The democracy and economic growth nexus: do FDI and government spending matter? Evidence from the Arab world

Nouha Bougharriou, Walid Benayed, and Foued Badr Gabsi

Abstract

The purpose of the paper is to examine the direct and indirect links between democracy and economic growth. To do so, the authors estimate a dynamic panel simultaneous equations model on a sample of 16 Arab countries during the period 2002–2013. This study focuses on two particular channels through which democracy affects growth, namely FDI inflows and public consumption expenditure. The results show that there is no clear relationship between democracy and economic growth in the Arab countries, which confirms the skeptical approach. The ambiguity of this relationship can be explained by the fact that democracy promotes growth indirectly by stimulating FDI inflows and hinders growth by generating higher public consumption expenditure.

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Authors

Nouha Bougharriou, ✉ Faculty of Economics and Management of Sfax, University of Sfax, Tunisia, nbougharriou@gmail.com
Walid Benayed, Higher Institute of Management of Gabès, Tunisia
Foued Badr Gabsi, Faculty of Economics and Management of Sfax, University of Sfax, Tunisia

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1. Introduction

In the wake of the popular uprisings of 2011 which were first broken out in Tunisia and subsequently widespread in neighboring countries, the Arab world seemed to witness a new phase of socio-political changes marking a turning point in the history of the region. The peaceful protests pursued in the name of freedom and democracy[1] have enabled some Arab countries to finally break with the persistent authoritarian regimes, which have escaped from various waves of democratization that invaded the world.

In light of these political upheavals, studying the effect of democracy on economic growth in the Arab world context is of key importance given that such a relationship could be influenced by the specificities of this region. From both theoretical and empirical points of view, democracy has an ambiguous effect on economic growth as existing studies on this topic provide evidence of positive, negative and even no significant relationship between democracy and economic growth (Sirowy and Inkeles, 1990).

Investigating the economic consequences of democratization in the Arab countries is obviously relevant in that little empirical studies examining this issue have been conducted on this set of countries. In addition, most studies carried out on this sample of countries have been limited to merely studying the direct link between democracy and growth while neglecting the transmission channels through which democracy may affect economic growth (Elbadawi, 2005; Elbadawi and Soto, 2014; Selim and Zaki, 2014; Rachdi and Saidi, 2015).

This paper aims to fill this gap by examining the direct and indirect relationship between democracy and economic growth in the Arab world. To this end, we estimate a dynamic panel simultaneous equations model on a sample of 16 Arab countries during the period 2002-2013[2], using public consumption expenditure and FDI inflows as potential transmission channels. The choice of these two channels stems from the importance of state intervention in Arab economies and the increasing evolution of FDI flows as an outcome of globalization.

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[1] The Arab revolutionary movements also appear as a response to the economic downturns resulting from the global financial crisis, the low economic performance of the Arab countries and their inability to deal with high unemployment, the lack of economic opportunities and the spread of corruption.

[2] Several political and economic events have marked this time interval. The most remarkable events were the invasion of Iraq by the United States in 2003 in an attempt to establish democracy in the Middle East after the attacks of September 11, 2001 and the emergence of the global economic crisis in 2008 that affected the economies of the Arab countries, notably those of the oil-rich countries and North African countries that have close ties with the EU.

The remainder of the current study is organized as follows. Section 2 briefly reviews the related literature. Section 3 displays the econometric methodology and the data. Section 4 presents the empirical findings. Section 5 reports the robustness checks of the obtained results. Finally, section 6 concludes and provides some policy implications.

2. Literature review

Theoretical and empirical studies that have examined the effect of democracy on economic growth have revealed a lack of consensus on the nature of the relationship between democracy and economic growth. Theoretically, the direct link between democracy and economic growth has been analyzed on the basis of three approaches: the "compatibility view" which sustains that democracy promotes economic development, the "conflict view" according to which democracy hampers economic development, and the "skeptical view" which advocates that there is no systematic relationship between democracy and economic development (Sirowy and Inkless, 1990; Helliwell, 1994; De Hann and Siermann, 1995; Feng, 1997).

The ambiguity of this relationship could be explained by the fact that democracy can affect economic growth indirectly through various channels (Helliwell, 1994; Barro, 1996; Tavares and Wacziarg, 2001; Baum and Lake, 2003). Nevertheless, these channels may have controversial indirect effects. In fact, several studies have shown that some of these channels show a positive impact of democracy on economic growth, while others show a negative influence.

From an empirical perspective, a number of studies have used simultaneous equations models to examine the direct and indirect relationship between democracy and economic growth. Interestingly, Helliwell (1994) has constructed a two-equation system for a sample of 125 countries during the period 1960-1985. The results suggest that democracy has a negative direct effect on economic growth and a positive indirect impact via education and investment. Helliwell (1994) also argues that this positive indirect effect offsets the negative direct effect and that the net effect of democracy on economic growth seems impossible to discern.

Further evidence of the negative and insignificant correlation between democracy and economic growth is provided by Tavares and Wacziarg (2001) for a sample of 65 industrialized and developing countries covering the period 1970-1989. The results show that democracy stimulates growth indirectly by promoting the accumulation of human capital and

by reducing income inequality. However, it negatively affects economic growth by hindering the accumulation of physical capital and increasing public consumption.

In the same vein, Kurzman et al. (2002) have shown on the basis of a panel of 106 countries covering the period 1951-1980 that no significant direct effect between democracy and growth is captured. However, the authors have identified two potential channels through which democracy affects growth. On the one hand, democracy stimulates investment, which is considered as a key factor in economic growth. On the other hand, democracy tends to reduce public spending, which is detrimental to economic growth.

Using data for a sample of 128 countries over a 30-year period, Baum and Lake (2003) conclude that there is no direct influence of democracy on economic growth. These authors find that democracy tends to promote economic growth via improving access to education and public health.

However, using instrumental variables technique for a sample of 175 countries during the period 1960-2010, Acemoglu et al. (2014) find a positive and significant effect of democracy on economic growth. These authors argue that democracy promotes growth by encouraging economic reforms, stimulating investment in primary education and health and mitigating social unrest. Similarly, Gründler and Krieger (2015) have demonstrated, using the GMM estimation technique, that democracy promotes economic growth as it is associated with more developed education, higher investment rates and lower fertility rates.

3. Econometric methodology and data

The aim of this paper is to study the channels through which democracy may affect economic growth. To this end, we use a panel dynamic simultaneous equations model for 16 Arab countries from 2002 to 2013. We consider that the effect of democracy on economic growth operates mainly through its impact on FDI and public consumption expenditure.

On the one hand, in the wake of globalization, FDI flows have grown rapidly in the world economy. FDI inflows to Arab countries have increased considerably since the early 2000s (IMF, 2016). Like many developing countries, Arab policy-makers have paid particular attention to FDI inflows. These additional resources are needed to improve the recipient country's economic performance (Borensztein et al., 1998; Agosin and Mayer, 2000). More specifically, FDI inflows favor the increase of the country's production and productivity, encourage local investment and stimulate development and technological progress.

On the other hand, public spending plays an important role in the Arab economies, particularly in the oil-producing countries, where a large share of government revenues comes from the export of oil and hydrocarbons. Although public spending is highly sensitive to fluctuations in oil prices, a disproportionate share of these expenditures are allocated for wages, subsidies and security. In fact, the proportion of public servants in the region as a whole is twice the world average (Malik, 2016). Specifically, more than 50 per cent of the budgets of these countries are devoted to public consumption spending, including public sector wages and social services provision. Indeed, Arab governments use public employment as a political tool to ease social tensions and preserve stability. Moreover, in order to preserve internal security, the Arab countries, in particular those of the GCC, devote an enormous proportion of public expenditure to defense and national security. This may explain the stability of the Arab regimes and the persistence of authoritarianism in the region.

3.1 Model specification

The equations of our model are formulated on the basis of previous theoretical developments. Thus, the system of equations can be written as follows:

$$growth_{it} = \alpha_1\, lgdppc_{it-1} + \alpha_2\, democracy_{it} + \alpha_3\, invest_{it} + \alpha_4\, pop_{it} + \alpha_5\, fdi_{it} + \alpha_6\, govsp_{it} + \alpha_7\, rents_{it} + \alpha_8\, trade_{it} + \varepsilon_{it} \qquad (1)$$

$$democracy_{it} = \beta_1\, democracy_{it-1} + \beta_2\, lgdppc_{it-1} + \beta_3\, growth_{it} + \beta_4\, trade_{it} + \beta_5\, rents_{it} + \mu_{it} \quad (2)$$

$$fdi_{it} = \lambda_1\, fdi_{it-1} + \lambda_2\, democracy_{it} + \lambda_3\, growth_{it} + \lambda_4\, trade_{it} + \lambda_5\, rents_{it} + \lambda_6\, inflation_{it} + \lambda_7\, law_{it} + v_{it} \qquad (3)$$

$$govsp_{it} = \gamma_1\, govsp_{it-1} + \gamma_2\, democracy_{it} + \gamma_3\, growth_{it} + \gamma_4\, pop_{it} + \gamma_5\, trade_{it} + \gamma_6\, rents_{it} + \gamma_7\, pubdebt_{it} + \gamma_8\, inflation_{it} + \omega_{it} \qquad (4)$$

Eq. (1) examines the determinants of economic growth based on a standard growth model that relates the growth rate of real GDP per capita to the initial level of real GDP, the investment rate and the population growth rate. Our growth equation is augmented by a set of variables: democracy, our variable of interest, whose effect on growth is ambiguous (Helliwell, 1994; Tavares and Wacziarg, 2001), FDI inflows that are expected to stimulate growth by promoting technology and knowledge transfer (Borensztein et al., 1998), public consumption expenditure which is considered as non-productive and harmful for growth (Barro, 1997;

Afonso and Furceri, 2010) natural rents that should stimulate economic growth by generating resources to finance development and trade openness which is supposed to have a positive effect on growth (Frankel and Romer, 1999).

Eq. (2) examines the determinants of democracy. According to the "modernization theory", democratization is influenced by income per capita and other socioeconomic variables such as economic growth (Lipset, 1959). However, many studies have advocated that the positive impact of income on democracy disappears once it is reached through oil wealth (Ross, 2001). Democratization is also affected by external factors. Indeed, countries that are more open to international trade are likely to be more democratic (Csordas and Ludwig, 2011).

Eq. (3) highlights the impact of democracy on FDI inflows. Many studies argue that a democratic regime can create an attractive institutional environment for FDI by providing better protection of property rights (Busse and Hefeker, 2007), promoting economic freedom (Mathur and Singh, 2011) and guaranteeing better control of corruption (Kalenborn and Lessmann, 2013). Other determinants of FDI have been included in the equation, namely, economic growth which increases the country's attractiveness for receiving FDI (Asiedu and Lien, 2011), natural resources that tend to attract FDI (Poelhekke and van der Ploeg, 2010), trade openness that positively affects FDI flows destined to serve foreign markets and negatively affects those destined to serve domestic markets (Blonigen, 2005), inflation to take into account the detrimental effect of macroeconomic instability on FDI (Schneider and Frey, 1985) and law and order to check whether good institutional quality stimulates FDI (Staats and Biglaiser, 2011).

Eq. (4) evaluates the impact of democracy on public consumption expenditure. The literature suggests that democracy favors the rising of public spending due to increased redistribution demands (Aidt et al., 2006), trade union pressure for wage increases (Rodrik, 1999) and the opportunistic behavior of politicians during elections (Drazen and Eslava, 2010). A number of explanatory variables are introduced into the equation: economic growth which leads to an increase in demand for public services (Adsera and Boix, 2002), the population growth which is assumed to have a negative effect on public consumption due to economies of scale (Alesina and Wacziarg, 1998), natural rents that are often used to finance public expenditure (Ross, 2001), public debt that has a crowding out effect on public expenditure (Mahdavi, 2004), inflation that can lead to a reduction in public spending due to the deterioration in the

real value of tax revenues (Zakaria and Shakoor, 2011) and trade openness which can lead to lower taxes and thus lower spending (Schulze and Ursprung, 1999).

3.2 Estimation method

The main econometric problem that may arise when estimating simultaneous equations model for dynamic panel data is that of the endogeneity of the explanatory variables. This endogenous bias[3] is due essentially to the problem of reverse causality between economic development and democracy (Przeworski and Limongi, 1993; Barro, 1996; Tavares and Wacziarg, 2001). In fact, as noted above, according to the modernization theory (Lipset, 1959), economic development may lead to the emergence of democracy.

Similarly, the dynamic structure of the model makes the traditional estimators (Fixed effect, Random effect) biased since the lagged level of the dependent variable is correlated with the error term. To overcome this problem, we use the difference-GMM estimator suggested by Arellano and Bond (1991). This estimation method makes it possible to instrument the lagged dependent variable as well as the endogenous explanatory variables with their own past values. This method controls not only the endogeneity of the lagged dependent variable but also that of some explanatory variables.

The validity of the instruments is tested using the Hansen test and the Arellano-Bond test for second-order autocorrelation. The null hypothesis of the Hansen test is that the instruments are uncorrelated with the error term whereas that of Arellano and Bond (1991) assumes the absence of second-order autocorrelation of the residuals.

3.3 Data

In this study, we employ an unbalanced panel of 16 Arab countries covering the period 2002-2013 (See Appendix for the country list). We use two different measures of democracy. Our main democracy measure is the Freedom House index widely used in the political science literature. This measure is composed from two indices: the political rights index which refers to how fair and free elections are held and the civil liberties index which involves a set of fundamental rights and freedoms mainly freedom of expression and belief, associational and organizational rights, rule of law and individual rights. More specifically, the Freedom House index defines democracy by the set of freedoms it is supposed to assure, thus leading to a

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[3] The endogeneity problem can also arise due to omitted variable bias and measurement errors.

maximalist definition of democracy (Munck and Verkuilen, 2002). The Freedom House index is constructed by averaging the sum of political rights and civil liberties sub-indices. The index is measured on a 1–7 scale, with 1 representing the most free and 7 representing the least free. The scale has been inverted, so that higher values indicate more democratic countries.

To assess the robustness of our results, we use the Polity2 index from the Polity IV database as an alternative measure of democracy. The Polity2 index ranges from -10 to 10, with higher values reflecting more democratic countries. In contrast to Freedom house index, Polity IV index defines democracy by the set of rules and procedures that ensure political power transfer and electoral participation, thereby providing a minimalist definition of democracy. Both the Freedom House and the Polity IV measures of democracy are normalized between zero and one, with higher values indicating a higher level of democracy.

In this paper, we suppose that democracy affects economic growth through its impact on FDI inflows and public consumption expenditure. Fig. 1 and Fig. 2 present scatter plots of democracy against FDI and public consumption expenditure over the period 2002-2013, respectively. The dispersion diagram shown in Fig. 1 indicates a positive correlation between democracy and FDI inflows. This positive relationship between the two variables is also displayed in the correlation matrix reported in Table A.3 of the Appendix. This points out that the emergence of democracy in the Arab countries tends to promote the attractiveness of the region for FDI.

Likewise, the positive slope shown in the Fig 2. suggests that there is a positive correlation between democracy and public consumption expenditure. This amounts to saying that democracy tends to stimulate public consumption expenditure in the Arab countries.

Variables description and data sources as well as summary statistics of the main variables used in the current study are provided in the Appendix.
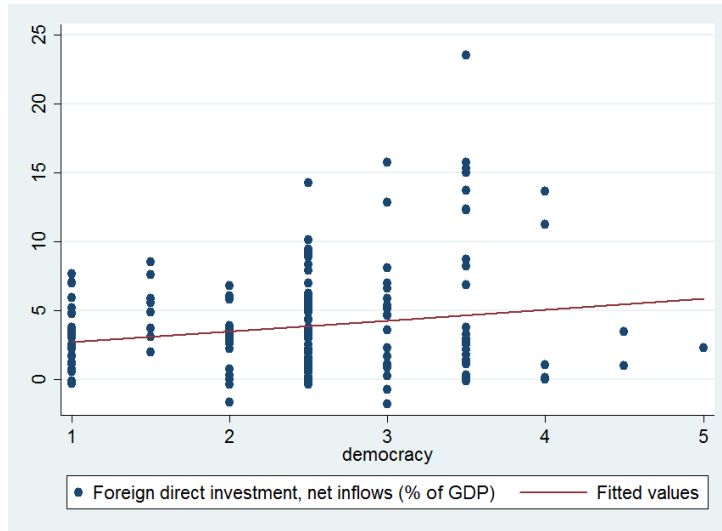
Fig. 1. Democracy and FDI in the Arab world
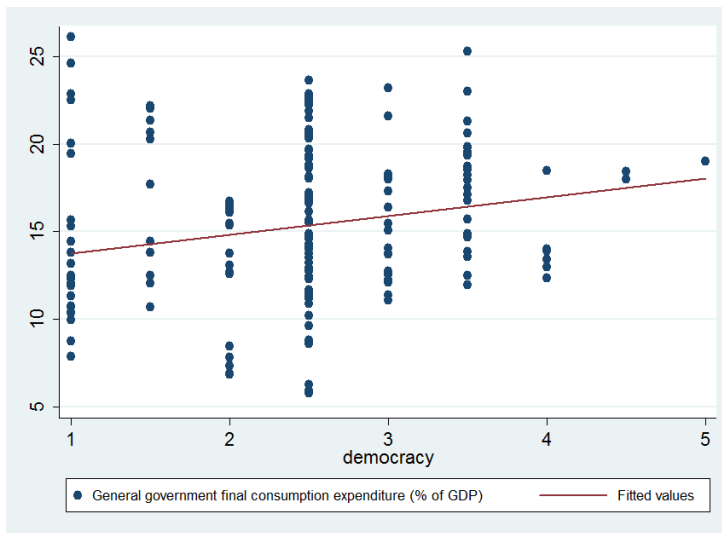
Fig. 2. Democracy and public consumption expenditure in the Arab world

4. Results

The estimation results of the growth equation are presented in Table 1. The regressions suggest that democracy has a positive and insignificant effect on economic growth confirming the skeptical approach according to which there is no clear relationship between democracy and growth. This result is similar to those obtained by Helliwell (1994), Tavares and Wacziarg (2001), Kurzman et al. (2002) and Baum and Lake (2003). Regarding the other explanatory variables, the results obtained are consistent with those reported in prior empirical studies dealing with the determinants of economic growth. The conditional convergence hypothesis is verified since the initial GDP coefficient is consistently negative. Similarly, the population growth rate seems to have the expected negative sign.

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The effect of investment on economic growth, although positive, is found to be insignificant. In fact, investment in the Arab countries is largely considered unproductive. The low productivity is mainly due to the predominance of public investment and to the low level of private investment[4] (Sala-i-Martin and Artadi, 2003; Hakura, 2004; Makdisi et al., 2006).

FDI inflows appear to have a positive and significant effect on economic growth. This result is in sharp contrast to that reported by El-Wassal (2012) which showed that FDI inflows play only a very limited role in promoting economic growth in the Arab countries. This positive effect can be interpreted in light of the fact that FDI flows in these countries are mainly formed by Greenfield investments[5] (Burger et al., 2013).

The results show as well that public consumption spending has a negative and statistically significant influence on economic growth. These findings support those obtained by Sala-i-Martin and Artadi (2003), Hakura (2004) and Espinoza and Prasad (2012), which revealed that the important size of the public sector is one of the main factors explaining the poor economic performance of the Arab countries, especially the GCC countries. This situation worsened further following the revolution. In fact, to ease social tensions and protect their regimes from any attempt of reverse, most GCC countries have significantly increased spending to finance subsidies and wages. The same goes for the Arab Spring countries that have increased public spending, including subsidies, pensions, wages and public sector employment in response to social pressures. This increase in public spending has accentuated inflationary pressures and crowded out private investment, thus penalizing the economic growth of these countries (Burger et al., 2013).

For the natural resource rents, the positive and significant coefficient result indicates that natural resources in Arab countries are a blessing rather than a curse for economic growth, which contrasts with Elbadawi and Soto (2014) and Selim and Zaki (2014) who argue that natural resource revenues in the Arab world are negatively associated with economic growth due to the poor institutional quality and to the persistence of authoritarian regimes in these countries. Contrary to our expectations, trade openness appears to have a negative and

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[4] The financial systems of the Arab countries are underdeveloped, the business environment is weakened by internal and external conflicts and the institutional environment is characterized by complex administrative procedures and regulations. These factors explain the decline in private investment in these countries (Elbadawi, 1999).

[5] Greenfield investments foster capital accumulation, which stimulates economic growth, in contrast to mergers and acquisitions which are not the result of additional investments but merely a change of ownership (Wang and Wong, 2009; Harms and Méon, 2012).

significant effect on economic growth. This can be attributed to the fact that exports from Arab countries are not very diversified and more concentrated on low value-added products (Galal and Selim, 2012; IMF, 2015).

Table 1: Economic growth equation: baseline results

VARIABLES	(1) Diff-GMM
$lgdppc_{(-1)}$	-15.69*
	(8.588)
demf	9.630
	(16.75)
fdi	0.341**
	(0.125)
govsp	-0.393**
	(0.174)
invest	0.164
	(0.138)
pop	-0.966***
	(0.229)
rents	3.401*
	(1.843)
trade	-20.82**
	(9.517)
Observations	135
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.930
Test de Hansen (p-value)	0.641

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Table 2 reports the estimation results of the democracy equation. The results show that per capita income is positively and significantly associated with democracy, confirming the modernization theory of Lipset (1959) according to which an increase in income per capita stimulates democracy. In addition, economic growth seems to favor democracy, which reinforces the conclusions of Lipset (1959). In line with Csordás and Ludwig (2011), we find no significant relationship between trade openness and democracy. The results also reveal a negative and significant effect of natural resource rents on democracy. These findings are

consistent with recent research suggesting that natural resources are a barrier to the emergence of democracy (Elbadawi and Makdisi, 2007; Tsui, 2011; Fayad et al., 2012; Bougharriou et al., 2017). This is tantamount to saying that, in resource-rich countries, governments use the rents derived from these resources to reduce social pressure and ensure their stay in power.

Table 2: Democracy equation: baseline results

VARIABLES	(1) Diff-GMM
$demf_{(-1)}$	0.958***
	(0.144)
$lgdppc_{(-1)}$	0.162**
	(0.0747)
growth	0.00416***
	(0.00100)
trade	0.132
	(0.0807)
rents	-0.0286*
	(0.0153)
Observations	144
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.545
Test de Hansen (p-value)	0.794

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

In light of the estimation results of the FDI equation presented in table 3, it seems that democracy stimulates FDI inflows significantly. These results are in line with those of Busse (2004) and Jakobsen and Soysa (2006). This brings us to the point that democratic countries tend to create an investment climate that provides better protection of property rights, better control of corruption and efficient legal system that guarantees economic freedom, thereby attracting foreign investors.

In line with our expectations, economic growth appears to be positively and significantly related to FDI inflows. These findings support those of Moosa (2009) and Mottaleb and Kalirajan (2010). The estimates also show that inflation has a negative and statistically

significant effect on FDI. This result, consistent with that obtained by Schneider and Frey (1985), implies that an unstable macroeconomic environment impedes the entry of foreign firms. Similarly, trade openness seems to have a negative and significant coefficient. This may be justified by the fact that FDI in Arab countries is essentially horizontal in nature, generally intended for the local market, thus confirming the tariff jumping hypothesis (Almounsor, 2007).

Table 3: FDI equation: baseline results

VARIABLES	(1) Diff-GMM
$fdi_{(-1)}$	0.926***
	(0.095)
demf	6.451***
	(2.104)
growth	0. 304**
	(0.115)
rents	1.006
	(1.466)
trade	-9.771*
	(4.682)
inflation	-0.0645**
	(0.023)
law	3.17**
	(1.434)
Observations	142
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.188
Test de Hansen (p-value)	0.677

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Moreover, we find that natural resources affect positively, but not significantly FDI inflows. This is not surprising in view of the fact that several studies sustain that the effect of natural resources on FDI flows depends on institutional quality (Poelhekke and van der Ploeg, 2010; Asiedu, 2013). More specifically, natural resources tend to stimulate significantly FDI only in countries with good institutional quality. This is well illustrated by the positive and significant

coefficient associated with the "law and order" variable, reflecting that a strong legal system creates an investment-friendly environment and strengthens foreign investors' confidence (Biglaiser and Staats , 2010; Alexander, 2014).

The results shown in Table 4 indicate that democracy stimulates public consumption expenditure. Our findings are consistent with those reported by Aidt et al. (2006) and Profeta et al. (2013) who advocate that the extension of the right to vote to the masses, most notably the poor, causes an increase in demands for income redistribution, which favors the increase of public spending and social transfers. Workers' unions can also lobby for wage increases. In such a situation, the political elites find themselves obliged to meet these requirements in an attempt to remain in power. This is illustrated by the fact that, in response to the events of the Arab Spring, Arab governments have increased wages and employment in the public sector in order to alleviate social discontent.

The results also suggest a negative and significant relationship between economic growth and public expenditure. This implies that, in times of economic downturn and in order to absorb unemployment, governments increase public spending by stimulating public sector employment and rising subsidies to calm social frustration. Similarly, population growth appears to have the expected negative effect. Regarding macroeconomic indicators, we find that inflation is negatively associated with public expenditure. These findings support those of Zakaria and Shakoor (2011) and Eterovic and Eterovic (2012) who argue that high inflation tends to reduce the real value of tax revenues, which can hamper the growth of government spending. As well, the results reveal no evidence that public debt and trade openness have a significant explanatory power.

The estimates also indicate that an increase in natural resource revenues favors that of public spending. This result can be explained by the fact that in the resource-rich Arab countries, oil rents have led to the expansion of public spending, mainly on wages. In fact, politicians tend to increase employment in the public sector in order to retain popular support and contain political protests so that they can ensure their political survival (Ali and Elbadawi, 2012).

Table 4: Public consumption expenditure equation: baseline results

VARIABLES	(1) Diff-GMM
$govsp_{(-1)}$	0.677***
	(0.135)
demf	1.909***
	(0.616)
growth	-0.101**
	(0.0418)
rents	0.494**
	(0.230)
pubdebt	-0.106
	(0.376)
inflation	-0.0966***
	(0.0218)
trade	-1.148
	(0.750)
pop	-0.0678
	(0.0667)
Observations	127
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.335
Test de Hansen (p-value)	0.587

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

5. Robustness checks

To check the robustness of our results, we use the Polity2 index of the Polity IV database as an alternative measure of democracy. As can be clearly seen in table A.4 of the appendix, democracy does not appear to have a significant effect on economic growth in the Arab countries even when measured by the Polity IV indicator. As a result, it is important to mention that our core results are not affected by the democracy index employed. Similarly, table A.4 shows that the effect of FDI and public consumption expenditure on economic growth is significant and the estimated coefficients have the signs initially obtained. It also seems that the results remain unchanged for most control variables.

For the democracy equation, the results reported in Table A.5 of the appendix show that the initial level of income per capita continues to be consistently positive even after using an alternative measure of democracy, which confirms again the modernization theory. As for the other explanatory variables, the results are consistent with those obtained previously.

With regard to the FDI equation, table A.6 of the appendix indicates that democracy continues to have a positive and significant effect on FDI. The control variables seem to exert the same effects as those obtained in our benchmark model, except for inflation which becomes insignificant.

The reported estimates of the public consumption expenditure equation in Table A.7 of the appendix confirm the positive effect of democracy on public expenditure. The results show as well that some control variables retain their significance and keep the same sign, while others gain significance.

6. Conclusion and policy implications

The revolutions of the Arab Spring have fostered the fall of some Arab authoritarian regimes that have held power for several decades, opening the way for democratic changes in the region. In light of these political developments, it is particularly interesting to study the relationship between democracy and economic growth in the Arab world context as little empirical research has been conducted on this subject.

The purpose of the paper is to examine the direct and indirect links between democracy and economic growth. To do so, we estimate a dynamic panel simultaneous equations model on a sample of 16 Arab countries during the period 2002-2013. This study focuses on two particular channels through which democracy affects growth, namely FDI inflows and public consumption expenditure. The results show that there is no clear relationship between democracy and economic growth in the Arab countries, which confirms the skeptical approach (Helliwell, 1994; Tavares and Wacziarg, 2001; Kurzman et al. 2002; Baum and Lake, 2003). The ambiguity of this relationship can be explained by the fact that the impact of democracy on economic growth operates through different channels, each of which affects growth differently. Interestingly, our model shows that democracy promotes growth indirectly by stimulating FDI inflows and hinders growth by generating higher public consumption expenditure.

More specifically, a democratic country offers a favorable climate for investment that ensures the rule of law and the protection of private property, thereby making itself more attractive to foreign investors. At the same time, democracy is associated with higher public spending. In fact, to cope with social pressures and to keep themselves in power, politicians increase public spending by rising social transfers and subsidies to satisfy citizens' demands for income redistribution and by stimulating public employment to reduce unemployment during economic recession periods. These results are robust to the use of an alternative measure of democracy.

In view of the results obtained from our model, it should be emphasized that democracy has a growth-enhancing effect only if its benefits outweigh its costs. In other words, the benefits of FDI must exceed the costs of public spending. Hence, a number of policy implications for the Arab countries may arise from our findings.

First, as democracy is associated with an increase in administrative salaries and expenses, a reduction in current expenditure is of paramount importance. Accordingly, the adoption of public sector reforms is highly desirable. On the one hand, it is essential to create incentives to motivate public servants to move towards employment in the private sector. On the other hand, Arab governments have to undertake expenditure reforms and improve the quality of their budget institutions. Indeed, the implementation of effective spending rules can help control public spending. Reducing the excessive dependence on natural resources and fostering the economic diversification are as well expected to lower public spending.

Second, improving institutional quality and the business environment seems to be a key solution to attract more FDI. Therefore, reforms aimed at promoting good governance are needed. Stimulating economic diversification in the Arab countries and attracting FDI concentrated in the non-oil sector would as well enhance economic growth (IMF, 2016).

In view of the above, it is important to note that the simultaneous equation model cannot take into consideration all the costs and benefits of democracy. In fact, the current research is limited to studying only the effects of two transmission channels which are supposed, from our point of view, to be the most influential in the Arab world context. Nevertheless, other channels can also be taken into account while examining the link between democracy and economic growth. This may be the subject of future research.

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APPENDIX.

Country list (16 Arab countries)

Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, UAE, Yemen

Table A.1 Variables description and data Sources

Variables	Description	Sources
demf	The average of political rights and civil liberties indices. The index is measured on a 1–7 scale, with 1 representing the most free and 7 representing the least free. The scale is inverted and the index is normalized between zero and one, with higher values indicating a higher level of democracy.	Freedom House
demp	The Polity2 index ranges from -10 to 10. The index is normalized between zero and one, with higher values indicating a higher level of democracy.	Polity IV
growth	Real GDP per capita growth	WDI
lgdppc	Real GDP per capita (constant 2005 US$) (in logarithm)	WDI
fdi	Foreign direct investment, net inflows (% GDP)	WDI
govsp	General government final consumption expenditure (% of GDP)	WDI
invest	Gross capital formation (% GDP)	WDI
pop	Population growth rate	WDI
rents	Total natural resources rents (% of GDP) (in logarithm)	WDI
trade	The sum of exports and imports of goods and services measured as a percentage share of GDP (in logarithm)	WDI
inflation	Growth of GDP deflator	WDI
pubdebt	The ratio of total public debt stocks to GDP (in logarithm)	(Abbas et al., 2010)
law	The law and order index lies between 0 and 6, with higher values indicating more efficient legal system.	ICRG

Table A.2 Summary statistics

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum
growth	192	1.330683	10.16989	-62.21435	104.6576
lgdppc	192	8.611738	1.337341	6.407185	11.01657
demf	192	.1892361	.1546634	0	.6666667
demp	192	.2627604	.2136229	0	.8
fdi	185	3.821773	3.876652	-1.802918	23.53736
govsp	180	15.27085	4.367002	5.745824	26.09611
invest	170	23.93529	5.931456	8.948526	46.01657
pop	192	3.462496	3.313806	-.2775595	17.62477
rents	186	2.344572	2.422639	-5.946491	4.28685
trade	176	4.445044	.3667664	3.247355	5.170865
inflation	192	8.464953	9.739545	-25.3128	36.67306
pubdebt	167	3.488874	1.095625	-.5963027	5.203516
law	192	4.171875	.9921384	2	6

Table A.3 Correlation matrix

	growth	lgdppc(-1)	demf	demf(-1)	demp	demp(-1)
growth	1.0000					
lgdppc(-1)	-0.3481	1.0000				
demf	-0.1357	0.1728	1.0000			
demf(-1)	-0.0976	0.2241	0.8961	1.0000		
demp	0.1623	-0.5077	0.2997	0.2061	1.0000	
demp(-1)	0.1861	-0.5011	0.2702	0.2409	0.9689	1.0000
fdi	0.1406	-0.0630	0.0914	0.1177	0.3174	0.3371
fdi(-1)	0.1376	-0.0338	0.0469	0.0933	0.3086	0.3323
govsp	0.2098	-0.0560	0.1200	0.1098	-0.0828	-0.0868
govsp(-1)	0.3486	-0.0029	0.1338	0.1312	-0.1110	-0.1159
invest	-0.1581	0.3645	0.1630	0.2032	-0.1136	-0.1189
pop	-0.5075	0.6777	0.0420	0.0775	-0.4569	-0.4580
rents	-0.1453	0.2198	-0.2804	-0.2550	-0.6572	-0.6672
trade	-0.2744	0.6174	0.3373	0.3594	-0.1517	-0.1392
inflation	0.1571	0.0044	-0.1319	-0.1429	-0.1045	-0.0960
pubdebt	0.2415	-0.5706	0.0890	0.0448	0.4692	0.4597
law	-0.1021	0.5898	0.1635	0.2099	-0.5161	-0.5162

Table A.3 Correlation matrix (continued)

	fdi	fdi(-1)	govsp	govsp(-1)	invest	pop
growth						
lgdppc(-1)						
demf						
demf(-1)						
demp						
demp(-1)						
fdi	1.0000					
fdi(-1)	0.7937	1.0000				
govsp	0.0439	-0.0115	1.0000			
govsp(-1)	0.0383	-0.0055	0.9199	1.0000		
invest	-0.0568	0.0533	0.0434	-0.0184	1.0000	
pop	0.0182	0.0500	-0.3607	-0.3476	0.4188	1.0000
rents	-0.6049	-0.5783	-0.0458	-0.0364	0.0642	0.2559
trade	0.2627	0.2581	0.0435	0.0706	0.1087	0.3367
inflation	-0.1342	-0.1155	-0.2409	-0.0012	-0.1798	0.0639
pubdebt	0.3224	0.2993	0.0558	0.0304	-0.1892	-0.3578
law	-0.0196	-0.0220	0.3827	0.3928	0.2972	0.2228

Table A.3 Correlation matrix (continued)

	rents	trade	inflation	pubdebt	law
growth					
lgdppc(-1)					
demf					
demf(-1)					
demp					
demp(-1)					
fdi					
fdi(-1)					
govsp					
govsp(-1)					
invest					
pop					
rents	1.0000				
trade	-0.1053	1.0000			
inflation	0.3026	-0.1231	1.0000		
pubdebt	-0.5916	-0.3116	-0.2210	1.0000	
law	0.0460	0.5089	-0.1765	-0.2411	1.0000

Table A4. Economic growth equation: robustness checks

VARIABLES	(1) Diff-GMM
lgdppc(-1)	-19.76*
	(11.00)
demp	14.21
	(11.39)
fdi	0.316**
	(0.143)
govsp	-0.410*
	(0.222)
invest	0.214
	(0.190)
pop	-0.921***
	(0.243)
rents	3.509
	(2.362)
trade	-21.75
	(14.02)
Observations	135
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.986
Test de Hansen (p-value)	0.985

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Table A5. Democracy equation: robustness checks

VARIABLES	(1) Diff-GMM
$demp_{(-1)}$	0.585**
	(0.218)
$lgdppc_{(-1)}$	0.187**
	(0.0808)
$growth$	0.00262
	(0.00160)
$trade$	0.188**
	(0.0794)
$rents$	-0.0718
	(0.0517)
Observations	144
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.434
Test de Hansen (p-value)	0.281

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Table A6. FDI equation: robustness checks

VARIABLES	(1) Diff-GMM
$fdi_{(-1)}$	0.8996***
	(0.150)
demp	6.879*
	(3.782)
growth	0. 341*
	(0.193)
rents	1.198
	(2.701)
trade	-12.433**
	(4.296)
inflation	-0.0297
	(0.0868)
law	3.1996***
	(0.9545)
Observations	142
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.131
Test de Hansen (p-value)	0.873

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Table A7. Public consumption expenditure equation: robustness checks

VARIABLES	(1) Diff-GMM
$govsp_{(-1)}$	0.941***
	(0.100)
demp	8.819*
	(4.375)
growth	-0.165***
	(0.0344)
rents	0.375
	(0.270)
pubdebt	-0.444
	(0.325)
inflation	-0.115***
	(0.0104)
trade	-2.200**
	(0.826)
pop	-0.204**
	(0.0950)
Observations	127
Nombre de pays	16
F-stat (p-value)	0
Test AR(2) (p-value)	0.155
Test de Hansen (p-value)	0.648

Notes: Standard errors are in parentheses. Diff-GMM regression uses robust standard errors clustered by country. We employ the two-step GMM estimator with the Windmeijer (2005) finite sample correction for standard errors. To avoid overfitting endogenous variables, we collapse the instrument set as suggested by Roodman (2009). The Hansen and AR(2) tests indicate that we cannot reject the validity of our instruments. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

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