

Decentralization, Transparency of Public Procurement and Corruption in MENA Countries

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Abstract: This paper aims to study the impact of decentralization on corruption in the MENA region during the period 2001-2019. We adopt the model of Fisman and Gatti (2002) and use two econometric methods: the instrumental variable method and the system GMM method. Firstly, we show that decentralization in these economies favors rent-seeking behavior and cannot be a mechanism to fight against corruption. This result is robust for these two estimation methods and different corruption and decentralization indicators. Secondly, we introduce the base model, an interactive variable that links the decentralization indicator to that of transparency in public procurement. Likewise, we estimate this model by using the instrumental variable method and the system GMM method. We show that a threshold level of transparency in public procurement is necessary for successful decentralization and the reduction of corruption in MENA countries. This result is robust for the two estimation methods and different corruption and decentralization indicators.

Keywords: Corruption, Decentralization, Transparency in public procurement, Panel data, Instrumental variables method, System GMM method.

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1. INTRODUCTION:

For more than three decades, international financial institutions have been interested in encouraging developing countries to establish institutions of good governance that are capable of ensuring confidentiality and securing the transactions and expectations of actors. Consequently, decentralization policies were embedded in this context. They aim to democratize the decision-making process, limit stakes in power, and restrict the scope of political authority against corrupt and rent-seeking practices.

According to Hooghe, Marks, and Schakel's (2010) index of regional authority for 42 democracies and semi-democracies, 70 percent of developed countries have been decentralized since 1950 (Canavire-Bacarreza et al. 2019). The main reason for decentralization is that it can promote local development and better governance. Decentralization can help reduce tensions, avoid conflict, and prevent the concentration of power in the hands of one group, party, or individual, thereby reducing corruption (Kherigi, 2017). However, the theoretical and empirical contributions on the impact of decentralization on corruption do not all point in the same direction. Many authors show that decentralization curbs corruption, while others argue that decentralization promotes opportunistic practices and stimulates corruption.

This study focuses on countries in the MENA region. Indeed, initiatives aimed at strengthening subnational governance systems as well as neoliberal reforms have been part of the political agenda of MENA countries since the 1980s. Thus, the purpose of this paper is to study whether decentralization in the countries of the MENA region effectively improves the institutions of good governance and fights against corruption in these economies.

To this end, our study is divided into two sections. In the first section, we review the literature on the effects of decentralization on corruption. We study the mechanisms by which decentralization restricts the discretionary power of public leaders and fights against opportunistic behavior. Likewise, we show that decentralization does not undoubtedly lead to reducing corruption and that there are difficulties and constraints in putting decentralization policies into practice in some economies. We demonstrate that there are many supporting conditions for decentralization to be effective and successful. In this study, we prove that transparency in public procurement management is a necessary condition for successful decentralization and good local governance in MENA countries. Indeed, one of the main objectives of decentralization is to make public management transparent, which is perceived as opaque and corrupt at the central level. Likewise, the public market is a powerful instrument for local development projects. It is the quality of the management of its different procedures that the quality of the management of municipal budgets is expressed. The lack of predictability and transparency in public procurement reflects

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opportunistic behavior, patronage, and favoritism. In this regard, the OECD (2007), in one of its reports on “corruption in public procurement” recommends that “corruption in public procurement is a structural problem and that the term “public procurement” seems synonymous with “corruption”. “Consequently, the establishment of institutions of good governance through decentralization policies can only succeed if it is accompanied by measures that ensure the integrity of municipal public procurement.

In the second section, we develop an empirical study on the effect of decentralization on corruption in MENA countries. First, we carry out a descriptive study of the preponderance of corruption in these economies as well as the decentralization reforms adopted in the different countries constituting our sample. We show that these economies are characterized by pervasive corruption, persistent authoritarian dominance of the central state, and insufficient provision of local services. Then, in the second stage, we conducted an econometric study on the effect of decentralization on corruption in the MENA region. We adopt the Fisman and Gatti’s (2002) model, consider a balanced panel of MENA countries for the period 2001–2019, and apply two econometric methods: the instrumental variable method and the system Generalized Method of Moments (system GMM method). First, we show that decentralization in these economies promotes rent-seeking behavior and cannot reduce corruption. This result is strong for both econometric methods and various indicators of corruption and decentralization. We then introduce an interactive variable to the reference model that links decentralization to transparency in public procurement. Similarly, we used the instrumental variable method and the system GMM method. We show that minimum integrity and transparency in government procurement are needed to successfully decentralize and combat corruption in the MENA region. This result is robust for different indicators of corruption and decentralization and for different estimation methods.

Our contribution in this study is to incorporate the temporal dimension into Fisman and Gatti’s (2002) model. The authors developed a cross-sectional data study to investigate the impact of fiscal decentralization on corruption in a sample of 57 countries with unequal levels of development. In addition, unlike previous empirical work, we use a measure of decentralization that takes into account both the decentralization of decision-making and the degree of autonomy of local governments. This measurement is taken from the “Institutional Profiles” database, which is based on an approach that focuses more on the extent to which an institution is applied and prevalent than on its existence and legal form. To the best of our knowledge, no previous work has demonstrated that the transparency of public procurement is a prerequisite for the success of decentralization and the establishment of good local governance.

2. DECENTRALIZATION AND CORRUPTION: A LITERATURE REVIEW

In general, decentralization consists of the transfer of authority, resources, and skills from a central government to a sub-national entity. Likewise, decentralization can occur in fiscal, political, and administrative forms. According to Faguet

(2014), decentralization is one of the most important reforms of previous generations given its profound implications in terms of the quality of governance. Campbell (2001) assimilates decentralization with a “quiet revolution” as it generates a new model of governance based on competent leadership, strong popular participation, and a reduction in the abuse of power by public authorities. Likewise, multilateral organizations argue that decentralization helps fight public corruption by shifting certain functions and resources from the central government to lower levels. Furthermore, numerous empirical studies in many countries have shown a negative relationship between corruption and decentralization. Fisman and Gatti (2002) conducted a cross-sectional study of 57 countries with unequal levels of development and showed that fiscal decentralization makes it possible to reduce corruption in these economies. Arian (2004) investigated an empirical study of cross-sectional data for 40 countries and showed a negative and significant relationship between fiscal decentralization and corruption. In addition, Gurgur and Shah (2005) developed an empirical study on a sample of 30 countries (developing and industrial countries) using the weighted least squares (WLS) method, and showed that decentralization hurts corruption. Likewise, the authors conclude that the centralization of decision making and the presence of underdeveloped democratic institutions reinforce corruption in these economies. Similarly, Altunbaş and Thornton (2012), using an empirical study of a set of countries, confirmed the existence of a negative and significant relationship between fiscal decentralization and corruption. Aji Saputra and Setiawan (2021) also conducted an empirical study on a sample of 94 districts or cities in Java between 2013 and 2015 and discovered that the greater the degree of fiscal decentralization on Java Island, the less likely corruption is.

However, many other empirical studies have shown that the negative relationship between decentralization and corruption is nuanced and that the success of decentralization depends on the existence of preconditions. Ko and Zhi (2012) conducted an empirical study on 31 provinces in China during the period 1998–2008 and proved that fiscal decentralization aggravates corruption in Chinese local governments, which are characterized by poor compliance with the rule of law. In contrast, the negative relationship between corruption and decentralization is maintained in local governments, which are characterized by strong legal systems and political goodwill to fight corruption. These results are robust to different estimation methods, decentralization measures, and corruption measures. Alfada (2019) studied the effects of fiscal decentralization on corruption in the local governments of 19 Indonesian provinces from 2004 to 2014. Thus, the author applied the dynamic panel data method and showed that fiscal decentralization increases corruption in local governments. This outcome can be explained by a lack of competent human resources, low transparency, limited accountability, and high reliance on central government grants by local governments. Khan and Zimbalist (2022) conducted a survey of Mexican local governments to determine the effect of local government spending on citizens’ perceptions of corruption. They discovered that public investment in visible public works projects should reduce the perception of corruption. In addition, they contend that greater public invest-

ment by municipal governments is associated with higher perceptions of corruption. However, this effect is mediated by individuals' educational levels and may be driven by poorer neighborhoods with higher public service deficits. Thus, the impact of local government spending on citizens' perceptions of corruption in Mexico is asymmetric; it is influenced by the amount of local government spending, the nature of public spending, and the targeted local population, all of which have a significant impact on citizens' perceptions of corruption. According to Shon and Kyoung Cho (2019), corruption in state governments in the United States increases as the government becomes more decentralized. Indeed, local officials may be captured by private corporations and other special interest groups. These empirical findings support the existing literature, which suggests that decentralization has the potential to increase corruption and harm government accountability.

Thus, decentralization cannot inevitably lead to good local governance and cannot constitute a tool to fight corruption, unless it is accompanied by numerous conditions. Therefore, through what mechanisms does decentralization reduce corruption among local governments? What difficulties and constraints inhibit the transmission of the beneficial effects of decentralization in certain economies?

Based on numerous theoretical and empirical studies, we distinguish different channels of transmission of the effects of decentralization on corruption. Firstly, and according to the theoretical predictions of Tiebout (1956) and Oates (1972), it can be said that competition between local governments improves the efficiency of public administration and reduces corruption. If elected officials in one jurisdiction behave corruptly, investors and citizens will move to other jurisdictions. This leads to a reduction in fiscal resources. This situation encourages political decision-makers to improve the effectiveness of their policies and adopt adequate behaviors so as not to be sanctioned in the next elections. Weingast (1995) also demonstrated that competition between jurisdictions reduces corruption and improves government efficiency and honesty. Similarly, and in the same vein, Breton (1996) argues that in democratic systems, decentralization reduces corruption through inter-governmental competition. This shows that corruption is vulnerable in a number of jurisdictions. The lower the number, the higher the corruption, because it is easier for a small number of centers to regroup and defraud the population. By contrast, Bardhan and Mookherjee (2006) noted that competition among jurisdictions is similar to electoral competition among political parties. A dominant party can improve coordination between particular-interest groups and promote corruption at the local level.

Secondly, decentralization leads to geographical rapprochement between policymakers and citizens. Fan et al. (2009) and Kolstad et al. (2014) showed that this proximity could reduce information asymmetries between them and increase the responsibility of these policymakers. Consequently, they are less likely to adopt opportunistic or rental behavior. However, this proximity can also increase the risk of bribery, particularly in developing countries, where controls are weak. Tanzi (1995) argued that corruption is more prevalent

at the local level in developing economies because it is stimulated by the proximity of citizens to decision-makers. This leads to favoritism and nepotism. Likewise, Prud'homme (1995) and Bardhan (2002) emphasized that the proliferation of public decision-making centers in developing countries makes local decision-makers more sensitive to pressure from interest groups and pushes them to establish privileged relationships. Shon and Cho (2019) affirmed that fiscal decentralization limits the autonomy of subnational governments and increases corruption if private interest groups capture local government representatives and bureaucrats.

Finally, the control and direct accountability of political decision-makers involved in decentralization improve the performance of politicians. Consequently, this reduces corruption (Persson & Tabellini, 2003). In a decentralized system, each agent is held directly responsible for a specific task within its jurisdiction. In contrast, in a centralized system, politicians are responsible for a multitude of tasks that affect many jurisdictions. However, improving public decision makers' accountability through decentralization requires a fairly advanced level of education, political awareness of citizens, local democracy, and the absence of distributional conflicts at the local level (Galasso and Ravallion, 2005). According to Bardhan and Mookherjee (2006), such conditions may not be fulfilled in developing countries. Thus, it is uncertain whether decentralization will curb corruption in these economies. According to Batterbury and Fernando (2006), decentralization has often been carried out incompletely, giving way to hybrid forms closer to "deconcentration." This latter term refers to "the delegation of functions and powers to central government antennas" (Olsen 2007), which reinforces corruption and rent-seeking strategies. Likewise, Olsen (2007) asserted that if "decentralization" has not been successful, the fault does not lie with decentralization per se but with the decentralization model implemented, referred to as "deconcentration."

Similarly, Froger et al. (2008) state that the insufficiency of transferred powers and accountability mechanisms vis-à-vis the local population constitutes the brakes on decentralization policy. Furthermore, Lacuna (2012) showed that countries with a higher number of subnational governments, relative to their population, are more corrupt. Indeed, civil servants in smaller jurisdictions tend to be captured more by economic and political elites since oversight and whistleblowing mechanisms are relatively weak. In addition, officials in regional governments are less reliable than those at the central level because they are underpaid, uncooperative, and demotivated. Thus, the offer and acceptance of bribes, conflicts of interest, collusion, patronage, and nepotism can jeopardize the integrity of public administration and, in particular, the awarding of municipal public contracts. Public procurement is a major issue in local communities. Thus, to promote local investment and satisfy the operating needs of municipal public services, the municipality concludes public contracts, which are the legal means used by public authorities to procure essential goods and services with the most advantageous price/quality ratio.

However, local community abuse of power causes elected officials to surround themselves with collaborators who

share kinship, friendship, or political affiliation ties. In this regard, the OECD (2007) asserts that “corruption can occur at any stage of this process, from the moment when one decides on the need for a project until its completion, through the drafting of specifications and the launch of the call for tenders.” Consequently, local development policies are emptied of their content, offering no chance of success. Several development partners require local communities in most developing economies to maintain a minimum of transparency in public procurement procedures before intervening or strengthening their technical and financial support.

3. EMPIRICAL STUDY

3.1. Methodology

This section examines the impact of decentralization on corruption in the MENA region. Firstly, we develop a descriptive study of decentralization policies in MENA countries. Secondly, we conducted an econometric study on a panel of MENA countries during the period 2001-2019. The data constraints restrict our sample to four MENA countries: Algeria, Egypt, Morocco, and Tunisia. We apply two estimation methods: the instrumental variable method in panel data, and the system GMM method. We show that decentralization in these economies favors rent-seeking behavior and cannot be a mechanism for fighting corruption. This result is robust across different corruption and decentralization indicators and estimations. We then insert an interactive variable in the baseline model that links the indicator of decentralization to that of transparency in public procurement. We show that a threshold level of transparency in public procurement is necessary for successful decentralization and reduction of corruption in MENA countries. This result is robust for different indicators of corruption and decentralization and for different estimation methods. This empirical study is based on Fisman and Gatti's (2002) study, which studied the impact of fiscal decentralization on corruption in a sample of 57 countries. They conducted a cross-sectional study and found a negative and significant relationship between corruption and decentralization. Additionally, according to Fisman et al. (2002), decentralization is expressed as the share of regional expenditure in total public expenditure. However, this measure does not reflect a real decentralization of decision-making and does not necessarily correspond to local government autonomy in the allocation of resources. Given this constraint, we use a decentralization measure that takes into account both the decentralization of decision-making and the degree of autonomy of local administrations. This measure is extracted from the “Institutional Profile” database, which is based on an approach that focuses more on the degree of application and prevalence of an institution than on its existence and legal form. To our knowledge, there are no indicators in the empirical literature that permit comparative analysis at the transnational level as a measure of effective decentralization of decision-making. Therefore, our decentralization indicator was the most suitable proxy. In addition, our contribution to this study is the introduction of the temporal dimension in Fisman et al. (2002) and the completion of an empirical study using panel data. We also introduce another indicator variable into the model that considers the level of transparency in public procurement.

3.1.2. Decentralization Policies in the MENA Region: a Descriptive Study

The concentration of power and resources in a single state is a common feature of MENA countries. As a result, participation and citizenship rights have been denied, as has unequal growth within a single country. Thus, since the 1980s, initiatives to develop sub-national governance systems have been part of the political agenda of MENA countries. However, decentralization attempts were a façade, strictly controlled by increasing the center's power through deconcentrated state agents. What most MENA countries have implemented as decentralization in recent years is merely a “deconcentration,” which is a process by which the central government relocates and disposes of its agents geographically, from the capital down to the region. “Deconcentration” does not imply a full transfer of responsibilities, decision-making, and resources to local governments; on the contrary, certain administrative and managerial responsibilities for specific functions are delegated. While political decentralization supports strong local leadership, deconcentration aims to maintain or even reinforce authority and financial resources in the central government; local authorities' influence on local public policies remains limited (Jari, 2010). In this context, Shalaby et al. (2020) argued that MENA regimes promote decentralization but tend to oppose developments that could jeopardize their dominance. Central state governments have also expressed concerns regarding the sharing of power with elected sub-national governments. So, the success of local governance reforms in the MENA region is based on major changes in the political structure, which need to be prepared for decentralization. Furthermore, Shalaby et al. (2020) claimed that fiscal decentralization is a necessity for effective political decentralization; legislative goodwill and vast competencies on paper are of little use to subnational actors. Many decentralization processes in MENA have been characterized by massive underfunding.

This situation is further aggravated by the lack of staff, which makes local governments unable to spend their scarce funds efficiently. In addition, most decentralized actors in the MENA region still depend, for the most part, on transfers from the central government. The collection of local taxes has not yet made an adequate contribution to subnational funding. While local governments in some MENA countries have the right to levy and collect taxes, most face problems with tax collection, due to insufficient enforcement power or political decisions not to tax constituencies. In Jordan, Morocco, and Yemen, local governments often choose not to increase taxes to satisfy their political leadership. The new decentralization process in Tunisia continues to suffer from citizens' refusal to pay local taxes, and there is little incentive to encourage their collection. In 2008, public expenditure on local governance averaged 5% in MENA, compared to 35% in OECD countries. Morocco and Tunisia are among those who have established decentralization laws in the wake of the 2010/2011 Arab protests. While they show some individual progress, there are insufficient efforts towards fiscal decentralization. Tunisia has taken massive steps to turn from a highly centralized autocratic system towards a decentralized democracy, but only spent 7.8% of total government spending (2.1% of its GDP) and 3.4% of public staff expenditure on its local governments in 2016. Morocco, as one

of the "precursors" of decentralization in the region, spent 3.4% of its GDP, or 11.8% of total public spending, on its various sub-national governments in 2016.

In Egypt, there has been some progress in the legal and constitutional aspects, but much effort is needed regarding the budgetary and financial aspects of the local government. Indeed, Egypt is a good example of the lack of robust data on fiscal decentralization in the MENA region. Official data record subnational spending in the form of "subnational administration." It is unclear which sectors and public functions were included in these statistics. In fact, from 1990 to 2019, between 9% and 17% of Egypt's public expenditure went into local administration (Vollman et al., 2021). These numbers include subnational expenditures as well as all ministerial costs and those of other involved entities at the central and subnational levels. In addition, more than three-quarters of the allocated subnational budget is spent on salaries annually. Furthermore, Vollman et al. (2021) argued that in 2011, 6% of local budgets were allocated for central state expenditures at the local level. Only a minor amount (around one-fifth of the budget in 2011) is left for expenditures on local units. This has often rendered the impact of local expenditures on subnational service provision and development inefficient, as the allocation of public expenditures responds to the interests of central ministries. Furthermore, Egyptian local officials have no role in the employment process because all staffing decisions are exclusively taken by central entities in Cairo. Consequently, the public sector in Egypt is inefficient and characterized by high degrees of formal and informal central control.

In Algeria, decentralization remains incomplete and does not allow local authorities to recognize the leadership of local actions by the population. At the level of local finances, communes do not have sufficient resources to implement real local development policies. In addition to a lack of human resources and an embryonic and ineffective devolution process, these factors combine to produce obstacles and dysfunctions that render the viability and sustainability of the process fragile. Hachemi et al. (2016) and Vollman et al. (2021) argued that these obstacles and dysfunctions are located at three main levels: the difficulties of sharing responsibilities between the state and local authorities, the weakness of the human and financial resources of local authorities, and the ineffectiveness of citizen participation, which is the absence of a culture of participatory democracy.

3.2.3. *The Impact of Decentralization on Corruption: an Econometric Study the Specification of the Model*

As noted above, we adopt the model of Fisman and Gatti (2002), which is presented as follows:

$$CORRUPT_{it} = \beta_0 + \beta_1 DECENT_{it} + \beta_2 GOVSHARE_{it} + \beta_3 CIVIL_{it} + \beta_4 \ln(POP_{it}) + \beta_5 SCHOOL_{it} + \beta_6 \ln(GDP_{it}) + \alpha_t + \mu_i + \varepsilon_{it} \quad (1)$$

Where,

CORRUPT: corruption index

DECENT: decentralization

GOVSHARE: government share

CIVIL: civil liberty

POP: population size

SCHOOL: tertiary education rate

GDP: gross domestic production

We note that index *i* designates the country *i* and index *t* designates the date *t*. β_0 is a constant of the model, and $\beta_1, \beta_2, \dots, \beta_6$ are the coefficients to estimate. μ_i is country-fixed-effects, α_t is year dummy or time fixed-effects, to account for common shocks affecting all countries in all the sample period and $\varepsilon_{i,t}$ is a random term.

For the corruption index, we use two corruption indices that are commonly used in the economic literature. These include the corruption perception index (CPI) and the control of corruption index (CC). These indexes focus on corruption in the public sector and rank countries according to the degree of perceived corruption in government and politics. CPI scores are based on a scale from 0 (high corruption) to 10 (no corruption). The CC index ranges from -2.5 (low governance performance) to 2.5 (high governance performance). Thus, the higher each of these corruption indexes, the healthier the institutional environment and the weaker the corruption.

The decentralization is approximated by two indicators: the fiscal decentralization index and the political decentralization index. The fiscal decentralization index (FISCAL) is extracted from the "Institutional Profiles" database. This index is a composite index since it includes other sub-indices that indicate the degree of fiscal autonomy of sub-national authorities (states in the case of a federation, regions, provinces, etc.). Furthermore, this measure varies between 0 and 4, where 0 indicates the absence of fiscal autonomy and 4 indicates that all local resources are collected locally. The measure of political decentralization (POLITICAL) synthesizes two sub-indices that answer the following questions: Are municipal authorities throughout the country elected or designated by the central authority? And are other sub-national authorities (states for a federation, regions, provinces, etc.) elected or appointed by the central authority? The indices are between 0 and 3, where 0 indicates that sub-national authorities are named in total and 3 indicates that sub-national authorities are elected in total. Thus, the higher these decentralization indices, the more participatory the decentralization. The expected sign of the coefficient associated with the variable *DECENT* is positive. The greater the autonomy and independence of decision-making within the local administration, the lower the level of corruption. Section 1 of this article develops mechanisms of action of decentralization on corruption.

The tertiary education level serves as a proxy for human capital in an economy. It is measured as the ratio of the total number of enrollments, regardless of age, to the population of the age group that officially corresponds to the indicated level of education. The higher the level of education in an economy, the lower the level of corruption. In fact, higher education improves the ability of citizens to vote, behave legally, control the government, and judge the performance of politicians, consequently reducing corruption. The expected sign of the coefficient associated with *SCHOOL* is therefore positive.

The log of the GDP is expected to have a negative correlation with corruption. In fact, poor countries seem more cor-

Table 1. Statistical Description of Variables.

Variable	Observations	Mean	Std. Dev.	Min	Max
Corruption (CPI)	80	3,604	0,639	2,6	5,3
Corruption (CC)	80	-0,404	0,263	-0,938	0,369
FISCAL	80	0,879	0,626	0	2
POLITICAL	80	1,645	0,796	0	3
Ln GDP	80	9,073	0,258	8,383	9,378
GOVSHARE	80	0,312	0,048	0,239	0,458
CIVIL	80	4,7	0,736	3	6
Ln POP	80	17,274	0,741	16,089	18,425
SCHOOL	80	0,281	0,097	0,102	0,514
TRANSP	60	2,237	0,739	0,771	4,000
Ln AREA	80	13,362	0,991	12,005	14,683

rupt (Gould & Amaro-Reyes, 1983). Countries with a low level of GDP per capita are likely to have weak institutions and accounting traditions, which increase the level of corruption since citizens and civil servants tend to increase their income and gain money by twisting the law. The expected sign of the coefficient associated with Ln GDP is thus positive.

To control the size of the government, we use government expenditure as a share of GDP. The increase in these expenditures presumes an improvement in the quality of public services (and vice versa). Consequently, citizens have easy access to public services and do not need to bribe bureaucrats or public servants (Banerjee 1997, Fisman et al. 2002). Therefore, the expected sign of the coefficient associated with the variable GOVSHARE is positive.

The population is expected to have a positive impact on corruption, and the expected sign of the coefficient associated with Ln POP is negative. Demographic expansion generates pressure on public services and pushes citizens to bribe bureaucrats to acquire important public services more rapidly.

The index of civil liberty captures the extent to which a free press and free political associations curb corrupt practices in the public sector. This index varies from 0 (least freedom or no rights guaranteeing freedom or respect) to 4 (substantial freedom). The higher this index is, the more bureaucrats and politicians are controlled by civil society. This reduces their deviation or rent-seeking behavior. The expected sign of the coefficient associated with CIVIL is thus positive.

Sources and Description of Data

The Corruption Perception Index (CPI) was extracted from the Transparency International database (2020), and the Control of Corruption Index (CC) was derived from the World Bank Governance (2020). GDP/capita, SCHOOL, and POP were derived from the World Bank Indicators (2020). Civil liberty was extracted from the Freedom House Database (2020). The indicators of decentralization are taken from the database "Institutional Profiles," concerning surveys 2001,

2006, 2009, 2012, and 2016. It is assumed that these indicators will remain constant for some years given that institutional change is slow and that historical and social parameters resist their evolution. We assumed that these indicators were constant for a period of three to four years. The 2001 survey was spread over the period 2001-2004 the 2006 survey over the period 2005-2008, the 2009 survey over the period 2009-2011 the 2012 survey over the period 2012-2015, and the last survey over the period 2016-2019. We acknowledge the survey's non-periodicity and adjust our study in light of this constraint.

The descriptive statistics of the data give us an idea of the dispersion and development of these data over time. Table 1 shows the number of observations, average, SD, minimum and maximum values of our variables.

Table 1 shows that the economies in our sample are badly classified in terms of corruption. For the CPI indicator, on a scale ranging from 0 to 10, the average value of that indicator in our sample is 2.3. In addition, for the CC indicator, on a scale ranging from -2.5 to 2.5, the mean value of this indicator is equal to -0.404. These results confirm that corruption is pervasive in these economies.

In addition, such economies are characterized by a low level of decentralization. On a scale that varies from 0 to 4, the average value of FISCAL is 0.879 and that of POLITICAL is 1,645. As a result, local government in these economies has low budgetary autonomy. Similarly, sub-national authorities are not fully elected and, in most cases, they are appointed by the central authority. These findings show that the autonomy of subnational governments and participatory governance in these economies are still limited.

Methods and Results of the Estimations

In this study, the estimating strategy will be developed in two stages. In the first stage, we estimate the baseline model of Fisman and Gatti (2002) by using the common static panel data method. Next, to solve the endogeneity problem of the variable DECENT, we estimate the model using the instru-

Table 2. Estimation of Model (1) using Static Panel Data Method.

	The Impact of Fiscal Decentralization on Corruption		The impact of Political Decentralization on Corruption	
	Dependent Variable CC (1)	Dependent Variable CPI (2)	Dependent Variable CC (3)	Dependent Variable CPI (4)
FISCAL	0.037 (0.031)	-0.105 (0.077)	-	-
POLITICAL	-	-	-0.0767*** (0.027)	-0.102* (0.059)
Ln GDP	-0.487*** (0.102)	-3.157*** (0.525)	-0.701*** (0.112)	-3.361*** (0.522)
Ln POP	-0.252*** (0.028)	5.942*** (1.015)	-0.279*** (0.028)	5.583*** (0.937)
GOVSHARE	-1.226*** (0.460)	-0.773 (1.294)	-0.734 (0.475)	-0.054 (1.206)
SCHOOL	0.127 (0.284)	0.961* (0.570)	0.409 (0.288)	1.157** (0.563)
CIVIL	-0.109** (0.056)	-0.397*** (0.126)	-0.089* (0.053)	-0.408*** (0.123)
Year Fixed Effects	Yes	No	Yes	No
Constant	8.678*** (1.153)	-69.59*** (14.83)	10.93*** (1.225)	-61.72*** (13.06)
Observations	80	80	80	80
Method	Random Effect	Fixed Effect	Random Effect	Fixed Effect
Hausman Test (P-Value) ⁽¹⁾	0.744	0.000	0.994	0.000

Notes: The asterisk represents the p-value significance levels (* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$). Standard errors in parentheses are based on robust-consistent standard errors. The results relating to year dummies are not reported. (1) This is the p-value associated with the Hausman test: if the coefficient result of the Hausman test shows that the p-value is higher than 0.05 (the significance level), then the null hypothesis of the random effects model is the preferred model. If not, the fixed effects model will be used instead.

mental variable method. Then, to confirm the robustness of our results, we use the GMM system method.

In the second stage of our empirical study, we introduce to the baseline model an additional institutional variable, "the transparency of public procurement", and an interactive variable that links this latter variable with the decentralization variable. Then, we estimate the model by using the instrumental variables method and the system GMM method.

- Estimation of Model (1) using the static panel data method

Estimating a model from the panel data first requires checking the homogeneous or heterogeneous specification of the studied sample. The Fisher statistic associated with the homogeneity test shows that the model is an individual effect model. The Hausman test allows us to identify whether these

individual effects are fixed or random. The estimation results are presented in Table 2.

Table 2 shows that in columns (3) and (4), the coefficient associated with POLITICAL is negative and significant. Thus, political decentralization increases corruption. This result was preserved for the two corruption indicators. Moreover, the coefficient associated with FISCAL is not significant in columns (1) and (2), but it has a negative sign in column 2.

According to Fisman and Gatti (2002), Arkan (2004), and Alfada (2019), these estimates suffer from endogeneity biases. Indeed, the above findings in Table 2 assume that there is one-way causality between decentralization and corruption. However, it is conceivable that corrupt central government officials could resist permitting decentralization policies since this would limit their ability to extract rents. In this

case, the coefficients estimated using the random- or fixed-effect estimators are biased and non-convergent. Thus, to avoid the endogeneity problem, we adopt other estimation methods: the instrumental variable method and the GMM system method.

- Estimation of Model (1) using the instrument variables method.

In our case, this method enabled us to obtain unbiased and converging estimators. The principle of this method is to instrument the endogenous variables by using instruments that are correlated to the endogenous variables but not to their error terms. Therefore, the relevance and validity of these instruments need to be verified. In this study, to instrument the endogenous variable FISCAL or POLITICAL, we used an external instrument proposed in the literature (Arikan, 2004, Lessmann and Markwardt 2009), which is the surface area of the country in thousands of square kilometers (AREA). Furthermore, we used other instruments internal to the model, such as the lag of certain exogenous variables in the model. The instruments used were as follows:

- Ln (AREA),
- Ln POP₋₁: the delay of a one-period of the exogenous variable Ln POP,
- SCHOOL₋₁: the delay of a one-period of the exogenous variable SCHOOL

To test the relevance of the instruments used, we regress the endogenous variable on all the exogenous variables of the model, namely, the explanatory variables of the model and candidate instrumental variables.

$$DECENT_{it} = a + B X_{it} + C Z_{it} + \mu_{it} \quad (e)$$

The endogenous variable *DECENT* can be FISCAL or POLITICAL, *X* is the vector of exogenous variables in the model; and *Z* is the vector of instrumental variables. The statistics of the relevance test focus on the explanatory power of the instruments in the regressions (coefficient of determination and Fisher's test). Staiger and Stock (1997) show that if the value of the F statistic is greater than 10, the instruments are not weak, and the model is well identified. The estimation of equation (e) above using the ordinary least squares method shows strong explanatory power and a globally significant Fisher statistic (Table 3 in the Appendix). This allowed us to conclude that the instruments were relevant.

Furthermore, the application of the Sargan over-identification test (1957) shows that the null hypothesis cannot be rejected; therefore, the instruments are not correlated with the error term. As a result, the instruments were valid.

Moreover, it should be noted that the unit root test (Dickey Fuller) performed on our panel shows that all series are stationary.

Table 4 presents the results of the regression estimate using the instrumental variable method.

The estimates from the instrumental variables method in Table 4 show that the coefficients associated with the variables in the model are statistically significant. Thus, columns 1–4 show that the coefficients associated with FISCAL and POLITICAL are negative and statistically significant. This

result indicates that fiscal and political decentralization in the MENA region increases corruption. This result does not conform to the theoretical model, but it is consistent with many decentralization experiences in different countries (Alfada (2019) for Indonesia and Treisman (2000) for a panel of 54 countries). Furthermore, according to the above description of decentralization policies in the MENA region, the political and institutional environment in MENA economies is poorly suited to decentralization. It is characterized by informal and personal ties. Thus, deep institutional reforms (legal and constitutional) are necessary for the success of decentralization and the fight against corruption.

In addition, Column (1), (2), and (4) of Table 4 show that an increase in government size (GOVSHARE) has a negative impact on the corruption index. In Column (3), the coefficient is negative but statistically insignificant. Thus, rising public expenditure increases corruption. This outcome doesn't conform to the expected sign, but it can be justified. Indeed, in MENA countries, higher public spending is not always accompanied by more inclusive public service. In Egypt, it is accompanied by an increase in military expenditure (Mukhtar 2020). Thus, citizens bribe bureaucrats to access vital public services or to get ahead of others.

In addition, the estimations show that an increase in the size of the population (Ln POP) has a positive and significant effect on corruption in all the columns, with a degree of risk of 1%. This result was consistent with our expectations. In the presence of poor public services per capita, as is the case in the countries comprising our sample, an increase in the size of the population pushes them to engage in corruption to benefit from essential public services more quickly.

Additionally, the estimates show that the coefficient associated with SCHOOL is positive and significant at the 1% level for all the specifications, except in Column 1, the coefficient is positive but statistically insignificant. This result is in line with what was expected given the impact of education on mitigating corruption. In other words, higher education improves citizens' abilities to fight corruption.

To demonstrate the robustness of our previous results, we consider the dynamic aspect of corruption and estimate the model using Blundell and Bond's (1998) system GMM estimator.

- Robustness checks: estimation of model (2) using the system GMM method:

In this section, we take into consideration the dynamic impacts of corruption. Present corruption is believed to have been influenced by last year's corruption (Alfada, 2019). However, this dynamic effect of corruption causes a severe endogeneity problem if the lagged value of the dependent variable is placed as an independent variable. To resolve this problem, we use the GMM estimator of Blundell and Bond (1998). Moreover, this model allows us to solve the endogeneity issue resulting from the causality between corruption and decentralization. This estimation technique has the advantage of correcting the endogeneity in a panel data model.

We introduce to model (1) one-year lagged corruption as an independent variable. The system GMM estimator was applied to the following model:

Table 4. Estimation of Model (1) using the Instrumental Variable Method.

	The Impact of Fiscal Decentralization on Corruption		The Impact of Political Decentralization on Corruption	
	Dependent Variable	Dependent Variable	Dependent Variable	Dependent Variable
	CPI (1)	CC (2)	CPI (3)	CC (4)
FISCAL	-0.656*** (0.239)	-0.107*** (0.034)	-	-
POLITICAL	-	-	-0.364*** (0.124)	-0.076*** (0.026)
Ln GDP	-1.586*** (0.668)	-0.555*** (0.068)	-1.832*** (0.634)	-0.640*** (0.089)
Ln POP	-0.472*** (0.048)	-0.224*** (0.008)	-0.579*** (0.070)	-0.248*** (0.016)
GOVSHARE	-5.775*** (1.635)	-1.936*** (0.292)	-1.237 (2.297)	-1.051** (0.440)
SCHOOL	3.855 (2.773)	0.469*** (0.217)	5.070*** (1.947)	0.733*** (0.155)
Constant	27.133*** (5.333)	8.806*** (0.588)	29.868*** (5.729)	9.744*** (0.912)
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	76	76	76	76
Sargan Test (P-Value) ⁽¹⁾	0.383	0.845	0.285	0.537
Econometric Method	G2SLS Random Effects	G2SLS Random Effects	G2SLS Random Effects	G2SLS Radom Effects
Instruments	Ln AREA Ln POP ₋₁	Ln AREA SCHOOL ₋₁	Ln AREA SCHOOL ₋₁	Ln AREA SCHOOL ₋₁

Notes: All regressions include year dummies (results not reported). The asterisk represents the p-value significance levels (* p < 0.1; ** p < 0.05; *** p < 0.01). Standard errors in parentheses are based on robust-consistent standard errors. (1) This is the p-value associated with the Sargan test. In the four columns, we have a p-value > 0.05. This result shows that we must accept the H₀ hypothesis: the instruments are not correlated with the error term.

$$CORRUPT_{it} = \beta_0 + \beta_1 DECENT_{it} + \beta_2 GOVSHARE_{it} + \beta_3 CIVIL_{it} + \beta_4 \ln(POP_{it}) + \beta_5 SCHOOL_{it} + \beta_6 \ln(GDP_{it}) + \beta_7 CORRUPT_{it-1} + \alpha_t + \mu_i + \varepsilon_{it} \quad (2)$$

Where *CORRUPT*_{it-1} indicates a one-year delay in corruption and β_7 is a coefficient to be estimated. The other variables are identical to those in model (1). The system GMM model estimation results are provided in Table 5 below. Also, these results allow us to note that the tests of the validity of the dynamic panel are verified. The autocorrelation tests show that we accept the presence of an AR (1) effect for the residuals and the absence of an AR (2) effect. Moreover, the Sargan over-identification test confirms the validity of the instruments.

Furthermore, the results given in Table 5 show that the coefficients associated, respectively, with the lagged values of

corruption IPC-1 and CC-1 are positive and statistically significant in all specifications. This result confirms the dynamic aspect of corruption. Current corruption is significantly correlated with past corruption. Besides, this correlation is positive. In fact, in an economy, the omnipresence of corruption in the last year, which is due to impunity, for example, increases the level of corruption in the following year. In contrast, a low level of corruption in the past year, which was due to effective anti-corruption efforts, discourages bureaucrats and politicians from getting involved in corrupt practices the next year.

Moreover, the results presented in Table 5 confirm those of the previous estimations in Table 4 when using the instrumental variable method. Therefore, we retain the same interpretations, developed above, concerning the results

associated with different explicative variables of the model. In effect, the coefficient associated with Ln GDP is negative and statistically significant for a degree of risk of 1% in all specifications. The coefficients associated with Ln POP, SCHOOL, maintain the same sign as those in the previous estimations and are statistically significant at the level of 1%. Also, in all specifications, the coefficient of the variable

GOVSHARE maintains the same sign as that in Table 4 above, and it is statistically significant at the level of 1% in columns (1) and (2). The coefficient associated with the variable CIVIL has the expected sign and is statistically significant in columns (1) and (2). Thus, a free press and political organizations curb corruption.

Table 5. Estimation of Model 2 using System GMM Method.

	The Effect of Fiscal Decentralization on Corruption		The Effect of Political Decentralization on Corruption	
	Dependent Variable CPI (1)	Dependent Variable CC (2)	Dependent Variable CPI (3)	Dependent Variable CC (4)
IPC ₋₁	0.468*** (0.079)	-	0.446*** (0.075)	
CC ₋₁	-	0.384*** (0.106)	-	0.219** (0.094)
FISCAL	-0.496*** (0.177)	-0.178** (0.086)	-	-
POLITICAL	-	-	-0.187*** (0.054)	-0.084*** (0.027)
Ln GDP	-0.735*** (0.274)	-0.394*** (0.132)	-0.741*** (0.237)	-0.522*** (0.120)
Ln POP	-0.206*** (0.057)	-0.128*** (0.031)	-0.310*** (0.067)	-0.205*** (0.033)
GOVSHARE	-3.009*** (0.841)	-1.211*** (0.450)	-0.711 (0.807)	-0.361 (0.377)
SCHOOL	2.822*** (0.685)	0.815*** (0.298)	2.138*** (0.509)	0.759*** (0.209)
CIVIL	0.129** (0.058)	0.060* (0.033)	-0.020 (0.061)	0.012 (0.027)
Constant	12.506*** (3.333)	5.763*** (1.458)	14.065*** (3.233)	7.997*** (1.517)
Observations	76	76	76	76
<i>Arellano-Bond test</i>				
AR (1) (p-value) ⁽¹⁾	0.019	0.004	0.001	0.001
AR (2) (p-value) ⁽²⁾	0.675	0.447	0.178	0.961
Sargan Over-Identification Test ⁽³⁾ (p-value)	0.240	0.923	0.163	0.767
Econometric Method	System GMM	System GMM	System GMM	System GMM

Notes: The asterisk represents the p-value significance levels (* p < 0.1; ** p < 0.05; *** p < 0.01). Standard errors in parentheses.

(1) In the four columns, we have p-value < 0.05. This result shows that we accept the presence of first-order correlation for the residuals.

(2) In the four columns, we have p-value > 0.05. So, we accept the absence of second-order serial correlation in the first-differences error.

(3) This is the p-value associated with the Sargan test. In the four columns, we have p-value > 0.05. This result shows that we must accept the H₀ hypothesis: the instruments are not correlated with the error term.

Furthermore, in all specifications, decentralization is negatively and significantly associated with the index of corruption. Thus, fiscal and political decentralization in the MENA region increase corruption. This effect is robust across various indicators of corruption and decentralization. It is also robust for various estimation methodologies. This outcome is justified by the stylized facts developed above. Indeed, the description of the decentralization policies of these economies, as well as the statistical description of the data (Table 1), shows that the MENA countries are still characterized by a concentration of authority and resources in a central government. The situation is closer to “deconcentration” of the administrative activity than to decentralization. Furthermore, Vollmann et al (2020) and Kherigi (2020) show that the political and institutional environment in MENA countries is not appropriate for decentralization. So, institutional reforms are necessary for decentralization to be successful and to fight against corruption. In the following sub-section, we show that a minimum level of integrity in the management of public procurement is necessary for the success of decentralization and the fight against corruption.

3.2.4. The Impact of Transparency in Public Procurement on Decentralization and Corruption: an Interactive Variable Model

To consider the effect of public procurement transparency on corruption, we introduce a new institutional variable (TRANSP) to model (1). This variable is taken from the "Institutional Profiles" database and considers the level of transparency in government procurement. This indicator ranges from 0 (very low transparency) to 4 (high transparency). The higher the index, the lower the corruption. Thus, the expected sign of the estimated coefficient associated with the relevant variable was positive.

Likewise, we add an interactive variable (DECENT*TRANSP) to the same equation, which links the indicator of decentralization to that of the transparency of public

contracts. The new model specification is presented in equation (3).

$$CORRUPT_{it} = \alpha + \beta_1 DECENT_{it} + \beta_2 GOVSHARE_{it} + \beta_3 CIVIL_{it} + \beta_4 \ln(POP_{it}) + \beta_5 SCHOOL_{it} + \beta_6 \ln(GDP_{it}) + \beta_8 TRANSP_{it} + \beta_9 DECENT_{it} * TRANSP_{it} + \alpha_i + \mu_i + \varepsilon_{it} \quad (3)$$

Where, β_8 and β_9 are coefficients to be estimated.

The marginal effect of decentralization on corruption is given by:

$$\frac{\partial CORRUPT}{\partial DECENT} = \beta_1 + \beta_9 TRANSP \quad (4)$$

This effect is positive if and only if $TRANSP > \frac{-\beta_1}{\beta_9}$.

Therefore, if the level of transparency of public procurement exceeds a certain threshold, decentralization may constitute an anti-corruption mechanism.

Of course, and from a statistical point of view, this threshold effect exists only if β_1 and β_9 are statistically significant.

To estimate this model, we use two econometric methods. First, we used the instrumental variables method, and second, to show the robustness of our results, we applied the system GMM method.

- The estimation of the interactive variable model using the instrumental variable method:

In this subsection, we estimate model (3) using the instrumental variable method. We follow the same methodology as described earlier. We make sure that our instruments are relevant and valid. Indeed, Table 6 of the Appendix indicates that our instruments are relevant (coefficient of determination, Fisher test). Also, Sargan's test shows that these instruments are valid. Likewise, we use the two corruption indicators (CPI and CC). The results of our estimation are given in Table 7 below.

Table 7. The Estimation of Model (3) Using the Instrumental Variable Method.

	The Effect of Fiscal Decentralization on Corruption		The Effect of Political Decentralization on Corruption	
	Dependent Variable CPI (1)	Dependent Variable CC (2)	Dependent Variable CPI (3)	Dependent Variable CC (4)
TRANSP	-0.738*	-0.282**	-1.147**	-0.565***
	(0.441)	(0.140)	(0.545)	(0.277)
FISCAL	-1.782***	-0.502**	-	-
	(0.725)	(0.230)		
FISCAL*TRANSP	0.712**	0.244**	-	-
	(0.348)	(0.109)		
POLITICAL	-	-	-2.002***	-1.637***
			(0.709)	(0.243)
POLITICAL*TRANSP	-	-	0.799***	0.664***
			(0.306)	(2.726)

Ln GDP	-2.351**	-0.0627	-4.474*	-0.915***
	(1.018)	(0.116)	(2.311)	(0.347)
Ln POP	5.426***	-0.224***	8.316**	-
	(1.161)	(0.0295)	(3.305)	
GOVSHARE	-2.059	-1.167***	1.163	-
	(1.370)	(0.343)	(0.806)	
SCHOOL	-	-0.0476	0.375	0.786
		(0.252)	(1.754)	(1.157)
CIVIL	-0.183	0.150***	-0.392***	0.244***
	(0.129)	(0.0351)	(0.149)	(0.083)
Constant	-66.145***	4.683***	-96.331**	9.375***
	(13.433)	(0.981)	(45.812)	(2.726)
Observations	60	60	60	60
Sargan Test (P-Value) ⁽¹⁾	0.688	0.187	0.236	0.126
Econometric Method	Within Fixed Effects	G2SLS Random Effects	Within Fixed Effects	G2SLS Random-Effects
Instruments	SCHOOL ₋₁ Ln AREA	Ln POP ₋₁ SCHOOL ₋₁	Ln POP ₋₁ Ln AREA SCHOOL ₋₁	SCHOOL ₋₁ Ln AREA

Notes: The asterisk represents the p-value significance levels (* p < 0.1; ** p < 0.05; *** p < 0.01). Standard errors in parentheses are based on robust-consistent standard errors. (1) this is the p-value associated with the Sargan test. In the four columns, we have p-value > 0.05. This result shows that we must accept the H₀ hypothesis: the instruments are not correlated with the error term.

Note that:

FISCAL*TRANSP is the interactive variable that links the fiscal decentralization variable to TRANSP.

POLITICAL*TRANSP is an interactive variable that associates political decentralization with TRANSP.

The results suggest that the coefficient associated with TRANSP is negative and statistically significant for all the specifications. This effect was inconsistent with our expectations. This aberration is due to the lack of transparency in government contracts in the economies of our sample. This deficiency reinforces corruption and rent-seeking behavior in these economies. The descriptive statistics in Table 1 show that, on a scale of 0 to 4, the average value of this indicator is 2.3.

Moreover, columns (1) and (2) in Table 7 show that, for the two corruption indicators, the coefficient associated with the variable FISCAL remains negative and significant. Furthermore, the results show that the coefficient associated with the corresponding interactive variable, FISCAL*TRANSP, is positive and significant. Thus, according to equation (4), the marginal effect of fiscal decentralization on corruption, there is a threshold level of transparency in public procurement, above which, fiscal decentralization leads to good local governance.

Similarly, columns (3) and (4) of Table 7 show that the coefficient associated with the variable POLITICAL remains negative and significant for the two indicators of corruption.

The coefficient associated with its corresponding interactive variable, POLITICAL*TRANSP, is positive and significant. Therefore, there is a minimum level of transparency in public procurement, beyond which political decentralization can be an anti-corruption mechanism.

- Robustness check: The estimation of the interactive variable model using the system GMM method:

In this subsection, we discuss the dynamic effects of corruption. Therefore, we add one-year-lagged corruption as an independent variable to model (3), and we apply the system GMM method. We followed the same procedure as presented above.

The results presented in Table 8 indicate that the dynamic panel validity tests are verified.

The coefficient associated with TRANSP is negative and statistically significant in all specifications. Furthermore, columns (1) and (2) show that the coefficients associated with FISCAL and its corresponding interactive variable, FISCAL*TRANSP, are significant. Columns (3) and (4) show that the coefficients associated with POLITICAL and with its corresponding interactive variable, POLITI-

CAL*TRANSP, are significant, respectively. Thus, we can retain the same conclusion as deduced above: there exists a threshold level of transparency in public procurement, above

which fiscal decentralization and political decentralization can be mechanisms to fight corruption.

Table 8. The Estimation of Model (3) using the System GMM Method.

	The Effect of Fiscal Decentralization on Corruption		The Effect of Political Decentralization on Corruption	
	Dependent Variable CPI (1)	Dependent Variable CC (2)	Dependent Variable CPI (3)	Dependent Variable CC(4)
CPI-1	0.433*** (0.093)	-	0.468*** (0.098)	-
CC-1	-	0.312*** (0.097)	-	0.638*** (0.056)
TRANSP	-0.370* (0.227)	-0.225*** (0.069)	-0.797*** (0.251)	-0.183*** (0.051)
FISCAL	-1.133*** (0.372)	-0.344*** (0.108)		
FISCAL*TRANSP	0.420*** (0.175)	0.179*** (0.051)		
POLITICAL			-1.473*** (0.441)	-0.329*** (0.112)
POLITICAL*TRANSP			0.590*** (0.182)	0.130*** (0.050)
Ln GDP	-0.436* (0.240)	-0.016 (0.082)	-0.969*** (0.348)	(-0.132) *** (0.072)
Ln POP	-0.205*** (0.060)	-0.164*** (0.027)	-0.085 (0.066)	-
GOVSHARE	-1.851*** (0.736)	-0.613** (0.259)	0.465 (0.972)	-0.264* (0.150)
SCHOOL	1.223** (0.582)	-0.041 (0.164)	1.701*** (0.623)	-
CIVIL	0.186*** (0.064)	0.102*** (0.024)	0.160** (0.075)	0.087*** (0.017)
Constant	10.379*** (2.701)	3.132*** (0.911)	13.295*** (4.033)	1.443** (0.678)
Observations	60	60	60	60
Arellano-Bond test				
AR (1)	0.010	0.040	0.015	0.140
(p-value) (1)				
AR (2)	0.909	0.446	0.092	0.409
(p-value) (2)				

Sargan Over-identification Test (3) (p-value)	0.307	0.156	0.220	0.088
Econometric Method	System GMM	System GMM	System GMM	System GMM

Notes: The asterisk represents the p-value significance levels (* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$). Standard errors in parentheses.

(1) In the four columns, we have $p\text{-value} < 0.05$. This result shows that we accept the presence of first-order correlation for the residuals.

(2) In the four columns, we have $p\text{-value} > 0.05$. So, we accept the absence of second-order serial correlation in the first-differences error.

(3) This is the p-value associated with the Sargan test. In the four columns, we have $p\text{-value} > 0.05$. This result shows that we must accept the H_0 hypothesis: the instruments are not correlated with the error term.

4. CONCLUSION

At the end of this study, we conclude that decentralization is a complex process, and its effectiveness in promoting favorable results is not linear and depends on the prevailing institutional context. Thus, many empirical studies show that the mechanisms for transmitting the effects of decentralization on corruption can function only in the presence of transferred powers and resources, and mechanisms of accountability vis-à-vis the local population.

Our contribution to this study is to show that fiscal and political decentralization in MENA countries increases corruption. This result is robust to various corruption and decentralization indicators and estimation methods. Furthermore, we show that transparency in public procurement is a prerequisite for decentralization mechanisms to function and lead to good local governance. A minimum level of transparency in public procurement is necessary for decentralization to be a mechanism for fighting corruption in these economies. These results are robust to various corruption and decentralization indicators and estimation methods.

Thus, to succeed in decentralization policies and promote good local governance in the economies of the MENA region, many recommendations in terms of the political economy should be suggested. First, it should be noted that decentralization in these economies is not sufficiently participatory and that MENA countries are still characterized by a concentration of power and resources in a central state. This finding is prevalent even after the Arab Spring and the establishment of democratic institutions in some regional economies. This reinforces the uneven development and regional imbalance within the same country. Therefore, if decentralization is the foundation of local development, strengthening decentralization in the MENA countries is necessary.

Second, it should be noted that participatory management of public affairs must be transparent. Minimum transparency in public procurement is a prerequisite to activating mechanisms for the beneficial effects of decentralization on good local governance in MENA countries. Therefore, governments in the MENA region should develop policies and initiatives to improve the efficiency and transparency of procurement processes. Despite significant progress in the development and modernization of public procurement systems in several MENA countries, it is insufficient in other countries. A revised set of regulations in Tunisia promotes online procurement and establishes an “observatory” that harnesses the power of monitoring data. However, public procurement was explicitly mentioned in Morocco’s new constitution for the first time. In addition, there is no unified legislation governing public contracts in Egypt. As a result, recommendations should be made to the MENA government to develop a

modern, transparent, and efficient public procurement system. Thus, institutional reform is required to enact regulations and laws that ensure the smooth operation of all transactions involving public procurement. In addition, the government should modernize its procurement system and develop electronic public procurement levers. This novel method, which aims to reduce corruption and increase transparency in government contracts, could be a future research topic or an extension of the current study.

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CONFLICT OF INTEREST

The authors reported no potential conflict of interest.

APPENDICES

Table 3. Relevance Test of Instruments of Model (1) using OLS Method.

	(1)	(2)	(3)
VARIABLES	FISCAL	FISCAL	POLITICAL
Ln GDP	-0.644** (0.293)	0.0103 (0.184)	0.343 (0.240)
Ln POP	-105.6*** (34.27)	0.158 (0.118)	-0.171 (0.154)
GOVSHARE	0.355 (2.327)	-3.328 (2.301)	-1.373 (3.010)
SCHOOL	2.655** (1.275)	6.811*** (2.559)	3.127 (3.347)
Ln AREA	0.0608 (0.139)	-0.0717 (0.132)	0.200 (0.172)
Ln POP ₋₁	106.0*** (34.36)	-	-
SCHOOL ₋₁	-	-6.729*** (2.338)	-5.966* (3.059)
Observations	76	76	76

R ²	0.722	0.718	0.829
Fisher	30.31	29.66	56.67

Notes: The asterisk represents the p-value significance levels (* p < 0.1; ** p < 0.05; *** p < 0.01). Standard errors are in parentheses.

Table 6. Relevance Test of Instruments using OLS Method.

	(1)	(2)	(3)	(4)
VARIABLES	FISCAL	FISCAL	POLITICAL	POLITICAL
TRANSP	-0.578*** (0.047)	-0.577*** (0.0393)	-0.557*** (0.055)	-0.549*** (0.0451)
FISCAL*TRANSP	0.468*** (0.016)	0.479*** (0.0132)	-	-
POLITICAL* TRANSP		-	0.412*** (0.025)	0.409*** (0.0207)
Ln GDP	0.193 (0.123)	-0.200 (0.136)	-0.532 (0.417)	-0.628** (0.254)
Ln POP	-0.079*** (0.031)	60.31*** (12.80)	-8.100 (28.228)	0.0298 (0.0802)
GOVSHARE	-0.137 (0.524)	-1.221*** (0.391)	1.509 (0.975)	1.359 (0.816)
CIVIL	0.072** (0.033)	0.0405 (0.0285)	0.068 (0.074)	0.0570 (0.0621)
SCHOOL	-0.483* (0.255)	-0.244 (0.773)	-1.218 (1.528)	-1.174 (1.506)
Ln POP ₋₁	-	-60.66*** (12.86)	8.176 (28.390)	-
Ln AREA	-	-	0.039 (0.073)	0.0465 (0.0684)
SCHOOL ₋₁	-	-0.312 (0.815)	1.799 (1.593)	(1.577) 0.0465
Constant	0.839 (1.110)	8.611*** (1.908)	3.721 (5.969)	5.235* (2.801)
Observations	60	60	60	60
R ²	0.973	0.982	0.971	0.971
Fisher	238.05	306.99	166.73	188.71

Notes: The asterisk represents the p-value significance levels (* p < 0.1; ** p < 0.05; *** p < 0.01). Standard errors are in parentheses.

REFERENCES

- Aji Saputra, Newin A. and Setiawan Doddy. 2021. "Fiscal Decentralization, Accountability and Corruption Indication: Evidence from Indonesia." *Journal of Home Affairs* 13(1):29-40
- Alfada, Anisah. 2019. "Does Fiscal Decentralization Encourage Corruption in Local Governments? Evidence from Indonesia." *Journal of Risk and Financial Management* 12(3):1-14.
- Altunbas, Yener and Thornton John. 2012. "Fiscal Decentralization and Governance." *Public Finance Review* 40(1):66-85.
- Arikan, G. Gulsun. 2004. "Fiscal Decentralization: A Remedy for Corruption?" *International Tax and Public Finance* 11(2):175-195.
- Bacarreza, Gustavo C., Vazquez Jorge M. and Yedgenov Bauyrzhan. 2020. "Identifying and Disentangling the Impact of Fiscal Decentralization on Economic Growth." *World Development* 127:104742.
- Bardhan, Pranab and Mookherjee Dilip. 2006. "Pro-poor targeting and Accountability of Local Governments in West Bengal." *Journal of Development Economics* 79 (2) :303-327.
- Breton, Albert. 1996. *Competitive Governments: An Economic Theory of Politics and Public Finance*. Cambridge, Cambridge University Press.
- Campbell, Tim. 2001. *The Quiet Revolution: The Rise of Political Participation and Leading Cities with Decentralization in Latin America and the Caribbean*. Pittsburgh. University of Pittsburgh Press.
- Changwony, Fredrick K. and Paterson Audrey S. 2019. "Accounting Practice, Fiscal Decentralization and Corruption." *The British Accounting Review* 51(5):1-21.
- Chiara, Ayad. 2019. "Assessing Decentralization Experiences in the MENA: Lessons Learned for Post- Conflict Countries." *Arab Reform Initiative*.
- Faguet, Jean P. 2014. "Decentralization and Governance." *World Development* 53(1): 2-13.
- Fan, C. Simon, Lin Chen and Treisman Daniel. 2009. "Political Decentralization and Corruption: Evidence from Around the World." *Journal of Public Economics* 93(1-2):14-34.
- Fisman, Raymond and Gatti Roberta. 2002. "Decentralization and Corruption: Evidence Cross Countries." *Journal of Public Economics* 8(3):325-345.
- Froger, Géraldine, Philippe Méral and Roldan Muradian. 2016. "Vers une Prise en Compte de la Diversité des Arrangements Institutionnels et des Pratiques dans l'Analyse des Paiements pour Services Environnementaux." *Développement Durable et Territoires* 7(1):1-10.
- Gurgur, Tugrul and Anwar Shah. 2002. *Localization and Corruption: Panama or Pandora's Box?* Routledge Press, London and New York.
- Hachemi-Douici, Naima and Si-Mohamed Djamel. 2016. "The Algerian Conception of Decentralized Economic Cooperation: The Present Situation, the Restraints and the Prospects of Achievement." *Mondes en Développement* 175(3):77-96.
- Kahn, Theodore and Zimbalist Zack. 2022. "How Do Local Public Spending Decisions Shape Corruption Perceptions? Evidence from Mexico." *Latin American Politics and Society* 64(3):67-92.
- Kherigi, Intissar. 2017. "Devolving Power after the Arab Spring: Decentralization as a Solution." *Al Sharq Strategic Research*.
- Kolstad, Ivar, Somville Vincent and Wiig Arne. 2014. "Devolutionary Delusions? The Effect of Decentralization on Corruption" *Chr. Michelsen Institute Working Paper* (10)
- Ko, Kilkon and Zhi Hui. 2012. "Fiscal Decentralization: Guilty of aggravating corruption in China?" *Journal of Contemporary China* 22(79):35-55
- Lercuna, Antonio.2012. "Corruption and Size Decentralization." *Journal of Applied Economics* 18(1):139-168.
- Oates, Wallace E. 1972. *Fiscal Federalism*. Edward Elgar Publishing.
- Olsen, Hans B. 2007. *Décentralisation Et Gouvernance Locale Module 1 : Définitions et Concepts*. Confédération Suisse, Département Fédéral des Affaires Etrangères DFAE Direction du Développement et de la Coopération DDC Ressources Thématiques, Section Gouvernance.
- Persson, Torsten, Guido Tabellini and Francesco Trebbi. 2003. "Electoral Rules and Corruption." *Journal of the European Economic Association* 1(4):958-989.

- Prud'homme, Remy. 1995. "The dangers of decentralization." *The World Bank Research Observer* 10(2):201-220.
- Shalaby, Marwa, Chagai Weiss, Ellen Lust, Kristen Kao, Erik Vollmann, Sylvia Bergh, Ezra J. Karmel, Miriam Bohn, Intissar Kherigi, Zeynep Kadirbeyoglu. 2020. "The Dynamics of Decentralization in the MENA: Processes, Outcomes, and Obstacles." *Program on Governance and Local Development, University of Gothenburg, Working Paper No. 31.*
- Shon, Jongmin and Yoon K. Cho. 2020. "Fiscal Decentralization and Government Corruption: Evidence from U.S. States." *Public Integrity* 22(2):187-204.
- Tanzi, Vito. (1995). "Fiscal Federalism and Decentralization: A review of Soren Efficiency and Macroeconomic Aspects." *Annual World Bank Conference on Development Economies*: 295-316.
- Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *Journal of Political Economy* 64(5):416-424.
- Vollmann, Erick and Bohn Miriam. 2021. "Fiscal Decentralization in the Middle East and North Africa: Deciphering Motives and Outcomes" Pp 107-150 in *Decentralization in the Middle East and North Africa: Informal Policies, Subnational Governance, and the Periphery*. Vol 5, edited by Nomos. *Nahoststudien Middle Easter Studies*.

- Weingast, Barry R. 1995. "The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development." *Journal of Law, Economics and Organization* 11(1):1-31.

OTHER REFERENCES:

- OCDE .2007. « Bonne Gouvernance au Niveau Local pour Accroître la Transparence & La Redevabilité dans la Prestation de Services : Expériences de Tunisie & d'ailleurs ».
- OECD & UCLG .2019. *Report of the World Observatory on Subnational Government Finance and Investment – Country Profiles*. Paris, OECD.

DATA AVAILABILITY

- <https://www.transparency.org/en>
- <https://info.worldbank.org/governance/wgi/>
- <https://donnees.banquemondiale.org/indicateur/NY.GDP.PCAP.PP.KD>
- <http://www.cepii.fr/institutions/EN/ipd.asp>

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