Economic growth, government size and political instability

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Abstract — **To empirically determine the effects of political instability and size of government on economic growth, we use the GMM system estimator for linear dynamic panel data models on a sample covering up to 19 countries from 1980 to 2012. The major empirical is that higher degrees of political instability are associated with lower growth rates of GDP per capita, unlike the size of government which has a positive effect on economic growth. Also, we figure out that political instability adversely affects growth by lowering the rates of productivity growth and physical and human capital accumulation. Finally, democracy and inflation have a negative effect, while economic freedom is beneficial to growth.**

Keywords— *Economic growth; Political instability*; **government size; GMM system estimator and MENA**

1. INTRODUCTION

The political instability was, for a long time, a field of research which attracted the attention of several researchers in economic and social materials, particularly in the 80s with the proliferation of coups in Africa. The economic dimension of the political instability generated many papers in the literature, in particular, its relation and its interaction with the economic performances. It is in this context that Rodrik (1991) affirms that political instability has a negative impact on macroeconomic indicators, such as investment, unemployment, and inflation. In fact, a low economic growth rate may be the result of political unrest during the change of government (Kuznets, 1966).

As a result, a politically unstable economy is likely to cause corruption and other distorting activities. Therefore, political instability is likely to have a negative impact on economic growth. Empirically, Aisen and Veiga (2008) have shown that higher inflation volatility is associated with higher levels of political instability, fragmentation of the political system and lower economic freedom. Furthermore, they argued that the policies in politically unstable countries tend to be more frequently interrupted by comparison with countries that are politically stable. Alesina and Drazen (1991) have shown that the delay in the implementation of inflation stabilization programs is associated with greater political instability in countries.

In fact, several empirical studies have shown that political instability has a negative impact on the main macroeconomic variable as GDP, private investment, and inflation. Jong-A-Pin (2009) examined the causal effect of political instability on economic growth (using GMM method). He showed that the unstable political regime has a significant negative effect on economic growth. Political instability considerably reduced economic growth, both statistically and economically (Aisen and Veiga, 2013). Similar studies have reported a negative and significant correlation between political instability and economic growth (e.g Gupta, 1990; Barro, 1991; Alesina et al, 1996; Ades and Chua, 1997).

Various economists (Alesina et al., 1996; Mauro, 1995; Özler and Rodrik, 1992; Alesina and Perotti, 1996) showed that GDP growth is much less weaker in countries where there is a significant tendency for their government to collapse than other countries. Tang and Abosedra (2014) found that political instability prevents the process of growth and economic development in the MENA region (use of 24 countries in the MENA region).

Economic theory suggests several mechanisms by which government activities can affect growth. Literature concerning the relationship between government size and economic growth is full of contradictory results. This conflict is explained by variations in definitions and studied countries. There are many reasons to expect a relationship that is inversely U-shaped, a hypothesis that is sometimes indicated under the name of Armey curve (Armey 1995).

For less developed countries, there is a positive link between tax revenue and growth because a state managed typically to collect taxes if it succeeded in providing the stability necessary for economic activity begins to grow (Besley and Persson 2009). The most basic government functions such as protection of property rights and Law enforcement can be performed at low levels of taxation. If productive public spending is characterized by diminishing returns, the negative impact of taxes financing public spending can dominate the positive impact of government activities promoting growth.

Generally, in poor countries, the public sectors are insignificant, and the relationship between government size and growth is positive. Unlike in rich countries, public sectors are great, and the relationship between government size and growth is less positive than in poor countries, and possibly negative[1]. Concerning the interaction between democracy and economic growth, Acemoglu et al. (2014) found a positive effect of democracy on growth. Economists, such as Alesina and Rodrik (1994) and Persson and Tabellini (1994), said that the democratic redistribution is a distortion and it will discourage economic growth. As a matter of fact, Acemoglu et al. (2008) argues that democratic institutions can create distortions because of their redistributive tendencies.

According to the empirical study of Barro (1996), democracy is a slight negative effect on economic growth, with evidence of nonlinearity where democracy increases the growth to low levels of democracy, or reduced to higher levels (Helliwell, 1994). According to Azam et al. (1996), the emergence of political disturbances is determined by economic variables such as health spending, defense spending, the enrollment rate in primary and secondary …etc.

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[1] Andreas Bergh and Magnus Henrekson (2011). Government Size and Growth: A Survey and Interpretation of the Evidence. IFN Working Paper No. 858, 2011

Figure 1: Growth and political stability in MENA
2014
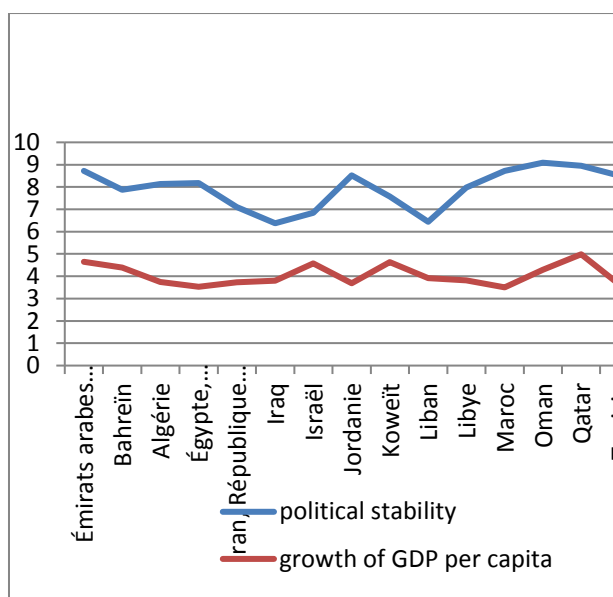
Source: author's own presentation issued from International Country Risk Guide (ICRG) data and World Bank data (WDI, 2014).

Political instability is one of the main obstacles for economic and financial reforms. It worsens budget deficits and inflation and hinders the improvement of economic growth. According to the chart in Figure 1, authors note that the evolution of the political stability and economic growth in the MENA region are progressing in parallel. In other words, it shows that the economic growth is proportional to political stability.

In fact, the least politically stable countries are characterized by lower growth. In 2011, the political shock led to a decrease in political stability in all countries of the MENA region. The most stable countries are those with the most reliable and solid institutions capable of effectively managing conflicts between antagonistic groups.

Usually the absence of significant economic reforms along with the political and macroeconomic instability help to limit the investment potential and that of the long-term growth. Political instability leads to problems such as revolutions or wars, coups and political crimes.

This means the absence of security and the discouragement of the long-term investments.

This article examines the relationship between political instability and economic growth. What are the main channels of transmission of political institutions instability on economic growth? What are the effects of political instability on the main drivers of growth, ie, the accumulation of physical and human capital?

This paper addresses important issues providing assessments of data regressions using the GMM2 system in 19 countries from the MENA region for the period 1980-2012.

2. DATA AND EMPIRICAL MODEL

Annual data on economic and political variables from 1980 to 2012 were collected for 19 countries, covering the MENA region (the Middle East and North Africa). Economic data sources were taken from World Development Indicators of the World Bank Development Indicators (WDI, 2007). Political data was obtained by Henisz (2002) and the Polity IV database (Marshall and Jaggers, 2009). The sources of the descriptive statistics and the correlation matrix of the variables are included in Tables 1, 2 and 3.

The baseline model that authors estimate is an augmented version of the model of Islam (1995), who derives an estimable panel regression specification from the Solow (1956) growth model. Similar to Arellano and Bond (1991) and Arellano and Bover (1995), authors use the generalized method of moments (GMM) to assess the relationship between political institutions and economic growth. The traditional regression of the growth model is as follows:

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

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 the country and time. We include variables of time dummies to represent the specific time effect $\varepsilon_{i,t}$.

To differentiate equation (1), Arellano and Bond (1991) propose:

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

Although differentiation eliminates countries specific effect but 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 are strongly exogenous. Arellano and Bond (1991) propose the following moment conditions:

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

E $[x_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})]= 0$ to s $\geq$ 2 and t = 3, ..., T. (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, 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 persistence, Blundell and Bond (1998) and Alonso-Borrego and Arellano (1996), verified that the delayed levels of these variables are weak instruments for the regression of the difference equation. Asymptotically, it will have an increase in the variance of the coefficients. Monti Carlo simulations for small sample sizes verified that the

weaknesses of the instruments can establish biased coefficients. Arellano and Bover (1995), Blundell and Bond (1998) have proposed an estimator system to reduce the potential bias and imprecision associated with the difference estimator. Instruments for the regression system delay differences of the corresponding variables. Conditions moment's estimator for the system is:

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

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

The consistency of the GMM estimator depends on the validity of hypotheses of autocorrelation absence of error terms and instruments. For the validity of these assumptions, we use two tests proposed by Arellano and Bond (1991), Blundell and Bond (1998) together with Arellano and Bover (1995). The first Sargan test of over-identification tests the complete validity of the instruments and the second test verifies the assumption that the error $(\varepsilon_{i,t})$ is not correlated in series.

The failure to reject the primary hypotheses of two tests gives support to our model. Both difference estimator and system estimator found some problems with small samples. For two-step estimators, asymptotic standard errors are biased (Arellano and Bond, 1991; Bundell and Bond, 1998).

Table 1 provides details on all variables along with their definitions and sources used in this paper.

Table1: List of variables, definitions and sources

Indicator	Definition	Source
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)	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)
Democracy (Polity IV)	From strongly autocratic (-10) to strongly democratic (10). This variable is our proxy for democracy.	Database (Marshall and Jaggers, 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)
General government final consumption expenditure (% of GDP)	The final consumption expenditure of government (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). These expenditures also include most of the expenses for defense and national security, but does not include military expenditures that are part of government capital formation of government.	World Bank's World Development Indicators (WDI)
Index of Economic Freedom	The Index of Economic Freedom Takes a broad and comprehensive view of Economic Freedom, measuring country performance in 10 separate Areas. The 10 measured aspects of Economic Freedom may be grouped Into four broad categories: 1. Rule of Law (property rights, freedom from corruption); 2. Government size (fiscal freedom, government Spending) 3. Regulatory efficiency (business freedom, labor freedom, monetary freedom); 4. Market and openness (trade freedom, investment freedom, and financial freedom).	Freedom House
political risk	The measure of political constraints employed in this paper estimates the feasibility of policy change (the extent to which a change in the preferences of any one actor may lead to a change in government policy)	Henisz, W. J. (2002).

The assessment and measurement of the role of government changes or adjustments is not an easy target to achieve. In this paper, we used the concept of measuring the political instability as the propensity for government change, which has attracted a considerable attention in previous research (Alesina et al., 1996). However, our measures of political instability are somewhat different from those of previous works. In fact we used two variables. The first called political risk which estimates the feasibility of policy change (the extent to which a change in the preferences of any one actor may lead to a change in government policy), and the second is the Democracy (Polity IV) which is our proxy for democracy. However, we believe that application of those variables may also provide some interesting conclusions as it allows comprehensive comparisons between the effects of major and regular government transfers.

Table 2 contains some basic information about our data, which shed some light on the possibility of the existence of simultaneous relations between economic growth and both indicators of political instability.

Table 2: Descriptive statistics of examined data

Variables	Obs	Mean	Standard deviation	Min	Max
growth of GDP per capita	500	3.677	0.563	2.452	4.967
Investment Share of GDP (%)	400	29.698	11.442	7.976	80.120
School Enrollment, tertiary (% gross).	411	19.536	13.196	-12.732	62.375
Inflation, GDP deflator (Annual %)	476	10.893	26.818	-25699	390.678
Democracy (polity IV)	509	-5.332	5.208	-10	10
political risk	523	0.126	0.201	0	0.647
Index of Economic Freedom	213	6.446	1.141	3.1	8.1
size of government	458	19.338	7.116	5.745	76.222

The average growth rate of the studied countries was around 3.677 current US $. On the other hand the average of political risk was at a level of 0.126, which indicates that the change in government policy frequency was prominent. In addition, the democracy level was too low since it did not exceed the rate of -5.

Moreover, to determine the strength of the statistical relationships between all the variables, table 3 represents the correlation matrix.

Table 3: Correlation Matrix

Variable	1	2	3	4	5	6	7	8
1	1							
2	0.004	1						
3	0.099	-0.028	1					
4	-0.069	-0.045	0.121	1				
5	-0.078	-0.036	0.633	0.302	1			
6	-0.047	-0.104	0.375	0.118	0.645	1		
7	0.633	0.150	0.184	-0.304	-0.059	-0.148	1	
8	0.184	0.018	0.075	0.165	0.089	0.146	-0.109	1

(1). growth of GDP per capita. (2).Investment Share of GDP (%).(3). School enrollment, tertiary (% gross). (4). Inflation, GDP deflator (annual %).(5). Democracy (polity IV). (6). Political risk. (7). Index of Economic Freedom. (8). size of government.

At the correlation matrix, it can be seen that the factors moderately correlate, which implies that they indeed reflect different dimensions of political instability, although some correlation coefficients do significantly differ from 0.

3. THE EMPIRICAL RESULTS

We choose a growth model on a panel of 19 MENA developing countries (Annex 1) selected according to data availability for the period from 1980 to 2012. The empirical analysis is divided into two parts. First, we test the hypothesis that the instability of political institutions has a negative effect on economic growth. In the second part of the empirical analysis, we study the channels through which political instability affects economic growth.

3.1. Political instability and economic growth

Annual data on economic and political variables from 1980 to 2012 were collected for 19 countries, covering the MENA region (the Middle East and North Africa). Economic data sources were found on the World Development Indicators of the World Bank (WDI, 2007). The political data was obtained by Henisz (2002) and the Polity IV database (Marshall and Jaggers, 2009). The following work will focus on determining the impact of political instability and the size of government on economic growth.

Our primary interest is to determine the tests of the validity of instruments (Sargan) and the lack of residuals serial autocorrelation (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 tests of Sargan validate the choices of instruments. For this study, variables: size of government and political instability are represented by proxy variables which are respectively the final consumption expenditure of general government as a percentage of GDP and political risk (Henisz, 2002). Specifically, we use the dynamic panel GMM system estimator of Blundell and Bond (1998). This choice is motivated by the fact that this estimator allows us to model both the lagged dependent variable and the fixed country effects. In our opinion, including country fixed effects in the model is particularly important because most of the significant variables identified by the empirical growth literature (such as the ethnolinguistic or geographical splitting variables) are time-invariant (an overview of determinants of economic growth can be found in Durlauf et al., 2005). In addition, the GMM approach can be used to take into account the potential endogeneity of political instability by using political instability lagged variables as instrumental variables. Results of the data regressions are represented in Table 1. In fact, considering macroeconomic variables, the results of the different models are similar to those provided. The hypothesis that political instability negatively affects economic growth gets a clear empirical support. The estimated coefficient implies when there is an additional change in political risk,

the annual growth rate decreases. Consequently, the low economic growth may increase the volatility of government (Alesina et al., 1996).The initial GDP per capita has a negative coefficient, which is compatible with the conditional convergence income across countries. Investment (Mankiw et al., 1992) and tertiary enrollment rates have positive and statistically significant coefficients, indicating that investment and education promote growth.

Inflation has a negative and statistically significant effect on economic growth due that high inflation negatively affects growth (Edison et al, 2002 and Elder, 2004).

The Index of Economic Freedom is included in the model in column 2 to explain the favorable economic institutions. This index is statistically significant and has a positive sign as expected.

Similarly, the size of government has a positive and significant effect on economic growth. In contrast, democracy has a significant and negative effect on economic growth. The one-unit increase in the index of democracy decreases the economic growth rate of 1.9 per cent. Similarly, the empirical analysis of Barro (1996) shows a negative relationship between democracy and economic growth. This implies that democracy promotes economic growth to low levels of political freedom, although tends to decrease it when a certain level of freedom is achieved.

Table 4: Economic growth and instability of political institutions

| | Dependent Variable : real GDP growth per capita | | | | |
	1	2	3	4	5
lagged real GDP growth per capita	-0.101 (0.000)**	-0.069 (0.032)**	-0.059 (0.000)**	-0.028 (0.006) **	-0.159 (0.037)**
Investment Share of GDP (%)	0.001 (0.000)**	-0.001 (0.440)	0.012 (0.000)**	0.002 (0.002)**	0.027 (0.005)**
School enrollment, tertiary (% gross)	0.001 (0.000)**	0.017 (0.000)**	0.008 (0.000)**	0.004 (0.000)**	0.021 (0.003)**
political risk	-1.279 (0.000)**	-0.463 (0.009)**	-0.882 (0.000)**	-0.980 (0.020)**	-0.987 (0.000)**
Index of Economic Freedom		1.448 (0.000)**			
Inflation, GDP deflator (annual %)			-0.003 (0.010)**	-0.005 (0.001)**	
size of government				0.004 (0.000)**	

					-0.019 (0.012)**
Democracy (polity IV)					-0.019 (0.012)**
Cons	4.251 (0.000)**	1.448 (0.000)**	3.627 (0.000)**	3.653 (0.041)**	2.459 (0.000)**
Number of observations	217	87	208	193	210
Number of countries	31	15	31	31	30
Sargan test (p-value)	0.57	0.23	0.989	0.32	0.063
Arellano-Bond test for AR(1) (p-value)	0.000	0.009	0.000	0.005	0.000
Arellano-Bond test for AR(2) (p-value)	0.210	0.067	0.134	0.298	0.201

Notes:
- System-GMM estimates for dynamics panel-data models. Sample period: 1980-2012
- P-values are in parentheses.
- Significance level at the null hypothesis is rejected: 1%***;5%** *et* 10%*

3.2. Transmission channels

We study mechanisms by which political instability affects economic growth since political instability is associated with greater uncertainty about future economic policy. Hence, it is likely to affect negatively on investment and thus on physical capital. Various studies have verified a negative relationship between political instability and investment (Alesina and Perotti, 1996; Mauro, 1995; Özler and Rodrik, 1992; Perotti, 1996). The accumulation of human capital could be disturbed by political instability because uncertainty about the future can encourage less investing in education. In developing countries, human capital formation may be adversely affected by political instability in two ways (Gyimah-Brempong and Camacho (1998)). First, a greater political instability can bring those who have high levels of human capital to emigrate. The second source is due to the allocation of resources by the government. Devereux and Wen (1998) argue that greater political instability leads to a higher share of public spending in GDP, which may require a misallocation of resources and slow productivity growth. Political instability affects growth through the accumulation of physical and human capital, note that the first having a slightly greater effect than the second.

Government stability is an important feature of political systems. Political instability leads to uncertainty about future political which encourages leaders to adopt a predatory behavior towards the resources of private economic resources. One of the main characteristics of democracy is providing transparent rules to facilitate the transaction between political forces.

Consequently, democracies can have a peaceful and predictable transfer of political power; nevertheless, autocracies may experience violent and irregular changes. Empirically, Alesina et al. (1996) found that political instability has a negative effect on growth. The estimation results of the regressions are shown in the table 5.

Table 5: Effect of political instability

	Dependent Variable : real GDP growth per capita			
	1	2	3	4
lagged real GDP growth per capita	-0.086 (0.000)**	-0.097 (0.000)**	-0.098 (0.000)**	-0.091 (0.000)**
Investment Share of GDP (%)	0.008 (0.000)**	0.008 (0.000)**	0.008 (0.000)**	0.008 (0.000)**
political risk* School enrollment, tertiary (% gross)	0.007 (0.000)**			
Political risk* Investment Share of GDP (%)		-0.006 (0.085)*		
political risk* size of government			-0.007 (0.002)**	
political risk* democracy				-0.001 (0.031)**
constant	3.781 (0.000)**	3.834 (0.000)**	3.828 (0.000)**	3.813 (0.000)**
Number of observations	276	276	276	276
Number of countries	31	31	31	31
Hansen test (p-value)	0.14	0.14	0.13	0.13
Arellano-Bond test for AR(1) (p-value)	0.000	0.000	0.000	0.000
Arellano-Bond test for AR(2) (p-value)	0.17	0.147	0.164	0.141

Notes:
- System-GMM estimates for dynamics panel-data models. Sample period: 1980-2012

- P-values are in parentheses.
- Significance level at the null hypothesis is rejected: 1%***;5%** *et* 10%*

So far, we have examined the overall effect of political instability on economic growth without trying to exactly distinguish the influence of the accumulation of production factors. By adding the interaction term between the production factors and political instability, we find that the interaction term between political instability and human capital is positive and significant at 5% level. Then the interaction term between political instability and physical capital is significant and negative at 5% level. In addition, there is a term negative and significant interaction between democracy and political instability. In contrast, there is not an interaction term between political instability and government size.

Finally, we can conclude that political instability can influence economic growth, through indirect effects via human capital. In other words, greater political stability will affect economic growth, if and only if these countries are characterized by a productive human capital.

4. CONCLUSION

In this study, we have tried to contribute to the resolution of fundamental questions concerning impact of political instability on economic growth and the transmission channels through which it affects economic growth.

To do this, we used the GMM system estimator for linear dynamic panel data models on a sample covering up to 19 countries in the MENA region during the period 1980-2012.

As part of this empirical study, we tested the effects of political instability, democracy and government size on economic growth.

The key findings emerged from this empirical analysis show a negative impact of political instability and democracy on economic growth, which is opposite to the effect of government size on economic growth.

In addition, increased political instability is aggregated to a decline in economic growth through the channels of human capital, physical capital, government size and democracy.

More generally, since 2011, several countries in the MENA region recorded a significant slowdown in tourism, lower remittances from migrants, worsening budget deficits and a raise of their debt level. These factors explain the decline in the growth rate in these countries which record negative rates in the case of transitions countries (Libya and Syria), and others weak and volatile ones for most countries in the region.

We conclude, that this analysis allowed us, even in part, to show the existence of a relationship between political instability and economic performance and some key channels through which the effects of political instability could affect the performance of countries in the MENA region.

Although, it is important to note that, despite the importance of empirical results that led this work, shortcomings might arise namely existence of other possible mechanisms to examine this relationship that have not been considered and the causality problem that also has not been treated.

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Annex: List of countries used in the sample

We used the MENA countries as a sample of our study except it has no standardized definition; different organizations define the region as consisting of different territories, so we choose to limit this analyze to the following list of countries:

- Algeria
- Bahrain
- Djibouti
- Egypt
- Iran
- Iraq
- Israel
- Jordan
- Kuwait
- Lebanon
- Libya
- Morocco
- Oman
- Qatar
- Saudi Arabia
- Syria
- Tunisia
- United Arab Emirates
- Yemen