (-0.94)								-1.722 (-0.63)
Fl*Demacc		-3.036 (-1.07)							-1.236 (1.99)**
Fl* Lawor			-9.037 (-1.26)						-1.675 (1.62)*
Fl*Cor				-2,914 (-1,05)					-3.423 (2.32)**
Fl*Extconf					-3,321 (-1,72)*				-1.875 (1.67)*
Fl*Invespro						-8,619 (-1,0)			-2.957 (-0.59)
Fl*Soecoc							-1.131 (-0.14)		-2.564 (-0.99)
Nb. of Obs	240	240	240	240	240	240	240	240	240
Wald test $\chi^2$	55.14***	27.01***	16.98***	13.93***	19.03***	24.07	16.29***	16.77***	
AR (2) test	1.21	1.03	1.11	1.06	1.11	0.63	0.418	-1.294	
P-value	0.228	0.302	0.266	0.289	0.269	0.53	0.685	0.195	
Sargan test	1.76	2.27	1.77	1.38	2.25	2.79	6.612	1.082	
P-value	0.995	0.986	0.995	0.998	0.987	0.972	1.000	1.000	

The numbers in parentheses are t-statistics. \*, \*\*, and \*\*\* indicate rejection of the null hypothesis at the 1, 5, and 10 percent levels of significance, respectively

Estimation method is GMM-in-System estimator. AR (2): test of null of zero second-order serial correlation, distributed  $N(0, 1)$  under null. The null hypothesis is that errors in the first difference regression exhibit no second-order serial correlation. Sargan: Sargan test for validity of over-identifying restrictions, distributed as indicated under null. This test of over-identifying restrictions is asymptotically distributed as  $\chi^2$  under the null of instrument validity.

In the first seven models, we have introduced to the first equation (equation1) a new variable that refers to the quality of institution and we have also added the interaction between the chosen variable along with financial liberalization (FL). The purpose of this methodology is to identify the consequence of such institution in triggering or limiting a financial crisis and also to see its impact on growth. For model 8, we have introduced all the variables of institutions and then we have added the interaction terms in model 9. By using this framework we can obtain a comprehensive study which could be consistent to get reliable results.

From the table above we can draw several important results. First of all, it is worth mentioning that for all the models, the Sargan and serial-correlation tests do not reject the null hypothesis of correct specification (P-value of Sargan test and P-value of AR (2) test of Arellano and Bond are larger than 5%). From table 4 we can see that all the common dependent variables have the same signs like what we have found in the previous estimations of equation 1 even after adding variables of institution. We can also conclude from Table 5 that the signs of most coefficients of financial liberalization (FL) are consistent with the previous literature showing the positive impact of liberalization on economic growth (Levine 2001, Claessens and Leaven 2003, Schmukler, 2004, Levine 2005, Hakimi *et al* 2013, Ben Jedidia *et al.* (2014), etc.). The positive and mostly significant coefficient confirms that the FL is associated with more growth except when using external conflicts as a proxy of institutional quality. External conflicts are indubitably a serious risk that can threaten a local economy through the contagion effects when the financial market is liberalized. In an open-ended economy, crises could be transmitted easily to the local economy and this makes liberalization program unsuccessful and fruitless.

The second important conclusion to be drawn from the table above is that the interaction the liberalization variable (*FL*) with the various indicators of institutional variables (*Instit*) and banking crisis (*Crises*) we find a positive and significant coefficient for the FL variable while banking crisis has a negative and significant coefficient regardless of the institutional variables

used. All the interaction coefficients with the institutional variables are negative. This result suggests that better institutional quality help decrease the probability of banking crisis for a given level of financial liberalization. The inverted U-shaped relationship between liberalization and crisis seems to be robust to the inclusion of the institutional variables. Overall, and regardless of the level of liberalization, the probability of crisis is always lower with improved institutional quality.

Third, it is obvious that the coefficients of banking crisis are negative for all models. Therefore, banking crises have a negative impact on growth. This sign is consistent across all previous studies (Demirgüç-Kunt and Detragiache (2002), Weller (2001), Eichengreen and Arteta (2002)). Increase of financial reform leading to higher levels of liberalization of the financial system seem to increase the likelihood of systemic banking crisis up to a certain level, after which more liberalization results in lower probability of crisis as countries get closer to being fully liberalized. For MENA countries, economies are partially liberalized and for this reason the number of crisis is limited.

#### **4. Conclusion**

In this study, using dynamic panel model, we specified an empirical framework to investigate the impact of financial liberalization, banking crisis and institutions quality on the economic growth of 10 MENA countries over the period 1990-2013. This study uses MENA countries to fill the gap of literature since no paper until this date that has investigated this important issue.

Overall, our findings provide some interesting new insights that financial liberalization increases the likelihood of systemic banking crisis at the initial stages of financial reform, but there is a threshold level after which financial liberalization can have a positive impact on economic growth by reducing the probability of crisis. We conclude that the turning point or the threshold after which liberalization starts to reduce likelihood of crisis occurs earlier (or at lower degrees of liberalization) in countries with better institutions compared to countries with weak institutional environments. The results suggest also that the type of institutional variables that may be most effective in mitigating the liberalization effect on crisis. In the MENA region, policy makers should target in priority to enhance the institutional environment when implementing new

financial reforms. A sound well-functioning banking sector leads to provide sustained economic growth.

### Appendix 1. Definitions of all variables

Variables	Definition	Source
<b>Economic Growth</b>	Real GDP per capita growth	WDI
<b>Inflation</b>	Change in consumer price index	WDI
<b>Trade</b>	Import plus export divided to GDP	WDI
<b>Government size</b>	Ratio of Government final consumption to GDP	WDI
<b>Population</b>	Growth rate of total population	WDI
<b>Financial liberalization</b>	This index includes three components: capital account, the domestic financial system, and the stock market. For each component, a value of 1 indicates no liberalization, 2 indicates partial liberalization, and 3 indicates full liberalization. The overall Financial Liberalization variable (also varying between 1 and 3) is obtained by averaging the values across the three components.	Kaminsky and Schuler 2008; Neumann et al. 2009
<b>Banking crisis</b>	Crisis that takes a value of one when the country is experiencing a banking crisis, and zero otherwise.	Laeven and Valencia (2012)
<b>Law and order</b>	Measure of the law and order tradition of a country. It ranges from 6, strong law and order tradition, to 1, weak law and order tradition.	International Country Risk Guide (ICRG)
<b>Corruption</b>	The level of corruption ranges from 0 (high level of corruption) to 4 (low level).	International Country Risk Guide (ICRG)
<b>Socioeconomic conditions</b>	This is an assessment of the socioeconomic pressures at work in society that could constrain government action or fuel social dissatisfaction. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.	International Country Risk Guide (ICRG)
<b>Investment profile</b>	This is an assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.	International Country Risk Guide (ICRG)
<b>External conflicts</b>	The external conflict measure is an assessment both of the risk to the incumbent government from foreign action, ranging from non-violent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc) to violent external pressure (cross-border conflicts to all-out war). The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.	International Country Risk Guide (ICRG)
<b>Democratic accountability</b>	This is a measure of how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one.	International Country Risk Guide (ICRG)

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