working paper

series

ARAB COUNTRIES BETWEEN WINTER AND SPRING: WHERE DEMOCRACY SHOCK GOES NEXT!

Hany Abdel-Latif, Tapas Mishra
and Anita Staneva

ARAB COUNTRIES BETWEEN WINTER AND SPRING: WHERE DEMOCRACY SHOCK GOES NEXT!

Hany Abdel-Latif, Tapas Mishra, and Anita Staneva

Working Paper 954

October 2015

Send correspondence to:
Hany Abdel-Latif
Swansea University
info@hanomics.com

Abstract

This paper presents rigorous mechanisms to study how persistent democratic shocks in one country produce spillover effects and comprise a major determinant in dynamic growth interdependence among nations. Taking the case of the Arab Spring in particular and employing both spatial and panel VAR mechanisms, we demonstrate that stronger relational 'proximity' among nations with respect to democracy is likely to trigger similar institutional reforms and growth upsurges in the neighborhood. Democratization event chronology is employed to identify transitional dynamics among countries' democratic pathways. A comprehensive model of transmission mechanism and response of democratic is further initiated by estimating a Global Vector Autoregression method among nineteen Arab countries. Our analysis reveals patterns of discrete changes in regimes that run counter to the dominant aggregate trends of democratic waves or sequences, presenting how the ebb and flow of democracy varies among the world's regions. The main finding suggests that the current revolutionary waves in the Arab World can be understood in light of the economic situation in a given country. More specifically, we find that high and upper middle income countries are immune to the recent democratic shock transference, whereas the lower middle and low income countries seem to be perfect candidates of another revolutionary wave.

ملخص

تقدم هذه الورقة آليات صــارمة لدراسـة كيفية أن الصــدمات الديمقراطية المسـتمرة في دولة واحدة تنتج آثار غير مباشـرة وتشــمل أحد المحددات الرئيسية في ترابط النمو الديناميكي بين الأمم. تأخذ هذه القضية الربيع العربي على وجه الخصوص، وتوظف كل من آليات VARالمكـانيـة علينـا أن نبرهن على علاقـة "القرب" تكون قوية بين الـدول فيمـا يتعلق بـالديمقراطيـة ومن المرجح أن تؤدي للإصــلاحات المؤسسية المماثلة. تعمل الديمقراطية بتسلسل زمني للأحداث لتحديد الديناميات الانتقالية بين مسـارات الديمقراطية في البلدان. نبدأ بنموذج شــامل لآلية الانتقال والاسـتجابة للديمقراطية بين الدول العربية تسـعة عشــر. يكشــف تحليلنا عن أنماط التغيرات المنفصـــلة في الأنظمة التي تتعارض مع التوجهات الكلية الســـائدة في موجات الديمقراطية أو المتواليات، نعرض الاختلاف بين المد والجزر للديمقراطية بين مناطق العالم. تشــير النتيجة الرئيسية أن الموجات الثورية الحالية في العالم العربي يمكن أن تفهم في ضــوء الوضــع الاقتصـادي في بلد معين. وبشـكل أكثر تحديدا، نجد أن البلدان ذات الدخل المتوسـط والأعلى ليسـت محصـنة ضـد صـدمات الانتقال الديمقراطي، في حين أن البلدان ذات الدخل المتوســـط والمنخفض أقل ويبدو أنها من المرشــــحين المثاليين للموجة الثورية القادمة.

'It is in its dynamic, rather than in its static, aspects that the value of democracy proves itself. As is true of liberty, the benefits of democracy will show themselves only in the long run, while its more immediate achievements may well be inferior to those of other forms of government'.

Friedrich Hayek 1960.

1. Introduction

Democracy - like happiness - has an innate tendency to diffuse over time and space. Extant literature has now convinced us to believe that democracy not only shapes a country's growth dynamics[1] (See Acemoglu, et al., 2014), it also significantly impacts growth and institutional quality among countries in 'proximity' (both in the geographic and relational sense). Among others, for instance, Diebolt et al. (2013) were able to establish that 'countries which were close with respect to their democratic qualities evinced highly interdependent growth processes'. Building a democratic distance function and employing a spatial vector autoregression mechanism, the authors estimated magnitudes of dynamic complementarity in countries' growth processes as a function of democratic distance. These and similar other studies, thus establish an important point in the democracy-economic growth relationship: both democratization and the democratic stock in one country can trigger dynamic spatial spillover effects in proximus countries determining to a measurable extent the evolution and co-evolution of institution-growth interlinkage. Under this backdrop, the current study models the dynamics of causality and cointegration of democratic shocks in a systemic framework. As such, to the knowledge of the authors, it is first such study in case of Arab World, especially in view of the paradigmatic institutional changes some countries have experienced in the recent past. A key question we ask is how countries - characterized by their development status, religions and trade - are going to respond to democratic shocks occurring in the neighborhood? Among other derivative questions related to the broad question presented above, our study will also shed light on if the size of the economy where democratic shocks are originating will determine the magnitude of effects on proximus economies.

The study intends to make a broad contribution to the ongoing debate on the democracy-income relationship. Although the role of democracy in economic growth appears to be uncontested in recent literature, over the last half a century the actual role of democracy in understanding cross-country economic growth has witnessed a paradigmatic shift. Under protectionist years, relevance of democracy was doubted where underdeveloped empirical and static theoretical methods helped in supporting this view. Subsequently, the years under 'free-trade' - which meant high internationalization of world economies - foresaw a re-establishment of the role of democracy/democratization in economic growth. The transition of thoughts that characterized the journey of 'democracy or democratization' from being an insignificant determinant to occupying an instrumental role in growth processes can be summarized by four terms: (i) *Apathy*: 'Democracy is the worst form of government except all those other forms that have been tried from time to time' (Winston Churchill, speech, Nov. 11, 1947) (ii) *Sympathy*: 'Democracy is an objective. Democratization is a process. Democratization serves the cause of peace because it offers the possibility of justice and of progressive change without force' (Boutros Boutros Ghali, 1995) (iii) *Confusion and apprehension*: 'Democracy has an economically small and statistically insignificant effect on economic growth' (Przeworski and

---

[1] Acemoglu, D., S. Naidu, P. Restrepo, and J. A. Robinson (2014), "Democracy Does Cause Growth," NBER Working Papers 20004, National Bureau of Economic Research. The authors rigorously studied existing research on income-democracy relationship. With the help new method and new data, they were able to show that democracy indeed positively affects economic growth.

Limongi (1993)) or 'More political rights do not have an effect on growth... The first lesson is that democracy is not the key to economic growth" (Barro 1997, pp. 1 and 11), and finally (iv) *Convictions*: 'Democracy does cause economic growth' (Acemoglu et al., 2014) and that 'democratic stock in a country can have a positive spillover effects making growth processes among countries highly interdependent', (Diebolt et al. (2013)).

Thus, in recent years while the centrality of democracy in almost every facet of economic and social life has been well-established, the attention has now shifted towards capturing and modelling the possible ways a change in democratic setting in one country can affect others in the neighborhood (characterized essentially by economic, cultural, and social affinities) (see O'Loughlin et al. (1998) for an insightful survey and d Diebolt et al. (2013) for developing a spatial framework). The few theoretical explanations of this phenomenon focus exclusively on political elites. O'Loughlin et al. (1998) presents a theoretical model and accompanying computer simulation that explains the diffusion of democracy based on the dynamics of public opinion and mass revolutions. On the basis of the literature on preference falsification, cascading revolutions, and the social judgment theory, an agent-based simulation developed by the authors demonstrate that the diffusion of attitudes, in combination with a cascading model of revolutions, is indeed a possible theoretical explanation of the spatial clustering of democracy. The implications of these theoretical predictions can be far reaching with respect to both evolution of political-economy and social restructuring in the long-run. A recent historic episode - in the form of the sequence of events in Arab Spring - has triggered new questions on the democracy-growth relationship and how democratic shock might affect others. In particular, it would be important to know if countries differentiated by heterogeneous income path-ways would be immune to democratic shocks occurring in the neighborhood. This forms the broad objective of the paper.

Indeed, what is happening in Arab Spring countries now raises many questions and captures the world's attention. The Egyptian revolution, following on rapidly from the Tunisian uprising, has sent shock-waves across the whole world, and has inspired a new political awareness in other Arab countries that might motivate a regime change. Jordan, for example, is a prime candidate to follow the Egyptian road. The country faced a rising unemployment rate and growing poverty. Yemen, with 45% of the population living on less than 2 dollars a day, may have followed the same revolutionary movement. Algeria also saw recent protest movements against the rising cost of basic food. Several governments have responded to more limited protest movements with promises of political and constitutional reform. Such processes are under way in Morocco and Oman. A group of economically powerful Gulf states - Saudi Arabia, the UAE and Qatar- remain resolutely opposed to fundamental reform, including the introduction of representative democracy. Saudi Arabia has sought to preempt pro-democracy protests by announcing a massive program of state investment, in an attempt to address grievances about high rates of unemployment and the lack of affordable housing. It also plays an important role in countering the pro-democracy trend, most conspicuously through its military intervention in Bahrain. This raises the question of whether the Arab World might experience a wave of democratization, as in Eastern Europe after 1989. Importantly, democratization may proceed differently in the Arab World than it has in other regions, due to political cultures, in particular the role of Islam in politics and the important role of oil in some of the region's economies. If democracy deepens in Tunisia and Egypt, other countries in the Arab World will have the opportunity to learn from their example, including from their approach to incorporate Islamic-oriented political parties into public life.

In light of the above, this paper contributes to the literature in three significant ways. First, to our knowledge, this is possibly the first research attempted towards providing a rigorous model of the spillover effects of democratic shocks. Elkink (2011) and O'Loughlin et al. (1998) provide some analysis of democracy diffusion in the international context, however, the models

employed in these studies offer some theoretical insights of the effect of democratic diffusion (Elkink, 2011) or the role of geography in the analysis of spatial effects of democracy (O'Loughlin et al. (1998)). In these and in the literature that followed (e.g., Diebolt et al. (2013)) spatial and temporal aspects of democratic diffusion in the world system has been analyzed. However, it is not possible, following this strand of literature, to answer, how a proximity effect of democracy can motivate a persistent growth and democratic spillovers in neighboring countries. In view of the events of the Arab Spring, this is a particularly pertinent question, which we make an attempt to address using an alternate methodological framework.

Second, ours is possibly the first study to address the dynamics of causality and cointegration of democratic shocks in a systemic framework. Within this setting, for instance, we ask: how countries - characterized by their development status, religiosity and trade - are going to respond to democratic shocks occurring in the neighborhood? Are countries - which are persistently autocratic, or have experienced democratic/autocratic reversals - going to respond to a recent democratic shock in a neighboring economy? Will the size of the economy where democratic shocks originate determine the magnitude of effects on proximus economies - interconnected strongly by trade and social dynamics? At an empirical level, it would be especially interesting to investigate this issue. To this effect, we adopt a somewhat different approach to democracy research and move beyond the typical Granger causality mechanism. In particular, we employ the properties of Global Vector Auto-Regression (GVAR) model and simulate the effect of democracy shocks in a panel of 19 Arab countries. We use the model to simulate the effects the shocks of selected variables in the system may have on the other variables over time. We also focus on the potential long-run relationship between democracy and human development in selected economies and try to answer the question whether the pioneers of the Arab Spring- Tunisia and Egypt- will be a motivating force of democratization in other Arab countries.[2]

Third, in addition to the global VAR methodology to study the nature of migration of democratic shocks, we also construct 'democratic distance' function among countries by studying their characteristics of democratization over years. A spatially interdependent growth model is then estimated by employing spatial vector autoregressive approach, where a firsthand analysis of the effect of 'proximity' in the democratic sense is quantified on dynamic complementarity of Arab countries' growth processes. We also control country and time fixed effects plus a number of economy wide executive constraints that may inhibit the migration of shocks over time.

Among the many striking results from our investigations, we find that there is heterogeneous dynamic interdependence among Arab countries' growth processes and such interdependence varies widely as democratic distance rises over time. The implication is that countries which are affine with respect to democratic qualities and socio-economic traits, are very likely to be affected by democratic shocks. This is confirmed by our GVAR analysis, which finds that (i) high and upper middle income countries are immune to the recent democratic shock transference, and (ii) the lower middle and low income countries seem to be perfect candidates for another revolutionary wave.

The rest of the paper is planned as follows. In Section 2, we provide a generic overview of the democratic challenges faced by Arab countries. Section 3 provides a succinct survey of the existing literature. In Section 4, we discuss data, construction methods, and their likely implications for our empirical investigation. To motivate our empirical method, in Section 5 we present some stylized observations. Section 6 presents and discusses GVAR methodology.

---

[2] One could further incorporate other countries from developed and developing regions to lend robustness to our empirical results. However, while such an analysis could be intuitive, it can be contested on the ground that democratic spillover effects are more acutely felt among proximus regions.

Empirical results from GVAR are discussed in Section 7. And finally, Section 8 summarizes the main findings of the paper with some discussion.

2. Arab Economies and Democratic Challenges

Scholars have argued that the Arab World has never had a consolidated democracy within its ranks. It does include a few examples of hybrid regimes and in the literature these regimes have been referred to as competitive authoritarian, electoral authoritarian, and partly free, among other labels. Three hybrid regimes in the Arab World- Lebanon, Kuwait, and Iraq- are often referred to as democratizing regimes. However, each of these countries faces considerable obstacles to evolving into stable democratic systems. Beyond the Arab World's hybrid regimes, which operate within constitutional systems that have some features of democracy, the region contains a wide variety of more purely authoritarian regimes. Of these, there are seven monarchies- Bahrain, the United Arab Emirates, Saudi Arabia, Qatar, Morocco, Jordan, and Oman- and, prior to the Arab Spring, there were six republics headed by long-ruling autocrats- Syria, Yemen, Algeria, Libya, Tunisia, and Egypt. Of the republics, as of early 2012, Tunisia was a nascent electoral democracy still in a transitional phase; Egypt had held parliamentary elections but was experiencing a more uncertain transition than Tunisia; autocratic leaders had been removed in Libya (violently) and Yemen (through negotiation), but transition processes had barely begun (Miller et al., 2012).

As regional bloody revolutions in Yemen, Syria, Libya, and Bahrain have yet to see their results, we consider Tunisia and Egypt as better placed to democratization and the most promising examples of ongoing democratic changes. In comparison with its regional counterparts, Tunisia was a high economic performer over the last decade. In terms of GDP per capita, Tunisia consistently outweighs Egypt (see Fig.1). Tunisia's reputation as an economic success story is also based on the fact that, unlike its resource-rich neighbors of Algeria and Libya, its growth was not driven by oil and gas exports. Rather, Tunisia's growth derived from private sector development, the attraction of foreign direct investment, and a much closer adherence to the economic policies advocated by the West. Similarly, prior to the revolution, the economy in Egypt as a whole was performing better than ever. GDP growth had shifted into a much higher gear, increasing to 2,780 US dollars in 2011. However, this snapshot of economic performance in both countries masks serious challenges.

One politically explosive issue is countries' high unemployment rate among youth. There is universal agreement that unemployment, in particular youth unemployment, and poverty played a significant, if not the most important, role in the Arab Spring. In 2005, the youth unemployment rate in Egypt was 34% and 31% in Tunisia. Two-thirds of Egyptians are under 30, and each year 700000 new graduates chase 200000 new jobs (Duncan, 2011). Tunisia's own government statistics record a rise in unemployment among university-graduated youth from 8.6% in 1999 to 19% in 2007. Unofficial statistics mirror this upward trend but paint an even graver picture, indicating figures twice as high as those derived from government data. Another major shortcoming of Tunisia's economy is the wide regional disparity between living standards along the country's coastal strip and in the interior. The north, north-west and center-east, which benefited from particularly strong growth rates through tourism and offshore activities as well as from high public investment, are the regions that witnessed the most impressive drops in poverty levels. By contrast, interior regions have stagnated, with levels of unemployment in the 25% to 40% % (Paciello, 2011). This disparity in living standards led to demonstrations in the years leading up to the January 14 Revolution.

The January 14 uprising in Tunisia did catalyze events in Egypt. Although the growth rate under the regime of Mubarak in Egypt pointed to a healthy economy, this indicator masked the very real economic insecurity felt by many Egyptians. The economic growth was accompanied by rising inequality that 'reached levels not before seen in Egypt's modern history' (El-Shimy,

2011). Egyptians also saw an erosion of their economic position due to increases in inflation. Food prices rose 20% in 2010 alone. Corruption reached an extreme, with Egypt rated 80th in the world. The economic, political, and social reasons behind the Egyptian revolution were expressed by serious signs of discontent prior to the revolution taking place. In 2004, there were about 266 acts of protest; and by 2008 they reached 630.

Scholars had argued that the Egyptian revolution was unique in many ways. Although inspired by the Tunisian revolution that took place slightly prior to it, it differed to the Arab Spring or the previous Eastern European revolutions that took place post-Cold War. It is interesting to predict whether the Tunisian and Egyptian revolutions will inspire new political awareness in other Arab countries. When statistically tested, the relationship between Islam and democracy offers mixed results. Policy practitioners have debated and provided a variety of theories to explain the lack of democracy in the Arab World. The principal explanations can be grouped into four categories: those pertaining to cultural perquisites for democracy; those related to the Arab world's location; those concerning foreign involvement; and, finally, those that emphasize the importance of government agency, either with regard to the institutions governments create or the strategies they employ (Miller et al., 2012). One of the most prevalent explanations for the Arab World's lack of democracy is the presence of oil. Arab countries contain 61% of the world's proven oil reserves and account for 40% of internationally traded crude (Stevens, 2011). Moreover, there are two regimes types in the Arab world that are thought to be particularly resistant to democratization: dynastic monarchies and personalized regimes. In addition, Arab leaders have dampened enthusiasm for democracy by pitting regime opponents against each other, so that each prefers maintaining the current leadership to the possibility of their rival coming to power. Current regimes also have employed highly effective strategies for managing opposition and reducing pressure for meaningful political change. We do not aim to explore the reasons for the region's democracy deficit. Instead, we investigate whether democratization movements in Tunisia and Egypt will motivate similar events in the region.

3. Literature

Relatively few empirical studies raise questions regarding whether recent democratization in Egypt and Tunisia will unfold in similar ways in other Arab countries. An interesting question to be considered is: does the presence of oil really have antidemocratic effect? Miller et al. (2012) consider the challenges ahead for Egypt and Tunisia and offer some lessons from past transition experiences. Their case studies bear out scholars' findings that no threshold of economic development is required for democratization. Because a country's policy implementation capabilities are generally related to its level of economic development (i.e., poorer countries on the whole tend to have weaker institutions), it is apparent that democratization can occur even with low levels of institutional development. The authors argued that Arab countries transitioning from highly personality regimes will have considerable state-building challenges, and those transitioning from strong institutionalized authoritarian systems will require the type of thorough institutional reform that was needed in Eastern Europe, but democracy need not founder on these challenges. Przeworski (2004) concludes that democracies can be established at any level of economic development. He finds that the probability of establishing democracy is 'pretty much random' with regard to per capita incomes but that the level of per capita income strongly affects the survival of democracy. However, the probability that once established it will survive increases with per capita income, and above and upper-middle per capita income level, democracy is almost certain to survive.

The claim that oil and democracy do not mix is used by many scholars to explain why the high-income states of the Arab Middle East have not become democratic. Studies on Algeria, Iraq, and the Arab Gulf states have all suggested that the government's oil wealth has blocked a transition to democracy. Huntington (1993), for example, suggests that democracy may bypass

the Middle East as many of these states depend heavily on oil exports, which enhances the control of the state bureaucracy. Barro (1999) finds significantly negative oil country dummy, indicating that the high level of per capita GDP associated with oil production does not have a positive linkage with democracy. Ross (2001) finds that oil has a strong antidemocratic effect and that the harmful influence of oil is not restricted to the Middle East only. The author concludes that oil and mineral wealth cause greater damage to democracy in poor countries than in rich ones. A closer reading of case studies from the Middle-East suggests that presence of oil and authoritarianism may also be linked by repression. Citizens in these states may want democracy as much as citizens elsewhere, but the democratic aspirations may be blocked by their governments as in Bahrain, for example, where promises of reform were withdrawn, and Syria, where the president has carried on with piecemeal political reforms even as his security forces have been killing large numbers of protesters. Ross (2001) tests the hypothesis that resource wealth causes governments to arm themselves more heavily against pressure and shows that oil exports are positively and significantly associated with militarily spending.

Religious affiliation has also been stressed as an important determinant of democracy and the idea of the coexistence of democracy and Islam has raised controversy among scholars. When statistically tested, the relationship between Islam and democracy shows mixed results. There is empirical evidence to prove that in Muslim countries, democracy is either weak or non-existent and they use religion to explain this phenomenon. Barro (1999) finds that there was a pronounced negative relationship between democracy and percentage of country's population that is Muslim. Only four of the 32 examined Muslim countries have electoral rights. Similarly, Pryor (2007) finds that Islam has a significantly negative impact on political rights. Other studies suggest that religion cannot be used to explain democratic development, and hence, they attribute the lack of democracy in Muslim countries not to Islam, but to other factors. By contrast, Toros (2010) concludes that democratic and religious values co-exist and there is only a limited connection between Islam and attitude to democracy in Turkey. Hence, the experience of Turkey constitutes one example of how democratic values can take root and develop in a Muslim population.

Mernissi (2009) tries to explain why democracy has not caught on in Arab countries and what the prospects for their future are. The author shows how the Islamic community is chained up by a set of fears that it would have to overcome to establish democracy, bringing religious, philosophical and historical factors as possible reasons to the incapacity of the Islamic World to put into action a real democracy. In a related research, Esposito and Voll (1996) examine the relationship between Islam and democracy in particular, between the global trend of democratization and the rise of so called Islamic fundamentalism or political Islam. The authors argue in favor of compatibility between Islam and democracy, claiming that democracy and Islamic resurgence have become complementary forces in many countries. Moreover, another study by Entelis (1997) analyzes the link between Islam and politics, human rights, aspects of political economy, and the international dimension of prospects for democratization in the North African states - Algeria, Morocco, and Tunisia. Their view is that new and more open politics would transform the region. Furthermore, Cotran et al. (1999) bring together comparative law by looking at Islamic and Egyptian law and their relationship to the issues of democracy. Their study shows that the traditional opposition of Israeli and Arab views may be giving way to a common informed reflection on modes of coexistence primarily determined by law.

Ibrahim (2002) draws a perspective on the political, religious, economic, and social issues of contemporary Egypt. He addresses different aspects of Islamic activism in Egypt- the formation, membership, and activities of activist groups and their philosophies, political and social roles, and ideological relations with the West. Ali (2000) attempts to integrate the recent literature on civil society in the Middle East with the political science debate on democracy by

using political science theory and methodology as well as an area-study approach to draw conclusions on the prospects for democratization in developing countries. The study challenges explanations of democratization prospects, arguing that culture becomes an important factor in the struggle for democracy but only when it contributes to the concentration of social, economic, and political resources.

Finally, Diamond et al. (2003) focuses on analyzing democratic regimes and movements around the world, providing a comprehensive assessment of the origins and staying power of Middle East autocracies, as well as the struggles of state reformers and opposition forces to promote civil liberties, competitive elections, and a pluralistic vision of Islam. According their study, political liberalization in Morocco, Algeria, Egypt, Jordan, Kuwait, Qatar and Yemen, not only opens new spaces for criticism, but also tried to avoid genuine democratization. Their struggles to affirm the compatibility of Islam and pluralistic democracy face the challenge of limiting the influence of all advocates of democracy, secular or religious.

To sum up, the above literature survey reveals that there is some misconception and misunderstanding that the compatibility of Islam with democracy is against Islamic law. There is a diverse group of scholars with a variety of viewpoints, spanning from those who believe that Islam is compatible with democracy to those who have doubts about it. However, very few studies examine the issue empirically, therefore our study seeks to fill the gap.

4. Data

Out of 22 Arab countries, our dataset includes annual data for 19 Arab countries and covers the period 1960-2012. Countries included in the dataset are chosen on the basis of several considerations. The first is to consider the most influential countries: countries in our dataset produced about 90% of the Arabic World GDP in 2010. The second consideration is to select those countries for which data of a reasonable quality could be assembled. The third consideration is to cover a wide range of development experiences. See Table 1, for a list of countries. The table also classifies countries according to income level. The variables of interest for individual country models are democracy, economic development, human capital stock and openness. The variables used to construct the methodology are oil price, bilateral migration, and freedom of press index. In what follows, we discuss the source of the variables, their measurement, and any performed transformation to raw data wherever needed.

4.1 Democracy

A variety of measures of institutional quality is used in our paper - led by the development of the concept in the empirical literature. We focus on three measures: (i) democracy for which data is publicly available as the revised polity index from the Polity IV database (Marshall and Jaggers, 2009); (ii) measure of democratization (Papaioannou and Siourounis, 2008) is used to capture the effect of political transition during the Third Wave of Democratization; and (iii) we also use a number of executive constraints, such as bureaucratic quality to capture the effect of political competition (Marshal et al., 2012).

With respect to the first one, the revised combined Polity score is based on subscores for constraints on the chief executive, the competitiveness of political participation, and the openness and competitiveness of executive recruitment. The Polity2 score ranges from -10 to +10. Higher values denote more democratic institutions. The Polity Code book defines a polity within the range [6,10] as a coherent democracy, one in the range [-10,-6] as a coherent autocracy, and one in the range [-5,5] as an incoherent regime. Formally, it is computed as the difference between a democracy index and an autocracy index, each ranging from 0 to 10.[3]

---

[3] Fredriksson and Neumayer (2013) use two alternative definitions of democracy. First, they define democracies as those having a positive polity2 score, following Persson and Tabellini (2009). As an alternative, they define democracies as those having a polity2 score above 5 since countries below this threshold (but above -5) are usually categorized as anocracies;

For our application purpose, we assign each government a number between 0 and 10 on each scale based on a set of weighted indicators designed to capture the extent of competitive political participation, institutionalized constraints on executive power and guarantees of civil liberties and political participation. The primary focus of the index is on central government and it notably ignores the extent to which control over economic resources is shared and the interaction between central government and separatist or revolutionary groups. This allows us to estimate six distinct transitions: Autocracy to Partial Democracy, Partial Democracy to Full Democracy, and Autocracy to Full Democracy, as well as the reverse of each.

The above also provides the basis for construction of the measure of democratization (Papaioannou and Siourounis, 2008) where the focus is on the relevance of regime transition on structural economic outcomes (such as income and pollution, for instance). With this definition we would be able to distinguish between full and partial democratization episodes and how they affect income and pollution growth. While the detailed description of the data and its usefulness can be found in the authors' paper, it is important to note that a 'full' democratic status is designated to countries where both the Polity indicator is greater than +7 and the Freedom House status characterization is 'free'. All remaining democratization countries are denoted as 'partial'. Among 127 countries covering 44 years (1960-2003) in our dataset, we find 36 as 'full' democratic, 18 are characterized by 'partial democratization', and 4 episodes of small improvements in the level of political freedom (that is, 'borderline democratization' episodes).

4.2 Economic development

The country level indicator of economic development is measured as real GDP per capita and data are extracted from the World Bank WDI database.

4.3 Human capital stock

Human capital stock is measured as average years of schooling in the total population of age 15 and above, given by Barro and Lee (2001). This is calculated on a five year basis. Therefore, data were smoothed in order to obtain the annual data.

4.4 Openness

Openness is measured by the degree a country is integrated into the world economy using the sum of exports and imports of goods and services measured as a share of gross domestic product. This data (the trade to GDP ratio) was extracted from the World Bank WDI database.

4.5 Oil price (shock)

Annual data for oil price are collected from DataStream (Ticker: WDOCBRNT). This is a Brent crude oil price. Data are obtained in on basis of free on board (F.O.B.) in terms of US $/Barrel. The annual series are computed based on the average of daily closing prices obtained for all trading days within the year. An alternate source of this data is the United Nations Conference on Trade and Development Commodity Statistics (UNCTAD, 2009).

Figure 2 graphs the evolution of oil price level for Arab countries (upper panel). The figure suggests that international oil price fluctuations are highly persistent. This is also confirmed by several econometric diagnostics such as ADF-GLS (Elliott et al., 1996) and Kwiatkowski et al. (1992) tests of non-stationarity and stationarity, respectively. We also applied the Zivot and

---

combining characteristics from both democratic and autocratic regimes (Plumper and Neumayer, 2010). Furthermore, it is important to note that the Polity IV project also provides the subscores for constraints on the executive, political competition, and executive recruitment. The executive constraints subscore measures the extent of institutional constraints on the decision making powers of chief executives. The score ranges from 1 to 7, with higher values denoting stronger executive constraints. The political competition score measures the degree of institutionalization of political competition and the extent of government restriction on political competition. This score ranges from 1 to 10, with greater values denoting more political competition.

Andrews (1992) test, which allows for a structural break in the mean and the trend of oil prices. This also fails to reject the hypothesis of a unit root at 95% level (results not presented but available from the authors). Because there is a unit root in oil prices, the change of this variable over time would correspond to oil price shocks. Following Bruckner et al. (2012), we have constructed an indicator of oil price shock defined as: $OilpriceShock_{c,t} = \gamma \Delta_c log(Oilprice)_t$, where γ_c is oil exports minus oil imports relative to GDP over the whole time period considered. Similarly, $\Delta_c log(Oilprice)_t$ indicates the log-change in international prices over time. The main idea of using oil price (shock) indicator in our analysis is to capture the real effects of democratic shocks on economic growth via oil price channel.

Indeed, Bruckner et al. (2012) found - by examining the effects of oil price fluctuations on democratic institutions - that countries with greater net oil exports over GDP see improvements in democratic institutions following upturns in international oil prices. It was estimated that a 1 percent point increase in per capita GDP growth due to a positive oil price shock increased the Polity democracy score by around 0.2 percentage point on impact and around 2% points in the long-run. Interestingly, the effect of international oil price shock on the probability of a democratic transition was found to be around 0.4%. Overall, the inclusion of oil price shock in our study - as motivated by earlier research - holds significance in that contamination of democratic shocks to other regions and the response of these economies would also depend on the magnitude of oil price shocks in these economies.

5. Stylized Observations

In this section, we present some stylized facts, which otherwise characterize the interlinkage between the process of democratization and income growth conditional on a number of executive constraints and oil price shocks.

Observation 1: *Non-unique democratization episodes and transition probability*

In Table 2, we have presented democratization event chronology among 19 Arab countries. Following Papaioannou and Siourounis (2008), we construct various democratization episodes and regime changes among countries. From the table it can be observed that the event chronology reveals a heterogeneous pattern of democratization: the number of countries with 'transition to democracy' event is far smaller than the one with 'transition to autocracy.' Transition to democracy is also not very strong and one of them is in the borderline (for instance, Comoros in 1990). The only persistent effect is the persistence of autocracy and/or regime change with fairly weak persistence in transition to democracy. In Table 3, the results are qualified by a Markovian transition probability matrix. As is evident, among all countries, on average, the transition between democratic states is fairly large (often around 90%) implying that there is a strong persistence of previous period democratic state. In Table 3, except for a few, the majority of the countries are characterized by transition to autocracy and therefore, the high transition probability among two similar values of democracy (e.g., between -10,-10 and so forth) imply no major reversal of democratic trend.

Observation 2: Volatile co-movement of oil price and polity

Economic theory says that countries with greater net oil exports over GDP often evince improvements in democratic institution following upturns in international oil prices (Bruckner et al., 2012). To understand the dynamics of co-movement of these variables among Arab countries, we present in Figures 3-5 the average response of oil price shock to a change polity2 score. As evident in the case of each individual country, changes in democratic regime (polity2 score) have a volatile effect on oil price shock. It might then imply that countries which suffer from high negative oil price shock and have relatively weaker income pathways, would respond

differently to democratic shocks occurring in the neighborhood than the ones that experience high income and positive oil price shocks.

Observation 3: Spatial interdependence

Finally, in this section, we present a brief analysis of dynamic spatial interdependence among countries' growth processes where 'space' is defined in an 'economic' or 'relational' sense as in (Diebolt et al. (2013)). Since, our primary interest is to study the diffusion of democratic shocks and estimating their responsiveness conditional on the countries' development pathways, it is necessary thus to understand - as and when economic distance among countries rise - how do their growth processes respond in terms of complementarity and interdependence. Following (Diebolt et al. (2013)), we can define 'democratic distance' as a measure of distance among countries with respect to democratization and oil price shocks. It is expected that if countries' growth processes are highly interdependent (that is, with dynamic spillovers as function of this distance is greater than zero), then a democratic shock would negatively affect countries in the 'neighborhood' during early stages of growth, but would be instrumental in facilitating a stable and higher growth in the long-run. As in Diebolt et al. (2013), we present the spatio-temporal framework of growth interdependence among Arab countries as:

$$Y_{i,t+1} = \alpha_i Y_{i,t} + \sum_{j \neq i}^{N} f_i(D_t(i,j)) Y_{j,t} + \gamma(D_t(i,j)) X_{i,t} + \varepsilon(D_t(i,j)) \tag{1}$$

where for country i ($i = 1,...,N$), $\{Y_{t-l}, D_{t-l}, l \geq 0\}$, is history of the output per capita growth: Using a cardinal B-Spline, the authors estimated the parameters related to f function (that is, $f_i(D_t(i,j)) Y_{j,t}$) where the functional relation was left open in order to uncover true functional form. $D_t(i,j)$ is a distance matrix, the elements of which concern democratic distance of a country from its neighbor. Using the measures of democracy (as defined before) and employing multidimensional scaling to create a relational distance measure, we have estimated the spatial interdependence coefficient of economic growth among Arab countries as a function of the democratic distance measure. The results from the estimated equation as above are presented in table 4. There are two components of the table: $\hat{\alpha}$ represents the estimated dynamic spatial VAR coefficient whereas $\hat{\sigma}^2$ represent dynamic spatial error covariance matrix. Both are expressed and estimated as functions of economic distance (i.e., democratization distance and oil price shocks). As evident from the table, the spatial VAR coefficient for each country represent interesting patterns as function of economic distance. Positive dynamic spatial VAR coefficients are noted for Algeria, Jordan, Egypt, and Sudan, for instance, whereas large negative spatial VAR coefficients are estimated for Djibouti and Morocco. The results are also presented graphically in Figure 6 (left panel). The right panel of Figure 6 presents dynamic spatial error covariance. As can be observed the error covariance evince a monotonic decay with increasing distance, indicating good model fit.

To summarize, the evidence of large negative and positive spatial VAR coefficients indicate that democratic shocks would affect dynamics of interdependence and complementarity among countries' growth pathways over time. The spatial diffusion of democracy and its effects on growth are important in that a strategy of cooperative policy programs to improve democratic quality in neighboring countries can be pareto improving in terms of long-term welfare of both the individual and all countries taken together. To understand how democratic shocks affect the causality and direction of effects within a systemic framework, we present next global VAR and the corresponding results from this regression.

6. Methodology: Global VAR

In the previous section, we presented three key observations, each pointing to the fact that both democracy and democratization are instrumental in realizing positive and interdependent growth processes among Arab countries. A natural question that may arise is how democratic shocks in one country impact growth and institutional patterns in proximus countries (defined in both geographic and relational senses)? Characterization of the democratic shock transmission mechanism in the Arab World is therefore necessary to reveal important insights into the future of growth interdependence and institutional changes in these countries. An econometric mechanism that can model democratic shocks transmissions among economies is the Global Vector Autoregression (GVAR) model that is developed by Pesaran et al. (2004); Pesaran and Smith (2006). Using the GVAR mechanism the current paper investigates and models, in particular, the transmission of democratic shocks originated in Egypt and its propagation mechanism to the Arab world countries. To proxy for economic development level and human development, the paper uses real GDP and schooling years, respectively. To proxy for a country integration level into the world economy, the degree of trade openness (i.e., trade to GDP ratio) is used. Countries are linked through a novel composite matrix that exploits information from countries bilateral migration, distance and their relative degree of freedom compared with Egypt - our reference country.

Our modelling approach is seen to be flexible and dynamic in many perspectives.[4] First, the GVAR directly incorporates many observable variables, which allow policy makers to craft scenarios that influence some specific variables and their response to different types of shocks. Second, the interdependencies between countries are transparently considered in three ways; a) combining individual country models that include domestic and foreign variables, b) capturing dependency in idiosyncratic shocks by allowing for non-zero pair-wise correlations in residuals between countries and equations, and c) by explicitly incorporating common global shocks such as oil prices (Eickmeier and Ng, 2011).

The GVAR allows unrestricted coefficients for the domestic variables and carefully constructs country-specific foreign variables, which are treated as weakly exogenous when estimating the individual models. To capture the long-run relationships as well as the short-run dynamics, the individual VAR models are estimated individually in the form of country-specific vector error-correcting models VECMs. Posteriorly, these VECMs are stacked up to simultaneously generate impulse response functions. Hence, the GVAR allows for the interdependencies between countries and regions explicitly (Galesi and Sgherri, 2009).

GVAR modelling involves greater use of prior information in choosing observed weights (Eickmeier and Ng, 2011). Most of GVAR literature relies basically on bilateral international trade to compute these weights, e.g., Pesaran et al. (2004); Dees et al. (2007). However, few studies opt different weight mechanisms; for instance, (Galesi and Sgherri, 2009) use financial weights, Vansteenkiste (2007) uses geographical distances based weights, Hiebert and Vansteenkiste (2010) adopt weights based on sectoral input-output tables across industries.

Given $N+1$ countries in the global economy, indexed by $i = 0,1,2\ldots,N$, where $N = 18$ and country $i = 0$ serves as a reference[5], each country, on its own is considered as a small open economy and thereby cannot affect the whole system. However, the Arabic World affects individual Arabic countries through country specific foreign ties. For each country i a VARX

---

[4] Although one may argue that concentration on only Arab countries does not, per se, represent a 'global' phenomenon. However, any subset of a broader set of countries can be treated as global as long as the countries represent specific economic, social, cultural, and political dynamics. Depending on the availability of data, further research may be carried by extending the framework to many country settings.

[5] Given the sizeable effect on the world economy, the US has been extensively referred to as the reference country in the GVAR literature. In the context of this study, Egypt is referred to as the reference country.

$^*_{(}p_i, q_i)$ model, where p_i and q_i are the lags orders of the domestic and foreign variables respectively, can be presented as follows:

$$\Phi(\mathbf{L}, \mathbf{p_i})\mathbf{x_{it}} = \mathbf{a_{i0}} + \mathbf{a_{i1}}\mathbf{t} + \quad (\mathbf{L}, \mathbf{q_i})\mathbf{d_t} + \Lambda(\mathbf{L}, \mathbf{q_i})\mathbf{x_{it}^*} + \mathbf{u_{it}} \tag{2}$$

where $\mathbf{x_{it}}$ is the $k_i \times 1$ vector of domestic variables, $\mathbf{x_{it}^*}$ is the $k_i^* \times 1$ vector of country-specific foreign variables, $\mathbf{d_t}$ denotes the $m_d \times 1$ matrix of observed global factors (here, oil prices), $\mathbf{a_{i0}}$ and $\mathbf{a_{i1}}$ are the coefficients of the deterministic components, and $\mathbf{u_{it}}$ is the $k_i \times 1$ vector of idosyncratic, serially uncorrelated, country specific shocks, where $\mathbf{u_{it}} \tilde{a} \notin i.i.d$ and have a zero mean with a covariance matrix $\mathbf{cov}(\mathbf{u_{it}}, \mathbf{u_{jt}}) = \mathbf{E}(\mathbf{u_{it}}\mathbf{u_{jt}'}) = \Sigma_{u,ij}$, for $i \neq j$. Further, there is $\Phi_i(\mathbf{L}, \mathbf{p_i}) = \Sigma_{t=0}^{p_i}\Phi_{it}\mathbf{L}^t$, $\quad_i(\mathbf{L}, \mathbf{q_i}) = \Sigma_{m=0}^{q_i} \quad_{im}\mathbf{L}^m$, $\Lambda_i(\mathbf{L}, \mathbf{q_i}) = \Sigma_{n=0}^{q_i}\Lambda_{in}\mathbf{L}^n$, where $\mathbf{L}$ is the lag operator and p_i and q_i are the lag order of the domestic and foreign variables for the ith country. Country-specific VARX* models are endogenous variables conditioned on country-specific foreign variables which are constructed based on our novel weight matrix w_{ij}, $j = 0,1,2,\ldots,N$, that capture the importance of country j for country i's economy such that $\mathbf{x_{it}^*} = \Sigma_{j=0}^{N}w_{ij}\mathbf{x_{jt}}$, where $w_{ii} = 0$ and $\Sigma_{j=0}^{N}w_{ij} = 1$, $\forall j = 0,1,2,\ldots,N$. These weights are fixed; see Table 10 in the Appendix.

For notation ease, the corresponding VARX$^{(}2,2)$ in the error correcting representation is as follows

$$\Delta\mathbf{x_{it}} = \mathbf{c_{i0}} - \alpha_i\beta_i'[\zeta_{i,t-1} - \gamma_i(t-1)] + \quad_{i0}\Delta\mathbf{d_t} + \Lambda_{i0}\Delta\mathbf{x_{it}^*} + \quad_{i1}\Delta\mathbf{d_{t-1}} + \Gamma_i\Delta\mathbf{z_{i,t-1}} + \mathbf{u_{it}} \tag{3}$$

where $\mathbf{x_{it}} = (\mathbf{x_{it}'}, \mathbf{x_{it}^*})'$, $\zeta_{i,t-1} = (\mathbf{z_{i,t-1}'}, \mathbf{d_{i,t-1}'})'$, α_i is a $k_i \times r_i$ matrix of rank r_i, β_i is a $(k_i + k_i^* + m_d) \times r_i$ matrix of rank r_i (the number of cointegrating relationships in the system). By partitioning β_i' as $(\beta_{ix}', \beta_{ix^*}', \beta_{id}')'$ conformable to $\zeta_{it} = (\mathbf{x_{it}'}, \mathbf{x_{it}'^*}, \mathbf{d_t'})'$, the r_i error correcting terms defined above can be written as

$$\beta_i'(\zeta_{it} - \gamma_i t) = \beta_{ix}'\mathbf{x_{it}} + \beta_{ix^*}'\mathbf{x_{it}'^*} + \beta_{id}'\mathbf{d_t'} - (\beta_i'\gamma_i)t$$

which allows for the possibility of cointegration within the endogenous variables and between endogenous and foreign variables in a given country model, as well as endogenous variables across country models. For estimation, the country-specific foreign variables are treated as '*long-run forcing*' weakly exogenous with respect to the parameters of the conditional model. The GVAR indispensable initiation to circumvent the dimensionality predicament is via conducting the estimation on a country by country basis. However, the model is solved for the system as a whole considering all variables are endogenous to the whole model. Recall that $\mathbf{z_{it}} = (\mathbf{x_{it}'}, \mathbf{x_{it}'^*})'$ and consider the individual models written as

$$\mathbf{A}_i(L, p_i, q_i)\mathbf{z_{it}} = \varphi_{it}, i = 0,1,2,\ldots,N$$

where

$$\mathbf{A}_i(L, p_i, q_i) = [\Phi_i(L, p_i) - \Lambda_i(L, p_i)],$$

$$\varphi_{it} = \mathbf{a_{i0}} + \mathbf{a_{i1}}t + \Upsilon_i(L, q_i)\mathbf{d_t} + \mathbf{u_{it}}$$

The vector $\mathbf{z_{it}}$ can be written as

$$\mathbf{z}_t = \mathbf{W}_i \mathbf{x}_t, i = 0,1,2,\ldots,N \tag{4}$$

where $\mathbf{W}_i$ is a link matrix of dimension $(k_i + k_i^*) \times k$ constructed based on country specific weight. Substituting results in the following

$$\mathbf{A}_i(L, p_i, q_i)\mathbf{W}_i \mathbf{x}_t = \varphi_{it}, i = 0,1,2,\ldots,N \tag{5}$$

Then, the vector of endogenous variables of the global economy, $\mathbf{x}_t$, can now be obtained by stacking the country specific models as

$$\mathbf{G}(L, p)\mathbf{x}_t = \varphi_t \tag{6}$$

where

$$\mathbf{G}(L, p) = \begin{pmatrix} \mathbf{A}_0(L, p)\mathbf{W}_0 \\ \mathbf{A}_1(L, p)\mathbf{W}_1 \\ \vdots \\ \mathbf{A}_N(L, p)\mathbf{W}_N \end{pmatrix}, \; \varphi_t = \begin{pmatrix} \varphi_{0t} \\ \varphi_{1t} \\ \varphi_{Nt} \end{pmatrix}, \; p = max(p_0, p_1, \ldots, p_N) \text{ The above model can be}$$

solved recursively and used for generalized impulse response analysis and forecast.

7. Model Specification

The variables for the GVAR model are real GDP, democracy index, openness and schooling. Additionally, foreign real GDP, foreign democracy index, openness of other countries and foreign schooling are included as weakly exogenous variables into the system constructed based on a constant weights system, see Table 10 in the Appendix. As well, the model contains unweighted oil prices *poil* as a global variable which is weakly exogenous to all countries in the system except for the reference country in which *poil* enters as an endogenous variable. Subsequently, the resulting GVAR model is no more than a tremendous VAR (P) model containing global endogenous variables.

7.1 Country-specific model

To seize the possibly unobserved common factors, GVAR incorporates the cross section averages of the endogenous variables, which are assumed to be weakly exogenous. Also, being individually integrated is a presumption should one aspire making use of long-run information as well as short-run dynamics. Such allegations, among others, have to be formally tested and for which the following subsections intend to stand.

7.1.1 Test of nonstationarity

To ensure series have univariate integration properties, Augmented Dickey-Fuller (ADF) proposed in Dickey and Fuller (1981) and weighted symmetric ADF (hereafter ADF-WS) introduced by Park and Fuller (1995) are considered. Different unit-root tests are set for the purpose of evasion the 'low power' featuring such tests as some test superiorly perform when compared to others, see for example e Perron (1989); Pantula et al. (1994); Elliott et al. (1996); Leybourne et al. (2005). These tests mull over the null hypothesis of 'unit root' against the alternative of 'no unit root.' Thus, ADF and ADF-WS tests are conducted with a time trend and with no trend for level as well as first and second differences. Table 5 presents ADF statistics of all the country-specific domestic variables, whilst Table 6 includes the foreign variables. The results, overall, support the treatment of the variables as being I(1).

7.1.2 Cointegration relations

Given the model specification discussed above and in light of the AIC lag selection criterion, the corresponding $\text{VARX}^*_{(q_i, p_i)}$ models are estimated and the rank of their cointegrating space

determined as given by Eq. 3. These are computed based on Johansen's trace and maximal eigenvalue statistics as set out in Pesaran et al. (2000). Moreover, to avoid having a quadratic trend in level, the model utilizes case IV defined by Pesaran et al. (2000) wherein the intercept coefficient is not redistricted but trend coefficient is so. The order of the VARX models as well as the number of cointegration relationships are presented in Table 7.

Results in Table 7 are based on the Maximum Eigenvalue and Trace statistics at the 5% significance level along with the cointegrating relationships for the individual VARX models. As shown in Table 7, the models have two or one cointegrating relationships.

7.1.3 Testing for residual serial correlation

The F statistic for the residual serial correlation test is the F-version of the familiar Lagrange Multiplier (LM) statistic (see Godfrey (1978a,b), also known as 'modified LM' statistic. The F-statistics for the serial correlation of the VECMX models along with the corresponding critical values at 5% significance level are reported in Table 8.

7.1.4 Testing for weak exogeneity

The weak exogeneity of the foreign variables with respect to the long run parameters of the conditional model is one crucial assumption that the GVAR approach builds upon. In the context of cointegration, this assumption implies no long run feedback from endogenous to exogenous variables without the need of ruling out lagged short run feedback between them, see Johansen (1992); Granger and Lin (1995). Thus, the country-specific endogenous variables are said to be 'long run forcing' for the corresponding foreign variables. The results from the exogeneity test are reported in Table 9. These results show that the exogenous variables pass the test. Results of weak exogeneity test show that the null hypothesis could not be rejected for the majority of the variables being considered.

7.2 Dynamic analysis

This section investigates the effects of democratic shocks in Egypt on the democracy variable in the other countries in the whole system. To this end, the current paper makes use of the Generalized Impulse Response Function (GIRF) to cope with the difficulty in identifying the structural shocks in the GVAR context. Our empirical exercise considers shocks in order to examine the possible effects on other Arabic countries. In particular, we consider effects of a one standard deviation positive shock to democracy in Egypt. Results summarized below are based on the median estimates resulting for bootstrap the model (500 replications) considering 90% confidence intervals of the error bands. Fig. 7 shows responses to the positive shock.

Referring to Fig. 7, it seems that a 1SD shock in Egypt has a statistically significant impact on both low and lower-middle income countries. The Egyptian democratic positive shock is more likely to induce democracy in those groups of countries by about 0.4% in low income countries and about 0.2% in lower-middle income countries. This effect becomes profound and persists after four years, at around 1% and 0.6% in low and lower-middle income countries, respectively. Interestingly, the same shock does not seem to have a statistically significant impact on democracy in both high and upper-middle income countries, which continues to be the case over the entire range of time horizon.

8. Concluding Remarks

This paper utilizes a GVAR modelling approach to investigate the transmission of democratic shocks in the Arab World. The model allows for the grouping of Arab countries into four groups: high (HIGH), upper middle (UMID), lower middle (LMID) and low (LOW) income countries. The countries are linked together through a novel weight matrix that exploits information on bilateral migration, distance and their relative degree of freedom compared with Egypt - our reference country. Regions are created based on population size, to give a sizeable weight to our reference country. The aim of this study is to empirically examine whether the

current revolution waves in Egypt are more likely to transfer to other Arabic countries. The paper stimulates shocks to democracy index in Egypt. To capture the impact of the democratic shocks in the Arab World, the paper calls upon the GIRFs. The main findings of this paper are twofold. First, there is empirical evidence of possible transmission of positive democratic shocks in the case of low and lower-middle income countries. Second, we found that countries with High level of economic development seem to be immune to democratic shocks. In the meantime, the full realization of the positive shocks in low development countries comes with a lag of four years.

A possible interpretation of our findings could be that democratic shocks and their transmission are well explained in light of the economic conditions in the corresponding country. Moreover, countries that show no response to democratic shocks in Egypt are found to be those countries that rely heavily on oil exports. This is in line with Ross (2001), who shows that oil does damage to democracy and supports the link between oil and authoritarianism, or the so-called rentier effect, through which governments use low tax rates and high spending to dampen pressures for democracy.

A very important policy lesson could be derived out of this exercise. In particular, economic reform should be on top of the post-revolution governments' agendas. As, Przeworski et al. (1997) have shown that democracies in poor countries have significantly better prospects if they can maintain their economic growth, in economic terms, then, the real danger for democracy is the combination of poverty and prolonged economic decline. Democracy cannot be implanted by military means, it has to grow from within countries by gradually constructing political processes, institutionalizing and combining this with economic reforms.

References

Ali, R. A. (2000), *Islam and Democracy*, NY: Garland Publishing Inc.

Barro, R. J. (1999), 'Determinants of Democracy', *Journal of Political Economy* 107(S6), S158–S183.

Barro, R. J. and Lee, J.-W. (2001), 'International Data on Educational Attainment: Updates and Implications', Oxford Economic Papers 53(3), 541–563.

Bruckner, M., Ciccone, A. and Tesei, A. (2012), 'Oil Price Shocks, Income, and Democracy', ¨ *Review of Economics and Statistics* 94(2), 389–399.

Cotran, E., Sherif, A. O. et al. (1999), Democracy: The Rule of Law and Islam, Vol. 6, *BRILL.*

Dees, S., Mauro, F., Pesaran, M. H. and Smith, L. (2007), 'Exploring the International Linkages of the Euro Area: A Global VAR Analysis', *Journal of Applied Econometrics* 22(1), 1–38.

Diamond, L. J., Plattner, M. F. and Brumberg, D. (2003), *Islam and Democracy in the Middle East*, Johns Hopkins University Press Baltimore and London.

Dickey, D. A. and Fuller, W. A. (1981), 'Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root', *Econometrica: Journal of the Econometric Society* pp. 1057–1072.

Diebolt, C., Mishra, T., Ouattara, B. and Parhi, M. (2013), 'Democracy and Economic Growth in an Interdependent World', *Review of International Economics* 21(4), 733–749.

Duncan, G. (2011), 'What Caused the Revolution in Egypt', The Guardian .

Eickmeier, S. and Ng, T. (2011), 'How Do Credit Supply Shocks Propagate Internationally? A GVAR Approach'.

El-Shimy, J. (2011), 'Egypt's Struggle For Freedom', Chatham House .

Elkink, J. A. (2011), 'The International Diffusion of Democracy', *Comparative Political Studies* 44(12), 1651–1674.

Elliott, G., Rothenberg, T. J. and Stock, J. H. (1996), 'Efficient Tests for an Autoregressive Unit Root', *Econometrica* 64(4), 813–836.

Entelis, J. P. (1997), *Islam, Democracy, and the State in North Africa*, Indiana University Press.

Esposito, J. L. and Voll, J. O. (1996), *Islam and Democracy,* Oxford University Press.

Fredriksson, P. G. and Neumayer, E. (2013), 'Democracy and Climate Change Policies: Is History Important?', Ecological Economics 95, 11–19.

Galesi, A. and Sgherri, S. (2009), 'Regional Financial Spillovers across Europe: A Global VAR Analysis', IMF Working Papers pp. 1–32.

Godfrey, L. G. (1978a), 'Testing Against General Autoregressive and Moving Average Error Models When The Regressors Include Lagged Dependent Variables', *Econometrica: Journal of the Econometric Society* pp. 1293–1301.

Godfrey, L. G. (1978b), 'Testing For Higher Order Serial Correlation in Regression Equations When the Regressors Include Lagged Dependent Variables', *Econometrica: Journal of the Econometric Society* pp. 1303–1310.

Granger, C. W. and Lin, J.-L. (1995), 'Causality in the Long Run', *Econometric Theory* 11, 530–530.

Hayek, F. A. (1960), *The Constitution of Liberty*, Chicago: University of Chicago.

Hiebert, P. and Vansteenkiste, I. (2010), 'International Trade, Technological Shocks and Spillovers in The Labour Market: A Gvar Analysis Of The Us Manufacturing Sector', *Applied Economics* 42(24), 3045–3066.

Huntington, S. P. (1993), *The Third Wave: Democratization in the Late Twentieth Century,* Vol. 4, University of Oklahoma press.

Ibrahim, S. E. (2002), *Egypt Islam and Democracy: Critical Essays*, American University in Cairo Press.

Johansen, S. (1992), 'Cointegration in Partial Systems and the Efficiency of Single-Equation Analysis', *Journal of Econometrics* 52(3), 389–402.

Kwiatkowski, D., Phillips, P. C., Schmidt, P. and Shin, Y. (1992), 'Testing the Null Hypothesis of Stationarity Against the Alternative of a Unit Root: How Sure Are We That Economic Time Series Have A Unit Root?', *Journal of Econometrics* 54(1), 159–178. 27

Leybourne, S., Kim, T.-H. and Newbold, P. (2005), 'Examination of Some More Powerful Modifications of the Dickey–Fuller Test', *Journal of Time Series Analysis* 26(3), 355–369.

Marshal, M., Jaggers, K. and Gurr, T. (2012), 'Polity IV Project: Political Regime Characteristics and Transitions,1800-2012'.

Mernissi, F. (2009), Islam and Democracy: Fear of the Modern World, Basic Books.

Miller, L. E., Martini, J., Larrabee, F. S., Rabasa, A. and Pezard, S. (2012), *Democratization in the Arab World: Prospects and Lessons from around the Globe*, Rand Corporation.

O'Loughlin, J., Ward, M. D., Lofdahl, C. L., Cohen, J. S., Brown, D. S., Reilly, D., Gleditsch, K. S. and Shin, M. (1998), 'The Diffusion Of Democracy, 1946–1994', *Annals of the Association of American Geographers* 88(4), 545–574.

Paciello, M. C. (2011), Tunisia: Changes and Challenges of Political Transition, Centre for European Policy Studies.

Pantula, S. G., Gonzalez-Farias, G. and Fuller, W. A. (1994), 'A Comparison of Unit-Root Test Criteria', *Journal of Business & Economic Statistics* 12(4), 449–459.

Papaioannou, E. and Siourounis, G. (2008), 'Democratisation and Growth*', *The Economic Journal* 118(532), 1520–1551.

Park, H. J. and Fuller, W. A. (1995), 'Alternative Estimators and Unit Root Tests for the Autoregressive Process', *Journal of Time Series Analysis* 16(4), 415–429.

Perron, P. (1989), 'The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis', *Econometrica: Journal of the Econometric Society* pp. 1361–1401.

Persson, T. and Tabellini, G. (2009), 'Democratic Capital: The Nexus of Political and Economic Change', *American Economic Journal: Macroeconomics* 1(2), 88–126.

Pesaran, M. H., Schuermann, T. and Weiner, S. M. (2004), 'Modeling Regional Interdependencies Using a Global Error-Correcting Macroeconometric Model', *Journal of Business & Economic Statistics* 22(2), 129–162.

Pesaran, M. H., Shin, Y. and Smith, R. J. (2000), 'Structural Analysis of Vector Error Correction Models with Exogenous I(1) Variables', *Journal of Econometrics* 97(2), 293–343.

Pesaran, M. H. and Smith, R. (2006), 'Macroeconometric Modelling with a Global Perspective*', *The Manchester School* 74(s1), 24–49.

Plumper, T. and Neumayer, E. (2010), 'The Level of Democracy during Interregnum Periods: Recoding the ¨ Polity2 Score', *Political Analysis* p. mpp039.

Pryor, F. L. (2007), 'Are Muslim Countries Less Democratic?', *Middle East Quarterly* .

Przeworski, A. (2004), 'Democracy and Economic Development', Mansfield & R. Sisson (Eds.), *The Evolution of Political Knowledge. Democracy, Autonomy, and Conflict in Comparative and International Politics* pp. 300–324.

Przeworski, A., Alvarez, M., Cheibub, J. A. and Limongi, F. (1997), 'What Makes Democracies Endure?', *Lua Nova: Revista de Cultura e Pol´ıtica* (40-41), 113–135.

Ross, M. L. (2001), 'Does Oil Hinder Democracy?', *World Politics* 53(03), 325–361.

Stevens, P. (2011), 'The "Arab Spring" and Oil Markets', *Foreign Policy* .

Toros, E. (2010), 'The Relationship Between Islam and Democracy in Turkey: Employing Political Culture as an Indicator', *Social Indicators Research* 95(2), 253–265.

Vansteenkiste, I. (2007), 'Regional Housing Market Spillovers in the Us: Lessons from Regional Divergences in A Common Monetary Policy Setting', Working Paper Series 708.

Zivot, E. and Andrews, D. W. (1992), 'Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root', *Journal of Business & Economic Statistics* 10(0), 3.

Spatial VAR Estimation

With vectorial representation, the spatial VAR model is:

$$Z_{t+1} = A(D_t)Z_t + \varepsilon_{t+1} \tag{7}$$

where $A(D_t)$ is a $N \times N$ matrix whose elements are functions of democratic distances between countries. As a structure of spatial VAR, ε_{t+1} is also a function of distance, D_t.

1. Structure on Conditional Means.

From (7), the conditional mean of $Y_{i,t+1}$ given $\{Z_{t-l}, D_{t-l}, l \geq 0\}$ is modelled as

$$\mathsf{E}[Y_{i,t+1} | \{Z_{t-l}, D_{t-l}, l \geq 0\}] = \alpha_i Y_{i,t} + \sum_{j \neq i}^{N} f_i(D_t(i,j))Y_{j,t} \tag{8}$$

where the f_i are continuous functions mapping from $(0, \infty)$ to R^l. The dynamic spatial output correlations are represented by f functions which are time-invariant functions of the distance between two countries. It follows that the conditional mean of Z_{t+1} given $\{Z_{t-l}, D_{t-l}, l \geq 0\}$ is $A(D_t)Z_t$, where

$$A(D_t) = \begin{pmatrix} \alpha_1 & f_1(D_t(1,2)) & \cdots & f_1(D_t(1,N)) \\ f_2(D_t(2,1)) & \alpha_2 & \cdots & f_2(D_t(2,N)) \\ \vdots & \vdots & \vdots & \vdots \\ f_N(D_t(N,1)) & f_N(D_t(N,2)) & \cdots & \alpha_N \end{pmatrix} \tag{9}$$

and that the spectral radius of $A(D_t)$ is strictly smaller than one. It reflects estimation in a stationary environment.

2. Structure on Conditional Covariances

Assuming that the Euclidean distance between two spatial locations is defined by $\tau = \mathsf{P}s_1 - s_2\mathsf{P}$ and setting $k = 3$ in $s \in \mathsf{R}^k$ the covariance function can be written following Yaglom (1987):

$$\gamma(\tau) = 2^{(k-2)/2} \Gamma(\frac{k}{2}) \int_0^\infty \frac{J_{(k-2)/2}(x\tau)}{(x\tau)^{(k-2)/2}} d\Psi(x) \tag{10}$$

where $\Psi(x)$ is a bounded non-decreasing function and where $J_{(k-2)/2}(x\tau)$ is a Bessel function of the first kind (see Yaglom, 1987 for details). After some algebra and by explicitly introducing the Bessel function, the covariance function becomes,

$$\gamma(\tau) = \int_0^\infty \frac{\sin(x\tau)}{x\tau} d\Psi(x) \tag{11}$$

In the degenerate case $\Psi(x) = x$ so that the covariance function reduces to single hyperbola. Then for every bounded non-decreasing function Ψ, this implies that the conditional covariance is represented by

$$\Omega(D_t) = \begin{pmatrix} \sigma_1^2 + \gamma(0) & \gamma(D_t(1,2)) & \cdots & \gamma(D_t(1,N)) \\ \gamma(D_t(2,1)) & \sigma_2^2 + \gamma(0) & \cdots & \gamma(D_t(2,N)) \\ \vdots & \vdots & \vdots & \vdots \\ \gamma(D_t(N,1)) & \gamma(D_t(N,2)) & \cdots & \sigma_N^2 + \gamma(0) \end{pmatrix} \tag{12}$$

where $\gamma(.)$ is assumed to be continuous at zero and is k-dimensional isotropic covariance function.[6] The choice of γ ensures that $\Omega(D_t)$ is positive definite for any set of interpoint distance D_t and any values of the $\sigma_i^2 \geq 0$. Yaglom (1987: 353–354) showed that an isotropic covariance function has a representation as an integral of a generalized Bessel function. The representation of γ is analogous to the spectral representation of time-series covariance functions.

---

[6] Isotropy means that the stationary random field (with indices in R^k) that generates the process is directionally invariant.

Figure 1: GDP per capita in Tunisia and Egypt, 2000-2011
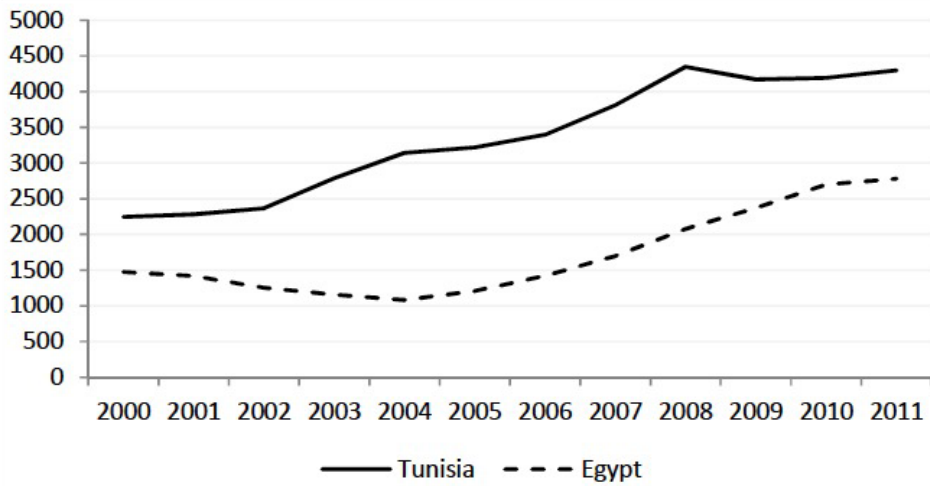
Source: The World Bank, World Development Indicators database, 2013

Figure 2: Plot of Oil Price and Polity
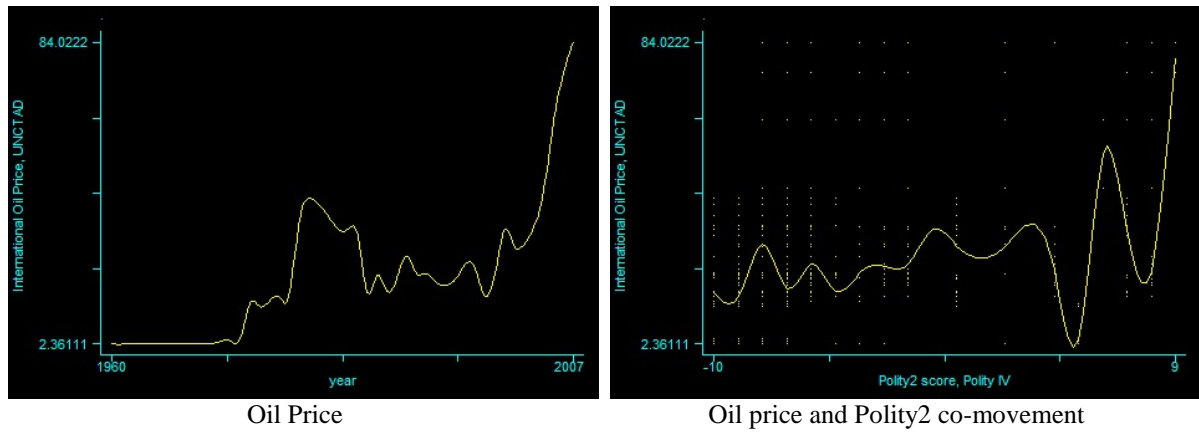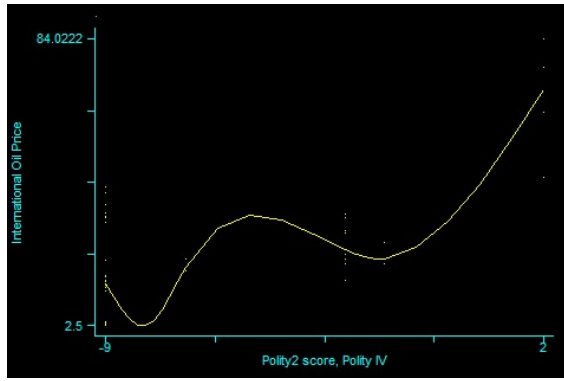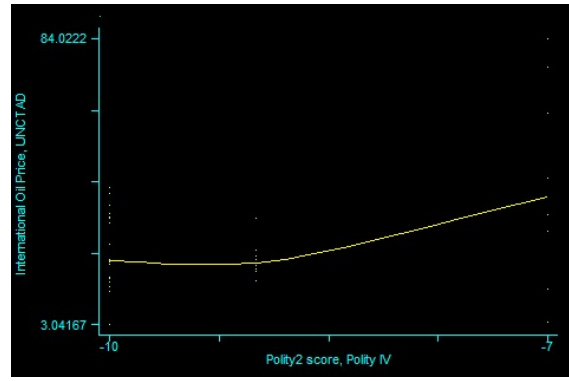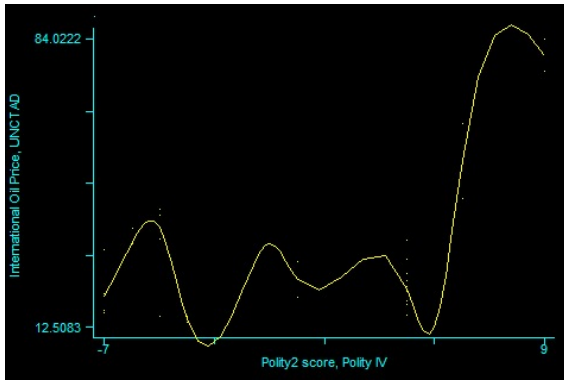

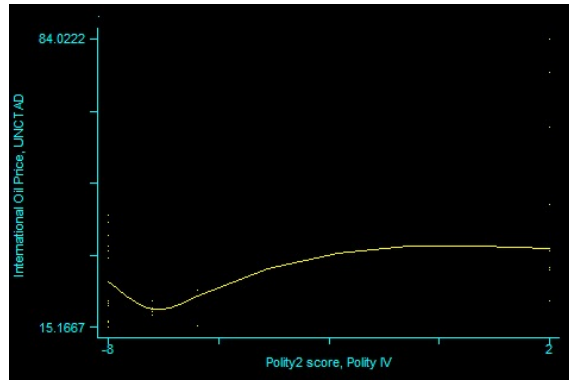| Oil Price | Oil price and Polity2 co-movement |

Figure 3: Plot of Oil Price and Polity Change

Algeria

Bahrain
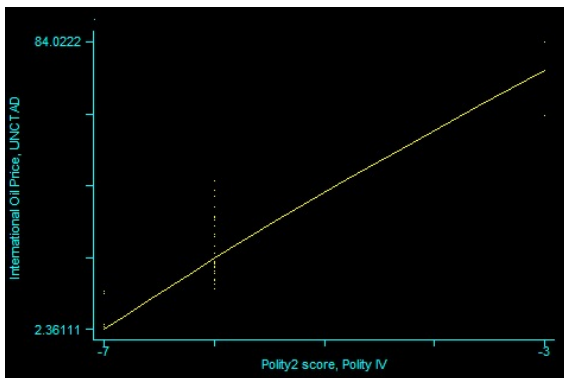

Comoros

Djibouti

Egypt
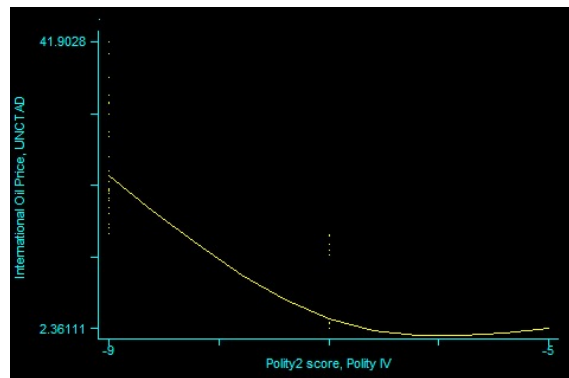
Iraq

Figure 4: Plot of Oil Price and Polity Change
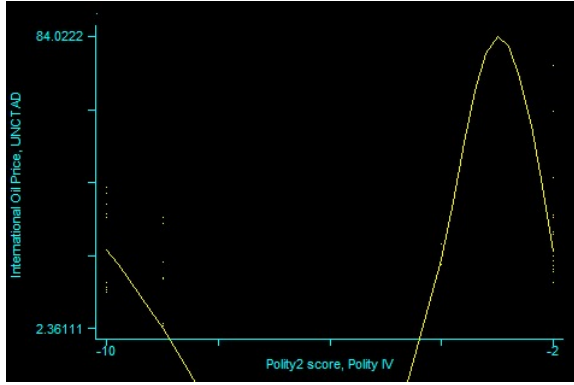
Jordan
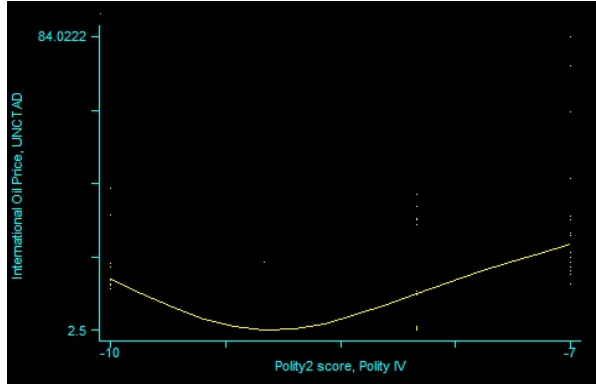
Kuwait
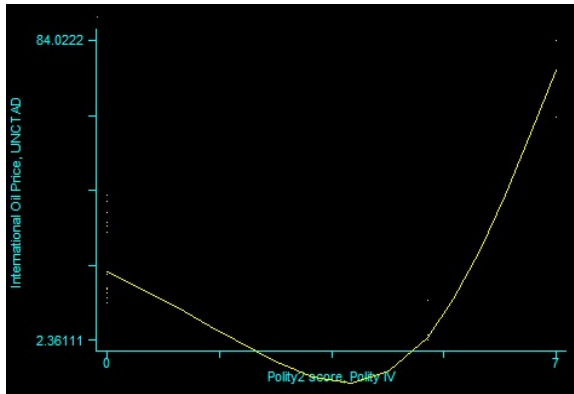
Lebanon
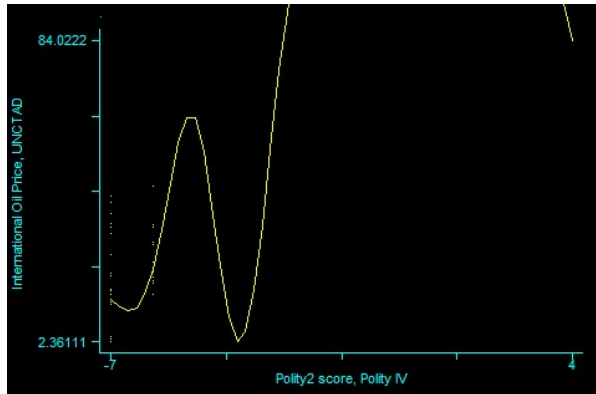
Mauritania
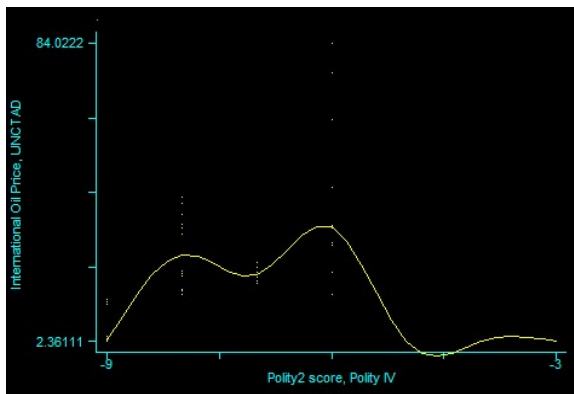
Morocco
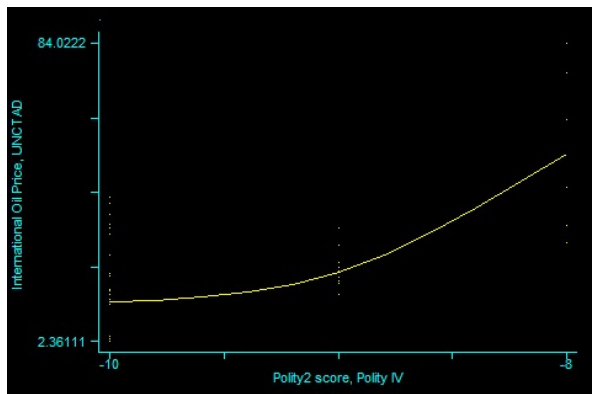
Oman

Figure 5: Plot of Oil Price and Polity Change

Somalia

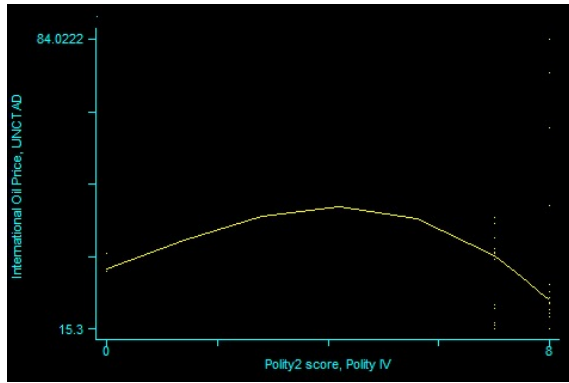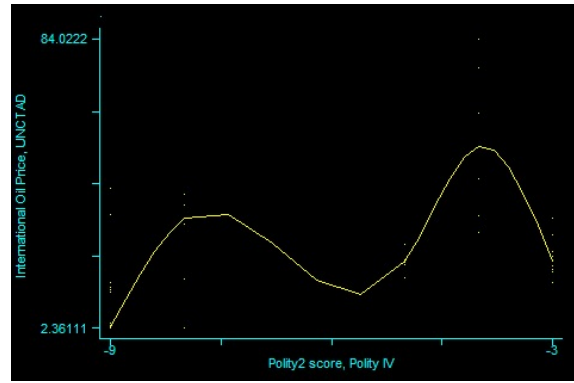Tunisia
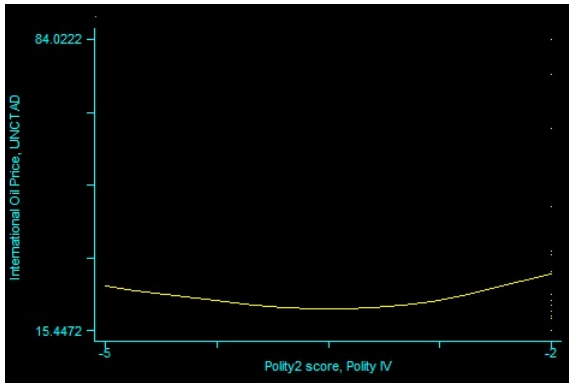
Yemen

Figure 6: Spatial Vector Autoregression Results of Dynamic Interdependence
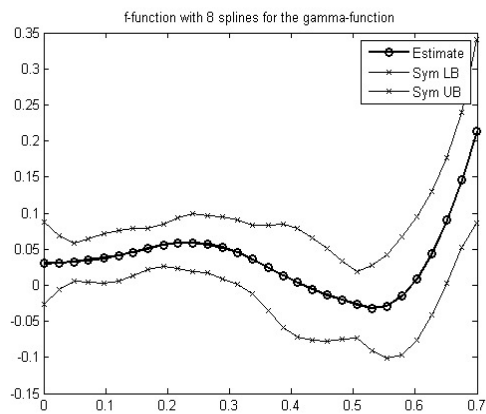
Dynamic spatial interdependence of growth
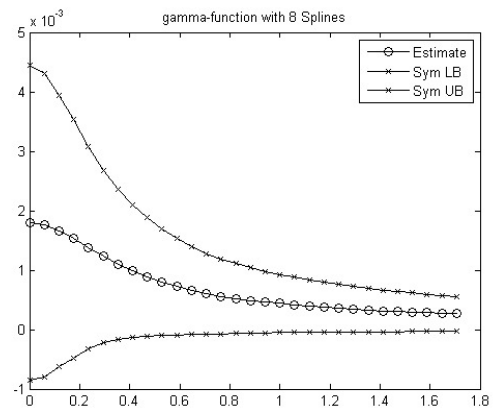
Dynamic spatial interdependence of error-covariance

Figure 7: Democracy Responses to 1SD Positive Shock to Democracy in Egypt

Low

Lower-middle
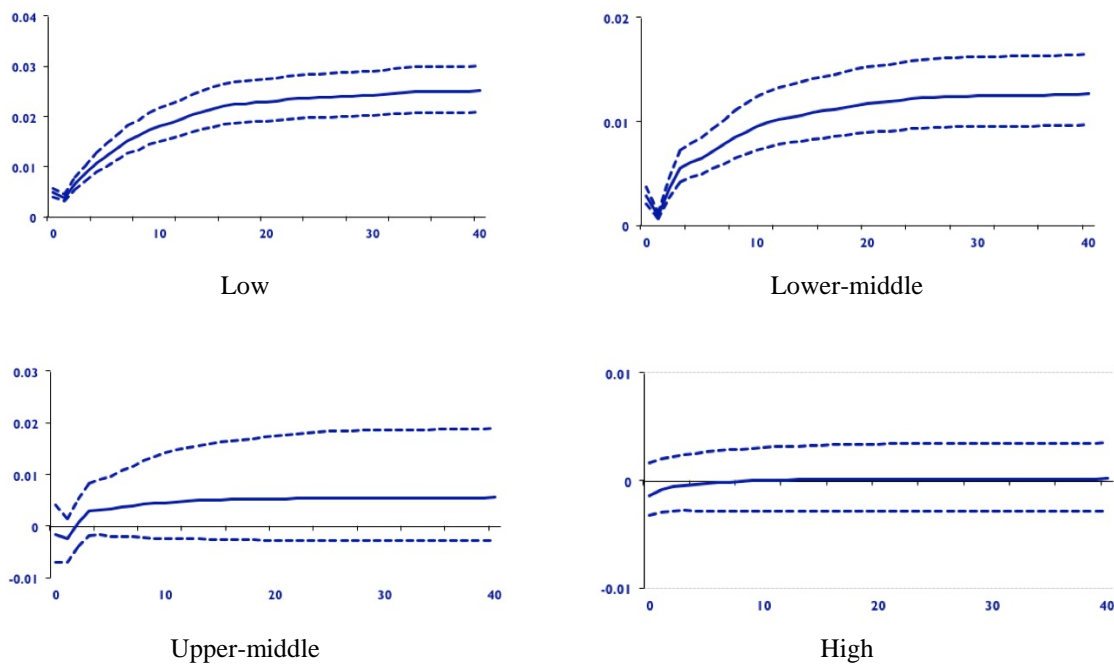
Upper-middle

High

Table 1: Dataset Country Classification According to Income Level

High income	Upper middle	Lower middle	Low income
Bahrain	Algeria	Djibouti	Comoros
Kuwait	Jordan	Iraq	Mauritania
Oman	Lebanon	Morocco	Somalia
Saudi Arabia	Libya	Sudan	
	Tunisia	Egypt*	
		Yemen	

Notes: Country income classification is based on the World Bank 2012 classification. * denotes the reference country in the GVAR model.

Table 2: Democratization Event Chronology

Transition to Democracy	Transition to Autocracy	Regime change	Borderline Democratization episode	Reverse transition
	ALGERIA (1962)	ALGERIA (1992)	Comoros (1990)	Lebanon (1975)
ALGERIA (2004)	BAHRAIN (1972)	ALGERIA (2003)		
COMOROS (1990)	COMOROS (1976)	BAHRAIN (1996)		
COMOROS (1996)	COMOROS (1995)	COMOROS (1998)		
COMOROS (2002)	COMOROS (1999)	DJIBOUTI (1977)		
DJIBOUTI (1999)	DJIBOUTI (1977)	DJIBOUTI (1978)		
MAURITANIA (2007)	EGYPT (1960)	EGYPT (1993)		
	IRAQ (1960)	JORDAN (1970)		
	JORDAN (1960)	JORDAN (1992)		
	KUWAIT (1963)	KUWAIT (1975)		
	KUWAIT (1991)	KUWAIT (1990)		
	LEBANON (1975)	LEBANON (1990)		
	LIBYA (1960)	LIBYA (1962)		
	MAURITANIA (1960)	LIBYA (2004)		
	MOROCCO (1960)	MAURITANIA (1989)		
	OMAN (1960)	MOROCCO (1988)		
	SOMALIA (2000)	MOROCCO (1991)		
	TUNISIA (1960)			
	YEMEN (1990)			

Note: Year of autocratic or democratic episodes as indicated are in brackets.

Table 3: Markov Transition Probabilities for Polity2

	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	2	4	5	6	7	8	9
-10	0.928	0.044	0.015	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-9	0.008	0.919	0.048	0.008	0.000	0.000	0.008	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-8	0.035	0.052	0.845	0.052	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-7	0.007	0.007	0.000	0.931	0.028	0.000	0.007	0.007	0.000	0.000	0.000	0.007	0.007	0.000	0.000	0.000	0.000	0.000
-6	0.017	0.000	0.000	0.017	0.915	0.017	0.000	0.017	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000
-5	0.000	0.000	0.000	0.048	0.048	0.714	0.095	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-4	0.000	0.000	0.000	0.067	0.000	0.067	0.667	0.133	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-3	0.000	0.040	0.000	0.000	0.000	0.040	0.040	0.760	0.040	0.000	0.000	0.040	0.040	0.000	0.000	0.000	0.000	0.000
-2	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.030	0.909	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.889	0.000	0.111	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.909	0.000	0.046	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.091	0.000	0.091	0.000	0.636	0.000	0.091	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.167	0.000	0.000	0.667	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500
	0.000	0.000	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.867	0.067	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.077	0.000	0.000	0.000	0.000	0.000	0.923	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000

Note: The transition probabilities are calculated for all countries as a whole.

Table 4: Spatial Interdependence

	$\hat{\alpha}$	$\hat{\sigma}^2$
Algeria	0.1239	0.0072
Bahrain	0.0756	0.0071
Comoros	-0.2110	0.0021
Djibouti	-0.4673	0.0104
Egypt	0.1701	0.0003
Iraq	-0.1227	0.0664
Jordan	0.3531	0.0045
Kuwait	-0.1590	0.0328
Lebanon	-0.1082	0.0633
Libya	0.0007	0.0141
Mauritania	0.0416	0.0010
Morocco	-0.2305	0.0003
Oman	0.0663	0.0250
Saudi Arabia	-0.1916	0.0195
Somalia	-0.1979	0.0070
Sudan	0.1948	0.0051
Tunisia	-0.0887	0.0000

Note: $\hat{\alpha}$ & $\hat{\sigma}^2$ denote dynamic spatial autocorrelation and dynamic spatial error covariance.

Table 5: Unit-root Test Statistics for Domestic Variables at the 5% Significance Level

Domestic	Critical	HIGH	LOW	LMID	UMID
Rg	-3.24	-1.11	-1.15	-1.65	-0.67
Drg	-2.89	-2.93	-3.2	-4.78	-3.77
polity	-3.45	-3.05	-2.02	-1.66	-2.55
Dpolity	-2.89	-4.49	-4.92	-3.95	-6.71
Op	-3.45	-1.65	-1.66	-1.78	-2.23
Dop	-2.89	-5.44	-4.5	-6.02	-4.04
sc	-3.45	-3.24	-0.91	-3.01	-2.71
Dsc	-2.89	-2.04	-2.43	-1.95	-1.9

Notes: Based on univariate autoregressive specifications, the ADF statistics for the level and first differences of the variables are all computed on the same sample period, namely, 1960-2012. The ADF statistics for all level variables are based on regressions including a linear trend.

Table 6: Unit-Root Test Statistics for Foreign Variables at the 5% Significance Level

Foreign	Critical	HIGH	LOW	LMID	UMID
rgs	-3.45	-1.82	-1.68	-0.48	-4.68
Drgs	-2.89	-4.84	-3.91	-3	-2.98
politys	-3.45	-0.06*	-0.97	-1.24	-0.56
Dpolitys	-2.89	-3.3	-4.07	-5.18	-3.69
ops	-3.45	-2.75	-2.32	-2.51	-2.56
Dops	-2.89	-5.16	-3.97	-3.82	-4.85
scs	-3.45	-3	-3.04	-3.06	-3.27
Dscs	-2.89	-1.89	-2	-1.94	-1.99

Notes: Based on univariate autoregressive specifications, the ADF statistics for the level and first differences of the variables are all computed on the same sample period, namely, 1960-2012. The ADF statistics for all level variables are based on regressions including a linear trend. Besides, the Unit-Root test statistics for the global variable (i.e., oil prices) is â€' 0.134 at -3.24 critical value of 95% confidence level

Table 7: Order and Number of Cointegration Relationships in the Country-Specific Models

	VARX*		2[0]*
Country	*pi*	*qi*	relationships
HIGH	2	1	2
LOW	2	1	2
LMID	2	1	2
UMID	2	1	1

Note: Number of cointegrating relationships

Table 8: F Statistics for Tests of Residual Serial Correlation for Country-Specific VARX*

Country	F critical	rg	polity	op	sc	Poil
HIGH	F(2,37)	3.25	0.9	1.48	1.33	1.52	1.57
LOW	F(2,37)	3.25	2.99	0.58	0.48	1.65	
LMID	F(2,37)	3.25	2.12	0.3	0.11	0.18	
UMID	F(2,38)	3.24	1.85	0.17	6.27*	0.39	

Notes: * denotes statistical significance at the 5% level or less

Table 9: F Statistics for Testing the Weak Exogeneity of the Country-specific Foreign Variables-selected Countries

Country	F test	Fcrit_0.05	rg^*	$polity^*$	op^*	sc^*	$poil^*$
HIGH	F(2,34)	3.28	0.3	0.38	1.09	0.35	1.04
LOW	F(2,34)	3.28	0.41	0.44	0.19	0.33	1.88
LMID	F(2,34)	3.28	0.45	2.09	0.14	1.33	0.14
UMID	F(1,35)	4.12	1.74	0.81	0.66	0.5	4.14

Notes: * denotes statistical significance at the 5% level or less

Table 10: Fixed-Weight Matrix

	LG	AH	OM	JI	GY	RA	OR	UW	EB	IB	AU	OR	MA	AT	AU	OM	UD	YR	UN
ALG	.00	.14	.00	.07	.01	.00	.00	.01	.00	.01	.00	.00	.01	.00	.00	.00	.00	.00	.01
BAH	.37	.00	.01	.11	.03	.01	.02	.02	.01	.02	.01	.01	.02	.01	.01	.01	.01	.01	.02
COM	.01	.02	.00	.03	.03	.01	.01	.02	.01	.01	.03	.01	.03	.01	.01	.01	.01	.03	.26
DJI	.07	.04	.00	.00	.01	.01	.00	.01	.00	.01	.01	.00	.01	.00	.00	.00	.00	.00	.01
EGY	.15	.15	.06	.19	.00	.06	.11	.20	.14	.08	.30	.15	.07	.14	.16	.17	.12	.10	.18
IRA	.03	.04	.01	.04	.03	.00	.23	.05	.02	.22	.02	.02	.01	.01	.03	.02	.12	.16	.03
JOR	.05	.09	.02	.04	.09	.37	.00	.09	.03	.32	.05	.05	.03	.05	.04	.04	.25	.25	.07
KUW	.02	.02	.01	.03	.04	.01	.02	.00	.05	.02	.01	.04	.00	.01	.04	.03	.02	.02	.02
LEB	.01	.01	.00	.01	.02	.00	.01	.04	.00	.01	.05	.05	.00	.03	.12	.05	.01	.01	.01
LIB	.04	.04	.01	.05	.03	.18	.16	.04	.02	.00	.02	.01	.01	.01	.01	.02	.15	.08	.02
MAU	.02	.06	.03	.12	.22	.03	.05	.06	.24	.03	.00	.16	.04	.22	.10	.25	.03	.05	.10
MOR	.01	.01	.00	.00	.04	.01	.01	.05	.08	.00	.04	.00	.01	.07	.19	.09	.01	.01	.02
OMA	.04	.04	.03	.05	.01	.01	.01	.01	.00	.01	.02	.01	.00	.00	.00	.01	.00	.01	.16
QAT	.01	.00	.00	.00	.03	.00	.00	.01	.02	.00	.02	.02	.00	.00	.03	.03	.00	.00	.01
SAU	.00	.02	.00	.00	.04	.02	.01	.08	.17	.01	.04	.19	.00	.13	.00	.08	.01	.02	.02
SOM	.01	.01	.00	.01	.03	.01	.01	.02	.05	.01	.06	.07	.00	.06	.06	.00	.01	.01	.01
SUD	.01	.01	.00	.01	.01	.02	.03	.02	.01	.04	.00	.00	.00	.00	.00	.01	.00	.03	.01
SYR	.02	.03	.03	.01	.04	.14	.16	.07	.02	.10	.03	.02	.01	.01	.03	.03	.11	.00	.05
TUN	.15	.26	.76	.23	.28	.11	.16	.22	.12	.11	.28	.19	.74	.24	.16	.16	.12	.20	.00