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Threshold effect of institutions on finance-growth nexus in MENA region: New evidence from panel simultaneous equation model

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Abstract

This paper reexamines the contribution of institutions quality in the effects of capital account liberalization on economic growth in the MENA region. Using a panel simultaneous equation model, we study the marginal effect of capital account liberalization on growth over the 1997–2016 period. Applying various measures of institutions quality and two indices representing capital account liberalization, we found that, while most liberalization indices have a significant positive effect on economic growth, the coefficients of the interaction term are significantly negative. This provides strong evidence that institutional quality mitigates the positive effect of capital account liberalization on economic growth. Our empirical results allow us to conclude that capital account liberalization policy in a country with high corruption and bureaucracy level and weak law and order slows down growth. Thus, to reap the benefits of such a policy, MENA countries should have a strong institutional framework.

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1. Introduction

The link between finance and growth still remains among the most controversial issues in recent studies (Bumann et *al.* (2013), Zhand and Hou (2014), Cabralet et *al.* (2016), Basu (2016), Wu et *al.* (2017), Furceri and Lungani (2018), Law et *al.* (2018)) and yet, they do not come to a clear conclusion. Removing barriers to the international capital flows can promote more efficient allocation of resources, provide opportunities for risk diversification, and help promote financial development (Edison et *al.* (2004)). Capital account liberalization also induces risks, amounting in particular to the instability of the exchange rate regimes and capital flight. Indeed, massive capital flows put a strong pressure on the exchange rate and, consequently, on monetary policy and interest rates (Amrani, (2010)). As a result, major theoretical and empirical contributions in recent years rallied to determine and explain the mechanism of the mixed effect (risks and benefits) of capital account liberalization on economic growth. This is supported by institutions theory and its impact on the social, economic environment (Givens (2013), Méon and Sekkat (2015), Enikolopov et *al.* (2014), Aguirre (2017), Enikolopov et *al.* (2018)) which has just erected its own foundations. Indeed, recent relevant empirical and theoretical studies (Njikam (2017)); Abbas et *al.* (2017), Saidi et *al.* (2017), Rachdi et *al.* (2018), Hartwell (2018)), especially in a context of instability-generating financial globalization, have underlined the importance of having an adequate institutional infrastructure for a capital account liberalization policy to succeed. However, the role of institutional factors on financial liberalization-financial development relationship is frequently studied in financial research (Ito (2006), Lee and Lin (2016), Trabelsi and Cherif (2017), Saidi et *al.* (2016), Batuo, 2018; Ho et al. 2018)). Nevertheless, good governance has improved financial development over time, mainly because of a reduced political instability. The nature of judicial systems suggests that civil laws are less favorable to financial development than mixed legal systems that include both civil and common laws (Karikari, 2010).

Given the contradictory results of studies on the role of institutions in the finance-growth relationship, many empirical studies have attempted to explain why countries have not experienced the same results in the aftermath of the implementation of liberalization program Some studies have attempted to determine the threshold beyond which a financial policy (such as institutional development, financial development, …) can generate positive results on the economy. (Karikar (2010), Gazdar and Cherif (2015), and recently, Benczúr et *al.* (2018) and Law and *al.* (2018)).

In this paper, we seek to analyze the capital account liberalization-institutional quality interaction on growth and financial development simultaneously for the case of 18 countries in the Middle East and North Africa (MENA henceforth) covering the period 1997-2016. We combine between the linear and non-linear effect of capital account liberalization on growth in the presence of institutional quality to determine the marginal effect of liberalization on growth. After estimating our simultaneous equations model by Baltagi's 2SLS applied to panel data, we calculate the institutional quality threshold necessary for capital account liberalization to positively affect growth.

We contribute to the empirical literature in three lines. First, our analysis focuses on MENA countries. This makes our analysis less affected by other unobserved determinants of growth and furthermore, most studies on MENA region have been focused on the causality (Honig (2008), Peia and Roszbach (2015)) or the link between finance, institutions and growth (Kar et *al.* (2011), Ben Jedidia et *al.* (2014), Omri et *al.* (2015) (Abid et *al.* (2016), Rachdi et *al.* (2018), Law et *al.* (2018)). However, generally, there is not enough works that are interested

in the threshold effect of institutional quality on the capital account liberalization-growth relationship taking into account the endogeneity of the financial development variable which is generally included in the growth equation. Second, to achieve this goal, we are calling to the Baltagi's 2SLS estimation method equation par equation founded by Baltagi (2005) to estimate the coefficients of our simultaneous equations model. Third, we use two measures of capital account liberalization: the Chinn-Ito Financial Openness Index (KAOPEN) updated by Chin and Eto in 2017 and the Lib index defines and constructed in this paper. These measures are more comprehensive and present several advantages over other liberalization measures used in previous studies of finance-growth. Furthermore, we integrate various institutional measures for different regressions. The rest of this paper is organized as follows. The next section reviews the relevant literature and focuses on the relationship between capital account liberalization, institutional quality and growth. Section 3 presents the data, our empirical model and methodological framework. Section 4 discusses the main empirical results. Section 5 presents policy implications and concludes the paper.

2. Literature review

There are already many empirical studies that investigated the growth effects of capital account liberalization and institutional quality using various methods and measures. Demetriades and Law, (2006) studied the relationship between finance, institutions and economic growth in a sample of 72 countries observed during the 1978-2000 period. The results indicate that financial development promotes growth when the financial system is integrated into a solid institutional framework. In another study, Law and Habibullah, (2009) examine the mixed effect of institutional quality, trade openness and financial liberalization on financial markets development, using a Dynamic panel data model on a sample of 27 economies (G-7, Europe, East Asia and Latin America). The results indicate that real per capita income and institutional quality contribute significantly to banking sector development and the economic development of capital markets.

Eichengreen et al. (2011) examined the contribution of financial crises, internal financial development and institutions quality in the relationship between capital account liberalization on industry growth. The results show that financial openness positively affects the growth of financially dependent industries, even if these effects on growth squander during financial crises. On the other hand, the positive effects of capital account liberalization are limited to countries with relatively well-developed financial systems, good accounting standards and rule of law. This paper suggests that countries should reach a certain threshold in terms of institutional and economic development before taking advantage of capital account liberalization. Bumann et *al.* (2013) studied the relationship between financial liberalization and economic growth using a meta-analysis based on 441 t-statistics reported in 60 empirical studies. The results show that on average financial liberalization positively affects growth. However, this effect has two exceptions. First, studies using 1970s data found on average a statistically less significant relationship between financial liberalization policies and growth (i.e. they report lower statistics) compared to studies using 1980s data. Second, studies monitoring the level of development of the financial system report lower statistics on the relationship between liberalization and economic growth.

Otherwise, Kuniedaa et *al.* (2014) raised the following question; how does the negative effect of corruption on economic growth be overstated or reduced by capital account liberalization? Estimating a dynamic growth model on a panel of 109 countries over the 1985-2009 period. The results indicate that the interaction term of government corruption combined with financial openness has a significant negative impact on economic growth, implying that corruption magnifies the negative effect of financial openness which amplifies economic

growth. Moreover, Furceri and Loungani (2015) examined the distributional impact of capital account liberalization, estimating a univariate autoregressive inequality equation on a panel of 149 countries over the 1970 to 2010 period. The authors found that on average, capital account liberalization increases inequality and reduces income share in the short and medium term. Furthemore, financial development level and crises play a key role in adapting the inequality response to capital account liberalization.

Saidi et *al.* (2016) focus on the relationship: Capital account liberalization, financial development and economic growth in presence of structural breaks and cross-ection dependence. Using co-integration tests without (Pedroni (2004)) and with (Westerlund and Edgerton (2008)) structural breaks over the period 1983-2013 on a sample of 79 countries (27 OECD and 52 non-OECD countries). The main conclusion of this work is that liberalization of the capital account, approximated by foreign direct investment and portfolio investment flows, is slowly affecting economic growth in non-OECD countries. As a result, non-OECD countries are being called upon to strengthen and modernize their financial systems to maximize the benefits of liberalization for growth. Lee and Lin (2016) studied the effects of globalization, political institutions and financial liberalization on the performance and risk taking of insurance companies in a sample of 1324 sole proprietorships in 30 OECD countries. The results indicate that financial liberalization has an inverse impact on the performance of insurance companies. Thus, a deeper globalization and a stable political environment give less risk to insurers. These results are particularly important for competitors and national policy makers in insurance markets.

Recently, Saidi et *al.* (2017) test the role that governance and institutional quality can play on the relationship of financial liberalization - economic growth across a large sample of 54 countries in the face of banking crises. The estimation of a panel smooth transition regression (PSTR) indicate that financial liberalization leads to economic growth in the presence of strong governance and good quality of institutions. Also, Trabelsi and Cherif (2017) examined the effect of freeing cross-border financial transactions on financial sector development. The empirical results confirm a non-linear relationship between external relations, financial reform and financial development in the case of middle-income countries. The estimation of a static and dynamic panel reveals a significant positive effect only in the case of developed countries.

More recently, Batuo et al. (2018) have studied the links between financial instability, financial liberalization, financial development and economic growth in a panel of 41 African countries between 1985 and 2010. The results indicate that financial development and financial liberalization have positive effects on financial instability. Moreover, economic growth reduces financial instability, much lower in the pre-liberalization period than in the post-liberalization period. Otherwise, Rachdi et *al.* (2018) study the role of institutions in the financial liberalization-growth relationship in the presence of banking crises for a sample of 15 MENA countries between 2000 and 2013. The empirical results from the SGMM's dynamic panel estimation reveal that financial liberalization has contributed to improve economic growth in the countries of this region while the banking crisis has had adverse effects. By integrating the institutions quality did not find an evident impact. On another side, the association, development of the banking sector, institutions and economic growth was examined by Law and *al.* (2018). The results from the dynamic panel estimation of 87 countries by GMM-system indicate the important role played by the institutions in mediating the positive relationship between banking sector development and growth.

3. Data and methodology

3.1. Model specification

To determine the impact of capital account liberalization, institutional quality on economic growth-financial development nexus, we consider a simultaneous equation model based on the following specification:

$$\begin{cases} Growth_t^i = \alpha_1^i + \delta_1 FD_t^i + \beta_1 {X_1}_t^i + \theta_1 CAL_t^i + \varphi {CAL_t^i}^2 + \omega_1 \left(CAL_t^i * INST_t^i\right) + {\varepsilon_1}_t^i & (1) \\ FD_t^i = \alpha_2^i + \delta_2 Growth_t^i + \beta_2 {X_2}_t^i + \theta_2 CAL_t^i + \omega_2 \left(CAL_t^i * INST_t^i\right) + {\varepsilon_2}_t^i & (2) \end{cases}$$

$i = 1, \ldots, N$ refers to country number; $t = 1, \ldots, T$ is the time period. Growth represents GDP per capita growth, CAL is the capital account liberalization index measured by two different indices: the Chinn-Ito Financial Openness Index (KAOPEN) : new updated to 2017 and the Lib index constructed to weight the country's capital account liberalization. FD is the aggregate index of financial development. As explained above, a composite index of financial development is used, liquid liabilities (ratios to GDP). INST is measured by four institutional variables: corruption, law and order, bureaucracy quality and democracy. X_1 and X_2 represent the matrix of the control variables that may have common factors, α_1^i and α_2^i are unobserved country-specific effects, and ${\varepsilon_1}_t^i$ and ${\varepsilon_2}_t^i$ are the error terms of each observation.

Equation (1) represents the growth model. We introduce the square term (capital account liberalization interacts with itself) which explains the nonlinear relationship between liberalization on growth as well as the interactive term (CAL * INST) to measure the contribution of the institutional quality in such a relationship. X_1 includes Trade Openness, Inflation, Government Consumption and Population growth rate. In this specification, the steady state of economic growth response to capital account liberalization is ρ (equation (3)). Specifically, equation (1) is differentiated with respect to capital account liberalization to obtain the marginal effect of capital account liberalization on economic growth:

$$\rho = \frac{\partial Growth}{\partial CAL} = \theta_1 + 2\,\varphi_1 * CAL + \omega_1 * INST \quad (3)$$

Our conditional hypotheses are centered around the coefficients θ_1, $\varphi_1$and ω_1. Four possibilities are created. They are:

- If $(\theta_1 + 2\varphi_1 * CAL) > 0$ and $\omega_1 > 0$, Capital account liberalization has a positive effect on economic growth and institutional quality positively affects such an effect.
- If $(\theta_1 + 2\varphi_1 * CAL) > 0$ and $\omega_1 < 0$, Capital account liberalization has a positive effect on economic growth and institutional quality negatively affects such an effect. (Institutional quality lessens this positive effect).
- If $(\theta_1 + 2\varphi_1 * CAL) < 0$ and $\omega_1 > 0$, Capital account liberalization has a negative impact on economic growth and institutional quality mitigates the negative effect of CAL.
- $(\theta_1 + 2\varphi_1 * CAL) < 0$ and $\omega_1 < 0$, Capital account liberalization has a negative impact on economic growth and institutional quality heightens the negative effect of CAL.

Equation (3) shows that we can calculate an institutional quality threshold beyond which CAL has a positive effect on growth to be observed when:

$$\theta_1 + 2\varphi_1 * CAL + \omega_1 * INST > 0$$

Therefore, such a threshold is determined from the following inequalities:

$$INST > \frac{-(\theta_1+2\varphi_1*CAL)}{\omega_1} \text{ if } \omega_1 > 0 \text{ and } INST < \frac{(\theta_1+2\varphi_1*CAL)}{-\omega_1} \text{ if } \omega_1 < 0$$

Equation (2) represents the simultaneity relationship between growth and FD. The effect of CAL is captured by $\theta_2 + \omega_2 * INST$, while δ_2 represents the possible feedback effect of growth on financial development. X_2 includes the French judicial system[1], Trade openness and Inflation.

3.2. Data

Our data covers the 1997–2016 period of a sample of 18 MENA countries: Algeria, Bahrain, Egypt Arab Republic, Iran Islamic Republic, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, Tunisia, United Arab Emirates, and the Yemen Republic.

3.2.1. Capital account liberalization data

We retain two different indices of Capital account liberalization: (i) KAOPEN index of Chinn-Ito (The Chin and Ito index, new database, 2016) is an index measuring a country's degree of capital account openness. KAOPEN is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). (ii) LIB founded and built by Saidi (2014) is inspired to the Share index of Klein and Olivei (2008), it represents the country advancement in terms of liberalization. it's a dummy variable that takes value 0 if the country imposes restrictions on its capital account. If the country started to open its capital account during the study period, « Lib » takes the number of years where there is no control and approximated to the number of years in the studied period (20 years in our study). If the economy proceeds to total liberalization of its capital account, « Lib » takes 1.

3.2.2. Institutional variables data

we consider four institutional indices whose data are extracted from ICRG the International Country Risk Guide (ICRG): (i) Corruption is a behavior punishable by law by which a person (the corrupt) asks, agrees or accepts a donation, an offer or a promise, gifts or any sums in view of accomplishing, reporting or omitting to accomplish an action directly or indirectly as part of his/her functions. This index ranges between 0 (high level) and 6 (low level). (ii) Law and order is an index that measures respect of law in a country. It ranges between 1 and 6. The higher it is, the higher the law is respected. (iii) Democratic accountability (ranges 0 and 6) which measures how responsive a government is to its people and (v) bureaucracy quality and autonomy from political pressure.

[1] Dummy variable

3.2.3. *Instrumental variables data*

Our econometric investigation estimates a model with simultaneous equations. In the presence of two endogenous variables, we use instrumentation for its estimation.

We retain a few instrumental variables for our estimation procedure, given by: (i) autocracy index (ii) Polity Difference between democracy and autocracy[2] (iii) Catholic Population in percent of total population and (vi) Muslim Population in percent of total population[3].

3.2.4. *Dependent and other variables data*

Financial development indices are extracted from the Financial Structure Dataset (Thorsten et al. (2000), updated in September 2015). We consider an index for banking sector development, which is Liquid Liabilities (LIABILITIES), representing the ratio of liquid liabilities of the financial system divided by GDP.

Data representing GDP Growth and control variables, such as inflation and trade openness are collected from the World Development Indicators database (2017). Data on the French judicial system are taken from La Porta et al (1999). Specifically, we consider the most used variables in the growth equation and financial development equation defined as follows: (i) Trade Openness (TO), represented by the sum of exports and imports to GDP ratio, since the literature on growth has shown that openness to international trade is an important determinant of economic growth; (iii) Government Consumption (GC), where we control for government consumption using the government consumption to GDP ratio; and (iv) Inflation (INF) represented by the annual inflation rate which is included as an indicator of macroeconomic stability. POPGr represents annual population growth rate. French judicial system defined by a Dummy variable that takes 1 if a county's commercial/corporate law is based on the French civil law.

Table I presents the descriptive statistics for all the variables described above including means, maximums, minimums and standard deviation.

Table I : Descriptive Statistics

	Observations	Mean	Std.Dev	Min	Max
Growth	332	2.753	4.306	-8.947	35.371
FD	316	72.430	40.22	15.73	241.62
KAOPEN	360	0.720	1.333	-1.190	2.370
Lib	360	0.310	0.998	0	1
Trade	301	95.620	30.91	40.73	178.15
Inflation	328	4.330	4.110	-4.86	18.31
GC	360	78.210	20.33	38.71	166.60
POPGR	341	2.470	1.570	2.96	11.18
French legal	360	0.333	0.211	0	1
Corruption	360	3.040	2.621	2	6
Law and order	360	3.880	7.110	2	6
Bureaucracy	360	5.800	8.987	4	6
Democracy	360	2.755	1.660	0	6

[2] (i) and (ii) : the data are extracted from Polity VI (2014).
[3](iii) and (vi) : the information are extracted from Gradstein *et al.* (2001)

4. Empirical finding

Tables II and III present the results of the system estimation for the two regressions for KAOPEN and Lib respectively. We use the system estimation of Baltagi's W2SLS and G2SLS, equation by equation, estimators developed for a simultaneous equation model of a sample of 18 MENA countries observed between 1997 and 2016. We notice that the first equation of our simultaneous equations model represents a growth model. Then, we include in the estimation initial real GDP per capita (IGDP) to control for the steady-state convergence predicted by the neoclassical growth model. Its coefficient is negative and significant in most regressions. The system estimation of Baltagi's W2SLS and G2SLS, equation by equation, using two differents capital account liberalization measures, KAOPEN (Table II) and Lib (Table III), reveals that the p-value of the Hausman test ($Prob > \chi^2_{(n)}$ is less than 5% for all regressions), which implies that the fixed effects model is preferable to the random effects model. We found a reverse effect of growth on financial development (δ_1 and δ_2 are significant with opposite signs in most regressions except Bureaucracy). It turns out that financial development exerts a significant positive influence on growth; however, strong growth can decrease financial development in MENA countries. This result confirms that of Abid et al. (2016), Durusu-Ciftci et al. (2017) and Ibrahim (2018). However, there are divergent to several other studies, that failed to find a correlation positive between financial development and growth like Adeniyi et *al.* (2015) and Lim (2018).

Table II: 2SLS Estimation of Simultaneous Equation Model

KAOPEN Regression

	(1)		(2)		(3)		(4)	
	W2SLS	G2SLS	W2SLS	G2SLS	W2SLS	G2SLS	W2SLS	G2SLS
EQUATION 1 : DEPENDANT VARIABLE : GROWTH								
IGDP	-0.008*	-0.008*	-0.002*	-0.001*	-0.008*	-0.007*	-0.004*	-0.001*
	(-2.33)	(-2.48)	(-3.01)	(-3.05)	(-3.09)	(-3.09)	(-1.99)	(-1.75)
FD	1.531**	1.111**	2.085**	2.433**	2.120**	2.009**	2.333**	2.981**
	(2.22)	(2.74)	(2.11)	(2.19)	(1.96)	(1.97)	(3.01)	(2.99)
KAOPEN	0.235*	0.221*	0.333**	0.314**	0.5430*	0.5130*	0.288*	0.274*
	(2.36)	(2.47)	(3.15)	(3.06)	(5.68)	(5.16)	(6.66)	(6.74)
$KAOPEN^2$	0.0020 *	0.0024*	-2.031*	-3.003*	0.0018*	0.0022*	0.0012	0.0019
	(6.01)	(6.53)	(5.43)	(5.55)	(6.98)	(7.42)	(0.39)	(0.46)
KAOPEN*CORRUP	-0.089**	-0.077**						
	(-2.29)	(-2.18)						
KAOPEN*LAW			0.418*	0.397*				
			(-6.33)	(-6.16)				
KAOPEN*BUREAU					-0.12**	-0.200**		
					(-2.66)	(-2.89)		
KAOPEN*DEMOC							-0.666	-0..542
							(-1.14)	(-1.09)
INFLATION	-0.001*	-0.001*	-0.003*	-0.002*	-0.003	-0.004	-0.0032*	-0.0022*
	(-5.55)	(-5.69)	(-6.12)	(-6.18)	(-0.87)	(-0.23)	(-4.51)	(-4.13)
TRADE OPENNESS	0.056**	0.034**	0.009**	0.008**	0.031**	0.029*	0.007**	0.004**
	(2.22)	(2.39)	(2.91)	(2.85)	(2.43)	(3.81)	(2.82)	(2.81)
GC	-0.258*	-0.233*	-0.081**	-0.076**	-0.10***	-0.09***	-0.10*	-013*
	(-6.61)	(-6.63)	(-3.01)	(-3.00)	(-1.76)	(-1.88)	(-2.59)	(-2.38)
POPGR	-0.333*	-0.334*	-0.228*	-0.195*	-0.581*	-0.502*	-0.322*	-0.233*
	(-5.12)	(-5.13)	(-7.45)	(-7.88)	(-4.14)	(-4.44)	(-5.66)	(-5.34)
EQUATION 2 : DEPENDANT VARIABLE : FD								
GROWTH	-0.111*	-1.110*	-0.908**	-0.899**	-0.652**	-0.600**	-0.320	-0.314
	(-6.51)	(-6.64)	(-2.27)	(-2.23)	(-4.55)	(-4.86)	(-0.33)	(-0.34)
KAOPEN	0.977	0.888	0.920	0.900	0.420	0.401	0.202	0.208
	(0.12)	(0.15)	(1.13)	(1.33)	(0.87)	(0.83)	(0.09)	(0.11)
KAOPEN*CORRUP	-0.027*	-0.019*						
	(-5.14)	(-5.16)						
KAOPEN*LAW			0.030**	0.037**				
			(2.22)	(2.71)				
KAOPEN*BUREAU					-0.043	-0.040		
					(-0.76)	(-0.66)		
KAOPEN*DEMOC							-0.100	-0.099
							(-0.81)	(-0.93)
INFLATION	-0.033*	-0.030*	-0.0011*	-0.0017*	-0.0022*	-0.0020*	-0.0083*	-0.0082*
	(-5.89)	(-5.61)	(-6.14)	(-6.15)	(-6.27)	(-6.71)	(-7.66)	(-7.72)
TRADE OPENNESS	0.69***	0.70***	0.548	0.581	0.692	0.681	0.144	0.139
	(1.87)	(1.83)	(1.16)	(1.12)	(0.92)	(0.84)	(0.05)	(0.01)
FRENCH LEGAL	-0.062*	-0.059*	-0.041	-0.044	-0.031*	-0.027	-0.009	-0.011
	(-4.31)	(-4.44)	(-0.71)	(-0.73)	(-5.57)	(-5.81)	(-0.08)	(-0.25)
Hausman test (p-value)	0.036		0.001		0.000		0.002	

t-statistics for coefficient in parentheses; ***, **, * refer to the 1, 5 and 10% levels of significance respectively; (1) relative regression of corruption, (2) relative regression of law and order, (3) relative regression of Bureaucracy and (4) relative regression of Democracy. Catholic Population in percent of total population and Muslim Population in percent of total population are used to instrument the variable Growth in equation (2), Autocracy index Polity and Difference between democracy and autocracy are used to instrument the variable FD in the equation (1).

Table III: 2SLS Estimation of Simultaneous Equation Model

LIB Regression

	(1)		(2)		(3)		(4)	
	W2SLS	G2SLS	W2SLS	G2SLS	W2SLS	G2SLS	W2SLS	G2SLS
EQUATION 1 : DEPENDANT VARIABLE : GROWTH								
IGDP	-0.003*	-0.002*	-0.005*	-0.003*	-0.002*	-0.0026*	-0.0046*	-0.004*
	(-5.86)	(-5.30)	(-6.39)	(-5.77)	(-5.12)	(-4.98)	(-4.36)	(-5.52)
FD	2.392**	2.211**	2.036**	2.756**	2.001**	2.238**	1.938**	1.999**
	(2.22)	(2.56)	(2.88)	(3.01)	(2.33)	(2.19)	(3.09)	(2.82))
LIB	0.121*	0.131 *	-0.239*	-0.222	-0.255*	-0.267*	0.299	0.301
	(4.89)	(5.15)	(-6.88)	(-7.11)	(6.69)	(6.51)	(1.21)	(1.07)
LIB^2	0.001*	0.001*	0.0031	0.0033	0.0018	0.0022	0.0012	0.0019
	(4.44)	(4.37)	(0.74)	(0.29)	(1.23)	(1.35)	(0.36)	(0.18)
LIB*CORRUP	-0.043*	-0.044*						
	(-3.94)	(-3.88)						
LIB*LAW			0.036*	0.029*				
			(5.69)	(5.55)				
LIB*BUREAU					-0.111	-0.113		
					(-0.99)	(-1.01)		
LIB*DEMOC							-0.195	-0.187
							(-1.06)	(-1.22)
INFLATION	-0.002*	-0.001*	-0.005*	-0.003*	-0.0054*	-0.0044*	-0.0032*	-0.0022*
	(-4.33)	(-3.96)	(-3.33)	(-3.81)	(-3.11)	(-3.26)	(-5.98)	(-6.92)
TRADE OPENNESS	0.055**	0.064**	0.021**	0.028**	0.033**	0.012**	0.0047**	0.0039**
	(2.33)	(2.61)	(3.05)	(3.11)	(2.77)	(2.71)	(1.97)	(2.08)
GC	-0.166*	-0.112*	-0.09***	-0.11***	-0.12***	-0.10***	-0.11*	-015*
	(-788)	(-6.91)	(-1.79)	(-1.84)	(-1.92)	(-2.01)	(-6.14)	(-6.13)
POPGR	-0.564*	-0.42**	-0.23*	-0.56**	-0.679*	-0.368*	-0.533*	-0.237**
	(-4.35)	(-3.33)	(-6.11)	(-3.82)	(-5.55)	(-5.12)	(-7.14)	(-2.99)
EQUATION 2 : DEPENDANT VARIABLE : FD								
GROWTH	-0.288*	-0.257*	-0.595**	-0.805**	-0.841**	-0.904**	-0.457	-0.325
	(-5.63)	(-6.02)	(-2.12)	(-2.11)	(-3.22)	(-3.99)	(-0.33)	(-0.62)
LIB	1.126	1.133**	0.754*	0.897	0.998	1.002	0.991	0.998
	(0.22)	(0.89)	(1.11)	(1.18)	(0.11)	(0.29)	(0.66)	(0.59)
LIB*CORRUP	-0.018*	-0.023*						
	(-5.66)	(-5.12)						
LIB*LAW			0.009	0.010				
			(0.31)	(0.09)				
LIB*BUREAU					-0.047	-0.034		
					(-0.13)	(-0.08)		
LIB*DEMOC							-0.009*	-0.012*
							(-5.11)	(-5.15)
INFLATION	-0.054*	-0.044	-0.0042*	-0.0022*	-0.0033*	-0.0011*	0.0043	0.0012
	(-6.39)	(-6.16)	(-4.44)	(-4.88)	(-5.31)	(-5.05)	(-0.55)	(-0.62)
FRENCH LEGAL	-0.056	-0.061	-0.046	-0.041	-0.37*	-0.28*	-0.11	-0.18
	(-0.61)	(-0.33)	(-0.16)	(-0.44)	(-6.91)	(--.6.69)	(-0.82)	(-0.93)
TRADE OPENNESS	0.816**	0.143**	0.712	0.556	0.236	0.111	0.824	0.188
	(2.33)	(2.55)	(0.11)	(0.17)	(0.88)	(0.81)	(1.18)	(1.13)
Hausman test (p-value)	0.043		0.028		0.009		0.042	

t-statistics for coefficient in parentheses; ***, **, * refer to the 1, 5 and 10% levels of significance respectively; (1) relative regression of corruption, (2) relative regression of law and order, (3) relative regression of Bureaucracy and (4) relative regression of Democracy. Catholic Population in percent of total population and Muslim Population in percent of total population are used to instrument the variable Growth in equation (2), Autocracy index Polity and Difference between democracy and autocracy are used to instrument the variable FD in the equation (1).

The impact of CAL on growth remains significantly positive while its effect on financial development is insignificant ($\theta_2 = 0$ may be a valid restriction in the model) in most regressions. The coefficient of the interaction term (CAL * INST) is significantly negative in both equations (ω_1 and ω_2), suggesting that weak institutional quality may constrain the positive effect of capital account liberalization on growth. Moreover, the presence of poor institutional quality in the opening process may generate a negative indirect effect on growth through financial development. This is in corroboration with Ito (2006) and Law and *al.* (2013). Namely, while the adoption of a capital account liberalization policy promotes growth, the positive effect is reduced in countries with poorer institutional environments.

The coefficient of corruption index combined with capital account liberalization is negative and statistically significant in equation (2). Moreover, the coefficient δ_1, which represents the effect of FINDEV on growth, is positive and statistically different from zero, which indicates that capital account liberalization in corrupt environment leads to reducing financial development, consequently, an indirect negative effect on growth. In this regard, Klapper and Love (2004) agreed that a country that does not have an effective judicial system and where corruption is high cannot achieve good economic performance. Moreover, the interaction term (CAL*CORRUP) is significantly negative in equation (1) ($\omega_1 < 0$) in both regressions, and the coefficients for CAL and CAL^2 are significantly positive ($(\theta_1 + \varphi * CAL) > 0$) in both regressions. The results seem indicate that, in order for capital account liberalization to contribute to economic growth, MENA countries should reduce corruption lower than the threshold of 2.67 ($\frac{0.235+2*0.002*0.72}{0.089}$). (Table II, column 1). Bearing on the regression of the LIB index, the corresponding threshold is 2.82 ($\frac{0.121+2*0.001*1.81}{0.043}$) (Table III, column 1) where 0.72 and 0.31 are the average coefficients of KAOPEN and LIB respectively for the 18 MENA countries (see Table I up). The studied MENA countries have not benefited from the positive effect of capital account liberalization because of the high corruption level in the region (the average value is 3.04, which is higher than the 2.67 and 2.82 threshold levels estimated by the two regressions respectively. This result is recently corroborated by Blackburn and Forgues-Puccio (2010), Kunieda et *al.* (2014) and Rachdi and al. (2018) who support the negative association between corruption and economic growth.

As for the Law and order regression, we found a positive and a significant coefficient at a 5% significance level for the (KAOPEN*LAW) variable in equation (2) (ie $\omega_2 = 0.030$). FINDEV's estimated coefficient of δ_1 in the growth equation reveals a positive and a significant coefficient (2.085). This indicates that an increase in the law index in an economy that opts for financial sector development makes it possible to accelerate economic growth. However, the weakness of the law enforcement system helps to restrain economic growth. This result is consistent with that of Demirgüç-Kunt and Vojislav (2002), who found that poor law enforcement, undermines financial systems and increases risk of capital account liberalization. Looking at the two regressions of equation (1), the interaction terms (KAOPEN*LAW) and (LIB*LAW) are significantly positive ($\omega_1 > 0$). The coefficients of KAOPEN, KAOPEN^2, LIB remain significantly positive *(*$((\theta_1 + \varphi * CAL) > 0)$. The coefficients of LIB^2 are not statistically significant. This proves that capital account liberalization favors economic growth of the studied MENA countries, if these latter possess a level of law higher than the threshold of 6.20 ($\frac{0.333-2*2.031*0.72}{0.418}$). (Table II, column 3) and 6.63 ($\frac{-0.239+2*0*1.81}{-0.036}$), under the regression of the LIB index (Table III, column 3). Even though capital account liberalization has had a positive effect on the economic growth of the studied MENA countries, the level of law remains insufficient to cash in the advantages of openness. (The average value is 3.88, which is lower than the 6.20 and 6.63 threshold levels

resulting from the two regressions respectively. there are divergent Gazdar and Cherif (2015) , which concluded that the MENA countries are above the optimal threshold of law and order which makes it possible to attenuate the negative effect of financial development on the growth. Otherwise, our results are similar to Apergis and Payne (2014), Arayssi and Fakih (2017), Saidi et *al.* (2017) et recently Law and *al.* (2018) from the international data. These authors support that the the lack of respect for the law negatively influences the finance-growth relationship.

The results of regressions of bureaucracy quality index, reported in Table 2 column 3, indicate that its coefficient is negative and significant. The coefficients of (KAOPEN*BUREAU) is negative and significant at the 5% level (-0.12, $\omega_1 < 0$). These results indicate that a country with a high bureaucracy level cannot achieve good economic performance under capital account liberalization. This is an obstacle to achieving high economic growth rates (already confirmed by Papaconstantinou et al. (2008) and Blackburn and Forgues-Puccio (2010) who concluded that financial liberalization is good for development when corruption and bureaucracy are good, but may be bad for development when corruption and bureaucracy are bad, as well as Ayal and Karras (1996) show that bureaucracy is negatively related to economic growth because it has a negative effect on investment. The threshold level of institutional quality (bureaucracy index) is 4.54 (only significant for the KAOPEN regression) which is below the average of the MENA countries (5.8). On the other hand the complex bureaucracy may hamper economic growth in this region Also, the results on the Democratic accountability index (DEMOC), reported in Tables II and III, column 4, indicate that the coefficients of CAL and the interaction term (CAL*DEMOC) are negative but no longer significant. This can be interpreted by the fact that democracy does not mediate the CAL-growth nexus. Indeed, most MENA countries record the lowest democracy rates of the rest of the world. Such a result differs from Rachdi and Saidi (2015) who concluded for the same sample of countries that democracy have a negative impact on growth. Generally, Corruption and law and order are the most relevant determinants of institutional quality in the finance-growth nexus in the region.

The other control variables are consistent with the theory regarding their impacts on economic growth-financial development nexus. The coefficients of, Government Consumption; Inflation and annual population growth rate are negative and statistically significant in most specifications of growth equation. A result that is consistent with the economic literature (Law and Singh, 2014, Barro, 1990, Blackburn and Powell (2011), Kremer et al., (2013).Chu et al. (2015), Cannolly and Li. (2016)) suggests that these variables are negative determinants of economic growth. Trade Openness is significantly positive in all the specification of growth equation and statistically significant in some in financial development equation (consistent with Law and Singh, (2014) , and contradictory with Menyah et al. (2014) whose The results imply that financial development and trade liberalization do not seem to have made a significant impact on growth).

In summary, our main findings about the coefficients of the capital account liberalization index and financial development are generally significant and positive in the growth equation. However, the interaction terms that represent the joint effect of liberalization and institutional quality on growth have negative and significant coefficients in most regressions. This suggests that poor institutional quality may hinder economic growth of countries that opt for an openness policy. Indeed, financial development and progress in capital account liberalization promote growth. This positive effect is reduced in a country with poor institutional quality. Our findings are in line with those of Abdullahi (2013) and Kuniedaa *et al.* (2014), Rachdi et *al.* (2018) and Law et *al.* (2018) who suggested that the positive effect of capital account liberalization on growth is conditioned by a reasonable level of institutional

quality. Therefore, our results provide empirical evidence that, given poor institutional quality in the MENA region, the adoption of a capital account liberalization policy along with financial sector development may not generate significant benefits in terms of economic growth. In other words, openness is a necessary but not a sufficient condition for the growth of the MENA countries; it should be complemented by an improvement in institutional quality. Thus, low corruption level, prevalence of law and order and a lower bureaucracy index are prerequisites for successful capital account liberalization in promoting economic growth.

5. Concluding remarks and policy implications

This paper explored the link between capital account liberalization, financial development, and economic growth, and tested whether the results are affected by institutional quality, in a sample of MENA countries. We used a model with two simultaneous equations estimated by the 2SLS equation per equation over the 1997 to 2016 period. To account for the marginal effect of CAL on growth, we included a squared variable CAL^2 and the interaction term which represents the joint effect of CAL and institutional quality on growth. We found that there was a conditional relationship between capital account liberalization and economic growth. In reality, institutional quality diminishes the positive effect of openness. In addition, financial development and institutional quality are complementary to promote growth in the MENA region. In fact, capital account liberalization can only promote economic growth in countries with an adequate institutional environment. The negative effect of the mixed variable CAL * INST in most regressions can be explained by the fact that most MENA countries have not reached an institutional quality level beyond which financial liberalization may act as a growth factor. These results are in line with those of Kuniedaa et al. (2014), Trabelsi and Cherif (2017) and Demetriades and Law (2006), who pointed to the importance of institutional quality to the finance- growth link.

Our results have some policy implications for an institutional reform adoption. We suggest that capital account liberalization and higher institutional quality together can enhance economic growth. Therefore, the MENA countries should improve their institutional environment, instating in the process low corruption level and a solid protection of ownership rights and setting up solid democratic institutions.

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