

**A MEASURE OF POLITICAL INSTITUTIONS INSTABILITY AND ITS
IMPACT ON THE ECONOMIC GROWTH:
EVIDENCE FROM MENA**

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Abstract:

We examine the multidimensionality of political institutions instability using 22 political institutions instability indicators in Principal components analysis (PCA). We find that political institutions instability has five dimensions: Largest Government Party Seats, Number of Government Seats, Legislative Index of Political Competitiveness, Executive Index of Political Competitiveness and Largest Opposition Party Seats. By using the GMM system estimator for linear dynamic panel data models on a sample covering up to 19 countries from 1980 to 2012, we find that the five dimensions of political institutions instability have significant negative effect on economic growth.

Keywords: Economics growth, political institutions instability, GMM system estimator and MENA.

Résumé:

Nous examinons la multi -dimensionnalité de l'instabilité des institutions politiques en utilisant 22 indicateurs d'instabilité des institutions politiques dans l'analyse des composantes principales (ACP). Nous constatons que l'instabilité des institutions politiques a cinq dimensions: les plus grands sièges du gouvernement, le nombre de sièges du gouvernement, l'indice législatif de la compétitivité politique, l'indice exécutif de la compétitivité politique et les plus grands sièges de l'opposition. En utilisant l'estimateur du système GMM pour les modèles de données de panel dynamiques linéaires sur un échantillon couvrant jusqu'à 19 pays de 1980 à 2012, nous constatons que les cinq dimensions de l'instabilité des institutions politiques ont un effet négatif significatif sur la croissance économique.

Mots clés : croissance économique, instabilité politique, GMM en système.

1. Introduction

For a long time, political instability has been a field of research which has attracted the attention of several researchers in economic and social matters. Abessolo (2003) defines political instability as the manifestation of several factors that do not fully overlap and must be taken into account simultaneously. It covers two distinct categories: regular changes in political power while respecting legal forms, and political changes through violence (Alesina et al., 1996).

In recent years, the MENA region (Middle East and North Africa) has been characterized by political instability. With these problems, countries run the risk of becoming caught in the resource trap unless institutional strengthening and improving the investment climate, especially political and macroeconomic stability. Moreover, political instability creates uncertainty at the level of future institutions and decision-makers, which in turn change the behavior of private agents and societies in terms of capital accumulation. This phenomenon is explained by a lack of determination by a lack of determination in the struggle of some governments against corruption.

In addition, a set of factors takes the place of explanatory principle of political instability, the latter finds its origins in:

- Terrorism: is defined as political violence against civilians whose aim is to maximize the internal disruption of countries and external ones by forming terrorist groups. According to Bounan (2003), terrorism is the set of criminal operations of varying nature and importance intended to frighten a particular population with a view to obtaining political concessions. To achieve this goal, terrorist crimes must be known as widely as possible and terrorism is first and foremost a media operation.

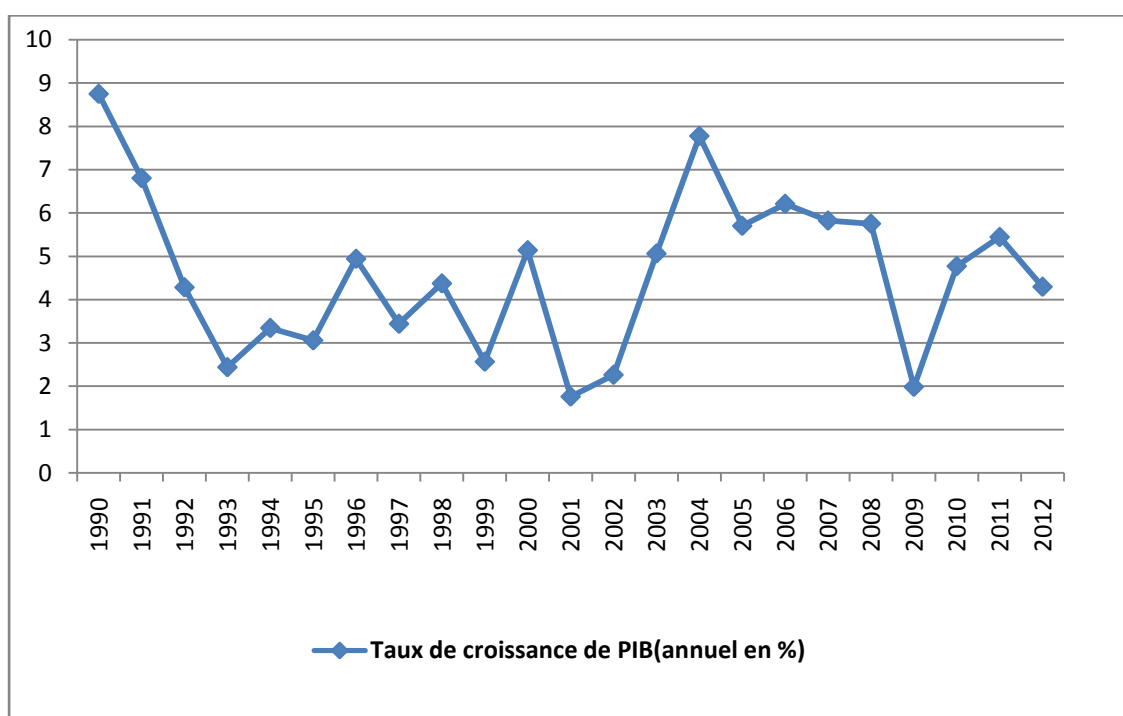
- Social and ethnic conflict: conflicts are manifested in civil wars, social conflicts or riots that affect a country and cause a deterioration of its economic growth and human development. According to Brown (1993), ethnic conflict can be seen as a dispute between two or more communities and which involves important disputes related to political, social, economic or territorial issues. Concerning this, social conflict springs from social organization itself, since it is based on a differentiation of positions and on political, economic and social disparities.

On the other hand, democracy is a process highlighting the importance of elections, fundamental rights and various modalities allowing active participation of citizens in making political decisions through enlargement and better representative of the Consultation, while ensuring respect for the minority. According to Burdeau (1956), democracy is the freedom and equality of citizens, it refers more to a project of society and less to a form of

government. The latter is at the heart of the organization of a State. The figure above inspires us several thoughts. In fact, over the period (1980-2012), the average annual growth rate of

East Asia and the Pacific is higher (4.2%), whereas America Latin America and the Caribbean is down, their growth rates are almost 2/3 the rate of growth of this first (2.8%). Concerning the MENA region, the situation is more moderate compared to Sub-Saharan Africa. Depending on the rate of growth, the classification of countries of the world remains uncertain.

Figure 1: Growth in the MENA region: (1990-2012)



Source: Author's own presentation based on data from the World Development Indicators, (2012).

In 2004, the graph above shows that the region has experienced strong economic growth, the average annual growth rate is 7.78%, an exceptional growth of the decade, taking into account the annual average of 8.75 % Of the 1990s. Over the years, the region has grown gradually. For the period 1990 to 2012 we note that the average annual growth rate of the MENA region is always positive, it is a 'sustainable' growth.

For the period 2000-2004, the main reason for this increase in economic growth in the region is the increase in oil prices. Thus, more countries in the region had delays in their

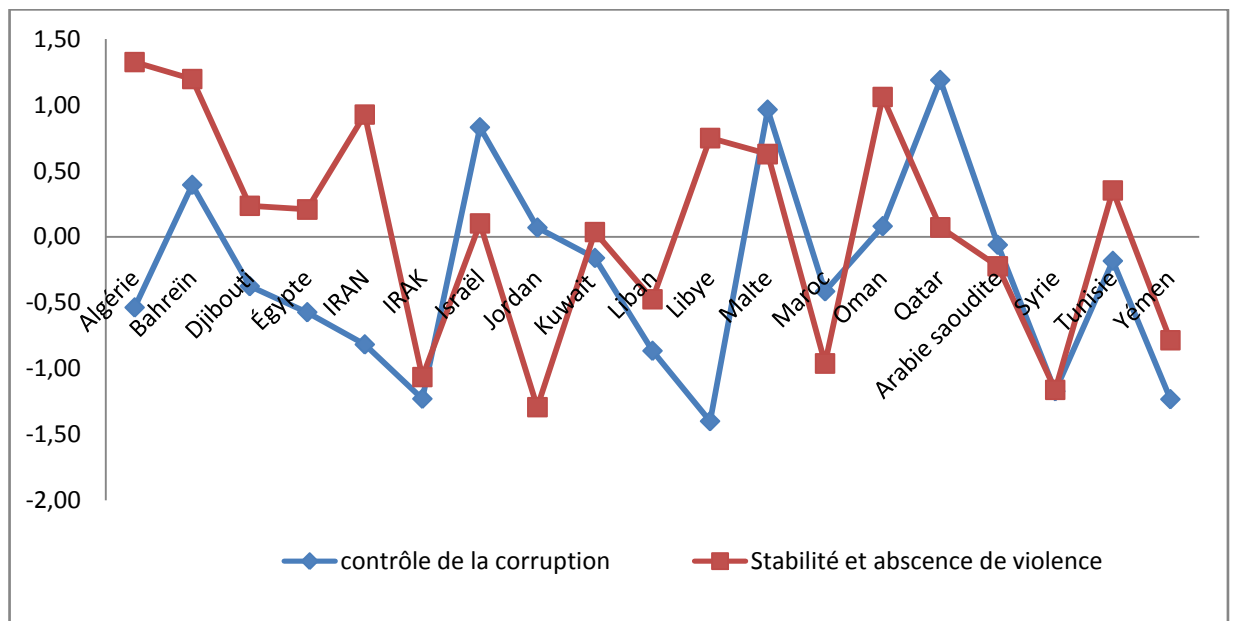
economic growth for the year 2001. For the year 1990, we compare the statistical figures drawn with those of the year 2004, we note that the oil countries (Arabia Saudi Arabia, Algeria, the Islamic Republic of Iran and the United Arab Emirates) are the main miner of economic growth in the region. But, generally for the two years 2010 and 2011, the level of economic growth in this region is decreased, due to political instability (political shock 2011).

Growth in the economies of the MENA region will increase in 2012 to 5.3% from 3.3% in 2011 before rising to a moderate 3.6% in 2013. The growth of the main oil-exporting countries is certified by the increase of their oil production and their domestic demand. For the oil-importing countries of the MENA region, the economic situation remains difficult, with growth estimated at 1.2% in 2012 after 1.4% in 2011. In Egypt, growth decreased to 1.1% in 2012 against 1.8% the year which described the uncertainty surrounding the country's political procedures. These factors have had an impact on investment and services, including tourism. In Morocco, GDP growth increased by 4.1% to 2.8 in 2012, due to the economic slowdown in Europe and the poor performance in agriculture. In Libya, growth has improved to 100.7%, investment has strengthened the economy and oil production has recovered to reach 1.42 million barrels / day in July 2012 compared with 500,000 at the end of 2011 (Bank World, 2012). The Tunisian economy contracted in 2011 to 1.7%, but in 2012 recovered to reach 2.6%, reflecting the recovery in tourism, exports and foreign direct investment (FDI).

In addition, political instability is one of the main obstacles to economic and financial reform. Political instability aggravates fiscal deficits, inflation and hinders the improvement of economic growth. Figure 2 shows that the evolution of political stability and control of corruption in the MENA region is progressing in parallel. In fact, the least politically stable countries are the most corrupt Iran, Iraq, Libya and Syria. Thus, we observe that the majority of countries in this region are characterized by a decrease in the control of corruption. In 2011, the political shock led to a decrease in political instability in all regions of the MENA zone. The most stable countries are those with the most reliable and strong institutions capable of effectively managing conflicts between antagonistic groups.

Thus, the absence of significant economic reforms alongside political and macroeconomic instability will help curb investment and long-term growth potential. Political instability leads to problems such as revolutions or wars, coups d'Etat and political crimes. This means lack of security and discourages long-term investments.

Figure 2: Change in control of corruption and political stability in 2011



Source: Author's own presentation based on data from the World Development Indicators, (2011).

In this article, our main objective is to examine the multidimensionality of political instability institutions. For this purpose, we use a principal component analysis on a set of 22 indicators of political instability institutions. The rest of this article is organized as follows. In Section 2, we discuss our data and the results of the analysis to the main component. In section 3, we examine the data and the empirical model. We examine the effect of the political institutions instability on economic growth, in Section 4. Section 5 is the conclusion.

2. A review of the literature

Over the last decade, the term institution has gain attention by dozens of researchers given its importance in the social sciences in recent years , the growth in institutional economics and the use of the institution concept in several other disciplines, including sociology, philosophy, politics, and geography. North (1990) defined institutions as human constraints that have economic, political and social interactions. In fact, he includes in his definition both formal rules (property rights, constitutions and laws) and informal constraints (customs, traditions and codes of conduct). However, Nelson and Sampat (2001) show that institutions are presented as « social technologies » in economic productive activities, which involve the search for human interaction rather than physical technology.

Political institutions are likely to be part of the root causes of economic performance¹. Acemoglu et al. (2005) and Persson (2004) argued that political institutions set the stage for economic activities and the creation of economic institutions.

As a matter of fact, several researchers concluded that the institutional framework of a country plays a crucial role in determining the growth performance of a country (Acemoglu and Robinson, 2010; Jones, 1987; North, 1981; North and Thomas, 1973). The existing literature establishes a positive relationship between institutions and economic growth (Acemoglu and Robinson, 2010; Iqbal and Daly, 2014; Mauro, 1995; Rodrik et al., 2004). It suggests that the impact of various institutions may vary from one country to another according to the national economic environment. For example, Latin American countries have adopted institutions more or less similar to those adopted in the United States of America but the results (economic development) remained significantly different (Yifu Lin and Nugent, 1995). In addition, empirical analysis shows that the stability of government has a positive effect on economic growth (Nawaz, 2015). This implies that a country with a stable government works better for accelerating economic growth. Aisen and Veiga (2013) found similar results. Nevertheless empirical results (García-Peñalosa, Konte, 2014) have shown that political institutions have no direct impact on the growth rate. Deger and Sen (1995), Ram (1995) and Dunne (1996) showed that the effect of military spending on economic growth varies depending on the design of the empirical strategy. Studies of Alptekin, Levine (2012) found mixed results on the impact of military spending on economic growth.

Other empirical results showed that military spending leads to negative economic growth for low-income countries (Chang et al., 2011). Knight et al. (1996) demonstrated empirically the existence of a direct negative relationship between military spending and economic growth through investment and productivity. Galvin (2003) found the same result.

In contrast, Benoit (1973, 1978) have shown that military spending increases economic growth in developing countries (For a sample of 44 least developed countries (LDC) in the period from 1950 to 1965). Valeriani and Peluso (2011) found a positive impact of institutions on economic growth (using a panel data from 1950 to 2009 for 181 countries). Regarding the relationship between democracy and economic growth, empirical studies of Borner et al. (1995) have shown mixed results. However, Helliwell (1994) and Barro (1996a) found a non-significant negative effect of democracy on economic growth.

¹See Galor (2005) for discussions of a deep and proximate cause of growth.

3. The data and results of the PCA

3.1. Principal Component Analysis

Principal component analysis (PCA) is a statistical technique that is part of the group of multivariate descriptive analysis methods. PCA is considered the theoretical basis of factorial data analysis methods; it is a particularly powerful method for exploring data. It is also the "mother" of most multidimensional descriptive methods». (SAPORTA, 2006). PCA compresses the data and reduces its dimensionality so that quantitative variables are not correlated to a smaller number of uncorrelated variables by projecting the multidimensional observations represented in a space R_p (p is the number of observed variables) on a small dimensional subspace of R_p between the projected points. It is necessary to retain the plan for which the projections are most dispersed. (BOUROCHE and SAPORTA, 1980). The main component analysis is based on the iterative algorithm NILES 'Nonlinear estimation by Iterative Least Squares'² Which was developed by WOLD(1966).

3.2. Algorithm

According to TENENHAUS(1998), Having a matrix X of rank α Which represents a table of data relating to variables X_j Supposedly centered The decomposition of X into main components is written as follows

$$X = \sum_{h=1}^q t_h p_h' \quad (3)$$

With: t_1, t_2, \dots, t_q are the main components associated with X .

p_1, p_2, \dots, p_q are the main vectors of the main axes.

This equation (3) is seen as a model to estimate the parameters p_h and t_h under orthogonality and orthonormality constraints on the principal vectors and components.

² This algorithm is similar to that of the Nipals algorithm 'Nonlinear estimation by Iterative Partial Least Squares 'In the case of the PLS 'Partial Least Squares regression' (Regression of partial least squares) presented by WOLD (1973).

By considering variables x_j and to the individuals x_i , the equation (3) becomes:

$$\begin{cases} x_j = \sum_{h=1}^{\alpha} p_{hj} t_h, j = 1, \dots, p \\ x_i = \sum_{h=1}^{\alpha} t_{hi} p_h, i = 1, \dots, p \end{cases}$$

It is noted that p_{hj} Of the vector p_h is the coefficient of regression of x_j on t_h . Similarly, the value of t_{hi} of the main component t_h for the individual i equally represents the coefficient of the regression of x_i on p_h .

3.3. Results analysis

3.3.1. Choice of number of axes to remember

Given the fact that the data is centered, the diagonalization of the correlation matrix allows the extraction of eigenvalues presented in the table above:

Table 1: the eigenvalues of the factorial axes

N	Own value	% Of variance	% Accumulated
1	5,0339	21,89	21,89
2	3,1378	13,64	35,53
3	2,0994	9,13	44,66
4	2,0667	8,99	53,64
5	1,8242	7,93	61,57
6	1,3908	6,05	67,62
7	1,2176	5,29	72,91
8	0,9724	4,23	77,14
9	0,9079	3,95	81,09
10	0,7988	3,47	84,56
11	0,6821	2,97	87,53
12	0,5727	2,49	90,02
13	0,5313	2,31	92,33
14	0,4681	2,04	94,36
15	0,3525	1,53	95,90
16	0,3191	1,39	97,28
17	0,2111	0,92	98,20
18	0,1646	0,72	98,92
19	0,1436	0,62	99,54
20	0,0645	0,28	99,82
21	0,0346	0,15	99,97
22	0,0054	0,02	100,00

N: Number of eigenvalues drawn in descending order.

Eigenvalue: eigenvalue of the matrix of the correlation coefficients between parameters.

Percentage: Percentage of the variance explained by each factor axis.

Percentage Cumulative: Percentage of cumulative variance.

Some authors suggest that only factors with an eigenvalue equal to or greater than 0.8 (Phillipeau, 1986) or even above 0.7 (Everitt and Dunn, 1991) are retained. Kaiser (1958) postulates that the eigenvalue related to the factor must be greater than 1, accordingly are based on this rule (which is the most recommended), We retain the first two main axes. Axis 1 represents 21.89% of the total information. The second axis accounts for 35.53% of the total variance.

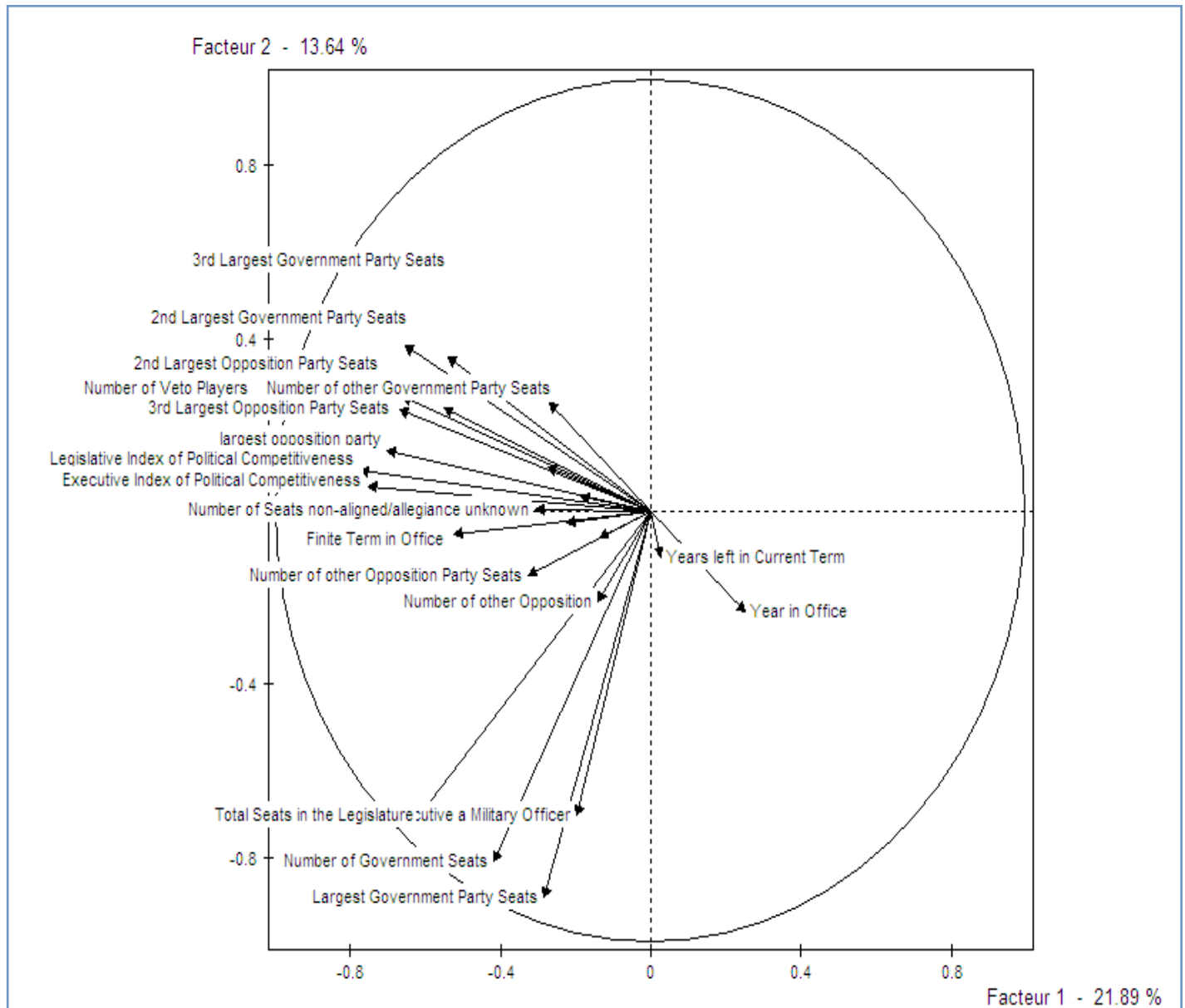
3.3.2. Graphical representation of the active variables on the first factorial plane

In order to analyze more closely the proximities between variables, we consider their projections on the factorial plane defined by the first two axes. The representation of the variables carried by the first factorial plane makes it possible to detect, at a glance, among the initial variables, the groups of variables that are strongly correlated with one another.

The interpretation of factorial plan is based on the following rule: "one limits the balance of the links to the well represented variables (that is to say whose image is close to the circle of correlation). It is thus possible to regroup visually (which is all the more valuable as the variables are numerous) linked variables and thus sketch a typology of variables ". (Escoffier and Pagés, 1998).

We examine the dimensionality of the instability of political institutions using (ACP). We use 22 indicators based on the political institutions of (Beck et al., 2001). The sources of the data are given in Annex 1. The descriptive statistics of the variables included in the tables of results are presented in Annex 2. The correlation matrix (Annex 3) provides us with elements of description of the associations between active variables. Its reading gives us a first idea of the network of interrelations existing between the variables, but the analysis in main components will make it possible to obtain a synthesis of these links. The circle of correlations corresponding to the first factor plane is given in Figure 1. The first factor axis accounts for 21.9% of the inertia. The variables that contributed the most to this axis are: **Largest Government Party Seats, Number of Government Seats**. The second factor axis accounts for 13.64% of inertia. The variables that contributed the most to this axis are: **Legislative Index of Political Competitiveness, Executive Index of Political Competitiveness, Largest Opposition Party Seats**.

Figure 1: correlation circle in the first factor map



Notes: this graph shows the representation of variables in the plan. The variables are well Represented those close to the circle and those close to the origin are poorly Represented.

4. data and empirical model

Annual data on economic variables, as well as policies, from 1980 to 2012 were collected for 19 countries, covering the MENA region (Middle East and North Africa). Economic data

sources were World Development Indicators of the World Bank³ (WDI). The political and institutional data were obtained from (Beck et al. (2001))⁴ and Polity IV database (Marshall and Jagers⁵, 2009). The data sources are listed in Appendix 4. Descriptive statistics of the variables included in the tables of results are presented in Table 2. The baseline model we estimate is an augmented version of the model of Islam (1995)⁶, who derives an estimable panel regression specification from the Solow (1956)⁷ growth model. Using the generalized method of moments (GMM) to estimate the relation between political institutions and economic growth, which is developed for dynamic panel by models of Holtz- Eakin and al. (1990), Arellano and Bond (1991) and Arellano and Bover (1995). The traditional regression of the growth model is as follows:

$$y_{i,t} - y_{i,t-1} = \alpha y_{i,t-1} + \beta' x_{i,t} + \mu_i + \varepsilon_{i,t} \quad (1)$$

Where y is the logarithm of GDP per capita, x represents the explanatory variables other than the lagged dependent variable, μ_i is a specific effect of the unobserved country. $\varepsilon_{i,t}$ is the error term and the indices (i, t) represent respectively country and time. We include dummy variables of time to represent the specific time effect. To differentiate equation (1), Arellano and Bond (1991) propose:

$$(y_{i,t} - y_{i,t-1}) - (y_{i,t-1} - y_{i,t-2}) = \alpha (y_{i,t-1} - y_{i,t-2}) + \beta'(x_{i,t} - x_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (2)$$

Although differentiation eliminates countries specific effect, it offers a new way for construction of the new error term, $(\varepsilon_{i,t} - \varepsilon_{i,t-1})$, which is correlated with the lagged dependent variable $(y_{i,t-1} - y_{i,t-2})$. As a result, the explanatory variables $x_{i,t}$ are strongly exogenous. Arellano and Bond propose the following moment conditions:

³ Worldbank, 2007. World Bank Development Indicators. CD-ROM.

⁴<http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>.

⁵ Marshall, M., Jagers, K., 2002. Polity IV Data Set. [Computer file; version p4v2002] College Park, MD: Center for International Development and Conflict Management, University of Maryland. Data set downloadable at: <http://www.systemicpeace.org/polity/polity4.htm>.

⁶ Islam, N., 1995. Growth empirics: a panel data approach. The Quarterly Journal of Economics 110, 1127–1170.

⁷ Solow, R., 1956. A contribution to the theory of economic growth. The Quarterly Journal of Economics 70, 65–94.

$$E [y_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ to } s \geq 2 \text{ and } t=3, \dots, T. \quad (3)$$

$$E [x_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ to } s \geq 2 \text{ and } t = 3, \dots, T. \quad (4)$$

Arellano and Bond (1991) propose a two-step GMM estimator, using the moment conditions. For the first step (3), the error term is assumed to be independent and homoscedastic across countries and over time. In the second step, the residues reached from the preceding step, are used to construct a regular estimate of the variance-covariance matrix. As a result, we obtain the assumptions of homoscedasticity and independence. We obtain an asymptotically efficient estimator in the first step. Concerning the case where the explanatory variables persist, Blundell and Bond (1998) and Alonso-Borrego and Arellano (1999) verified that the delayed levels of these variables are weak instruments for the regression of the equation in difference. Asymptotically, it will have an increase of the variance of the coefficients. Monte Carlo simulations for small sample sizes, verified that the weaknesses of the instruments may be biased coefficients. Arellano and Bover (1995), and Blundell and Bond (1998) proposed a system estimator to reduce the potential bias and imprecision associated with the difference estimator. Instruments for the regression in system are the delays of the differences of the corresponding variables. Conditions moments for the estimator system are:

$$E [(y_{i,t-s} - y_{i,t-s-1})(\mu_i - \varepsilon_{i,t})] = 0 \quad \text{pour } S = 1$$

$$E [(x_{i,t-s} - x_{i,t-s-1})(\mu_i - \varepsilon_{i,t-1})] = 0 \quad \text{pour } S = 1$$

The consistency of the GMM estimator depends on the validity of the hypotheses of absence of auto-correlation of the error terms and those of instruments. For the validity of these hypotheses, we use two tests proposed by Arellano and Bond (1991), Blundell and Bond (1998) and Arellano and Bover (1995). The first is Sargan test of over-identification, which test the complete validity of the instruments and the second test verifies the hypothesis that the error ($\varepsilon_{i,t}$) is not correlated in series. If both tests are valid, we can apply our model. Both difference estimator and system estimator have some problems with small samples. For two-step estimators, asymptotic standard errors are biased (Arellano and Bond (1991); Blundell and Bond (1998)).

5. Empirical results

We choose a growth model on a panel of 19 MENA developing countries (Annex 4) selected according to the availability of data for the period from 1980 to 2012. By adding institutional and political variables to our growth model, regression results are shown in Table 2. Our primary interest is to determine the tests of the validity of instruments (Hansen) and the lack of serial autocorrelation of residuals (Arellano and Bond (1991)). Empirically, we accept the presence of an AR (1) for residues and the absence of an AR (2) effect. This is in accordance with the formulated hypotheses. Besides, the Sargan test validate the choices of instruments. For macroeconomic variables, the results of the different models are similar to those provided. The hypothesis that the instability of political institutions negatively affects economic growth gets a clear empirical support. The initial GDP per capita has a negative coefficient, which is compatible with the conditional convergence income across countries⁸.

Investment (Mankiw et al., 1992)⁹ and tertiary enrollment rates have a positive and statistically significant coefficients, indicating that more investment and education promote growth. Inflation has a negative and statistically significant effect due that high inflation negatively affects growth (See Edison et al. (2002) and Elder (2004)). By integrating each time one of the 5 variables of the instability of political institutions of Beck et al. (2001) database, the results confirm the existence of a negative correlation between the instability of political institutions and economic growth. For example, the estimated coefficient (Executive Index of Political Competitiveness) implies when there is an additional change in the degree of political competitiveness in the Annual Legislative Assembly, the annual growth rate decreased by 2.3 percentages. The results show that democracy (polity IV) has a positive association with GDP growth per capita. Many studies have found similar results (Helliwell, 1994; Rodrik, 2000). Contradictory, other results have proven a negative relationship (Barro (1996) and Tavares and Wacziarg (2001))¹⁰.

⁸ Ari Aisen., Francisco José Veiga., 2013. How does political instability affect Economic Growth ?. *European Journal of Political Economy* 29, 151-167.

⁹ Mankiw, NG, Romer, D., Weil, D., 1992. A contribution to the empirics of Economic Growth. *Quarterly Journal of Economics* 107, 407-437.

¹⁰ On the relationship entre democracy and growth, aussi see Acemoglu et al. (2008).

Table 2 : Descriptive statistics

Variable	Numobs	Mean	St.dev.	Min	Max.
growth of GDP per capita	570	3.645	0.554	2.452	4.967
Investment Share of GDP (%)	487	27.759	12.045	0.733	80.120
School enrollment, tertiary (% gross)	458	18.731	13.736	-12.732	62.375
Inflation, GDP deflator (annual %)	518	11.015	26.533	-32.814	390.678
Military expenditure (% of GDP)	404	5.987	6.994	0.921	117.387
Executive Index of Political Competitiveness	665	3.514	2.007	1	7
Legislative Index of Political Competitiveness	617	4.233	2.256	1	7
Number of Government Seats	683	157.483	185.837	0	1112
Largest Government Party Seats	674	143.290	186.152	0	1112
largest opposition party	683	16.623	16.623	0	106
Democracy (polity IV)	601	-5.396	5.047	-10	+10

Sources :

- Beck and al.(2012)
- World Bank's World Development Indicators (WDI)
- Database (Marshall and Jagers, 2009)

Notes: sample of 19 MENA developing countries selected according to the availability of data for the period from 1980 to 2012. In the columns 'Numobs', 'Mean', 'St.dev', 'Min' and 'Max' contain the number of observation , the mean, standard deviation, minimum and maximum for each variable.

Table 3: political institutions instability and economic growth

Dependent Variable : real GDP growth per capita							
	1	2	3	4	5	6	7
lagged real GDP growth per capita	(-0.205) 0.000**	(-0.069) 0.000**	(-0.123) 0.000**	(-0.232) 0.000**	(-0.161) 0.000**	(-0.160) 0.000**	(-0.245) 0.000**
Investment Share of GDP (%)	(0.003) 0.000**	(0.006) 0.000**	(0.001) 0.001**	(0.002) 0.007**	(0.003) 0.002**	(0.004) 0.000**	(0.006) 0.000**
School enrollment,	(0.009)	(0.014)	(0.015)	(0.017)	(0.018)	(0.017)	(0.013)

tertiary (% gross)	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
Inflation, GDP deflator (annual %)	(-0.003) 0.020**	(-0.005) 0.021**					
Military expenditure (% of GDP)		(-0.034) 0.000*		(-0.006) 0.019*	(-0.171) 0.002*		
Executive Index of Political Competitiveness		(-0.126) 0.000***		(-0.018) 0.000**		(-0.005) 0.019**	(-0.071) 0.000**
Legislative Index of Political Competitiveness			(-0.154) 0.000**	(-0.146) 0.000**	(-0.171) 0.000**	(-0.160) 0.000**	(-0.172) 0.000**
Number of Government Seats				(-0.001) 0.000**			
Largest Government Party Seats					(-0.001) 0.000**	(-0.001) 0.000**	(-0.001) 0.000**
largest opposition party						(-0.001) 0.000**	
Democracy (polity IV)							(0.033) 0.000**
cons	(4.131) 0.000**	(3.973) 0.000**	(4.478) 0.000**	(4.979) 0.000**	(4.711) 0.000**	(4.773) 0.000**	(5.694) 0.000**
Number of observations	277	226	308	232	240	306	287
Number of countries	31	23	31	23	23	31	31
Hansen test (p-value)	0.985	0.966	0.229	0.638	0.996	0.998	0.198
Arellano-Bond test for AR(1)	0.001	0.026	0.001	0.024	0.021	0.001	0.001
Arellano-Bond test for AR(2)	0.295	0.884	0.997	0.534	0.915	0.239	0.198

Notes:

- System-GMM estimations for dynamics panel-data models. Sample period: 1980-2012.
- t-Statistics are in parentheses. Significance levels at which the null hypothesis is rejected: 1%***; 5%**; 10%*.

5. Conclusion

The stability of political institutions turns out to be one of the most important rules of the game in the determination of the shape of the economic behavior of the agents and in the explanation of the economic performance of countries. Indeed, in this article, we examined the multi-dimensionality of instability of political institutions. After using the Principal Component Analysis (PCA), we concluded that five political dimensions of the instability can be distinguished.

These dimensions are: (1) Largest Government Party Seats, (2) Number of Government Seats, (3) Legislative Index of Political Competitiveness, (4) Executive Index of Political Competitiveness and (5) Largest Opposition Party Seats. Then we are interested to study empirically the interaction between the instability of political institutions and the economic growth for a group of 19 developing countries in MENA during the period 1980-2012. At this level, we concluded that the instability of political institutions which characterize the MENA region lead to destabilize their economic growth. Democracy has a positive impact on GDP growth per capita (Helliwell, 1994; Rodrik, 2000). Inflation have a negative and statistically significant effect since high inflation negatively affects growth (See Edison et al. (2002) and Elder (2004)). When the military expenditure is high, they divert a part of the economic resources of the investment, as a result setting back economic growth (United Nations Centre for Disarmament, 1978). Generally, the stability of institutions is essential for economic growth. Thus, to achieve strong, sustainable growth, quality of the institutions must be strengthened.

Annex 1: List of variables, definitions and sources

Indicator	Definition	Source
Number of Government Seats	Number of seats in the legislature of the parties in government.	Beck and al.(2001)
Largest Government Party	Number of seats in the legislature of the largest	Beck and al.(2001)

Seats	government party	Beck and al.(2001)
Largest Opposition Party Seats	Number of seats in the legislature of the largest opposition party.	Beck and al.(2001)
Legislative Index of Political Competitiveness	Dummy variable. 1 if there is an executive election held this year.	Beck and al.(2001)
Executive Index of Political Competitiveness	This variable captures the degree of political competitiveness in the legislature as follows: (1) No legislature (2) Unelected legislature (3) Elected legislature with single candidates (like in many Communist countries) (3,5) Unclear whether there is competition among elected legislators in a single-party system (4) Single party with multiple candidates (5) Multiple parties are legal but only one party won seats (5,5) Not clear whether multiple parties ran and only one party won or multiple parties ran and won more than 75% of the seats (6) Multiple parties won seats but the largest party received more than 75% of the seats (6,5) Multiple parties won seats but it is unclear how many the largest party got (7) Largest party got less than 75%.	Beck and al.(2001)
Chief Executive a Military Officer	Dummy variable, 1 if the chief executive is a military officer. If chief executives were described as officers with no indication of formal retirement when they assumed office, they are always listed as officers for the duration of their term. If chief executives were formally retired military officers upon taking office, then this variable gets a 0.	Beck and al.(2001)
Total Seats in the Legislature	Total seats in the legislature, or in the case of bicameral legislatures, the total seats in the lower house. This variable includes appointed and elected seats	Beck and al.(2001)
2nd Largest Government Party Seats	Number of seats in the legislature of the 2nd largest government party	Beck and al.(2001)
3rd Largest Government Party Seats	Number of seats in the legislature of the 3rd largest government party.	Beck and al.(2001)
Number of other Government Party Seats	Number of seats in the legislature of government parties other than the three largest	Beck and al.(2001)
2nd Largest Opposition Party Seats	Number of seats in the legislature of the 2nd largest opposition party	Beck and al.(2001)
3rd Largest Opposition Party Seats		
Number of other Opposition Parties		

Number of other Opposition Party Seats	Number of seats in the legislature of the 3rd largest opposition party	al.(2001)	
	Number of opposition parties other than the three largest	Beck al.(2001)	and
Number of Seats non-aligned/allegiance unknown	Number of seats in the legislature of opposition parties other than the three largest	Beck al.(2001)	and
Legislative Election	Number of Seats non-aligned/allegiance unknown		
Executive Election	Dummy variable. 1 if there is a legislative election held this year	Beck al.(2001)	and
	Dummy variable. 1 if there is an executive election held this year.	Beck al.(2001)	and
Number of Veto Players		Beck al.(2001)	and
Year in Office	In parliamentary systems this is incremented by one for every party in the government coalition as long as the parties are needed to maintain a majority, and by one for every party in the government coalition that has a position on economic issues closer to the largest opposition party than to the party of the executive. (The prime minister's party is <i>not</i> counted as a check if there is a closed rule in place.)		
Finite Term in Office	The number of years in office of the chief executive	Beck al.(2001)	and
Years left in Current Term	Is there a constitutional limit on the number of years the executive can serve before new elections must be called? Deviating from the convention, a 0 is recorded if a limit is not explicitly stated. This gets a 0 in the cases where the constitution with year limits is suspended or unenforced.	Beck al.(2001)	and
Number of Parties non-aligned/allegiance unknown	Only full years are counted. Thus, a "0" is scored in an election year, and n-1 in the year after an election, where n is the length of the term. In countries where early elections can be called, this is set to the de jure term limit or schedule of elections, but resets in the case of early elections	Beck al.(2001)	and
	Number of Parties non-aligned/allegiance unknown	Beck	and

al.(2001)

Annex 2 : descriptive statistics

Indicator	N	Mean	St.dev	Min	Max
largest opposition party	683	16,624	31,958	0,000	206,000
Number of other Government Party Seats	682	3,010	12,726	0,000	140,000
Chief Executive a Military Officer	672	0,284	0,451	0,000	1,000
Total Seats in the Legislature	683	194,026	202,083	0,000	1112,000
Number of Government Seats	683	157,483	185,701	0,000	1112,000
Largest Government Party Seats	674	143,291	186,014	0,000	1112,000
2nd Largest Government Party Seats	680	8,735	20,456	0,000	129,000
3rd Largest Government Party Seats	683	4,378	13,282	0,000	86,000
2nd Largest Opposition Party Seats	679	6,524	16,967	0,000	135,000
3rd Largest Opposition Party Seats	683	2,477	6,679	0,000	49,000
Number of other Opposition	550	5,487	19,903	0,000	144,000
Number of other Opposition Party Seats	683	6,389	19,714	0,000	145,000
Number of Seats non-aligned/allegiance unknown	674	3,473	13,950	0,000	112,000
Legislative Election	664	0,158	0,365	0,000	1,000
Executive Election	665	0,057	0,232	0,000	1,000
Legislative Index of Political Competitiveness	670	4,282	2,285	1,000	7,000
Executive Index of Political Competitiveness	665	3,514	2,006	1,000	7,000
Number of Veto Players	649	1,384	0,930	1,000	7,000
Year in Office	672	13,342	10,715	1,000	46,000
Finite Term in Office	671	0,534	0,499	0,000	1,000
Years left in Current Term	341	2,258	1,638	0,000	6,000
Number of Parties non-aligned/allegiance unknown	545	3,609	13,834	0,000	112,000

Sources :

- Beck and al.(2012)

Notes: sample of 19 MENA developing countries selected according to the availability of data for the period from 1980 to 2012. In the columns 'Numobs', 'Mean', 'St.dev', 'Min' and

‘Max’ contain the number of observation , the mean, standard deviation, minimum and maximum for each variable.

Annex 3: Correlation matrix of the political institutions instability

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	
I	1,00																						
II	0.04	1,00																					
III	0.03	-0.14	1,00																				
IV	0.37	0.09	0.45	1,00																			
V	0.14	0.07	0.47	0.95	1,00																		
VI	0.07	-0.08	0.51	0.91	0.97	1,00																	
VII	0.40	0.43	-0.16	0.23	0.09	-0.10	1,00																
VIII	0.22	0.52	-0.20	0.20	0.11	-0.08	0.77	1,00															
IX	0.68	0.09	-0.11	0.31	0.10	0.00	0.56	0.37	1,00														
X	0.41	0.13	-0.02	0.21	0.04	-0.04	0.40	0.33	0.60	1,00													
XI	-0.05	-0.04	0.21	0.11	0.03	0.03	0.01	-0.02	-0.03	0.00	1,00												
XII	0.05	-0.08	0.19	0.18	0.07	0.04	0.15	0.13	0.08	0.23	0.93	1,00											
XIII	0.12	0.07	0.03	0.17	0.08	0.04	0.10	0.18	0.09	0.13	-0.05	-0.09	1,00										
XIV	0.10	-0.01	0.05	0.04	0.00	0.00	0.04	0.03	0.07	0.08	0.04	0.07	0.06	1,00									
XV	0.01	-0.03	0.11	0.04	0.04	0.05	-0.02	0.00	-0.03	0.03	0.01	0.04	0.02	0.07	1,00								
XVI	0.55	0.24	0.18	0.31	0.15	0.06	0.43	0.36	0.41	0.36	0.21	0.32	0.20	0.19	0.12	1,00							
XVII	0.47	0.09	0.13	0.29	0.17	0.12	0.32	0.20	0.32	0.23	0.07	0.17	0.18	0.13	0.18	0.63	1,00						
XVIII	0.45	0.05	-0.04	0.19	0.06	-0.01	0.46	0.33	0.41	0.32	0.05	0.19	0.09	0.10	0.06	0.46	0.71	1,00					
XIX	-0.20	-0.05	0.14	0.02	0.06	0.07	-0.09	-0.06	-0.12	-0.09	0.10	0.06	0.01	-0.06	-0.07	-0.17	-0.34	-0.25	1,00				
XX	0.30	0.02	0.34	0.16	0.09	0.08	0.12	0.03	0.14	0.06	0.10	0.13	0.06	0.11	0.22	0.46	0.71	0.40	-0.35	1,00			
XXI	0.04	-0.03	0.22	0.03	0.01	0.01	-0.05	-0.01	0.01	0.01	0.12	0.11	-0.04	-0.26	-0.32	0.01	-0.10	-0.09	0.07	-0.12	1,00		
XXII	0.06	-0.04	0.04	0.12	0.04	0.03	0.00	0.06	0.04	0.02	-0.04	-0.02	0.92	0.05	0.02	0.13	0.21	0.09	0.04	0.10	-0.07	1,00	

Notes: The table shows pairwise correlation coefficients. The Roman numbers refer to: (I). largest opposition party. (II). Number of other Government Party Seats. (III). Chief Executive a Military Officer. (IV).Total Seats in the Legislature. (V). Number of Government Seats .(VI). Largest Government Party Seats .(VII). 2nd Largest Government Party Seats .(VIII). 3rd Largest Government Party Seats (IX). 2nd Largest Opposition Party Seats. (X). 3rd Largest Opposition Party Seats. (XI). Number of other Opposition. (XII). Number of other Opposition Party Seats. (XIII). Number of Seats non-aligned/allegiance unknown. (XIV). Legislative Election. (XV). Executive Election. (XVI). Legislative Index of Political Competitiveness. (XVII). Executive Index of Political Competitiveness.(XVIII). Number of Veto Players. (XIX). Year in Office. (XX). Finite Term in Office. (XXI). Years left in Current Term. (XXII). Number of Parties non-aligned/allegiance unknow

Annex 4: List of variables, definitions and sources

Indicator	Definition	Source
Number of Government Seats	Number of seats in the legislature of the parties in government.	Beck and al.(2001)
Largest Government Party Seats	Number of seats in the legislature of the largest government party	Beck and al.(2001)
Largest Opposition Party Seats	Number of seats in the legislature of the largest opposition party.	Beck and al.(2001)
Legislative Index of Political Competitiveness	Dummy variable. 1 if there is an executive election held this year.	Beck and al.(2001)
Executive Index of Political Competitiveness	This variable captures the degree of political competitiveness in the legislature as follows: (1) No legislature (2) Unelected legislature (3) Elected legislature with single candidates (like in many Communist countries) (3,5) Unclear whether there is competition among elected legislators in a single-party system (4) Single party with multiple candidates (5) Multiple parties are legal but only one party won seats (5,5) Not clear whether multiple parties ran and only one party won or multiple parties ran and won more than 75% of the seats (6) Multiple parties won seats but the largest party received more than 75% of the seats (6,5) Multiple parties won seats but it is unclear how many the largest party got (7) Largest party got less than 75%.	Beck and al.(2001)
Inflation, GDP deflator (annual %)	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	World Bank's World Development Indicators (WDI)
Investment Share of GDP (%)	The share of investment as a percentage of GDP.	World Bank's World Development Indicators (WDI)
School enrollment, tertiary (% gross)	Total is the total enrollment in tertiary education (ISCED 5 and 6), regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.	World Bank's World Development Indicators (WDI)
Military expenditure (% of GDP)	Such expenditures include military and civil personnel, including retirement pensions of military	World Bank's

	personnel and social services for personnel; operation and maintenance; procurement; military research and development; and military aid (in the military expenditures of the donor country). Excluded are civil defense and current expenditures for previous military activities, such as for veterans' benefits, demobilization, conversion, and destruction of weapons.	Development Indicators (WDI)
Democracy (Polity IV)	From strongly autocratic (-10) to strongly democratic (10). This variable is our proxy for democracy	Database (Marshall and Jagers, 2009)
GDP per capita (current US\$)	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars	World Bank's World Development Indicators (WDI)

Annex 5: list of countries included in the study

country	geographical location
Algérie (MENA)	Middle East and North Africa
Egypte (MENA)	Middle East and North Africa
Iran (MENA)	Middle East and North Africa
Jordanie (MENA)	Middle East and North Africa
Maroc (MENA)	Middle East and North Africa
Syrie (MENA)	Middle East and North Africa
Tunisie (MENA)	Middle East and North Africa
Bahreïn (MENA)	Middle East and North Africa
Djibouti (MENA)	Middle East and North Africa

Iraq (MENA)	Middle East and North Africa
Israël (MENA)	Middle East and North Africa
Kuwait (MENA)	Middle East and North Africa
Lebanon (MENA)	Middle East and North Africa
Libye (MENA)	Middle East and North Africa
Oman (MENA)	Middle East and North Africa
Qatar (MENA)	Middle East and North Africa
Yémen (MENA)	Middle East and North Africa
Saudia Arabie (MENA)	Middle East and North Africa
<u>Émirats arabes unis</u> (MENA)	Middle East and North Africa

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