An Empirical Descriptive Analysis of the Factors underlying the Role of Younger Generations in Economic, Social Political Changes in Arab Countries

Driouchi, Ahmed and Harkat, Tahar

IEAPS, Al Akhawayn University, Ifrane, Morocco

1 March 2017

An Empirical Descriptive Analysis of the Factors underlying the Role of Younger Generations in Economic, Social & Political Changes in Arab Countries

By: Ahmed Driouchi & Tahar Harkat, IEAPS, Al Akhawayn University, Ifrane, Morocco

Abstract:

This is to provide empirical evidence on the likely roles of knowledge, social networks and Information Technologies (IT) besides governance in shaping the characteristics of the current generation of youth in comparison with the oldest ones. The framework of intergenerational mobility provides promising grounds for the empirical analysis. Series of hypotheses require empirical testing under the above framework. The data are mainly time series from international organizations such as the World Bank, the International Labor Organizations and United Nations. In addition, results from previous studies assessing educational mobility and income are used. Several statistical methods provide the grounds for the testing of the retained hypotheses. The attained results show that the effects of annual demographic growth is not established clearly for all Arab countries as most economies have had immobility in demographic population growth over the period 1960-2015 but the total population of youth in the current generation is higher than the population that prevailed for the older generation. The overall openness of the Arab economies besides their democratization measured by series of indices appear to have been stable over the period 1996-2015. Other results are related to social mobility in income, education attainment and to the unemployment trends. They all show with the progress in ICTs and the increasing reliability on social media, that the current generation has more features that are different from those of the oldest generation.

JEL: J62; I25.

Keywords: Young generations, Arab World, Economic, Social and Political Changes

Introduction

Youngest segments of the population in each economy are known to be the major engine of economic, social and political change. This is confirmed by the continuous historical peaceful and non-peaceful transformations described through human history. Even today and in the future, youth is and will be the major source of social, economic and political changes. The only difference between current and past eras resides in the speed, frequency and directions of societal transformations that are relatively quicker and higher under current generations.

Nowadays, the relatively highest access to knowledge and to Information and Communication Technologies (ICTs) with highest probabilities of belongings to operational and large networks, provide economies of scale and higher cost effectiveness in information gathering and problem solving within higher dimensional sets of solutions backed up by the large network size. This new real and virtual evidence supports the higher potential that is likely to be expressed by current and future generations in comparison with the oldest ones.

But these trends are likely to be varying from one country and to the other and from one group of countries to other regions. There are indeed variations in historical, geographic and cultural endowments and values. This may be affecting the dynamics of change in relation to the importance and characterization of the values owned by the newest and oldest generations.

The latest related research on Arab countries shows that there are specificities for the role and dynamics of the youngest population segment in this part of the world. The latest contribution related to generation gap (Harkat, Driouchi, & Achehboune, 2016) assesses the link between unemployment, education, ICTs variables and their implications on the political stability within Arab economies. Findings indicate that both unemployment and education among youth in Arab countries increase the political instability while this latter is significantly caused by the unemployment. The contribution of Azeng and Yogo (2013) shows similar findings. In addition to that, empirical results indicate that political instability is also related to high socioeconomic inequalities and high corruption. This is the case for many Arab countries such as Jordan, Algeria, Egypt, and Tunisia (Ghafar, 2016).

Recent research shows also the differences in political attitudes towards changes as related to different generations. Findings indicate that the youngest segments in Arab countries do not follow the traditional political participation scheme but use newer and innovative forms of political contribution (Cole, 2015; Quintelier, 2007; Shelley, Thrane, & Shulman, 2004).

This research aims at analyzing the likely characteristics of the youngest population segments in Arab countries with regard to economic, social and political change in comparison with oldest generations. While doing that, it is well understood that the current generation of youth is relatively better endowed with knowledge, higher level of access to information and communication technology in addition to current youth segments that are parts of larger social networks and social media as allowed by the current information and communication technologies. Such facts and trends are first described through descriptive statistics with related tests of hypotheses to underline the on-going evidence about change and allocations.

The objective of this research is to establish and set the empirical evidence for the role of the youngest segments in Arab countries in relation to the characteristics of older generations.

The current paper starts with a literature review. It continues with showing the major hypotheses to be tested empirically before the introduction of the methods and the data. The paper ends with the presentation of the results and with the discussion of the major attainments.

I. Literature Review

Research on generations has been focusing on youngest segments as to understand the determinants associated with their decisions and to predict their behavior (Harkat, Driouchi, Achehboune, 2016). Cole (2015) defines the generation Y, or Millennials, in Arab economies as different from all the previous generations due to massive usage of information and communication technologies (ICTs) among this segment. Due to the availability and easiness for accessing these ICTs, youth nowadays are more connected in social networks. In the case of Tunisia, Facebook users doubled in a period of two years to reach 10 million people in 2008. This is also the case for Egypt, Libya, and other countries.

For Arab countries, Binzel and Carvalho (2015), Binzel (2011), Ragui, Krafft, Roemer, and Salehi-Isfahani, (2016), Ragui and Saleh (2013) in addition to Salehi-Isfahan, Belhaj-Hassine, and Ragui, (2014) have contributions related to different dimensions of the social context of Arab countries. But, the papers of Driouchi and Gamar (2016) and Driouchi and Harkat (2016) are directly related to this current research as they assess intergenerational mobility and inequalities in educational attainment and income in Arab countries. The attained results in the latter papers, indicate the large discrepancies that Arab countries face between high educational attainment, low income mobility and high unemployment.

In addition to that, other research (Driouchi and Gamar, 2014) indicates the increasing trend in knowledge among youth in Arab economies while assessing the relationship between the social context and the enterprise creation. The level of enterprise creation in Arab countries is very low and has a direct negative impact on the unemployment. This also aligns with the contribution of Driouchi (2015) related to the threats of unemployment and skills obsolescence for the qualified labor among the youngest segment. The results indicate that the youngest segments in Arab countries face the challenges of the lack of prospective policies and low level of job creation. Driouchi and Malki (2011) show the tragedy of anti-commons in enterprise creation of the Arab countries that directly relate to the generation Y, as it limits the creation of job opportunities, development, and expansion of the economies.

Salehi-Isfahan (2015) updates the earlier literature on youth transitions based on the evidence on inequality of opportunity. Salehi-Isfahan, Belhaj-Hassine, and Ragui, (2014) have ensured the first empirical investigation of inequality of education opportunities in the Middle East and North Africa (MENA) based on data from tests administered by the international consortium Trends In Mathematics and Science Study (TIMSS) for a number of countries and over time since 1999. Ragui & Saleh (2013) examine the effect of increased local supply of schooling on intergenerational mobility in education in Jordan using a unique data set that links individual data on own schooling and parents' schooling for adults, from a household survey, with the supply of schooling in the sub-district of birth, from Jordanian Ministry of Education data. Chusseau, Hellier and Ben-Halima (2012) review the literature on the impacts of several dimensions of education on intergenerational inequality persistence. Ramadan, Hlasny, and Intini, (2015) find that inequality is high and growing across the Arab region. The empirical evidence gathered shows that this process is already started in most economies of the Arab region, but needs to be further supported to ensure economic and social mobility with the quality of the human resources required for growth and development. Different authors such as Sika (2011), Bibi and Nabli, (2010) have devoted research to the situation of Arab countries.

With regards to the political change within economies, many historians and economist shed lights on the importance of the youth and the social media in the Arab Spring. Many has argued to innovative political implications of the youth that were not made the traditional way such as the case of the anti-government young people in Tunisia back in 2011 (Cole, 2015). The traits of this new generation vary from the previous ones, as this new generation is driven by self-interest. This implies the change of reforms initiated by young people due to the threats of the macroeconomic variables (Harkat, Driouchi, Achehboune, 2016).

II. Research Hypotheses

Series of hypotheses could be formulated and submitted to empirical tests. The possible hypotheses are:

4.1: The demographic hypothesis: The basic hypothesis is that there is no change throughout generations, in demographic profiles by opposition to change in the youngest segments of the population. Under the null hypothesis, demography is not the driver of change but there are other factors that are emphasized in the other following hypotheses.

4.2: The democratization hypothesis: Through time, the rate of democratization could be tested to be stagnating or increasing. This allows for the understanding of social, economic and political change in relation to democratization. Sub-indices such introduced by Kaufmann (World Bank) could be also supporting series of sub-hypotheses related to governance and corruption.

4.3: The external attractiveness hypothesis: This hypothesis tests for the migration drivers as being from the enhanced economic situation of the destination countries. Countries indicators in the World Bank will support testing for the relationship between the migration process, job opportunities, and macroeconomic variables.

4.4: The generational knowledge hypothesis: Here different measures of knowledge could be used to help test any change in knowledge in relation to economic, social and political change. Educational attainment can be also a way for testing the role of knowledge. Previous research results can be used.

4.5: The Information & Communication Technologies and generational change: The availability, access and use of ICTs are among the factors that enhance communication. This includes computers, software and telecommunications means.

4.6: The social media and networking hypothesis: ICTs and mainly communicating means allow exchange of data and information. They also allow quick consultations for individual and groups. Larger networks allow for richer communication and exchange possibilities. They can also provide higher and better quality decisions.

4.7: The unemployment issue and the lower share of employed skilled labor.

III. Methods and Data

Based on the hypotheses to be tested, series of variables appear to be critical for this research. The variables include the demographics of youth, the knowledge and education variables in addition to ICT related variables (access and use) with their related social media and networks. In addition, macroeconomic variables such as unemployment and economic growth are mobilized. Descriptive statistical analysis is conducted overall the hypotheses retained. Time series analysis is also applied for time series data where each series is divided into two subseries to capture at least two generations that are the new and the old. Regression analysis is also used to finalize the testing of some hypotheses.

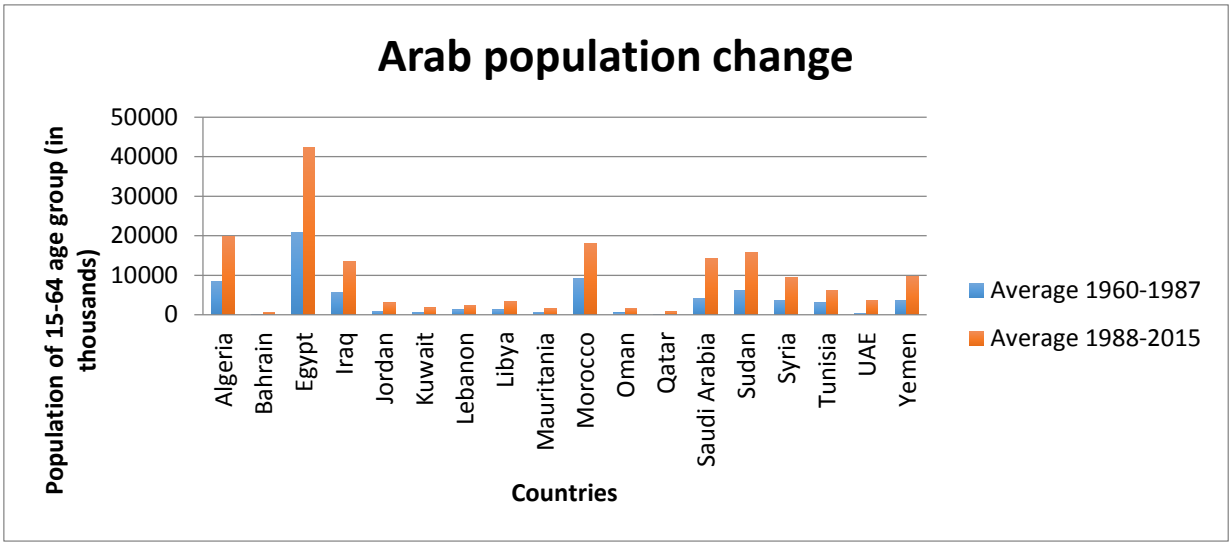
The sources of data include World Bank, UNESCO and ILO databases. These sources provide also macroeconomic variables. Other sources of secondary data are also used to account for the needed length and relevance of each time series. The World Population Data sheet is highlighting data related to Unemployment of ages 15-24 covering the period of 2005-2010 and labor force participation rate for ages 15-24 in 2010 with gender rates clarifications.

IV. Results and Discussion

The results to be attained will allow for the understanding of the dynamics of social, economic and political changes under the lens of intergenerational mobility in series of resources such as education and networking as permitted by information and communication technologies.

4.1: The demographic hypothesis: The basic hypothesis is that there is no change throughout generations, in demographic profiles by opposition to change in the youngest segments of the population. Under the alternative hypothesis, demography is the driver of change but there are other factors that are emphasized in the other following hypotheses. According to the Arab Human Development Report (UNDP, 2016), the demographic fact is that the current youth generation is the largest youth cohort this region has had over the past 50 years, making up 30% of its population of 370 million.

Figure 1: Arab population change for the 15-64 age group.



As to test for the population change, the population of the group age between 15 and 64 years old for Arab economies was collected from the World Bank of the period between 1960 and 2015. The data is divided into two main generations in which each generation covers 27 years. The first generation, or G_0, is between 1960 and 1987, and the second generation, or G_1, is between 1988 and 2015. Figure 1 shows the average age of each generation for each of the Arab countries and indicates that the population change in all the Arab economies at least doubled with the highest increase in the United Arab Emirates, followed by Qatar, Bahrain, and Oman, with the multipliers of 8.00, 5.82, 2.68, and 2.42, respectively. This implies that the newer generation exhibits higher level of population than the previous one.

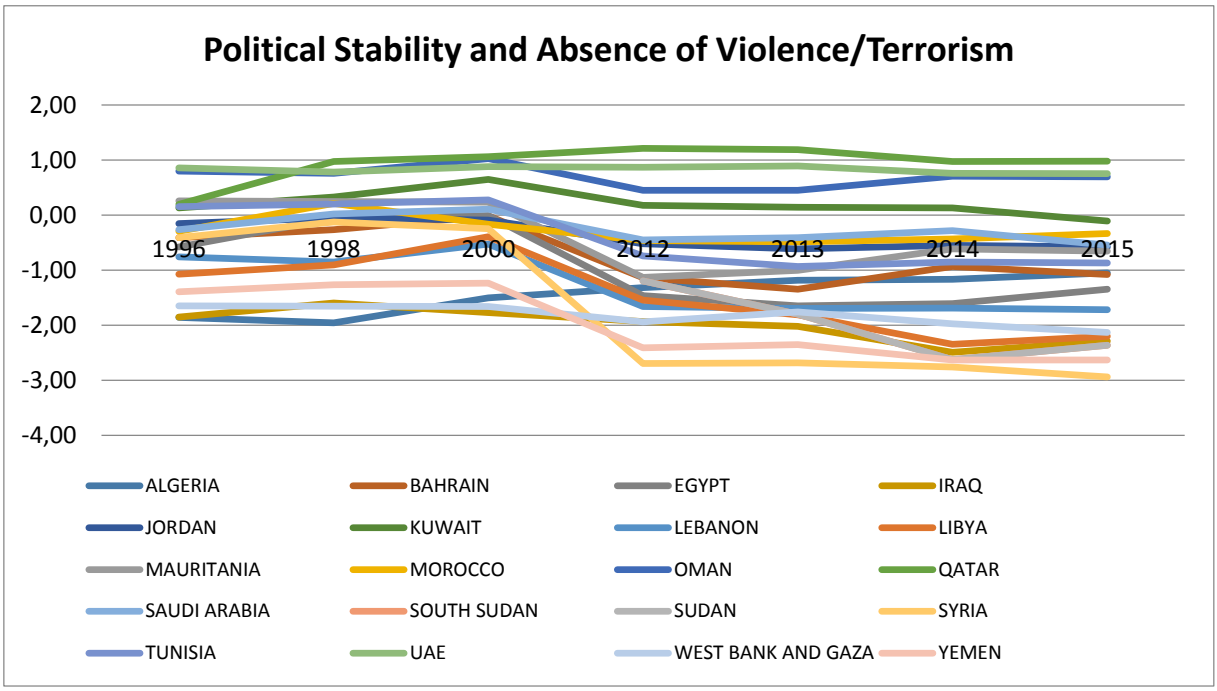
4.2: The democratization hypothesis and change: Through time, the rate of democratization could be tested to be stagnating or increasing. This allows for the understanding of social, economic and political change in relation to democratization. Sub-indices such introduced by Kaufmann (World Bank) could be also supporting series of sub-hypotheses related to governance and corruption.

The data related to governance measures was collected from the World Bank and account for 5 main variables that are: political stability and absence of violence/ terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. The data is available for the years 1996, 1998, 2000, 2012, 2013, 2014, and 2015. The Worldwide Governance Indicators (WGI) is an index that summarizes its composites to show views on the governance quality of more than 200 economies from surveys of households and firms, commercial business information providers, non-governmental organizations, and public sector

organizations. The aggregate WGI indicators have values that range between -2.5 and 2.5, or from lower to better governance.

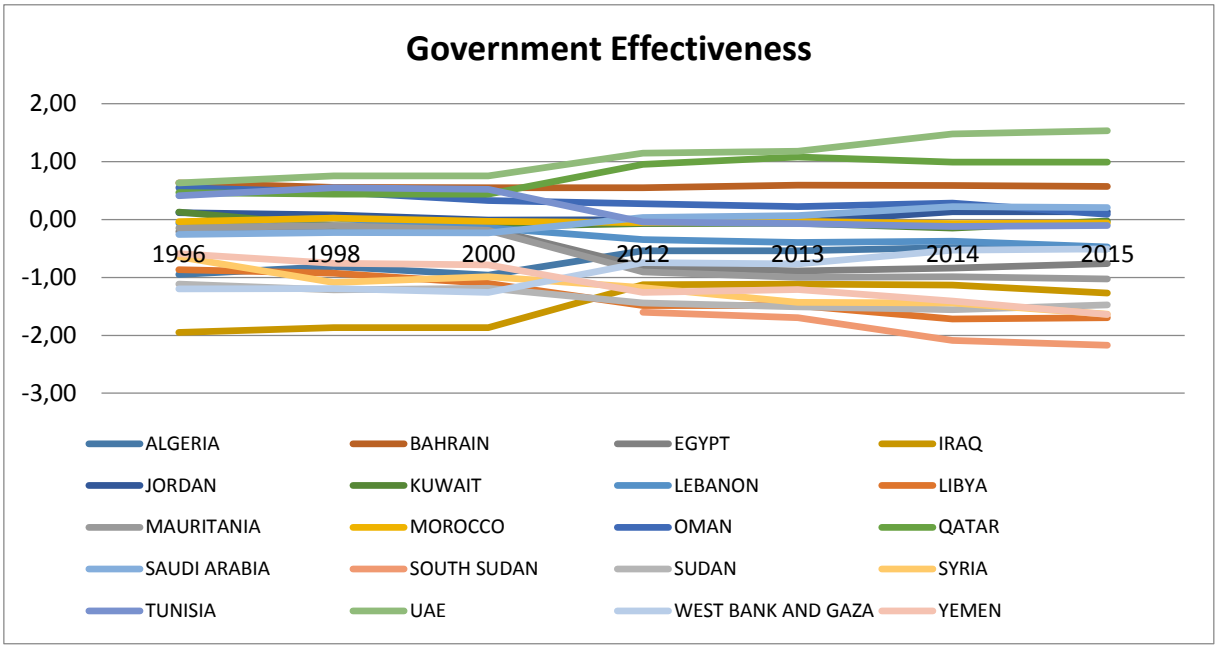
The descriptive analysis show that most of the indicators express stationary processes over the period 1996-2015 and that no major changes are exhibited by the governance indicators. The results are shown below for each index respectively.

Figure 2: Political Stability and Absence of Violence/ Terrorism in the Arab Countries



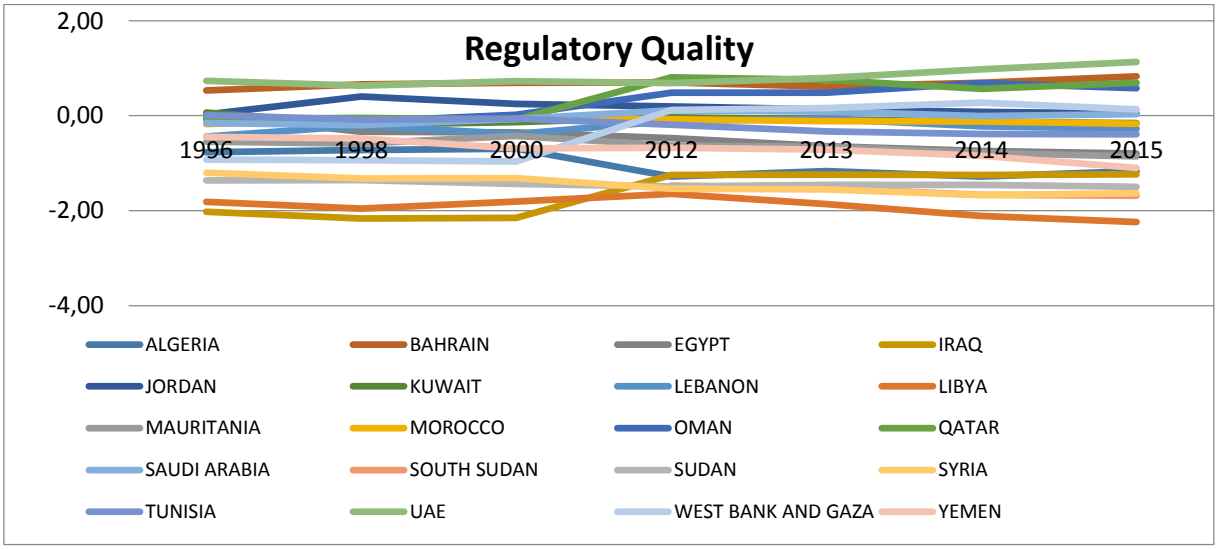
Concerning the political stability and absence of violence or terrorism, it is an estimation of the likelihood that the government will be destabilized by violent means, including political terrorism or any other unconstitutional means. For this measure, only Algeria, Qatar, and Sudan indicate an increasing pattern while Sudan account for low values in which the highest is -2.17. Kuwait, Oman, and the United Arab Emirates show a relatively stable pattern. For all the remaining Arab economies, they illustrate a decreasing trend, meaning that these economies tend to more political instability and an increase in the violence and terrorism.

Figure 3: Government Effectiveness in the Arab World



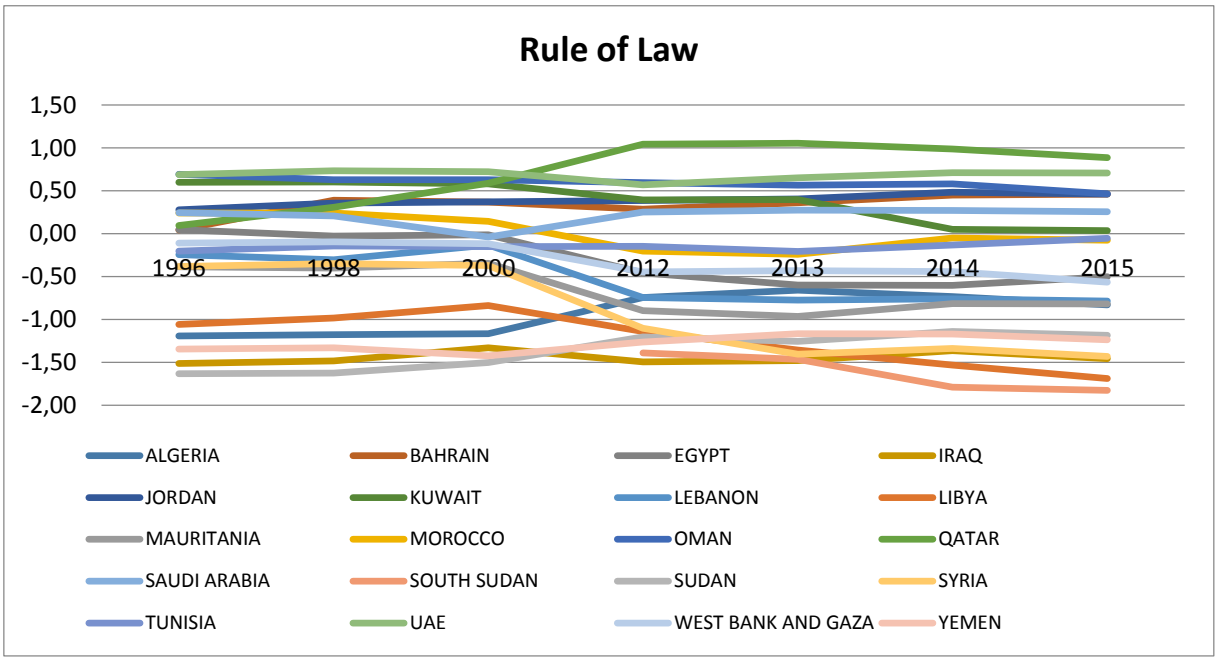
With regard to the government effectiveness measure, it gives incentives on the relationship between the quality of both the public and civil services. This measure also shows the relationship between these latter variables and the political pressure. In addition to that, this indicator shows the formulation, implementation, and commitment of the governments to policies. Qatar, Saudi Arabia, United Arab Emirates, Algeria, Iraq, and Palestine indicate an increasing patter with negative value for the three latter countries. For Bahrain, Jordan, and Libya, they show a stable patter while for all the other remaining countries they indicate a decreasing pattern.

Figure 4: Regulatory Quality in Arab Countries.



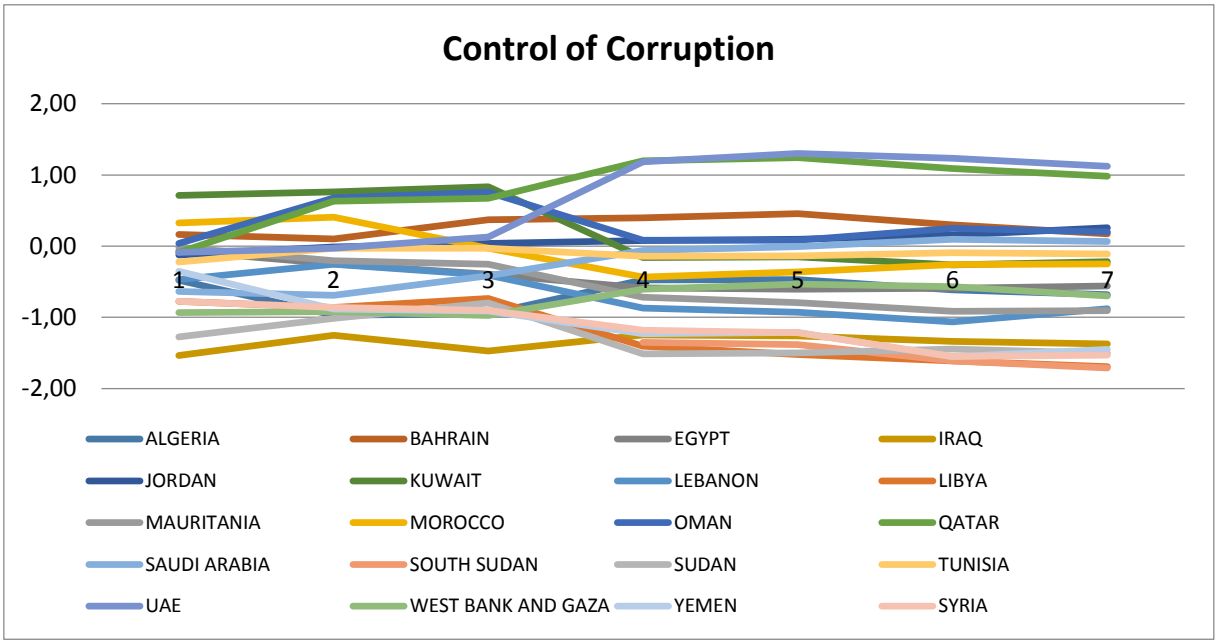
The regulatory quality summarizes the ability of a government to support private sector development by updating, formulating and implementing new laws and regulations. The regulatory quality in the Arab countries indicate an increasing trend for Bahrain, Iraq, Lebanon, Oman, Qatar, Saudi Arabia, United Arab Emirates, and Palestine, and a stable pattern for Jordan and Morocco. Decreasing patterns are noticed in all the remaining countries.

Figure 5: Rule of law in Arab countries.



The rule of law indicator summarizes many components that concern the level of confidence in regulatory authorities such as the police, property rights, and the courts. It also shows the level of crime within economies. This indicator shows increasing trends for Algeria, Bahrain, Jordan, Qatar, and Sudan, and shows stable patterns for Iraq, Oman, Saudi Arabia, Tunisia, and the United Arab Emirates. All the remaining Arab countries indicate decreasing trends.

Figure 6: Control of corruption in Arab countries.



The control of corruption indicates the power exercised by the public sector on private gains. This indicator shows increasing patterns for Jordan, Oman, Qatar, Saudi Arabia, and the United Arab Emirates, and indicates stable patterns for Bahrain, Iraq, Tunisia, and Palestine.

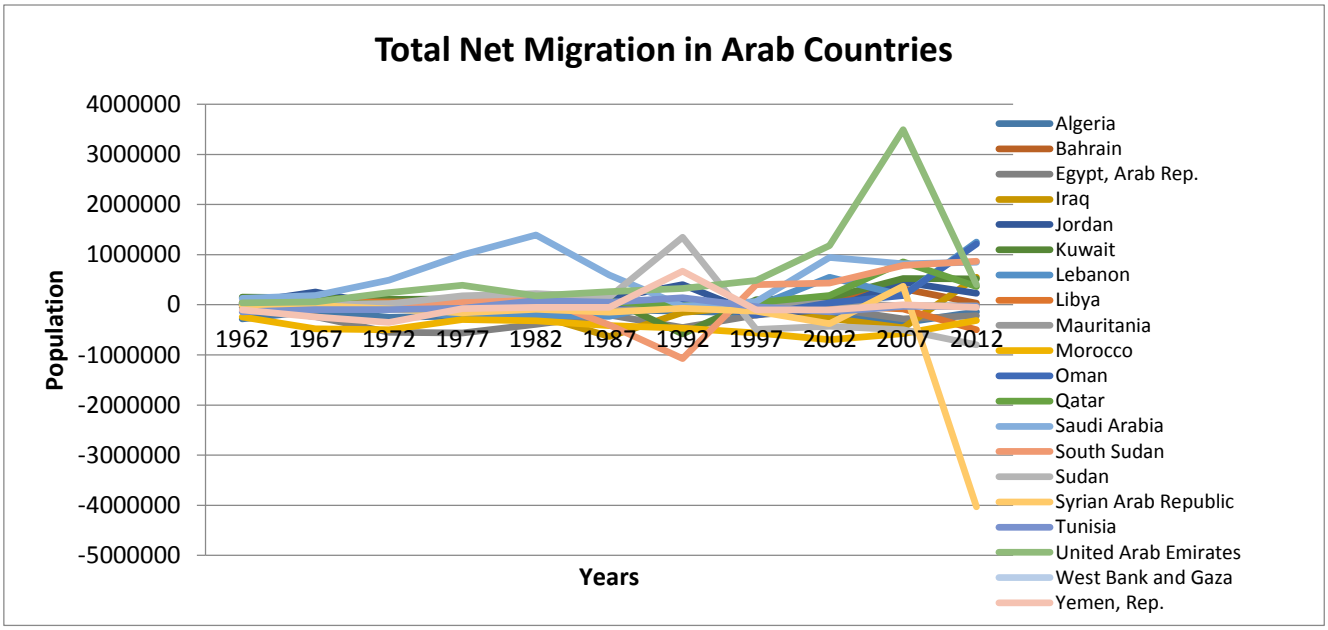
4.3: Attractiveness of outside models of change with emphasis on net migration: This hypothesis tests for the migration drivers as being from the enhanced economic situation of the destination countries. Countries indicators in the World Bank will support testing for the relationship between the migration process, job opportunities, and macroeconomic variables.

In order to test for the migration through generations in Arab countries the net migration variables is used. The net migration accounts for the total number of immigrants minus the number of emigrants, meaning the inflow minus the outflow of both citizens and non-citizens. The data is extracted from the World Bank and is based on each five years estimate for the period between 1962 and 2012. A negative value of the net migration implies that citizens are leaving their home countries to other destination countries, while the opposite implies that the country attracts individuals.

Figure 7 indicates that Algeria, Egypt, Mauritania, Morocco, Sudan, Syria, Tunisia, Palestine, and Yemen have negative values, which indicate that the citizens of these countries have high tendencies to emigrate to other host countries and implies the outflow of the skilled labor. All the remaining variables have positive net migration values.

Figure 7 shows the trends of the net migration of the Arab countries. Increasing patterns implies that the inflow of citizens is increasing within the concerned economies, and decreasing patterns indicate the opposite. Countries with increasing trends are: Algeria, Bahrain, Jordan, Oman, Qatar, Saudi Arabia, South Sudan, United Arab Emirates, Iraq since 1987, Kuwait since 1992, Lebanon since 1997, and Tunisia since 2002. All the remaining economies have negative trends with major fluctuations.

Figure 7: Net migration in Arab countries.



In order to understand the migration change among Arab generations, a regression analysis was performed. Since the data is per five years, an assumption of a similar pattern or value for each of the following four years has been made. Thus, the data was separated into two main generations: G_{old}, which is the generation between the years 1960 and 1987, and G_{new}, which is the generation between 1988 and 2015.

The regression model is given as:

$$G_{old} = \alpha + \beta G_{new} + \varepsilon$$

Where:

α: is the intercept;

β: is the coefficient;

ε: is the standard error.

The R-squared of all the models ranges between the values of 0.001 and 0.501. Table 1 summarizes all these model results.

Table 1: Regression results of migration in Arab countries

Country	R-squared	Intercept	Coefficient
Algeria	0.039	-228 928.59 (-6.301)	-0.182 (-1.031)
Bahrain	0.439	-439.65 (-0.114)	0.118 (4.519)
Egypt	0.267	-539 749.47 (-7.116)	-0.874 (-3.079)
Iraq	0.316	-105 466.00 (-4.506)	-0.207 (-3.469)
Jordan	0.001	55 548.94 (2.195)	-0.014 (-0.159)
Kuwait	0.501	128 610.10 (41.118)	-0.041 (-5.108)
Lebanon	0.302	-64 136.48 (-2.875)	-0.138 (-3.351)
Libya	0.215	55 226.55 (10.848)	-0.070 (-2.668)
Mauritania	0.017	-7 437.16 (-5.456)	0.042 (0.672)
Morocco	0.129	-201 534.46 (-2.439)	0.306 (1.958)
Oman	0.216	21 672.56 (2.947)	0.042 (2.679)
Qatar	0.292	25 872.05 (3.979)	0.054 (3.272)
Saudi Arabia	0.456	168 294.02 (1.457)	0.820 (4.667)
South Sudan	0.042	22 755.92 (1.162)	0.029 (1.064)
Sudan	0.330	72 532.49 (4.755)	-0.074 (-3.579)
Syria	0.033	-66 519.60 (-5.709)	0.007 (0.945)
Tunisia	0.104	-68 920.81 (-4.617)	-0.291 (-1.734)
UAE	0.389	99 092.78 (3.671)	0.069 (4.068)
Yemen	0.006	-158 172.81 (-6.959)	0.031 (0.396)

Table 1 shows the regression results of the net migration of the old generation versus the new generation. The coefficient of Algeria, Jordan, Mauritania, Morocco, South Sudan,

Syria, Tunisia, and Yemen are not significant. This means that there is no significant relationship among the behavior of previous generations and newer ones in the Arab economies, and this is explained by the fluctuation shown in Figure 7.

Arab economies that have a positive and significant trend are Bahrain, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. All of these latter countries indicate a similar positive trend of net migration between older and newer generations. For countries that have negative and significant coefficients indicate a negative relationship of net migration between older and newer generations, and are divided into two main categories. The firs category relates to countries in which older generations have an increasing net migration trend while the newer generations indicate the opposite. These countries are Egypt, Libya, and Sudan. For Iraq, Kuwait, and Lebanon, older generations shows a decreasing net migration patterns while newer generations shows increasing patterns.

4.4: The Intergenerational gaps in income, unemployment and educational attainments

This part is taken from previous contributions of Driouchi (2016) and Harkat and Driouchi (2016). The following tables are thus extracted from the results of these previous contributions.

4.4.1: Income Mobility: This respectively measured by per capita GDP, GNP and by the adjusted net national income.

4.4.1.1: Intergenerational economic mobility measured by per capita GDP (constant 2005 US dollars) for Arab countries

Countries such as Morocco, Tunisia and Libya appear to be exhibiting higher elasticity in relation to intergenerational economic mobility. This shows a high level of intergenerational immobility with respect to GDP per capita. All the other Arab countries show lower elasticity implying higher mobility throughout generations**.**

Table 2: Intergenerational economic mobility measured by per capita GDP (constant 2005 US dollars) for Arab countries

				tcritical		
Countries	Coefficient	t-statistic	N	0.05	0.01	
Algeria	0.3282	4.8179	30	1.697	2.457	***
Bahrain	-0.2269	-4.9613	21	1.721	2.518	**
Egypt	0.7203	25.6032	30	1.697	2.457	***
Iraq	0.4138	2.0939	30	1.697	2.457	***

Jordan	-0.2408	-1.0474	30	1.697	2.457	NS
Kuwait	-0.4230	-1.5900	15	1.753	2.602	NS
Lebanon	0.2099	1.3057	20	1.725	2.528	NS
Libya	-1.9312	-3.0007	10	1.812	2.764	*
Mauritania	-0.1655	-1.0866	30	1.697	2.457	NS
Morocco	0.9403	14.6829	30	1.697	2.457	***
Oman	0.0947	8.3406	30	1.697	2.457	***
Qatar	0.4407	2.0843	10	1.812	2.764	***
Saudi Arabia	-0.1951	-2.1746	30	1.697	2.457	**
Sudan	-0.4804	-0.7625	30	1.697	2.457	NS
Syria	0.3404	6.7835	30	1.697	2.457	***
Tunisia	0.8947	11.9229	30	1.697	2.457	***
UAE	0.5133	2.7617	30	1.697	2.457	***
West Bank	0.2616	2.5118	15	1.753	2.602	***
Yemen	-0.0149	-0.0572	15	1.753	2.602	NS

Notes

***School attainment of children related to that of parents with statistically significant elasticity that is less than one. This is a stationary process at the given level of significance. There are countries that have low elasticity such as Oman and Lebanon. This means that the white noise is the most important driver of mobility. But, Morocco has a coefficient that is close to one implying that this close to a random walk process.

**Coefficient negative and less than one the process depends negatively on past but it is covariance stationary

*This is an evolutionary process but with oscillations (negative value) in the case of Libya.

NS: the coefficients are statistically non-significant implying that the process is only a while noise.

4.4.1.2: Intergenerational economic mobility measured by GNI per capita (constant 2005 US$) for Arab Countries

When using GNI per capita, Egypt and Morocco and Sudan, appear to be showing with high statistical significance, higher elasticity as a signal of immobility of the economic status across generations. The other few countries left have elasticity estimate not statistically different from zero. This means that the estimates attained indicate that the economic status of newer generations is mainly driver by a while noise and no link could be established with the economic situation of the older generation.

Table 3: Intergenerational economic mobility measured by GNI per capita (constant 2005 US$) for Arab Countries

Countries	Coefficient	t-statistics	N	tcritical	
				5%	1%
Algeria	0.1093	1.0568	30	1.697	2.4457
Egypt	1.4356**	29.4765	30	1.697	2.4457
Jordan	-0.0981	-0.2927	30	1.697	2.4457
Lebanon	-0.1549	-0.2454	15	1.753	2.6020
Morocco	1.7220**	15.8550	30	1.697	2.4457
Sudan	-1.2729	-1.6255	30	1.697	2.4457

4.4.1.3: Intergenerational economic mobility measured by the adjusted net national income per capita (current US$) for Arab countries

When attempting the use of the adjusted net national income per capita, it appears that Bahrain, Egypt, Morocco, Tunisia, Oman, Qatar and Yemen have higher immobility in economic intergenerational transfers.

Table 4: Intergenerational economic mobility measured by the adjusted net national income per capita (current US$) for Arab countries

Countries	Coefficient	t-statistics	N	t-critical	
				5%	1%
Algeria	0.3862	1.2407	25	1.708	2.485
Bahrain	1.2191**	10.1332	25	1.708	2.485
Egypt	3.3073**	6.8418	25	1.708	2.485
Jordan	0.4450	0.9975	25	1.708	2.485
Kuwait	0.2330	0.4319	25	1.708	2.485
Lebanon	0.7473**	3.6205	20	1.725	2.528
Mauritania	0.4095**	3.7975	30	1.697	2.457
Morocco	1.7043**	8.7444	30	1.697	2.457
Oman	1.3290**	4.4388	30	1.697	2.457
Qatar	1.0394*	1.7620	30	1.697	2.457
Saudi Arabia	0.0947	0.3166	30	1.697	2.457
Syria	-0.3744*	-2.3672	30	1.697	2.457
Tunisia	1.7313**	14.5837	30	1.697	2.457
Yemen	1.1814**	5.5450	20	1.725	2.528

4.4.2: Elasticity for intergenerational mobility in educational attainment

All Arab countries appear to have estimated elasticity that is highly statistically significant and below one at the exception of Mauritania where the estimated coefficient is

around one. This implies that all countries except Mauritania exhibit higher mobility for educational attainment meaning that new generations are enjoying higher attainment compared to the older ones. Mauritania appears to be at the limit as it has lower mobility in educational attainment.

Table 5: Elasticity for intergenerational mobility in educational attainment in Arab countries

Country	Independent	R^2	Obsevations
Algeria	0.6429 (4.5721)	0.7491	10
Bahrain	0.3778 (5.8349)	0.8295	10
Egypt	0.7496 (7.2206)	0.8816	10
Iraq	0.5099 (14.4771)	0.9677	10
Jordan	0.6916 (17.7490)	0.9783	10
Kuwait	0.4856 (5.8311)	0.8293	10
Libya	0.5952 (8.1222)	0.9040	10
Mauritania	1.0514 (13.8059)	0.9646	10
Morocco	0.6699 (17.8472)	0.9785	10
Qatar	0.5902 (11.9104)	0.9530	10
Saudi Arabia	0.7800 (9.7937)	0.9320	10
Syria	0.5663 (7.6956)	0.8943	10
Sudan	0.7779 (8.2241)	0.9062	10

Tunisia	0.6551 (12.3391)	0.9560	10
UAE	0.6991 (13.4366)	0.9627	10
Yemen	0.9469 (4.5720)	0.7491	10

(all estimated coefficients statistically highly significant)

4.4.3. Unemployment Processes

Most Arab countries have unemployment rate processes that are non-stationary with estimated autoregressive of order one (AR,1) process and with coefficient higher or equal to 1. These countries include Bahrain, Qatar, Oman, Kuwait and UAE but all have low unemployment average rate. Saudi Arabia with a low unemployment rate shows a stationary process for unemployment rate. Other countries such as Egypt, Libya, Mauritania, Sudan and Yemen do show explosive pattern for their unemployment rates. But Algeria, Iraq, Morocco, Tunisia and West Bank/Gaza exhibit very high unemployment rates.

Table 6: Unemployment Processes in Arab Countries

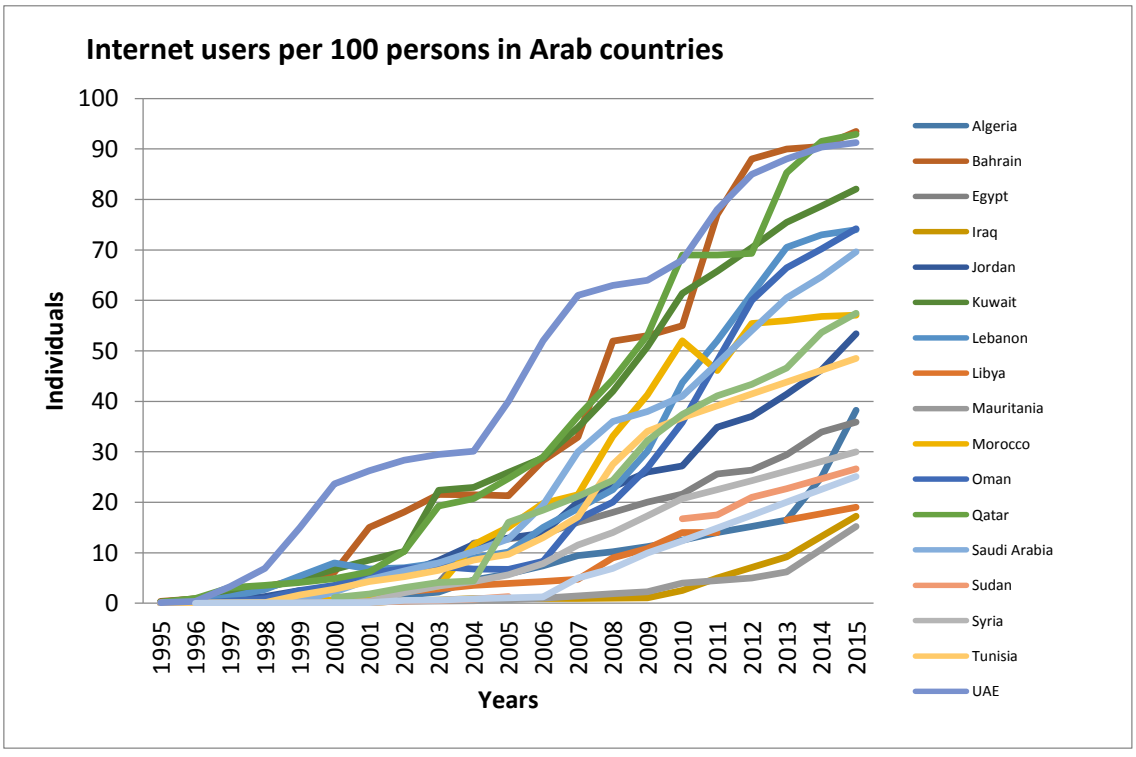
Country	AR(1) coefficient	Stationarity	Average rate unemployment	Observations on unemployment
Algeria	0.98	Stationary	19.72	Very high
Bahrain	1.00	Non	7.11	Low
Egypt	1.01	Non	10.04	Exploding
Iraq	0.98	Stationary	18.71	Very high
Jordan	0.99	Stationary	14.30	High
Kuwait	1.03	Non	1.44	Low
Lebanon	0.98	Stationary	7.71	High
Libya	1.00	Non	19.52	Exploding
Mauritania	1.00	Non	21.87	Exploding
Morocco	0.98	Stationary	10.94	Very high
Oman	1.00	Non	7.99	High
Qatar	0.99	Stationary	0.60	Low
Saudi Ar.	0.99	Stationary	5.55	Low

Sudan	1.00	Stationary	14.98	Exploding
Syria	0.99	Stationary	9.32	High
Tunisia	0.99	Stationary	14.74	Very high
UAE	1.00	Non	3.17	Low
West Bank/Gaza	0.99	Stationary	22.73	Very high
Yemen	1.00	Non	14.75	Exploding

4.5: The Information & Communication Technologies and Social Media: The availability and access to ICTs are among the factors that enhance knowledge ownership with possibilities of quicker transformations. This includes computers, software and telecommunications means.

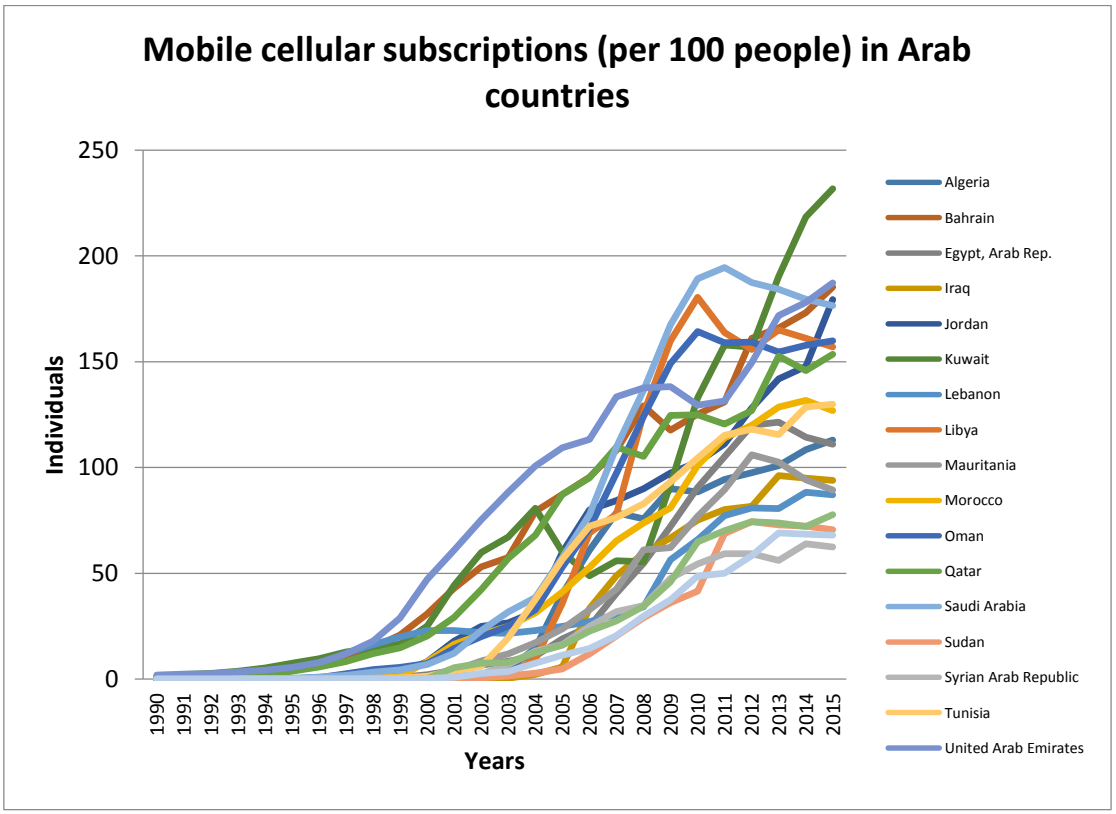
In order to assess the usage of ICTs and social media in the Arab countries, data is extracted from the World Bank and accounts for both the percentage of use of Internet and the percentage of cellular mobile subscriptions in Arab countries. The data is of the period between 1990 and 2015. Figure 8 shows the trends of Internet usage. All Arab countries have increasing patterns with the highest values in Bahrain, Qatar, and the United Arab Emirates, and the lowest values in Mauritania, Iraq, and Libya.

Figure 8: Internet users per 100 individuals in Arab countries



With regards to the cellular mobile subscriptions, all Arab countries indicate increasing trends, with the highest values for Kuwait, United Arab Emirates and Jordan, and with the lowest values for Syria, Yemen, and Sudan.

Figure 9: Mobile cellular subscription per 100 individuals in Arab countries



Concerning the social media in the Arab countries, the Dubai School of Government's Governance and Innovation Program gathers data in all the 22 Arab countries. The data gives quantitative information about Facebook penetration rate, number of Facebook users, Twitter penetration rate, number of active users of Twitter, LinkedIn penetration rate, and LinkedIn number of users. The data covers the period between 2010 and 2012 for the first two variables, and the period between 2012 and 2013 for the remaining variables.

Figures 8 and 9 show the penetration rate of both Facebook and Twitter. It is noticeable that most of individuals in Arab countries tend to use more Facebook than Twitter as the highest penetration rate for this latter social media accounts for 7.6% in comparison to 28% for Facebook.

The number of individuals using social media is increasing each year in all Arab countries, with the highest number of Facebook users in Egypt, Algeria, and Saudi Arabia, and

with the lowest values in Syria, Sudan, and Morocco. Concerning Twitter, it has the highest number of active users in Saudi Arabia, Egypt, and the United Arab Emirates, and the lowest values in Mauritania.

Figure 10: Facebook Penetration in Arab countries

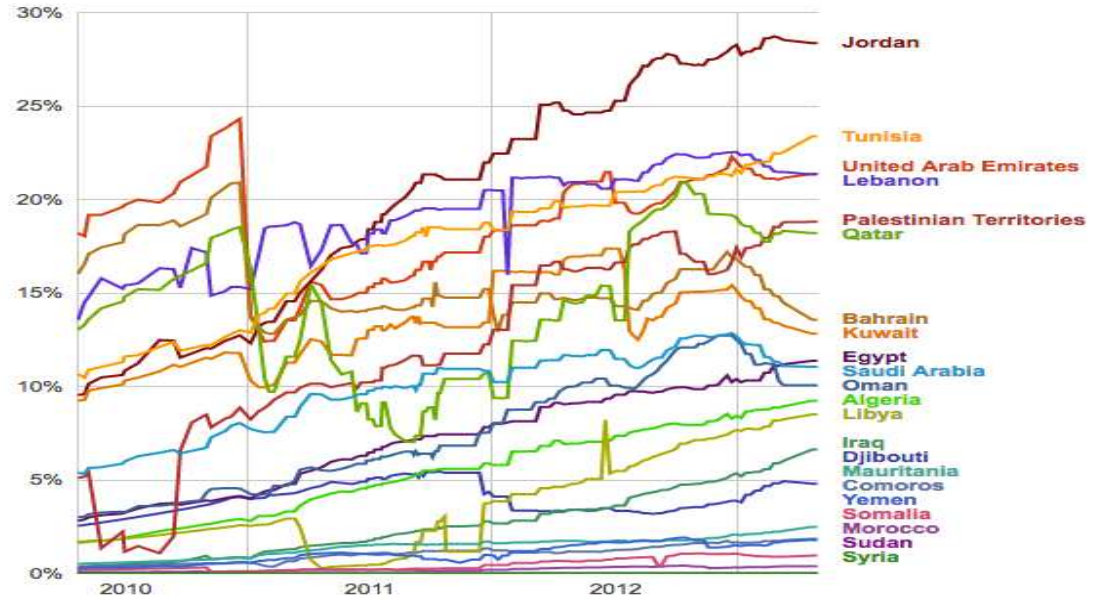


Figure 11: Number of Facebook Users in Arab countries:

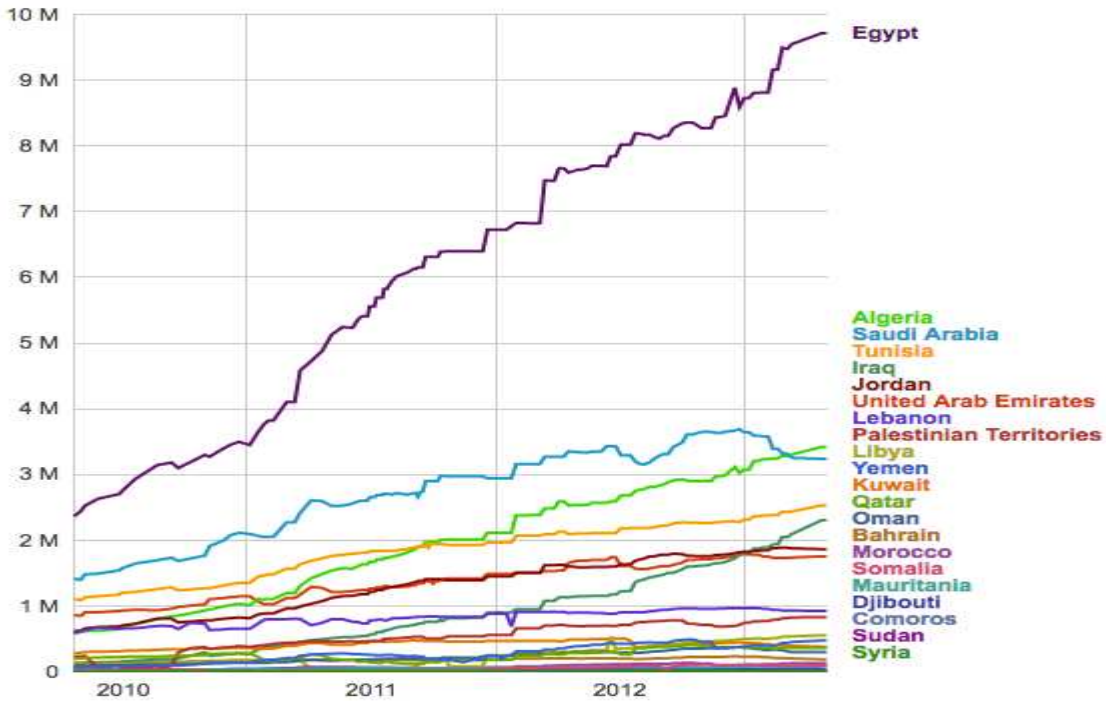


Figure 12: Twitter Penetration in Arab countries:

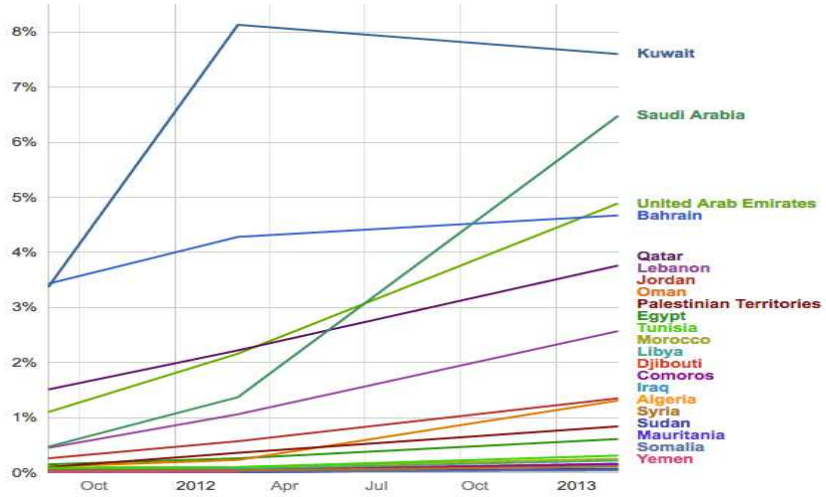
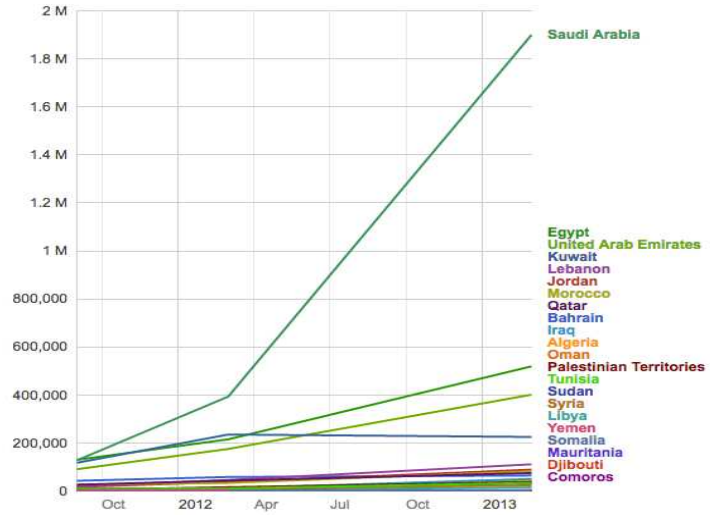


Figure 13: Number of active users in Twitter:



Nowadays, Arab economies are also using social media for professional use. LinkedIn for instance, which is a platform for job matching between employees and employers, have increasing trends regarding the penetration rate. The highest value for this latter variable is in United Arab Emirates, Qatar, and Bahrain, but the highest number of users is in United Arab Emirates, Saudi Arabia, and Egypt (Figures 14 & 15). The lowest values are in Tunisia, Morocco, and Algeria (Figure 14).

Figure 14: LinkedIn Penetration in Arab countries:

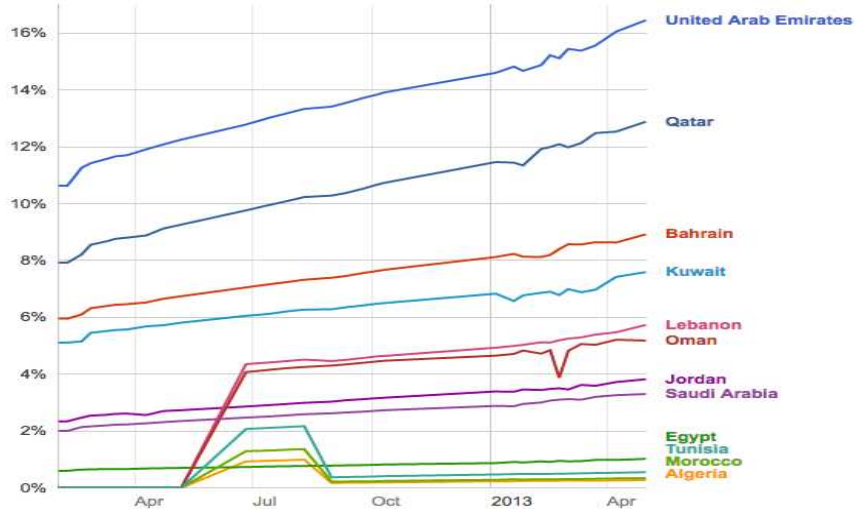
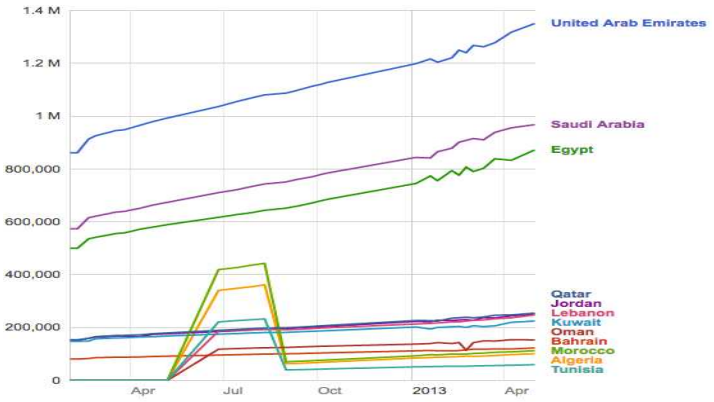


Figure 15: Number of LinkedIn users in Arab countries:



The social media and networking hypothesis with intensive use of ICTs and mainly communicating means allow for more exchange of data and information. They also allow quick consultations for individual and collective decisions. This assumes that current generations are more connected locally and globally compared to their parents.

Different topics related to the effects of social media on social and political changes have been developed since 2011. The most recent papers deals with new issues as related to forecasting of changes (Asongu & Nwachukwu, 2014) and diffusion of protests (Kwon & Hemsley, 2017) with focus on political marketing (Kalliny, Ghanem, & Kalliny, 2016). Other authors have mainly focused on the roles of social media as they relate to Egypt and Tunisia (Eltantawi and West, 2011; Howard, Duffy, Freelon, Muzammil, Will and Mazaid, 2011; Khondker, 2011). The case of the Arab Spring has been used also later by others such as

Wolfsfeld1, Segev , and Sheafer, (2013) and Gerbanso (2012) who extends the social movements to include protests in Spain.

These trends have led to the creation of the Center for International Media Assistance several months before the uprisings in Tunisia, Egypt and other countries of the region. This has also led to the launching of the "Arab social media report" that is published annually since 2011.

Conclusion

With relatively higher school attainment and low income mobility, the youngest segments of the population in the Arab world are enjoying increasingly the contributions of information and communication technologies. The higher level of geographic mobility in addition to higher levels of interconnections through social media offer new opportunities to the youngest generations in comparison with the oldest ones. Series of hypotheses are tested to show the distinctive features related to the new generations. Demographic, knowledge and education besides access and use of new technologies in addition to the connection in social networks do definitely characterize the newest generations. These features do affect the economic, social and political changes as perceived by the youngest segments relative to their parents. While these trends are also universal, the Arab countries appear to be experiencing more changes in the distinctive features such that the youth as a source of changes, would generate new waves of transformations in Arab societies. While the indicators related to governance seem to stay stationary, they do indicate that this political component is under the effect of both the democratization and the needs of the younger generations.

References

Asongu, S.A; Nwachukwu, J. C. (2014). Revolution empirics: predicting the Arab Spring. AGDI Working Paper, No. WP/14/032 in Cooperation with: African Governance and Development Institute (AGDI), Yaoundé, Cameroon.

Azeng, T. F., & Yogo, T. U. (2013). Youth unemployment and political instability in selected developing countries. African Development Bank, 171st ser., 1-31.

Bibi, S. and M. K. Nabli. (2010). Equity and Inequality in the Arab Region. ERF Policy Research Report PPR No 33. Egypt: Economic Research Forum.

Binzel, C. and Carvalho, J.P. (2015). Education, Social Mobility and Religious Movements: The Islamic Revival in Egypt. Heidelberg University & IZA University of California, Irvine, June 2015, 51 pages

Binzel, C. (2011). Decline in social mobility: Unfulfilled aspirations among Egypt's educated youth, Discussion Paper series, Forschungsinstitut zur Zukunft der Arbeit, No. 6139, 53 pages. http://nbn-resolving.de/urn:nbn:de:101:1-201112136927.

Chamlou, N. Moghadam, V. and Karshenas, M. (2016). Women, Work, and Welfare in the Middle East and North Africa: Introduction and Overview. Chapter 1, pp:1-30 in Women, Work and Welfare in the Middle East and North Africa: The Role of Socio-demographics, Entrepreneurship and Public Policies, 624pp Mar 2016 ISBN: 978-1-78326-735-4 (e-book).

Chusseau, N. and Hellier, J. in collaboration with Ben-Halima, B. (2012). Education, Intergenerational Mobility and Inequality. EQUIPPE, University of Lille 1, ECINEQ WP 2012 – 261, September 2012.

Cole, J. R. (2015). The new Arabs: how the millennial generation is changing the Middle East. New York: Simon & Schuster.

Driouchi, A. (2015). Threats to skills of unemployed qualified labor in Arab economies. MPRA 67361. https://mpra.ub.uni-muenchen.de/67361/

Driouchi, A., Gamar, A. (2016). The gap between educational & social intergenerational mobility in Arab countries. MPRA 73998. https://mpra.ub.uni-muenchen.de/73998/1/MPRA_paper_73998.pdf

Driouchi, A., Gamar, A. (2014). Hofstede's cultural indicators, knowledge economy and entrepreneurship in Arab countries. MPRA 58731. http://mpra.ub.uni-muenchen.de/58731/

Driouchi, A., Malki, K. (2011). Enterprise creation & anti-commons in developing economies: Evidence from World Bank doing business data. MPRA 32373. https://mpra.ub.uni-muenchen.de/32373/

Eltantatwi, N. & West, J. (2011). Social Media in the Egyptian Revolution: Reconsidering Resource Mobilization Theory. International Journal of Communication 5 (2011), Feature 1207–1224 1932–8036/2011FEA1207.

Gerbanso, P. (2012). Tweets and the Streets: Social Media and Contemporary Activism. Pluto, Press, 2012. ISBN: 074533248X 9780745332482, 216 pages.

Ghafar, A. A. (2016). Educated but unemployed: The challenge facing Egypt's youth. Brookings Doha Center, 1-16.

Harkat, T., Driouchi, A., Achehboune, A. (2016). Generational gap and youth in Arab countries. MPRA 75834. https://mpra.ub.uni-muenchen.de/75834/1/MPRA_paper_75834.pdf

Howard, P.N., Duffy, A., Freelon, D., Muzammil, H. Will, M. and Mazaid, M. (2011). Opening Closed Regimes What Was the Role of Social Media During the Arab Spring? University of Washington Working Paper 2011.1.

Kalliny, MO., Ghanem, S. & Kalliny, MA. MBA. (2016). The Impact of Advertising and Media on the Arab Culture: The Case of the Arab Spring, Public Spheres, and Social Media. Journal of Political Marketing, 0:1–28, 2016 DOI: 10.1080/15377857.2016.1176612 To link to this article: http://dx.doi.org/10.1080/15377857.2016.1176612

Khondker, H.H, (2011). Role of the New Media in the Arab Spring, Globalizations, 8:5, 675-679, DOI: 10.1080/14747731.2011.621287. http://dx.doi.org/10.1080/14747731.2011.621287

Kwon, H. & Hemsley, J. (2017). Cross-National Proximity in Online Social Network and Protest Diffusion: An Event History Analysis of Arab Spring. Proceedings of the 50th Hawaii International Conference on System Sciences | 2017. School of Journalism School of Information Studies Arizona State University Syracuse University.

Quintelier, E. (2007). Differences in political participation between young and old people. Contemporary Politics, 13(2), 165-180. doi:10.1080/13569770701562658

Ragui A., Krafft, C. Roemer, J. and Salehi-Isfahani, D. (2016). Inequality of Opportunity in Income and Consumption: The Middle East and North Africa Region in Comparative Perspective. Economic Research Forum, Working Paper 1003 May 2016. 34 pages.

Ragui, A. and Saleh M. (2013). Does Improved Local Supply of Schooling Enhance Intergenerational Mobility in Education? Evidence from Jordan. Economic Research Forum, Working paper 788, 29 pages.

Salehi-Isfahan, D., Belhaj-Hassine, N. and Ragui, A. (2014). Equality of opportunity in educational achievement in the Middle East and North Africa. The Journal of Economic Inequality, December 2014, Volume 12, Issue 4, pp 489-515.

Salehi-Isfahani, D. (2015). Inequality of Opportunity in Education and Youth Employment in MENA, Virginia Tech, Working Paper 15-1, March 2015, 18 pages,

Shelley, M. C., Thrane, L. E., & Shulman, S. W. (2004). Generational differences in informational technology use and political involvement. E-Government Research, 336-356. doi:10.4018/978-1-59904-913-7.ch015.

Wolfsfeld, G., Segev, E. , and Sheafer, T. (2013). Social Media and the Arab Spring: Politics Comes First/ The International Journal of Press/Politics 18(2) 115–137 © The Author(s)

2013 Reprints and permission: sagepub.com/journalsPermissions.nav DOI: 10.1177/1940161212471716 ijpp.sagepub.com.