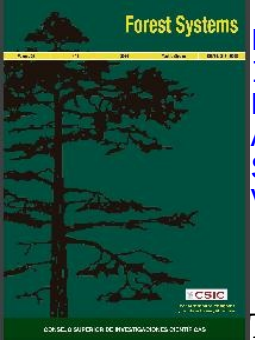

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The direct and indirect impact of institutional variables on economic growth: Case of the MENA region

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Abstract:

The aim of this article is to study the impact of institutional quality on economic growth in the MENA region in particular, and to identify certain institutional shortcomings. We proceeded by estimating GMM in a system on cross-sectional data for a sample of 18 countries over the period 1984-2018. The results show that political stability has a positive direct effect, as well as a positive indirect effect through the positive accumulation of human and physical capital, and a negative effect through income inequality. Corruption thus has a negative impact on economic growth, on the one hand through a reduction in human and physical capital, trade openness and political stability, and on the other through an increase in inflation and public spending. Democracy has a negative impact on economic growth through increased human capital, political stability and trade openness, while income inequality, government spending and physical capital contribute to its reduction.

Keywords: Institution, Economic Growth, Data from the Dynamic Panel (GMM).

1. Introduction :

It is an undeniable fact that the phenomena of political instability, democracy and corruption constitute a complex reality intervening at the economic, political, social and cultural levels, already on the agenda. This corruption is a complicated phenomenon. Indeed, North (1981) and Olson (1982) studied the impact of institutions on economic growth from the perspective of researchers as well as policy makers. Moreover et al. (1995), Mauro (1995) and Barro (1997) indicate that institutions matter for investment and long-term sustainable growth. Hall and Jones (1999) pointed out that institutional differences around the world led to huge variations in capital accumulation, education, economic performance rates and productivity growth, therefore explaining income disparities. More recently, Rodrik el al.(2004) found that rule of law has a positive impact on economic growth. Similary, Acemoglu et al. (2003) concluded that institutions deprived of property rights are the main drivers of long-term economic growth, investment and financial development. These studies suggest that institutions are the fundamental determinants of long-term economic growth. Then, to answer our main question, we proceed as follows. First, we study the impact of institutions on economic growth in several regions of the world, by highlighting the institutional failures in each region. At this level, we highlight the effect of institutions on economic growth in different regions. Second, we present the different variables (institutional variables and macroeconomic variables), the data sources of the sample of our study, and the estimation model. Third, we present the six indicators calculated by Kaufmann et al. (2003, 2005) as our measure of governance quality for the 99 countries under study. These governance quality measures can help us to have an overall perspective and form an overall empirical outlook of governance performance. Finally, we present the descriptive statistics for the countries in our sample. At this level, we present and discuss the results of the various estimates made at each stage. Previous research has shown that correcting institutional quality, in parallel with any economic reforms, represents a necessary condition for economic growth. Accordingly, we raise the question of whether there is a relationship between economic growth and political institutions, and whether such variables have a direct or indirect effect on economic growth? Then, this paper is structured as follows. The first section presents the background of our study by reviewing the literature on the effect of corruption, democracy, political stability on economic growth. In the second section, we present our empirical study which examines the direct and indirect relationship between these variables and economic growth in the MENA region. Finally, the third section concludes with the contributions and limitations of the study, and offers future research avenues.

2. Literature review

2.1. Impact of corruption on economic growth

Corruption has adverse effects on the process of social and economic development and on the prospects for achieving sustainable development and on investment (Mauro, 1995 ; Me´on and Sekkat, 2005 ; Wei, 2000a ;-Ackerman, 1999). Several studies have shown that corruption directly discourages economic growth and development (Keefer and Knack, 1997 ; Knack and Keefer, 1995 ; Li et al., 2000 ; Méon and Sekkat, 2005). Other authors (Mauro, 1995 ; Mo, 2001) have proven that corruption reduces investment, which hampers economic growth.

Negative relationships between growth and corruption occur in countries where there is a high level of financial transparency (Neeman et al., 2008). Aidt et al. (2008) prove that quality of institutions significantly affects the impact of corruption on economic growth. The World Bank considers corruption to be among the main obstacles to economic and social development. Most African countries are known by weak institutions and very loose governance structure (World Bank, 2010). Welsch (2004) found that any reduction in corruption leads to an acceleration of economic growth and an improvement in environment quality. Celentani and Ganuza (2002) recommend that an expanded climate of corruption can encourage the emergence of opportunistic behavior justified by the search for future gains. These behaviors induce information asymmetry which is the main factor that determines corruption (Laffont and Meleu, 2001), This is the subject of a stream of research initiated by Van Rijckeghenet and Weder (2001) and Kraster and Ganer (2004). Studies that tried to determine a causality relationship between the corruption index and economic growth affirm that the correlation between these two is not always negative (Vega-Gordillo and Alvarez-Arce, 2003 ; Del Monte and Pagagni, 2001). Other authors have shown that corruption can promote efficiency since it helps entrepreneurs avoid cumbersome bureaucratic regulations or ineffective policies by bribing officials (Huntington (1968), Summers and Heston (1988), Acemoglu and Verdier (1998)). Rock and Bonnett (2004) studied the link between growth, corruption and investment. They found that corruption significantly promotes economic growth in China, Indonesia, Thailand and Japan. Other studies have shown that corruption impedes economic growth, increases uncertainty in the decision-making process and the cost of doing business (Murphy et al., 1991 ; Goud and Amaro-Reyes, 1983 ; Mauro, 1995; Mo, 2001 ; Monte and Erasmo, 2001). Corruption on the one hand disrupts the linkages between taxes and public sector and service goods and on the other hand promotes tax evasion and the growth of the informal economy (Johnson et al., 1997,1998). Moreover, the sales models developed by Beck(1986) and Lien (1986) confirmed that corruption improves efficiency since only the most efficient firm can afford to pay the highest bribes. Kaufman and Wei (1999) showed that corruption accounts for wasted management time with bureaucrats and regulatory burdens on businesses. They conclude that firms facing more bribe demands are also likely to spend more time with management bureaucrats, invalidating the hypothesis that red tape and regulatory constraints are exogenous. (Kaufmann and Wei, 1999). Then, corruption has been responsible for distortions in public investments (Tanzi and Davoodi, 1997). Other studies have examined the effects of corruption on various aspects of the national economy. Corruption influences economic development and income distribution (Gupta et al., 1998). Husted (1999) provided further evidence that corruption and economic development negatively correlate. In the long term, corruption has been identified as an obstacle to economic development (Myrdal, 1968). A majority of researchers assume that corruption is at the root of enormous problems for the economy and society. Vinod (1999) found that corruption affects the national economy and an act of corruption of $1 imposes $1.67 on the economy. Other studies have pointed to a negative relationship between corruption and investment (Mauro, 1996; Ades and Di Tella, 1997; Tanzi and Davoodi, 1997). According to Wei (2000a), Drabek and Payne (1999), Habib and Zurawicki (2001), foreign investors assume that corruption is a blocking factor for investment. Al-Marhubi (2000) found a positive relationship between corruption and inflation levels. Rose-Ackerman (2008) points out that corruption tends to harm the distribution of economic benefits leading to inequitable distribution of income. In industrialized countries, Ali et al. (2010) noted

that high corruption leads to lower economic growth, no relationship is found in non-Asian countries, but a positive relationship is found in Asian countries. Otherwise, other authors have found a relationship between corruption and economic development. Examples are Mauro (1995), Knack and Keefer (1995), Keefer and Knack (1997), Fisman and Gatti (2002), Rauch and Evans (2000), Blackburn and Forgues-Puccio (2007). These authors have found a significant negative relationship between level of corruption and level of economic development. This hypothesis is explained by the fact that the expected losses of corrupt bureaucrats increase with income level (Blackburn et al., 2006 ; Haque and Kneller, 2009). Moreover, other economists have found that the absence of corruption has a positive and statistically significant effect on the growth rate of real GDP per capita and increases the investment ratio (Cieslik and Goezek, 2018). The empirical results therefore suggest that corruption directly hinders economic growth by hampering investment.

2.2. The impact of political instability on economic growth

The empirical literature on the relationship between political instability and economic growth is relatively recent ecause of data unavailability. Political unrest can be responsible for a low rate of economic growth (Kuznets, 1966), especially in periods of government change. North (1990) claimed that the institutional framework of a society plays an important role in the performance of the economy in the long term. Generally speaking, political instability is detrimental to economic growth. Several studies have pointed to negative and significant correlation between political instability and economic growth (Barro, 1991; Alesina et al., 1996; Perotti, 1996; Ades and Chua, 1997). Similar studies provide a theoretical link between political instability and economic growth (Benhabib and Rustichini, 1996; Brock Blomberg, 1996; Svensson, 1998; Devereux and Wen, 1998; Darby et al., 2004; Ghate et al., 2003).
Empirically, De Haan (2007) supports the idea that most variables, in particular political instability, are measured with error (which seriously affects the reliability of the obtained estimates). According to Campos and Nugent (2002), the presence of a negative correlation does not necessarily imply a causal relationship. Most studies have focused on the impact of political instability on economic growth using principal component analysis (PCA) (Perotti, 1996) and discriminant analysis (Gupta, 1990) and logit analysis (Alesina et al., 1996).

Broadly speaking, the interactions between political instability and economic growth can be categorized into four groups: first, the economics literature asserts that political instability has a negative impact on economic growth, but there is no causality in the opposite direction (Alesina et al., 1996). Other evidence asserts that economic growth leads to political stability, but not vice versa (Borner and Paldam, 1998). In the literature, another trend found that the causal relationship between political instability and economic growth works in both directions (Zablotsky, 1996; Gyimah-Brempong and Traynor, 1999). Other studies have pointed to the absence of a causal relationship between these variables (Campos and Nugent, 2000).
Moreover, previous studies have reported evidence on the direct and indirect effects of political instability on economic growth (Barro, 1991; Schneider and Frey, 1985). Thus, the negative impact of political instability has indirect consequences on growth factors such as savings or investment. Another line of research has emphasized the indirect effect of 'brain drain' (Adebayo, 1985; Kwasi, 1992), which is the process of depletion of human capital primarily caused by political unrest. Democracy ensures political instability and slower economic growth

(Yu, 2001; de Haan, 2007). In the empirical literature, different perspectives on the impact of political freedom (early democratization comes along political instability). Barro (1996, 1999) found that the net effect of more political freedom on economic growth is relatively uncertain. The author discovered that democracy accelerates economic growth when the level of democracy is relatively low. Barro insisted that increasing political rights in the worst dictatorships supports the rate of growth and investment following restrictions on government power. There are several conflicting studies of the impact of democracy on economic growth. Democracy promotes economic growth more than authoritarian regimes (Clague et al., 1996; Haggard, 1997).

In the economics literature, political freedom plays a key role along with other factors and income convergence. The importance of political freedom to economic growth is often highly controversial. Development is defined as the process of growing in real freedom (Sen, 1999). Friedman (1962) argued that economic freedom is an element of the general concept of freedom; it is a necessary condition to achieve political freedom. SEveral empirical studies have discussed the role of the political system in economic growth. Scully (1988), using a cross-sectional method to test correlations between institutions and economic growth of 115 countries between 1960 and 1980, found that the institutional framework exerted an effect on economic growth. The author found that political freedom explains nearly three times the speed of a stable democracy than of countries that are authoritarian or partially free. Similarly, Haan and Siermann (1995, 1996) found that the positive relationship between political freedom and economic growth is not robust and depended on political and cultural differences (a sample of 75 countries observed from 1986 to 1988). According to these authors, the important area of freedom that promotes economic growth is economic freedom. Studying earlier stages of economic and social development, Xu and Li (2008) found that economic freedom has positive consequences on economic growth (collecting data on a sample of 104 countries between 1970 and 2003). They found evidence indicating that economic freedom has stronger effects on income convergence in OECD countries, but that political freedom also promotes convergence. Alesina et al. (1996) pointed to the negative impact of political instability on growth, and to no dependence in the opposite direction (uses GDP per capita growth rate as endogenous variable and change in government to measure political instability). Similarly, in African countries, political instability causes slower economic growth (Campos and Nugent, 2000).

In general, researchers have not yet found a consensus on the role of democracy in economic growth, either from a theoretical or an empirical point of view. Brunetti (1997) found that volatility of politics and subjective perception of politics are more successful in cross-country growth regressions while democracy is the least successful. Alesina et al. (1996) found that GDP growth is lower in countries with a high propensity for government failure (using data on 113 countries from 1950 to 1982). Jong-a-Pin (2009) found that higher degrees of political regime instability lead to lower economic growth (using factor analysis to study the effect of 25 indicators of political instability on economic growth). Political instability, political polarization and government repression have a negative impact on economic growth (Chen and Feng, 1996). It leads to higher shares of public expenditure in GDP (Devereux and Wen, 1998). Moreover, in OECD countries, political uncertainty tends to reduce public investment (Darby et al., 2004). Additionally, political instability leads to greater reliance on seigniorage and higher inflation (Aisen and Veiga, 2006, 2008). For Aisen and Veiga (2013), political instability significantly reduces GDP growth rates (Collection of data from 169 countries for the 1960-

2004 period). Political instability influences economic growth through accumulation of physical and human capital; the first having a slightly greater effect than the second. Similarly, Keefer and Knack (1995) found that political instability has negative effects on investment and growth, and that the subjective indices of corruption and the quality of the administration are negatively associated with economic growth. Tabassam et al.(2016) showed that political instability has a negative effect on economic growth. The question then that needs to raised: What are the main transmission channels of political instability to economic growth?

2.3. Democracy and economic growth

Theoretically, the relationship is ambiguous. A vast literature has argued that democracy and capital growth are contradictory (Schumpeter, 1942). Economists (Alesina and Rodrik, 1994) have argued that democratic redistribution is distortion and will discourage economic growth. March and Olsen (1984) pointed to the possibility of a political deadlock in democracy, Olson (1982) proposed that interest group politics in democracy can lead to stagnation. The literature has identified advantages of democracy. Democratic redistribution can take the form of education or public goods and increases economic growth (Saint-Paul and Verdier, 1993; Benabou, 1996; Lizzeri and Persico, 2004). Democracy has beneficial effects on economic growth by limiting kleptocratic dictators, reducing social conflict or preventing politically powerful groups from monopolizing lucrative economic opportunities. Acemoglu (2008) argues that democratic institutions can cause distortions due to their redistributive tendencies. According to Barro (1996), democracy has a small negative effect on economic growth, with evidence of a non-linearity where democracy increases growth at low levels of democracy, or reduces it at higher levels (see also Helliwell, 1994). Tavares and Wacziarg (2001) found a poor negative effect, while Persson and Tabellini (2008) showed a positive effect. Other authors found a positive effect of recent democratization on growth (Rodrik and Wacziarg, 2005; Persson and Tabellini, 2008). Others have found similar results in Africa. However, Burkhart, Lewis-Beck (1994) and Giavazzi and Tabellini (2005) found no significant effect on growth. Acemoglu et al. (2008) argued for no statistical or causal effect of economic growth to democracy. Table 1 summarizes a sample of studies that have examined political democracy and used economic development as one of the independent variables. Acemoglu et al. (2008) claim that the observed positive relationship between income and democracy stems from common factors that determine the two variables. The relationship between economic performance and democratization suggests that democracy may imply higher returns to investments (Persson and Tabellini, 2009). Empirically, there is a positive link between the consolidation of democracy and economic well-being (Bernhard et al., 2001,2003; Epstein et al., 2006; Przeworski and Limongi, 1993, 1997).

Bjørnskov (2010) proved the importance of the democratic process in attracting foreign aid creating economic growth. Aisen and Veiga (2013) found that higher degrees of political instability are associated with lower economic growth rates because instability negatively affects accumulation of physical and human capital (in a sample of 169 countries over the 1960-2004 period). The author concludes that economic freedom and ethnic homogeneity are beneficial for economic growth. In a democratic regime, the State spends less on the army, unlike in an autocratic regime. According to Tavares and Wacziang (2001), democracy hinders growth by reducing the rate of accumulation of physical capital and increasing the ratio of public consumption to GDP (a panel of 65 industrialized and developing countries over the

1970 -1989 period). Doucouliagos and Ulubasoglu (2008) conclude that the net effect of democracy on the economy does not seem to be detrimental. Democracy does not have direct impacts on economic growth, but positive indirect effects such as increased human capital, lower inflation, decreased political instability and higher levels of economic freedom. Tanga and Yung (2008) show that democratization significantly affects growth, but the effect is neither consistent nor robust.

Over the long term, research has pointed to a statistically significant relationship between democratization and growth, the relationship being either positive or negative. According to Yang (2008), in countries with high degrees of ethnic heterogeneity, democracy seems to significantly reduce growth volatility. For countries with low degrees of ethnic diversity such a relationship is not significant. Studying a sample of developing countries, Collier and Hoeffler (2009) found that the combination of resources and democracy significantly reduced growth. Narayan et al. (2011) and Aisen and Veiga (2013) confirm this negative effect of democracy on growth. Empirically, Rachdi and Saidi (2015) prove that democracy has a negative and a significant effect in MENA countries. Therefore, all MENA countries need to strengthen institutions. Many countries are working to improve democratic accountability and reduce corruption and external conflict, as a well-functioning political system can contribute positively to higher economic growth rates. Economic growth requires long-term protection of civil and political freedoms. Moreover, Zuazu (2019) showed that transitions to democracy improve the growth of industries operating at an advanced global technological frontier, but have a negative effect on industries lagging behind (a 61 panel dataset of manufacturing industries observed between 1990 and 2010 with a wide variety of measures of democracy). Moreover, christmann, (2018) studied the link between economic performance, democratic quality and satisfaction with democracy at several levels. Reporting on a cross-sectional time series of 57 countries between 1990 and 2014, the author show that improving democratic and economic conditions relates to an increase in national satisfaction with democracy.

3. Methodology:

We use the system GMM technique of Blundell and Bond (1998). This estimation technique offers many advantages over other methods. First, it improves cross-analysis by exploiting the time dimension of the data. Second, it allows the correction of endogeneity whatever its origins. One of the criticisms of this estimate is that it allows the researcher to use a large number of instrumental variables, so that one could be led to doubt the reliability of the results. This class of estimators is consistent for a large number N and small T and it is compatible with the structure of our sample.

The Political Risk Service Group (PRS) is a private risk assessment institution, which produces a database built from monthly data from the International Country Risk Guide (ICRG). In this study, we will use five indicators of this base which are: corruption (CORR), Law and Order (LO), democratic accountability (DA), bureaucratic quality (QB), political stability (GS). The scores of the first three indicators range from 0 to 6, bureaucratic quality from 0 to 4 and the last variable from 0 to 12. Higher scores mean better institutional qualities, which indicates less corruption. In addition, the macroeconomic independent variables used in our study are taken from World Bank indicators (CD-ROOM 2019).These are: real GDP (US dollar) per capita, Physical Capital Stock (CHY), Human Capital Stock (CH), Size of Government (DEP),

Inflation Rate (INF), the Gini Index (ING) and Trade Openness (OUV). In order to validate therelationship between economic growth and institutional variables in a cross-section analysis of 18 MENA (Annex 1) countries observed from 1984 to 2018 , we estimate the following econometric model :

$$\mathbf{GDP_{i,t} = \alpha_i + \alpha_1 lGDP_{i,t-1} + \alpha_2 ch_{i,t} + \alpha_3 chy_{i,t} + \alpha_4 LO_{i,t} + \alpha_5 BQ_{i,t} + \alpha_6 SG_{i,t} + \alpha_7 DA_{i,t} + \varepsilon_{i,t}} \quad \mathbf{(1)}$$

$$\mathbf{Avec\ i=1,\ldots,18 \quad t=1984,\ldots,2018}$$

Where **GDP** is the logarithm of GDP per capita and **lGDP** is the lagged logarithm of GDP per capita**.**

α_i : the individual specific effect and et $\varepsilon_{i,t}$: error term.

In order to test the possible collinearity between the independent variables, we used the Variance Inflation Factor (VIF). A value less than 10 indicates that collinearity between variables is tolerable. For all the estimates, we note the absence of multi-collinearity (Ttable 1). The estimation results highlighting the link between institutional variables and economic growth (GMM in system) are presented in Table 1. For all the estimated models, we give the statistics of the Sargan and Hansen test (probability > 5%) which allows for the acceptance of the validity of the instruments. For the self-creation test, the results validate the absence of serial self-creation of the residuals with an AR (1) effect for the residuals (probability <5%) and an absence of an AR(2) for residuals (probability > 5%). For the macroeconomic variables (human capital and physical capital), the results of the model (models 1 to 5) have significant and positive effects at the5% level. These authors found that physical investment, at different types of the sample, positively correlates with economic growth. Notably, similar results were found by Loayza et al. (2007) who stated that investment in human capital and education leads to the acquisition of skills and encourages technological advancement. In addition, human capital can have a beneficial effect in terms of increasing economic growth. (Mankiw et al.,1992; Ghura and Hadjimichael, 1996). The empirical studies of Barro (1991, 1997), and Benhabib and Spiegel (1994) have reported that the initial level of education is an interesting determinant of future economic growth. As for the effect of corruption on economic growth, the estimation results of the first column indicate a significant and a statistically negative effect at the 5% level. It seems that an increase in the corruption index of one unit reduces economic growth by 0.8%. This finding confirms the conclusions of various empirical studies which have shown that corruption directly discourages economic growth and development (Keefer and Knack, 1995, 1997; Li et al., 2000; Méon and Sekkat, 2005). Similarly, Mauro (1995) and Mo, (2001) proved that corruption reduces investment, which hinders economic growth. Welsch (2004) proves that any reduction in corruption leads to an acceleration of economic growth and an improvement in the quality of the environment. Thus, corruption has been responsible for distortions in public investment (Tanzi and Davoodi, 1997). Generally, most developing countries are known by distorted economic policies, this is due to the poor quality of controls and regulatory bodies, and slower economic dynamism (Ali and Crain, 2002).

The results presented in the last column suggest that democracy has a significant and a statistically negative effect at the 5% level. For any increase in the democracy index, this effect is equal to a decrease in economic growth of 1%. This can be explained and interpreted essentially by the reduction in the rate of accumulation of physical capital and by the increase in the ratio of general government consumption to GDP. Democratic institutions facilitate access to education, reduce income inequality but this has a negative effect in terms of investment (Tavers and Wacziarg, 2001). Similarly, several authors have argued for a negative relationship between growth and democracy (Helliwell, 1994; Barro, 1996, 1997; Przeworski and Limongi, 1993; De Haan and Siermann, 1995). Huntington (1968) proves that democracy slows economic growth through the reduction of political stability and intensifies distributional conflicts. According to Barro (1996), democracy favors growth at a low level of political freedom, but reduces economic growth when a certain level of freedom is reached. Moreover, Collier and Hoeffler (2009) found (in developing countries) that the combination of resources and democracy significantly reduced growth. Narayan et al. (2011) and Aisen and Veiga (2013) confirm this negative effect of democracy on growth. Empirically, Rachdi and Saidi (2015) prove that democracy has a negative and a significant effect in MENA countries. Therefore, all MENA countries need to strengthen institutions.

For variables such as law and order, rule of law and political stability, these have significant, direct and positive effects on economic growth in developing countries at the 5% level. In addition, an increase in the index of order and respect for the law and political stability of a unit increases the rate of economic growth respectively by 2.5% and 1%. This finding implies that the institutional environment improves economic growth. Similarly, Acemoglu and Robinson (2010), Jones (1987), North (1981) and North and Thomas (1973) found that a country's institutional framework plays a crucial role in determining economic performance. Indeed, political stability is a necessary condition for a developing country to benefit from higher growth levels. In this regard, several researchers have argued for negative and significant correlation between political instability and economic growth (Gupta, 1990; Barro, 1991; Alesina et al., 1996; Perotti, 1996; Ades and Chua, 1997). Similar studies provide a theoretical link between political instability and economic growth (Benhabib and Rustichini, 1996; Brock Blomberg, 1996; Svensson, 1998; Devereux and Wen, 1996; Darby et al., 2004; Ghate et al., 2003). In addition, Edwards and Tabellini (1991), and Alesina et al. (1996) emphasized enhancement of political stability because political instability negatively affects economic growth and leads to poor governance. Similarly, regime instability refers to the uncertainty that investors feel about the security of property rights (Svensson, 1998). It negatively stimulates trade, increases military spending, and decreases the share of government spending granted. Studying African countries, Guillaumont and Brun (1999) point out that the effect of political instability, defined as a combination of coups and civil wars, is rather direct on the growth residual and does not have a bias for accumulation and investment.

3.1. Effect of corruption on economic growth: transmission channels

So far, we have examined the overall effect of political institutions on economic growth without trying to determine the relative importance of different corruption transmission channels on economic growth. There are a number of studies that examined the transmission mechanisms of the impact of corruption on growth. The empirical study of Mo (2001) proves that corruption

has a negative effect on economic growth, on the one hand. On the other hand, this author indicates that the negative effect of corruption is transmitted through political instability, investment and human capital. In a sample of 48 countries observed over the 1975-1996 period, Pellegrini and Gerlagh (2004) show that the transmission channels are investment, human capital, trade openness and political instability.
Indeed, corruption negatively affects human capital (education) which slows down economic growth. Rising poverty and income inequality is another way corruption affects human capital. Several empirical studies claim that corruption contributes to increased poverty and unequal income distribution (Li et al., 2000; Alonso-Terme and Davoodi, 2002; Gymiah-Brempong, 2002; Tebaldi and Mohas, 2010) . Empirically, the interaction between corruption and the size of the public sector (measured by the share of public consumption expenditure to GDP) shows that the degree of corruption decreases with the size of the public sector (Adsera et al., 2003; Montionale and Jackman, 2002; Goel and Nelson, 2010). According to Treisman (2000), a high degree of corruption is associated with a low level of per capita income. However, other studies found a positive relationship between these two variables (Goel and Nelson, 1998; Loayza and Soares, 2005). Corruption has a positive impact on inflation.

The results of the GMM estimates and the statistical tests carried out are presented in Table 2. The statistics of the Sargan and Hansen test (probability > 5%) allowed for accepting the validity of the instruments. For the self-creation test, the results validate the absence of serial self-creation of the residuals with an AR (1) effect for the residuals (probability <5%) and an absence of an AR(2) for residuals (probability > 5%). In this Table, the first column estimates the coefficients of each transmission channel on economic growth and the second column describes the interaction term through which corruption affects economic growth. The estimation results indicate that the six variables are all significant at the 5% level and have the appropriate signs. The results indicate that physical capital, human capital, trade openness and political stability promote economic growth, while inflation and public spending reduce it. In addition, the results of the indirect effects of corruption through each transmission channel on economic growth are summarized in this table. The multiplication of each transmission variable by the corruption coefficient in the estimating equation prove that corruption can reduce economic growth via a reduction in human capital, physical capital, political stability and trade openness.

An increase of one unit in the corruption index is aggregated with a decrease in economic growth of 0.1%, 0.2%, 0.1%, 0.04%, 0.05% and 0.1% respectively through the physical capital, political stability, trade openness, human capital, inflation and public spending channels. This implies a high level of corruption with a tendency to have less productive human capital. This finding is confirmed by Guetat (2006) who pointed to the indirect impact of corruption on economic growth via accumulation of human capital and investment (in the MENA region). Moreover, studying a sample of developing countries, Dutta and Mishra (2005) prove that corruption discourages economic growth. Similarly, they point out that the distribution of public spending depends on the quality of economic policies. This finding is confirmed by Andervson and Tverdora (2003). In general, the MENA region is known by a poor targeted choice of investment and has not managed public expenditure (poor governance) because there is no monitoring of the fight against corruption. Investment in human capital remains a question mark

for some countries. Through poor management (for this type of investment) it can discourage economic growth. Seka (2013) tested the link between accumulation of human capital and corruption, and found a negative and highly significant link (between the rate of enrollment in higher education and the corruption index). It follows that the propensity of young people to stop studying too early is all the more important as corruption is widespread in the economy and in the education sector in particular. In the most corrupt countries, Mo (2001) proves that the average number of years of study is significantly lower.

3.2. Effect of democracy on economic growth: transmission channels

For the effect of democracy on economic growth, the aim is to measure the relative impact of the different transmission channels of democracy on economic growth. There are various studies that focused on the transmission mechanisms of the impact of democracy on growth. According to Rodrik (1999), democracy reduces economic uncertainty since it provides better transparency for investors and helps countries better adapt to external changes. Democracy decreases investment (Huntington, 1968) but dictatorial regimes can increase domestic savings through financial repression. It increases accumulation of human capital and decreases physical investment (Tavares and Wacziarg, 2001). Indeed, Acemoglu and Robinson (2000) found a negative correlation between democracy and income inequality. Increases in various measures of quality of life predict a gradual increase in democracy (Barro, 1999). Tavares and Wacziarg (2000) suggest robust positive effects of democracy on economic growth through human capital accumulation. Generally, the impact of democracy on growth involves social benefits (human capital and inequality) and costs (unproductive investments).

In Table 3, we present the estimation results of the GMM system and the statistical tests. The statistics of the Sargan and Hansen test (probability > 5%) allowed for accepting the validity of the instruments. For the self-creation test, the results validate the absence of serial self-creation of the residuals with an AR (1) effect for the residuals (probability <5%) and an absence of an AR(2) for residuals (probability > 5%). The first column estimates the coefficients of each transmission channel on economic growth and the second column describes the interaction term through which democracy affects economic growth. The first finding of the system GMM estimation is that the six transmission variables are all significant at the 5% level and have the appropriate signs. This finding indicates that democracy is bound to decrease economic growth through an increase in human capital, political stability and trade openness, while income inequality, government spending and physical capital reduce it. An increase of one unit of the index of democracy leads to a decrease in economic growth of 0.05%, 0.07%, 0.007%, 0.06%, 0.01% and 0.04% respectively through the channels of income inequality, political stability, trade openness, size of government, physical capital and human capital. Taken together, these six channels cause a decrease in economic growth which amounts to 0.237%. On the other hand, to a large extent in agreement with the abundant empirical literature which highlights a negative effect of democracy on economic growth, the results of our estimations reveal that this negative effect essentially passes through the channels of political stability, income inequality and size of government.

3.3. Effect of political stability on economic growth: transmission channels

The aim is to measure the relative importance of the different transmission channels of political instability on economic growth. Most empirical studies (Alesina and Perotti, 1996; Mauro, 1995; Özler and Rodrik, 1992; Perotti, 1996; Barro, 1991) point to the negative effect of political instability on economic growth. Human capital accumulation could be disrupted by political instability as uncertainty about the future may lead to less investment in education. Income inequality increases socio-political instability which subsequently decreases investment (Alesina and Perotti, 1996).

The GMM estimation results and the statistical tests are reported in Table 4. The statistics of the Sargan and Hansen test (probability > 5%) allowed for accepting the validity of the instruments. For the self-creation test, the results validate the absence of serial self-creation of the residualss with an AR(1) effect for the residuals (probability <5%) and an absence of an AR effect (2) for residuals (probability > 5%). The first column estimates the coefficients of each transmission channel on economic growth and the second column describes the interaction term through which political stability affects economic growth. The first result to draw from the GMM estimation is that the three transmission variables are all significant at the 5% (or 10%) level and have the appropriate signs. The results prove that political stability increases economic growth through an increase of human capital and physical capital, while income inequality reduces it. An increase of one unit in the index of political stability leads to an increase in economic growth of 0.04%, 1.4% respectively through the channels of human capital and physical capital, while it decreases economic growth by 0.01%. through income inequality. By examining our estimation results, we deduce that the positive effect of political stability essentially passes through the channel of physical capital. Deverex and Wen (1996) show that political instability decreases investment. Moreover, it leads to poor management of public affairs and influences economic growth (Alesina et al., 1996; Edwards and Tabellini, 1991). Political instability causes problems such as coups, revolutions, political crimes or wars. The latter compromise security and discourage investment. This explains why there is a vicious circle between political instability, corruption and the low level of economic growth in the MENA region.

Conclusion

The aim of this paper is to contribute to the understanding and evaluation of the consequences of political instability, corruption and democracy on economic growth. To this end, we show, on the one hand, that democracy, corruption and political stability have direct effects on economic growth and that, on the other hand, they have indirect effects on economic growth. Specifically, these are income inequality, political stability and size of government for democracy, and physical capital, political stability and trade openness for corruption. Nevertheless, these effects manifest themselves through human and physical capital for political stability. However, in reality a high degree of democratization would have a detrimental consequence for improving economic growth through the mechanisms of political stability, income inequality and size of government. Essentially, this result can be explained by the reduction in physical capital accumulation rate and by the increase in government consumption ratio.

For the studied countries, we can conclude that the institutional failures that characterize them end up disrupting long-term economic growth. According to Laffont (1998), developing countries suffer from certain institutional failures in the form of lack of management skills, inefficiency of the financial market and the tax system, poor technological knowledge, corruption and low credibility. In addition, human capital is lower than that of developed countries. Democracy, corruption and political instability are at the root of institutional failures in this region.

Table 1. Estimation using the system GMM method: economic growth and institutional variables

Variables	*Model 1*	*Model 2*	*Model3*	*Model 4*	*Model 5*
LGDP (-1)	0.890	0.831	0.858	0.841	0.822
	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)
CH	0.001	0.001	0.0007	0.001	0.001
	(0.036*)	(0.000*)	(0.052**)	(0.057**)	(0.000*)
CHY	0.002	0.003	0.001	0.002	0.004
	(0.000*)	(0.001*)	(0.027*)	(0.009*)	(0.000*)
CORR	-0.008				
	(0.037*)				
BQ		-0.022			
		(0.022*)			
LO			0.025		
			(0.000*)		
SG				0.010	
				(0.000*)	
DA					-0.010
					(0.001*)
constant	0.397	0.628	0.417	0.473	0.635
	(0.001*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)
Number of observations	535	535	535	535	535
Number of countries	18	18	18	18	18
AR(1)	-2.02	-2.00	-1.99	-2.04	-2.02
	(0.043*)	(0.046*)	(0.046*)	(0.042*)	(0.044*)
AR(2)	-0.22	-0.10	-0.09	-0.36	-0.14
	(0.829)	(0.923)	(0.929)	(0.716)	(0.885)
Sargan	123.97	10.04	9.06	8.97	10.03
	(0.907)	(0.613)	(0.697)	(0.775)	(0.613)
Hansen	13.60	15.04	16.55	16.21	12.87
	(1.000)	(0.239)	(0.167)	(0.238)	(0.379)
VIF	1.08	1.12	1.14	1.09	1.14

Source: estimate made by the author using STATA 13.

Notes: Values in parentheses represent probability* Significant at the 5% level , ** Significant at the 10% level.

Table 2. Indirect effect of corruption on economic growth

Variables	Effect of the channel on economic growth					Effect of Corruption on the Channel					
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
LGDP (-1)	0.812	0.820	0.942	0.958	0.918	0.937	0.940	0.930	0.927	1.121	0.920
	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)
CH	0.003										
	(0.000*)										
CHY	0.008										
	(0.001*)										
INF		-0.0003									
		(0.000*)									
DEP			-0.002								
			(0.021*)								
SG				0.011							
				(0.034*)							
OUV					0.0004						
					(0.018*)						
CORR*CH						-0.0004					
						(0.000*)					
CORR*CHY							-0.001				
							(0.018*)				
CORR*INF								-0.00005			
								(0.055**)			
CORR*DEP									0.0008		
									(0.002*)		
CORR*OUV										0.001	
										(0.000*)	
CORR*SG											-0.002
											(0.000*)
Constant	0.608	0.671	0.271	0.067	0.269	0.265	0.233	0.265	0.232	-0.836	0.357
	(0.000*)	(0.000*)	(0.010*)	(0.631)	(0.001*)	(0.000*)	(0.007*)	(0.020*)	(0.007*)	(0.000*)	(0.000*)
Number of observations	540	540	540	535	540	540	540	540	540	540	540
Number of countries	18	18	18	18	18	18	18	18	18	18	18
VIF	1.10	1.00	1.16	1.01	1.00	1.13	1.00	1.00	1.00	1.05	1.01
AR(1)	-2.01	-1.99	-1.97	-1.99	-1.98	-1.98	-1.99	-1.97	-2.06	-2.06	-2.00
	(0.044*)	(0.047*)	(0.049*)	(0.047*)	(0.047*)	(0.047*)	(0.047*)	(0.049*)	(0.039*)	(0.040*)	(0.045*)
AR(2)	-0.14	-0.11	-0.32	-0.35	-0.16	-0.26	-0.22	-0.18	0.09	-0.61	-0.43
	(0.885)	(0.912)	(0.752)	(0.725)	(0.870)	(0.792)	(0.829)	(0.860)	(0.931)	(0.541)	(0.664)
Sargan	33.93	27.86	7.80	4.99	8.19	8.18	1.13	6.81	0.98	9.56	21.76
	(0.086)	(0.064)	(0.099)	(0.172)	(0.770)	(0.697)	(0.980)	(0.657)	(0.805)	(0.480)	(0.194)
Hansen	12.64	15.20	2.43	5.40	16.65	12.94	7.73	11.98	1.91	10.41	16.97
	(0.972)	(0.648)	(0.657)	(0.145)	(0.163)	(0.297)	(0.258)	(0.215)	(0.591)	(0.406)	(0.456)

Source : estimate made by the author using STATA 13.

Notes: Values in parentheses represent probability* Significant at the 5% level, ** Significant at the 10% level.

Table 3. Indirect effect of democracy on economic growth

Variables	Effect of the channel on economic growth					Effect of Democracy on the Canal					
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
LGDP (-1)	0.812	0.920	0.942	0.958	0.918	0.932	0.870	0.926	0.928	0.934	0.981
	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)
CH	0.003										
	(0.000*)										
CHY	0.008										
	(0.001*)										
ING		-0.014									
		(0.000*)									
DEP			-0.002								
			(0.021*)								
SG				0.011							
				(0.034*)							
OUV					0.0004						
					(0.018*)						
DA*CH						0.0001					
						(0.032*)					
DA*CHY							-0.0003				
							(0.000*)				
DA*DEP								-0.0006			
								(0.036*)			
DA*OUV									-0.00007		
									(0.016*)		
DA*SG										-0.0007	
										(0.000*)	
DA*ING											-0.0005
											(0.000*)
Constante	0.608	0.651	0.271	0.067	0.269	0.253	0.417	0.306	0.251	0.239	0.091
	(0.000*)	(0.002*)	(0.010*)	(0.631)	(0.001*)	(0.013)	(0.000*)	(0.000)	(0.000*)	(0.001*)	(0.018*)
Number of observations	540	272	540	535	540	540	540	540	540	540	540
Number of countries	18	18	18	18	18	18	18	18	18	18	18
VIF	1.10	1.04	1.16	1.01	1.00	1.02	1	1	1.01	1.01	1.04
AR(1)	-2.01	-2.06	-1.97	-1.99	-1.98	-1.99	-2.22	-1.98	-1.96	-1.97	-1.97
	(0.044*)	(0.039*)	(0.049*)	(0.047*)	(0.047*)	(0.046*)	(0.027*)	(0.048*)	(0.049*)	(0.048*)	(0.049*)
AR(2)	-0.14	0.24	-0.32	-0.35	-0.16	-0.15	0.69	-0.14	-0.17	-0.15	0.20
	(0.885)	(0.808)	(0.752)	(0.725)	(0.870)	(0.877)	(0.492)	(0.889)	(0.868)	(0.879)	(0.845)
Sargan	33.93	4.42	7.80	4.99	8.19	0.89	18.87	4.13	7.22	8.25	25.49
	(0.086)	(0.620)	(0.099)	(0.172)	(0.770)	(0.828)	(0.400)	(0.765)	(0.705)	(0.827)	(0.274)
Hansen	12.64	2.80	2.43	5.40	16.65	2.30	14.10	9.57	13.10	15.89	17.51
	(0.972)	(0.834)	(0.657)	(0.145)	(0.163)	(0.512)	(0.723)	(0.214)	(0.218)	(0.255)	(0.735)

Source : estimate made by the author using STATA 13.

Notes: Values in parentheses represent probability* Significant at the 5% level, ** Significant at the 10% level.

Table 4. Indirect effect of political stability on economic growth

Variables	Effect of channel on economic growth			Effet of poltical stability on the channel		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
LPIB(-1)	0.812	0.920	0.958	0.881	0.936	0.932
	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)	(0.000*)
CH	0.003					
	(0.000*)					
CHY	0.008					
	(0.001*)					
ING		-0.014				
		(0.000)				
SG			0.011			
			(0.034*)			
CH*SG				0.0004		
				(0.025*)		
CHY*SG					0.0014	
					(0.084**)	
ING *SG						0.0001
						(0.038*)
Constante	0.608	0.651	0.067	0.374	0.218	0.246
	(0.000*)	(0.002*)	(0.631)	(0.006*)	(0.072**)	(0.081**)
Number of observations	540	272	535	540	540	540
Number of countries	18	18	18	18	18	18
VIF	1.10	1.04	1.01	1.03	1.01	1.01
AR(1)	-2.01	-2.06	-1.99	-1.98	-2.01	-2.03
	(0.044*)	(0.039*)	(0.047*)	(0.048*)	(0.044*)	(0.042*)
AR(2)	-0.14	0.24	-0.35	-0.36	-0.25	-0.20
	(0.885)	(0.808)	(0.725)	(0.715)	(0.804)	(0.841)
Sargan	33.93	4.42	4.99	4.56	1.31	1.84
	(0.086)	(0.620)	(0.172)	(0.713)	(0.971)	(0.934)
Hansen	12.64	2.80	5.40	5.10	5.77	4.62
	(0.972)	(0.834)	(0.145)	(0.648)	(0.449)	(0.594)

Source : estimation réalisées par l'auteur à l'aide de STATA 13.

Notes: Values in parentheses represent probability* Significant at the 5% level, ** Significant at the 10% level.

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Annex1: List of countries in the MENA region

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