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## **What Makes Arab Economies Fail? An Assessment of the Complementary Relationship between Socioeconomic Reforms and Institutions**

**Islam ABDELBAR<sup>1</sup> and James BENHIN<sup>2</sup>**

**(Working Paper presented at the 16th Annual International Conference of Middle East Economic Association 2017, and TED University Trade Research Center in Ankara, Turkey, May 18-20, 2017)**

### **Abstract**

Following the Arab spring, Arabs today are passing through a dangerous time of tough and difficult choices that bear far-reaching consequences. This paper argues that there was a significant economic element to the Arab Spring, which relies mainly on the Arab economies' failure to achieve sustained inclusive growth. The purpose of the study is to understand whether the economic growth of the region has been unsatisfactory due to Arab economies lagging in terms of reforms, or because of the reform programs themselves.

In this paper, the empirical model analyses the linkages between economic reforms, human capital, physical infrastructure, and governance and growth for a panel of 87 countries, including 20 from the Arab region over the period 1995 to 2014. The analysis finds that macroeconomic and external stability are primary variables for the reform development and the growth prospects of the developing countries. The efficiency of structural reforms depends on success in stabilising the economy. The most striking result from the baseline model is that the coefficient of governance is significant and positively determines growth in the whole sample, while it is harmful in Arab sample. Additionally, the result tends to show that the resource curse in the Arab region is largely an "institutional curse", even though it has several macroeconomic manifestations.

The conclusion of the study confirms that reform is simultaneously political, social and economic. Economic reform should not be seen in a vacuum, in isolation from the political and social choices that society makes.

**Keywords:** *economic reform, Arab Spring, governance, panel analysis, North Africa and the Middle East*

JEL Codes: EO2, O19, O38

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## **1. Background**

Arab countries (ACs) are a diverse set regarding size, geography, level of income, natural resource endowments, economic structure, human capital and skills, social structures, economic policies, and institutions. Their land surface areas are 44% larger than China or 3.8 times the size of the European Union, and hold half of the world's known oil reserves and its natural gas (BP 2014). Therefore, the oil sector has provided the basis for economic and social development throughout the region, not only for oil-producing economies but for resource-poor Arab economies as well, through remittances, trade, capital and aid flows. The region has also been linked to economic policy, with similar models of economic development adopted by ACs since the 1950s and 1960s, based upon state-led planning with strong social policies designed for redistribution and equity (Bibi and Nabli 2010).

Different themes have shaped the characteristics of socioeconomic reform after independence. In the 1950s and early 1960s, the development model in ACs was based on strong governments, central planning of economic and social priorities, and wide-scale policies for redistribution and equity. During the 1970s-oil boom, ACs especially the Gulf Cooperation Council (GCC) countries launched ambitious programs of public spending on infrastructure and services. Nevertheless, by the mid-1980s, this progress faced pressures for change because of the significant role played by oil revenues. In the 1990s and 2000s, many ACs launched economic reform programs prescribed by the International Monetary Fund (IMF) and the World Bank. These reforms mainly were concerned with structural adjustment policies, macroeconomic stabilisation and structural reforms (Abbott et al. 2010).

Despite implementing all these reforms, they did not significantly affect the standards of living of Arab citizens. Indeed, over the last fifteen years or so, growth performance of the Arab region as a whole has been disappointing. According to Makdisi et al. (2006), the economic growth pattern is inextricably linked to several characteristics of most of the economies in the region notably, their heavy dependence on oil, weak economic base, high population growth and unemployment rates, low rates of returns on investment in physical and human capital, low level of integration in the world economy, and underdevelopment of market institutions.

A significant constraint to growth is the lack of adequate infrastructure, an exception being the Gulf countries. Following the World Bank's Investment Climate Assessments, almost half of the private businesses in the region complain that infrastructure is moderate to a significant

obstacle to conducting business. Telecommunications and transportation, two necessary services, are also significantly underdeveloped (Nabli 2007).

Furthermore, across the region, the lack of improvement in labour markets and living conditions are another critical constraint on growth. Unemployment is one of the primary sources of economic failure in most Arab countries. According to the Arab Labour Organization (ALO) in 2007, the overall average unemployment rate for the ACs was about 14.4 percent of the labour force compared to 6.3 percent for the world at large (Utz and Aubert 2013). A cross-country study of developing countries including Egypt, Morocco, Tunisia, and Jordan found that the first three of these countries have significant gaps relative to other developing countries with regard not only to youth employment but also the quantity and quality of education and skills mismatches (EBRD 2015; Jelassi et al. 2015). Of the seven Arab countries assessed in the World Economic Forum's Global Competitiveness Index, five scored worst in the labour market efficiency category in 2014 – 15, and three of these countries (Algeria, Egypt, and Tunisia) have been in the bottom decile of rankings of labour market efficiency for the previous three years (World Bank 2016b).

Owing to the nature of the educational system, there is a strong presence of large public sectors which distort incentives, in addition to excessive regulations negatively affecting private sector expansion. The countries in the region continue to fail to use human capital efficiently. Pissarides and Véگانzonès (2006), argued that education systems in the region are more aligned to the needs of the public sector, with the result that acquired skills do not match those required in growth-enhancing activities in the private sector. Excessive regulation of the private sector and a highly controlled labour market, have further removed the incentives for employers to recruit, train and retain productive workers.

Moreover, a report by UNDP (2011), which examined the sectoral economic growth and long-term structural transformation in the region, found that heavy sectoral weights of extractive industries lead to dependence on global oil prices. The structure of production limits employment generation for skilled and semi-skilled labour. Low-skilled services and informal activities absorb the labour force and have adverse effects on aggregate productivity and living standards. The slow emergence of manufacturing capacities distinguishes the economies of the Arab region from other developing countries, such as those in Asia.

Economists in recent years have come to a broad consensus that economic performance is not always warranted by economic characteristics alone, but it is often shaped by the political and

institutional environment in which economic activities take place (Kaufmann and Kraay 2008). Regarding the Arab region, besides the poor economic conditions, there are weak governance and institutional framework. Regardless of the different approaches used by institutional and commercial agencies, they all conclude that ACs are poor in all these indicators including the governance aspects in general and especially in democracy (Kaufmann et al. 2010; Marshall et al. 2012; PRS Group 2011).

According to the Freedom House (2015), the region as a whole had the worst civil liberties scores of any region, and most of its countries classified as partly free or not free. Arab nations are among the worst performers in estimates of global corruption perceptions index (CPI) (Transparency International 2011). They also observed that corruption is the primary challenge in the region, with three of the bottom ten countries CPIs in 2014 coming from the region.

High-level corruption is exemplified by the ruling elites who control both the polity and key segments of the economy. They abuse formal and informal institutions to control the accumulation and distribution of resources and jobs to extend their power and amass illicit wealth. Corruption was indeed an instrument for the capture of the economy. Despite the process of transition to a liberal economy as happened in Morocco, Tunisia, Jordan and Egypt, the elite's power and hold over resources expanded during these periods of "economic liberalisation". For instance, privatisation and public procurement operations carefully managed to ensure that close associates of the rulers would control these assets. This has led to an entrenched rent-seeking system of crony capitalism (Kaufmann and Fellow 2011).

There is no doubt that these political and economic institutional conditions had reflected directly on economic performance and business activities. Emara and Jhonsa (2011) and Nabli (2007) have argued that the low efficiency of capital in the MENA region can be attributed to the fact that most countries in the region provide an unfriendly business environment and insufficient institutional support for private investment. Makdisi et al. (2006) have also highlighted the importance of the quality of institutions in explaining the low productivity performance of MENA countries in comparison with the rest of the world in general. Furthermore, Aysan et al. (2007) addressed the issue of the low level of private investment in the region, with the empirical results showing that governance plays a significant role in private investment decisions. The same result exists in the case of "administrative quality" in the form of control of corruption, bureaucratic quality, the investment-friendly profile of administration, law and order, as well as for "political stability." The estimations also stress that structural

reforms like financial development and human development affect private investment decisions directly, through their positive effect on governance.

In the light of the above, the ACs regarding polity is characterised by a top-down, personalised, highly concentrated, and non-contestable mode of governing. Economically, the region exhibited highly skewed income and wealth accumulation as well as resource allocation, and distribution of political power linked with a highly centralised power of the ruling elite. In particular, under this politically and economically captured system, neither the middle nor the poor class were beneficiaries.

Under this dark image of living conditions, a broad wave of protests spread throughout most of the Arab region popularly referred to as the ‘Arab Spring’. The Arab street seemed to have made clear that it is no longer willing to accept these development models and the control and distribution of the region’s resources. A primary goal of the protesters everywhere from Tunisia to Bahrain was easy to capture from major slogans of the demonstrators in the Arab world. The first one was, "The people want to overthrow the regime" and the second “Bread, freedom and social justice”. These slogans represented what Arab people have suffered from, especially during the last two decades. They aim to create more participatory and representative political systems, a fairer economic system, and independent judiciaries (Alimi et al. 2016).

Regarding the first slogan, Tunisians succeeded in overthrowing their president, and so did the Egyptians, the Libyans, and the Yemenis (Hissouf 2014), while the second one which underlines the interdependence of inclusive governance, economic and social inclusion, still requires more time to achieve it. It needs more strategic thinking towards exploring alternative solutions and a range of development policy options to help redress the underlying causes that gave rise to the widespread popular grievances and discontent.

To further understand the origins of and find solutions to the Arab Spring, this paper aims to investigate why Arab economies have failed to achieve sustained inclusive growth. In order to address this question, the study evaluates the impact of socioeconomic reforms on economic performance, through estimating an economic growth model for the Arab Region in comparison to other regions in the world with an emphasis on the role of governance.

In other words, the research attempts to understand the possible explanations: whether the growth performance of the region has been disappointing because ACs economies have lagged behind in terms of reforms, or due to the reform programs themselves lacking key components such as governance and quality of institutions?

The rest of the paper is organised as follows: the second section is a brief overview of the theoretical model, while section three presents the empirical model and estimation approach. Section four presents the aggregated indicators of economic reforms, human capital, physical infrastructure, and governance and summarises the progress of these indicators in the Arab region. Section five discusses the estimated results of the growth model that includes the different composite indicators, with the last section focusing on conclusions and policy implications.

## 2. The Methodology

### 2.1 The Empirical Model

The setup of the empirical model is primarily driven by the Solow-Swan growth model with the estimation approach following “Barro-type regression” (Barro and Sala-I-Martin 1995). As mentioned, the primary aim of the model is to measure the economic reform effort of the countries by estimating a conditional convergence equation for economic growth. The aggregated economic reform indicators are generated using principal component analysis (PCA). This novel approach allows the computation and categorisation of environmental variables identified by Barro and Sala-I-Martin (1995) into six separate groups.

The first component is **macroeconomic stability reform indicator** (M) incorporating exchange rate (M1), the deficit (M2), public debt (M3), inflation (M4), and unemployment (M5). The second is **external stability reform indicator** (E) which contains current account balance (E1), the ratio of external debt to exports (E2), total reserves in months of imports (E3), and diversification index (E4). Thirdly, the component of **structural and business reform** (B) consists of foreign direct investment (B1), domestic credit to the private sector (B2), and the concentration index (B3). Fourthly, the component of **human capital** indicator (H), which includes health expenditure (H1), school enrolment (H2), life expectancy (H3), and scientific articles published (H4). The fifth component is **physical infrastructure** indicator (P), consisting of fixed telephone subscriptions (P1), improved water source (P2), access to electricity for population (P3), and improved sanitation facilities (P4). Lastly, the **governance** indicator (G) is based on voice and accountability (G1), political stability (G2), government effectiveness (G3), regulatory quality (G4), the rule of law (G5) and control of corruption (G6).

In addition, to controlling for sample heterogeneity and consistent with the literature, other two control variables are examined. These variables reflect differences in endowment levels of natural and human resources, which can be at the origin of significant differences in the “natural propensity” to grow. The evolving demographic situation is controlled for through the incorporation of annual population growth rate ( $POP_{i,t}$ ). Given the significance of the natural resource sector to many of the African countries; the ratio of oil rent to GDP ( $oil_{i,t}$ ) variable has also been included in the model. This hypothesis is supported by the figures, as shown by the value of the Hausman test as presented in the next section (see Table 3).

Real GDP per capita growth is therefore empirically expressed as follows:

$$\ln(Y_{i,t}) = \alpha_0 + \varphi_1 \ln(YY_{i,t-1}) + \theta_1(M_{i,t}) + \theta_2(E_{i,t}) + \theta_3(B_{i,t}) + \theta_4(P_{i,t}) + \theta_5(H_{i,t}) + \theta_6(G_{i,t}) + \theta_7(oil_{i,t}) + \theta_8(POP_{i,t}) + \varepsilon_{i,t} \quad (1)$$

where,  $Y_{i,t}$  represents the economic growth rate in country  $i$  at time  $t$ ;  $\ln(YY_{i,t-1})$  is an  $N \times 1$  vector of logs of initial GDP;  $M_{i,t}$ , macroeconomic stability indicator;  $E_{i,t}$ , external stability indicator;  $B_{i,t}$ , structural and business reform indicator;  $P_{i,t}$ , physical infrastructures indicator;  $H_{i,t}$ , human capital indicator;  $G_{i,t}$ , governance indicator;  $POP_{i,t}$ , population growth rate;  $oil_{i,t}$ , the ratio of oil rent to GDP;  $\alpha_0$  is the intercept,  $\theta_1$  to  $\theta_8$  are parameters for convergence and the principle components,  $i, t$  denote country and time period respectively, and  $\varepsilon_{i,t}$  is the error term.

## 2.2 Description of the Data

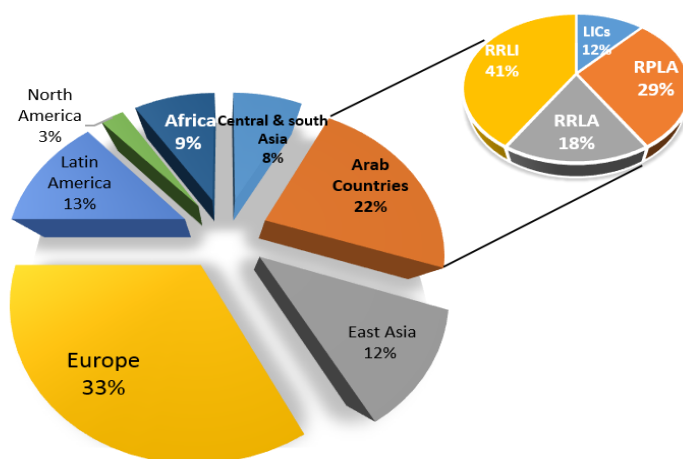
The empirical model as in equation (1) presents ten explanatory variables; six of which are principal components with 24 sub-variables and four control variables. The empirical analysis examines the trends and directions of the indicators, as well as the correlations between them and then, applies a panel data econometrics to estimate the economic growth functions for the respective group of countries. The study draws upon multiple sources for annual time-series data on a host of economic, social, political, and institutional indicators for 76 countries from 7 different regions based on the availability of data and representativeness of all continents. As Figure 1 shows, amongst these countries, 17 are Arab countries (ARB), 6 are Central & South Asian countries (CSA), 9 are East Asian countries (EAS), 25 are European countries (ECS), 10 are Latin America countries (LCN), 2 are North American (NAC), and 9 are 7 Sub-Saharan Africa countries (SSF).

In addition following World Bank (2006), the study classified Arab countries into four subgroups according to their natural-resource wealth, labour abundance and level of income.



The first group is “resource-poor, labour-abundant (RPLA)” or emerging economies (Egypt, Jordan, Lebanon, Morocco, Tunisia, West Bank and Gaza). Second, “resource-rich labour-abundant (RRLA)” or transition economies (Algeria, Iraq, and Syria), and the third group “resource-rich labour-importing (RRLI)” economies (the rich Gulf Cooperation Council (GCC) Countries - Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE and Libya). Finally, “low-Income Countries (LICs)” (Sudan and Yemen)<sup>3</sup>.

**Figure 1: The Distribution of Countries in the Study Sample**



The data sources for the analysis include the following:

- i. **World Development Indicators (WDI):** provides data for infant mortality rate, health expenditure, education school enrollment, public spending on education, government expenditure on education, road network logistics performance index, telephone network fixed telephone subscriptions and improved water source (World Bank 2015).
- ii. **The Economist Intelligence Unit (EIU) CountryData** provides data for GDP, inflation, deficit, exchange rate, unemployment, public debt, external debt, and current account balance (EIU 2015).
- iii. **The Worldwide Governance Indicators (WGI)** captures six key dimensions of governance since 1996. These are voice and accountability, political stability and lack of violence, government effectiveness, regulatory quality, the rule of law, and control of corruption (World Bank 2014).

<sup>3</sup> See Appendices 1, 2, and 3 for the list of countries.

## **2.3 Estimation Approaches**

Panel data methods are the preferred approaches for pooled cross-country and time series data ((Durlauf and Quah 1999) since panel data methods provide more information, more efficiency and less multi-collinearity (Baltagi 2008; Baltagi and Kao 2000). Panel estimates provide higher degrees of freedom, are more informative, and biases are substantially smaller than cross-sectional estimates.

One of the most significant challenges faced in panel data estimation is how to deal with heterogeneity characteristics in the dataset. Barbieri (2006) has however noted that the development of heterogeneous panel unit root and panel cointegration tests have greatly enhanced empirical analysis using panel data.

Therefore, the estimation approach involves three stages: Firstly, panel unit-root test is estimated based on Levin -Lin-Chu (LLC) test (2002), Im et al. (2003), Fisher type tests (Maddala and Wu 1999) and (Choi 2002) to ensure the variables are integrated of the same order. Secondly, panel co-integration technique based on Pedroni (1999) and Kao (1999) is applied to check whether there is a long-run co-integrating relationship among the variables. The analysis is especially interested in the group statistics which take into account heterogeneity. Thirdly, the estimation tests the relevance of unobservable individual effects through Lagrange Multiplier and Hausman tests.

## **3. Empirical results**

### **3.1 Descriptive Analysis of Aggregated Indicators of Economic Reforms, Human Capital, Physical Infrastructure and Governance**

ACs differ considerably among themselves, as well as with the rest of the world, especially regarding economic reforms, physical infrastructure, human capital and governance. These differences have been assessed using various indicators that have been aggregated using principal component analysis. This method has been used to generate six aggregate indicators.<sup>4</sup>

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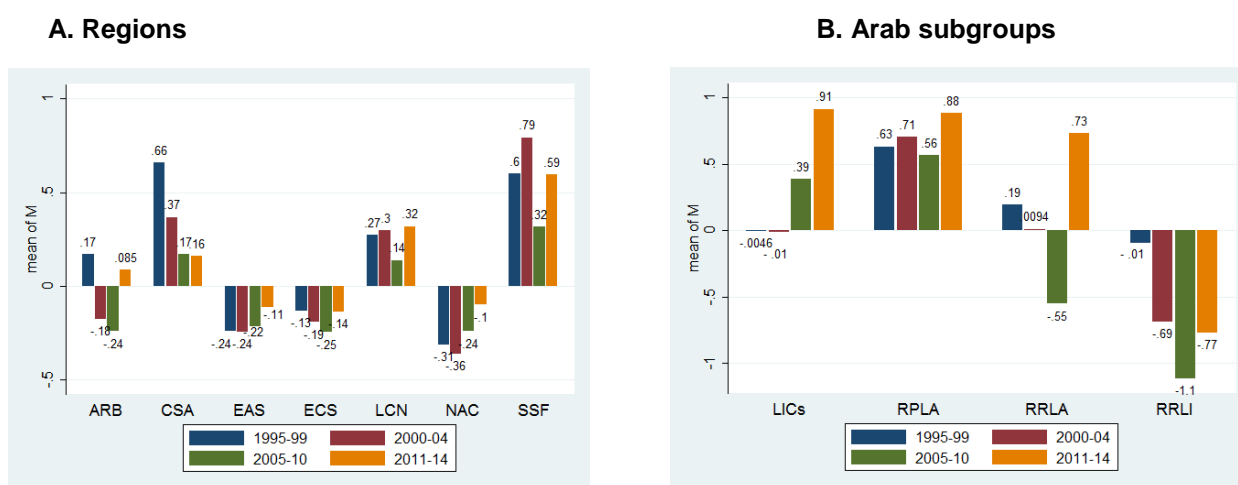
<sup>4</sup> As part of the empirical work, the study attempted, without success, to introduce into PCA the cumulative privatization receipts and stock market index as a factor in the structural reforms. Other interesting indicators had to be ignored because of limited and reliable data. This was the case with public health and education expenditures, the density of road network, and net international liquidity in terms of months of import cover, which could have reinforced the external stability index. Similarly,

This section briefly presents a summary of the six composite indicators which were created to support the empirical analysis in the rest of the paper.

### 3.1.1 Macroeconomic Stability Indicators (*M*)

Macroeconomic stability denotes precise factors that lead to a stable and robust environment in which individuals and companies can reliably engage in transactions. In terms of macroeconomic stability, the GDP needs to increase at a reasonable pace each year. Such increases allow a country's citizens to enjoy a stable or better standard of living.

**Figure 2: Macroeconomic Instability Indicator by Regions (1995 – 2014)**



**Source:** Authors' own calculations

The reform of macroeconomic stability indicator estimated as an inverted indicator, therefore, low and negative values represent an improvement in the reform, while large and positive values indicate bad macroeconomic stability conditions. As shown in Figure 2, macroeconomic stability gradually declines over 1995 – 2014 in Africa, Central Asia, and Latin America regions, while North America, Eastern Asia, and Europe regions experienced high progress in macroeconomic stability.

For Arab region, there were some progressive improvements during the period 2000 - 2010, however, the macroeconomic stability collapse in 2011 following the civil wars and political instability in the region. For the 4 subgroups of ACs, the analysis shows that LICs, RPLA and RRLA, have not achieved the required macroeconomic reform, while RRLI experienced

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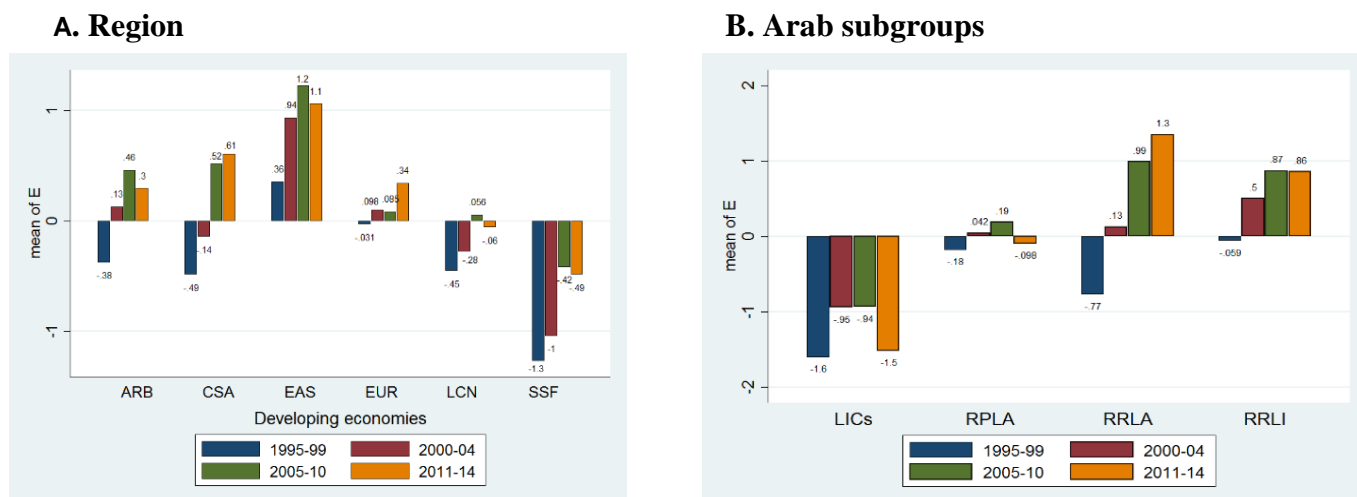
the structural reform index could not benefit from information on mean tariff rates, or highest marginal individual and corporate taxes.

significant improvements. Remarkably, the indicator declined for all sub-Arab groups in the last period (Figure 2B).

### 3.1.2 External Stability Indicators (E)

External stability is defined as a desirable situation where an economy is living within its means, and able to pay its commitments in its international transactions, without the burden of these overseas payments causing severe problems that could reduce living standards. External stability can refer to the key components that keep nations economically secure in relation to the rest of the world. Instability can increase uncertainty, discourage investment, impede economic growth, and hurt living standards.

**Figure 3: External Stability Indicator by Regions (1995 – 2014)**



**Source:** Authors' own calculations

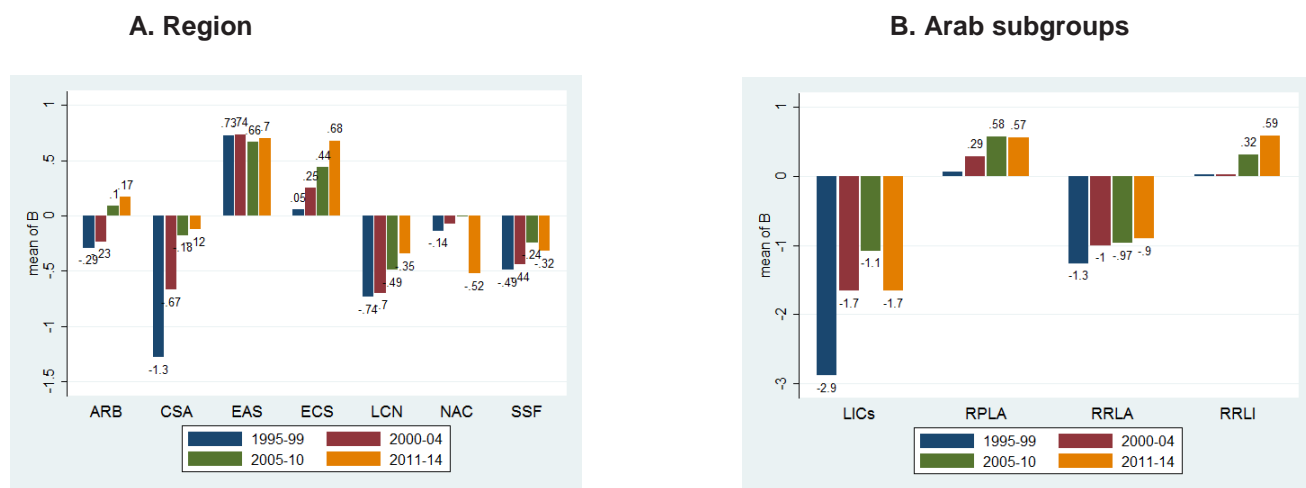
Remarkably as in Figure 3, there are three main clusters can be distinguished in this regard: The East Asia region has experienced very high progress in external stability with average 0.90. The second cluster with mild stability in the Central Asia region, the Arab region, and transition economies in East Europe with an average 0.11, which slightly higher than the world average -0.04. The third cluster with highest rates of instability during the whole period for Sub-Saharan Africa and Latin American regions with average -0.80 and -0.17 respectively. For Arabian nations, all oil exporting countries except Iraq in (RRLI and RRLA) have robust external stability mainly due to the oil boom between 2002 to mid-2008, which generated a large volume of revenues more than doubled their average compared with the preceding five years.

The abundant revenues were instrumental in boosting all foreign stability components especially current account balance and international reserves

### 3.1.3 Business and Structural Reform (B)

A government's main objective for structural reforms is to promote competition, enhance the services sector, move up the value chain in manufacturing, and achieve stronger integration at the regional and international levels. Ambitious structural reforms can boost economic growth. Structural and market reform is quantified based on a wide range of indicators that take into consideration trade policies, the business environment, the quality and improvement of the business environment.

**Figure 4: Business and Structural Reform Indicator by Regions (1995 – 2014)**



**Source:** Authors' own calculations

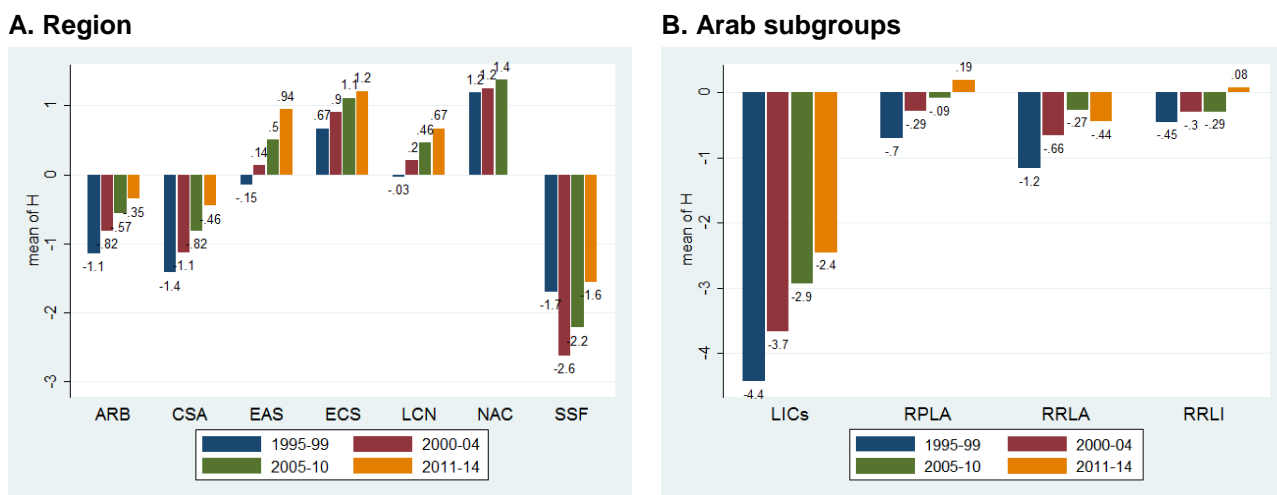
Although the structure and market reform indicators witnessed a gradual increase from 1995 until 2010, it remained steady from this point till 2014. This was a result of the fall in FDI to the Arab region after the political uprisings, especially in the RPLA countries, Egypt and Tunisia. In general, ACs seemed to perform relatively good compared to other developing regions in the world both at the general level and the specific 4 group's classification level.

### 3.1.4: Human Capital indicators (H)

According to Savvides and Stengos (2008), the human capital endowment can be a more important determinant of its long-term economic success than virtually any other resource. This resource must be invested in and leveraged efficiently for it to generate returns, for the individuals involved as well as an economy as a whole. Recent empirical investigations of the

contribution of human capital accumulation to economic growth have confirmed the need for improving health and education of the general populace to ensure sustainable growth and economic development. It is argued that the developing world has to prioritise this effort on an urgent basis (Alvi and Ahmed 2014).

**Figure 5: Human Capital Indicator by Regions (1995 – 2014)**



**Source:** Authors' own calculations

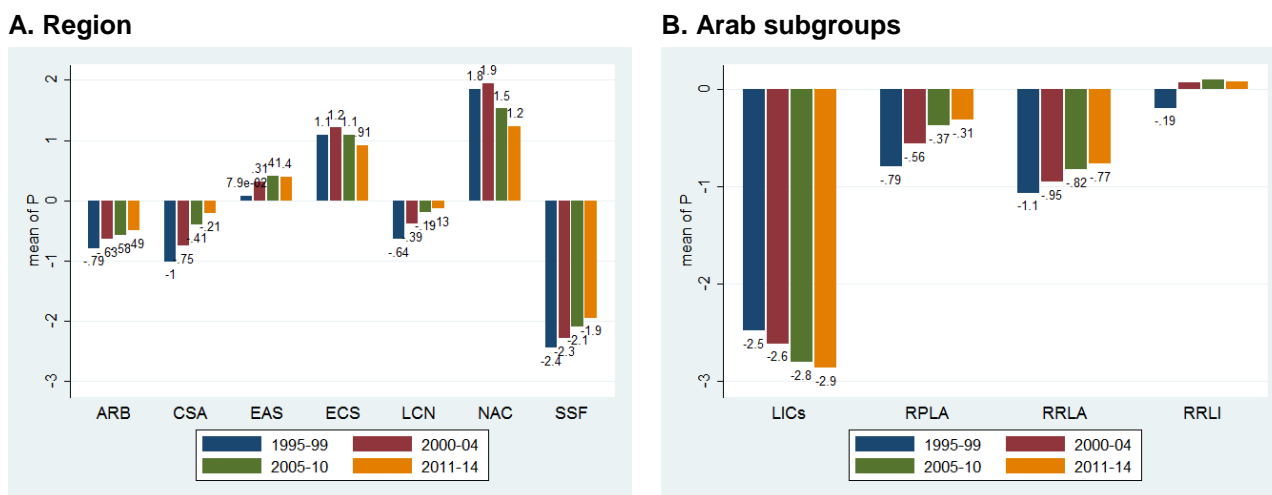
Although the human capital indicator in the Arab region improved slightly throughout the period, it can be considered as the third worst in the world after Africa and Central Asia (Figure 5). It is obvious that large gaps still exist between ACs and the developed world in terms of human capital. Analysing the infant mortality and school enrolment indicators showed remarkable good performance starting from 2010 for all Arab sub-groups except RRLA (due to the civil wars), this means there is potential for significant improvements in health and education in the region.

### 3.1.5 Physical Infrastructure Indicators

Physical infrastructure refers to the basic physical structures required for an economy to function and survive, such as electricity generation, transportation, telecommunication, and water and sanitation. The impact of infrastructure on long-run economic growth has been studied extensively. The underlying theoretical framework of the impact of public capital on economic growth was developed first by Arrow and Kurz (1970). Based on this framework, the endogenous growth literature shows that an increase in the stock of public capital can raise the steady-state growth rate of output per capita, with permanent growth effects (Barro 1990, 1992).

A majority of the literature finds a positive impact on the relationship between infrastructure and economic output (Loayza and Odawara 2010). The complementarities between physical infrastructure and physical and human capital lead to higher productivity and increase the incentive to invest (Aschauer 1989; Calderón and Servén 2004; Seethepalli et al. 2008).

**Figure 6: Physical Infrastructure Indicator by Region (1995 – 2014)**



**Source:** Authors’ own calculations

As shown in Figure 6, despite limited progress throughout the period, ACs status in infrastructures has remained insufficient. Access to healthy water has slightly improved, but about 50% of the low-income countries population in the Arab world still face difficulties in accessing improved water. Closing the gap with more advanced developing countries constitutes a significant challenge for ACs.

### 3.1.6 Governance and Institutions Indicator

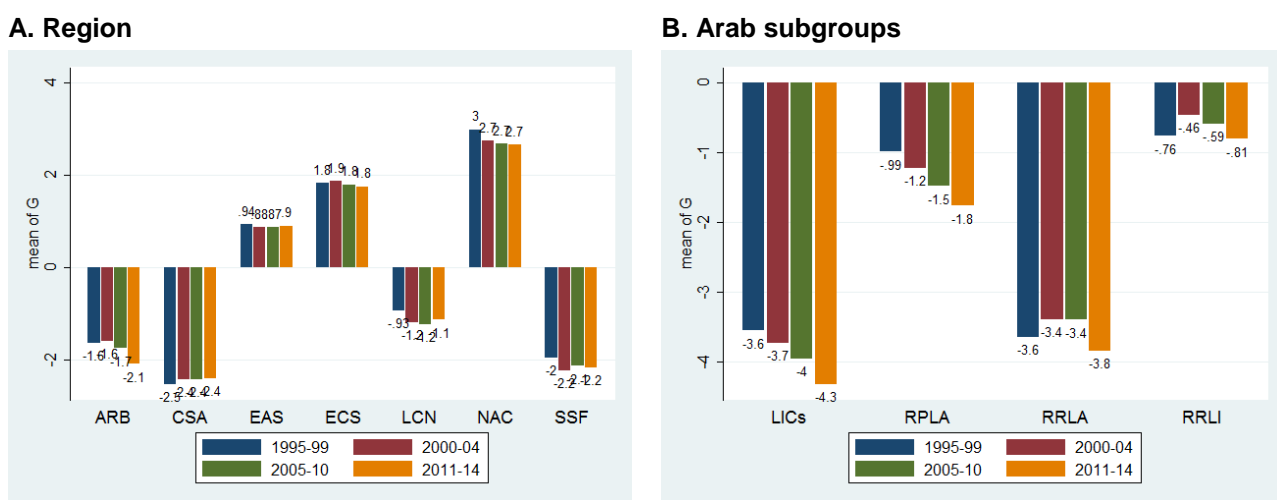
In recent decades, a surge of interest in governance has been seen as a means to promote economic development. Governance matters have been an integral part of societies since the dawn of civilisation, and especially so concerning what values, ethics and rules of conduct and justice should be upheld, how societies should be organised, and who should hold power and authority.

Economists currently have dedicated increasing attention to the impacts of political institutions and issues of governance in the process of economic development. The burgeoning literature on the topic has indicated a broad consensus in that economic performance is not always

warranted by economic characteristics alone, but it is often shaped by the political and institutional environment in which economic activities take place (Kaufmann and Kraay 2008).

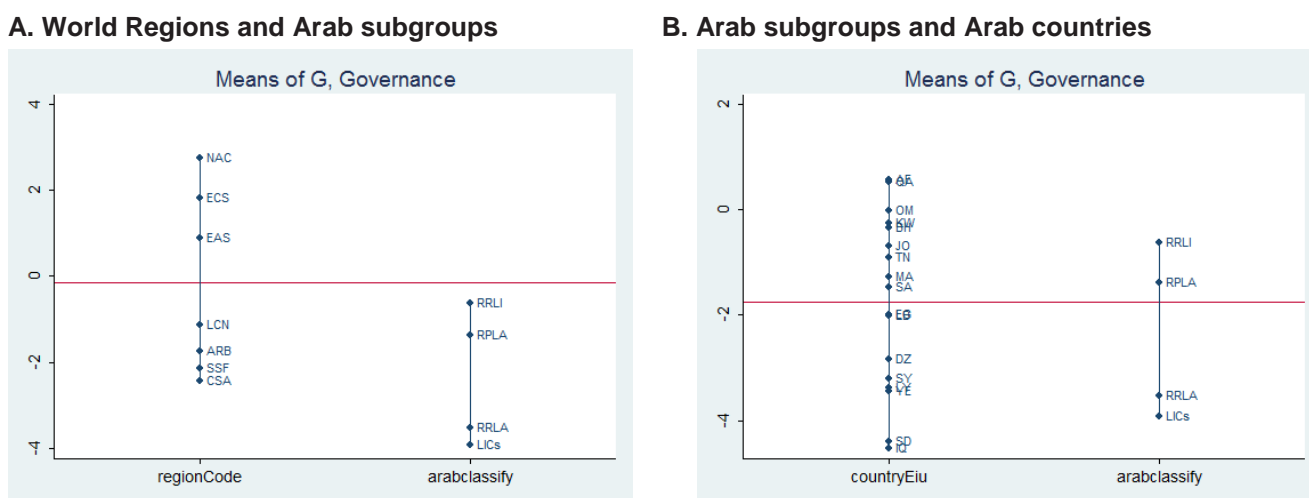
Additionally, in their analysis of some OECD countries during the period 1980 to 2000, Adam et al. (2007) prove that the quality of governance is more essential than the socioeconomic environment in affecting government spending efficiency. Furthermore, the findings of these studies show that states that are efficient in their government spending are characterised by citizen-friendly regulatory environments and strong transparency, regulatory practices, cost-effectiveness, and public spending directly associated with policy purposes.

**Figure 7: Governance and Institutions Indicator by Regions (1995 – 2014)**



Source: Authors' own calculations

**Figure 8: Governance and Institutions Indicator - Means**



Source: Authors' calculations



Following from Figure 7 and 8, North America, Europe and East Asia rank very highly regarding the quality of governance. The Arab region is not only below the global average and the third worst region behind Africa and Central Asia, but also the only region with a gradual decrease in the governance indicator. On average, overall governance in the ACs is low, and evidence shows that there have been virtually no good governance performers in the region.

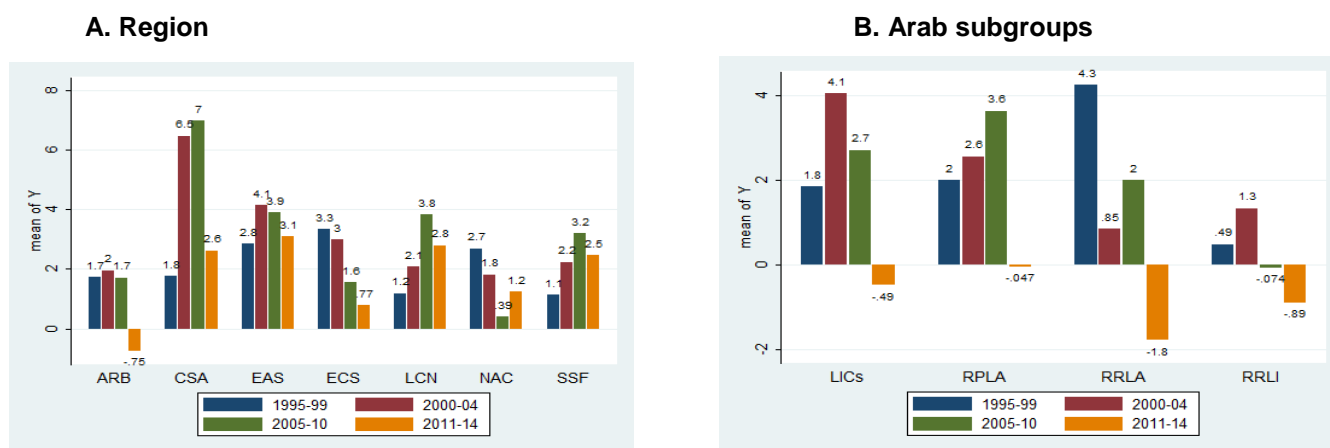
### 3.1.7 GDP per capita growth

Despite the noticeable progress in various areas of reform, ACs growth performance has shown disappointing results. Almost all ACs are growing slowly, but for different reasons. The Arab region has the worst economic growth in terms of the progress of GDP per capita. The regional GDP growth stayed at around 2 percent from 1995 to 2010 (Figure 9 and 10), which was lower than the rest of the world regions.

Although some ACs called Arab reformers launched economic reform programs prescribed by the IMF and the World Bank such as all countries in (RPLA) group, it can be seen that nothing appears exceptional about the performance of these countries. Their GDP growth rates are about the same as the others. These reformers countries' simple average GDP and per capita income growth rates consistently equal the growth rates of the entire region. This observation reinforces the argument that the growth experienced in the region is coming from elsewhere. Specifically, it comes from oil exports and oil revenues.

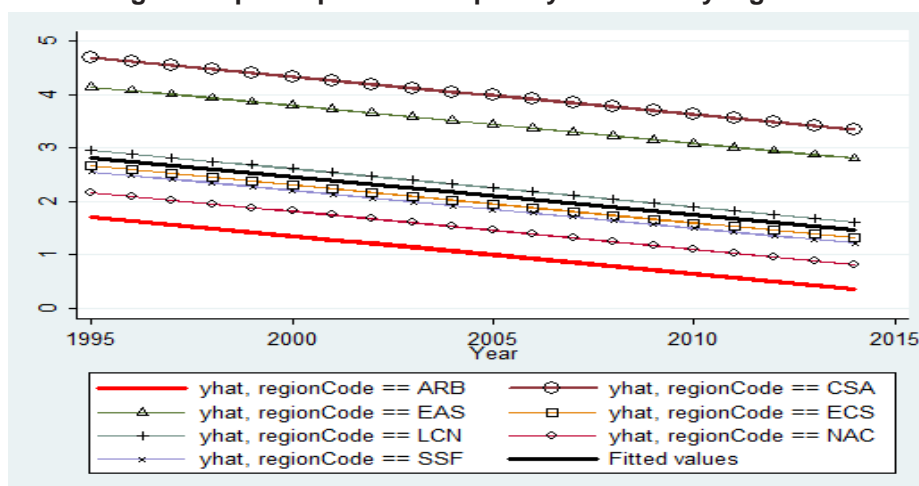
Following the Arab Spring revolutions in 2011, economic growth tumbled and turned negative; an already poor development suffered yet another setback. However, ACs before the transitions in 2011, they were lagging behind other emerging market and developing countries, and there was a perceived lack of competition in domestic markets.

**Figure 9: GDP per Capita Growth Rates (%) by regions (1995 – 2015)**



Source: Authors' own calculations

**Figure 10: Percentage GDP per Capita Growth plot by time and by regions**



**Source:** Authors' own calculations

### 3.2 The Effect of New Aggregate Indicators on Economic Growth

As discussed in the methodology section, the estimation approach follows four main steps: panel unit-root tests, panel cointegration tests, assessment of the significant of unobservable individual effects tests, and empirical estimations of the model as presented in equations (1).

#### 3.2.1 Panel Unit Root Tests:

Prior to testing the existence of a long-run cointegrating equilibrium among the variables, the integration properties of each panel have to be examined, since an incorrect transformation of the data may lead to spurious results.

**Table 1: Panel Unit Root Tests for Variables in Level (Intercept is included)**

Tests Variables	Levin, Lin & Chu (LLC)	Im, Pesaran and Shin (IPS)	Fisher		Final result
			ADF	PP	
<b>Ly</b>	-16.64600 (0.000)	-15.7851 (0.000)	543.333 (0.000)	901.186 (0.000)	<b>I(0)</b>
<b>M</b>	-3.73479 (0.001)	-2.66146 (0.0039)	192.463 (0.0031)	202.142 (0.0007)	<b>I(0)</b>
<b>E</b>	-7.77880 (0.000)	-3.19758 (0.007)	187.146 (0.002)	225.811 (0.000)	<b>I(0)</b>
<b>B</b>	-7.33402 (0.0000)	0.32819 (0.6286)	143.240 (0.5022)	147.889 (0.3950)	<b>I(1)</b>
<b>H</b>	-1.695 (0.0450)	3.70912 (0.9999)	116.428 (0.9086)	138.574 (0.4703)	<b>I(1)</b>
<b>P</b>	-8.28406 (0.0000)	1.10117 (0.8646)	225.629 (0.000)	504.369 (0.000)	<b>I(0)</b>
<b>G</b>	-8.5056 (0.0000)	-3.526 (0.0002)	240.525 (0.0000)	253.355 (0.000)	<b>I(0)</b>

**Source:** Authors' own calculations using EViews and STATA.

**Note:** Values in parentheses refer to the probability of the test statistics. The null hypothesis of Levin, Lin & Chu t-test assumes common unit root process, while the others assume individual unit root process.

The results of panel unit root tests in Table 1 are based on four-panel unit root tests for all variables in levels and first differences namely, LLC, IPS, Fisher (ADF) and Fisher (PP)(Breitung and Pesaran 2005; Gengenbach et al. 2006; Im et al. 2003). Apart from some limited exceptions, panel unit root test statistics significantly confirm that all the series have not a panel unit root in level, except for business reform (B) series, and human capital (H) series are stationary variables in first difference, I (1) variables. First differencing can remove non-stationarity as it appears from these two variables. Hence, the co-integration tests can be examined with intercept only to avoid the potential stationarity of the dependent variable with the trend.

### 3.2.2 Panel Co-Integration Tests

Two different tests of cointegration are performed to explore the co-movement among the variables in the model: the Kao and Pedroni tests of cointegration, taking into consideration the results of the panel unit root tests. Three tests of Pedroni (panel  $\nu$ , panel rho, and group rho) indicate that there is no co-integration among economic growth and its important determinants. In contrast, both Kao test and four other tests of Pedroni, including panel PP, group PP, panel ADF, and group ADF reject the null hypothesis of no cointegration at the 5% level of significance as illustrated in Table 2.

**Table 2: Results of Panel Co-integration Tests for All Countries**

Co-integration Tests	Kao Test	Pedroni Test						
		H1: Common AR Coefficients (within dimension)				H1: Individual AR Coefficients (between dimension)		
Test Statistic	ADF	Panel $\nu$	Panel rho	Panel PP	Panel ADF	Group rho-	Group PP-	Group ADF-
Intercept	3.09777 (0.010)	-3.2097 (0.9993)	5.25878 (1.000)	- 5.0367 (0.000)	2.11037 (0.0026)	7.24033 (1.000)	-9.1885 (0.000)	1.82218 (0.008)

**Source:** Authors' own calculations using EViews.

**Note:** P-values are given in parentheses. MAIC is used to determine the optimal number of lags to be included in the second stage regression.

According to the Monte Carlo simulation of Pedroni (Arellano and Bond 1991), the panel ADF and PP, as well as the group ADF and PP, are the most appropriate tests statistics for this model since they are working correctly in the case of the middle sample size as illustrated before. Therefore, we can regard the estimation model as being panel co-integrated.

### 3.2.3 Panel Estimated Results

In this section, the analysis run pooled OLS, fixed effects and random effects estimations; to check the robustness of the results. Table 3 contains results of static panel data models from estimating the baseline growth model formalised in equation (1) for the whole sample and ACs samples.

Based on the results in Tables 3, the overall F-statistics are significant in all panel data models, and therefore the null hypothesis cannot be rejected that the explanatory variables do not explain (taken as a whole) changes in the dependent variable. Hence the determinants selected in this study can be considered to sufficiently explain changes in the real per capita GDP growth.

**Table 3: Estimated Panel Data Models for the Whole Sample**  
**Dependent Variable: The Growth rate of GDP per capita**

	OLS		Fixed Effects		Random Effects	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
IYY	-0.36*	0.12	-1.02*	0.34	-0.36*	0.12
M	-0.31*	0.10	-0.45*	0.21	-0.31*	0.10
E	-0.11*	0.05	-0.18**	0.09	-0.11*	0.05
B	0.16	0.20	0.11	0.21	0.16	0.20
H	-0.01	0.21	-0.02	0.21	-0.01	0.21
P	0.31*	0.10	1.05*	0.36	0.31*	0.10
G	-0.08	0.06	0.21	0.21	-0.08	0.06
T	-0.001	0.01	-0.004	0.01	-0.001	0.005
Oil	-0.005	0.003	-0.002	0.01	-0.005	0.003
pop	-0.04	0.03	-0.11*	0.05	-0.04	0.03
_cons	4.37*	1.04	10.55	3.05	4.37	1.04
F test	0.0000		0.00000			
R-squared	0.1096		0.0717		0.0943	
chi2					0.0000	
LM test, chi2					0.76	
Hausman, chi2			11.82			

**Source:** Authors' own calculations

In Table 3, there is evidence of potential unobserved heterogeneity across countries owing to the insignificance of the estimated chi2 of the Lagrange Multiplier. Moreover, the OLS estimated standard errors are only valid when the errors are homoscedastic and not correlated (within individual countries) over time. As shown in Appendix 4 Table 4.1, it is clear that there is a weak correlation over time, which is very consistent with this result, indicating that there is probably no observed individual heterogeneity. Furthermore, the estimated robust standard errors are approximately similar to the standard OLS ones (see Appendix 4, Table 4.2) (Mátyás and Sevestre 2006). Therefore, the pooled OLS regression will be the most appropriate results for the whole sample.

The results in Table 4 show that the relationship between GDP per capita growth rates and its determinants is consistent with the theory. First, regarding the estimated coefficient of GDP per capita in the previous period, all samples are significant with negative signs except the oil-rich economies in the sixth and seventh samples (RRLA & RRLI). Consistently with the conditional convergence concept introduced by Barro and Sala-I-Martin (1995), the convergence in the study model is conditional; it predicts higher growth in response to lower starting GDP per person only if the other explanatory variables (some of which are highly correlated with GDP per person) are held constant. For instance, in the world sample the estimated coefficient is  $-0.36$  (s.e.=0.12), so the magnitude of the estimated coefficient implies that convergence occurs at the rate of about 36 percent per year. In other words, a one-standard-deviation decline in the log of per capita GDP would raise the growth rate on impact by 0.36. This effect is very large in comparison with the other effects, that is, conditional convergence can have important influences on growth rates.

As a result of the positive relationship between stabilisation and growth, the signs of the coefficients as expected are all negative except for sample 6(RRLA). The strength of significant and negative stability coefficients supports the argument that the economy has the desired degree of macroeconomic stability that leads to the confidence of investors, incentives for the most productive destination of the inputs, and the accumulation of inputs feasible and profitable at reasonable rates of risks. In contrast, an economy marked by macroeconomic instability will present an excessive degree of uncertainty, which in turn will deter agents from investing or will cause them to make wrong decisions regarding the allocation of resources to alternative projects.

**Table 4: Estimated Panel Data Models for the Study Samples of Countries**  
**Dependent Variable: The Growth Rate of GDP per capita**

<i>Independent variables</i>	(1) World Sample (Arab & Non-Arab)		(2) Non- Arab Sample		Arab Samples (Whole Arab Countries and Arab sub-groups)									
					(3) Whole Arab Sample		(4) LICS Sample		(5) RPLA Sample		(6) RRLA Sample		(7) RRLI Sample	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
<b>lyy</b>	<b>-0.36*</b>	0.12	<b>-0.62*</b>	0.16	<b>-0.05*</b>	0.20	<b>-27.32*</b>	24.21	<b>-1.79*</b>	0.84	<b>0.37*</b>	3.80	<b>1.81*</b>	2.64
<b>M</b>	<b>-0.31*</b>	0.10	<b>-0.43*</b>	0.13	<b>-0.25*</b>	0.21	<b>0.79*</b>	2.21	<b>-0.29*</b>	0.54	<b>0.92*</b>	1.38	<b>-0.44*</b>	0.63
<b>E</b>	<b>-0.11*</b>	0.05	<b>-0.22*</b>	0.06	0.02	0.09	<b>-1.27*</b>	1.35	<b>-0.06*</b>	0.36	<b>-0.20*</b>	0.76	<b>-0.38*</b>	0.45
<b>B</b>	0.16	0.20	0.19	0.20	0.11	0.77	-5.86	4.38	-0.58	1.06	-1.62	3.54	1.04	2.15
<b>H</b>	-0.01	0.21	<b>1.17*</b>	0.55	<b>-0.15*</b>	0.24	2.33	6.05	-1.37	1.53	-0.42	4.66	<b>-0.24*</b>	0.32
<b>P</b>	<b>0.31*</b>	0.10	0.46	0.14	0.25	0.21	5.14	7.63	0.90	0.59	-2.86	11.30	-1.27	2.27
<b>G</b>	-0.08	0.06	<b>0.02*</b>	0.07	<b>-0.21*</b>	0.18	<b>-1.18*</b>	1.96	<b>-0.93*</b>	0.58	-0.21	2.81	<b>-1.07*</b>	1.05
<b>T</b>	-0.001	0.01	-0.005	0.006	0.02	0.03	<b>0.09*</b>	0.03	<b>-0.01**</b>	0.05	<b>0.86*</b>	0.90	<b>-0.29*</b>	0.18
<b>Oil</b>	-0.005	0.003	<b>0.0002*</b>	0.003	<b>-0.004*</b>	0.01	0.10	0.14	-0.04	0.02	<b>-0.07*</b>	0.13	<b>-0.07*</b>	0.04
<b>pop</b>	-0.04	0.03	<b>-0.10*</b>	0.08	<b>-0.04*</b>	0.04	<b>-7.84*</b>	6.15	-0.13	0.21	<b>-1.52*</b>	3.14	<b>-0.13*</b>	0.08
<b>_cons</b>	4.37*	1.04	6.81	1.38	1.34	1.71	216.59	169.60	15.81	6.82	3.12	29.32	-11.45	25.40
<b>F test</b>	<b>0.0000</b>		<b>0.0000</b>		<b>0.0000</b>		<b>0.0000</b>		<b>0.0000</b>		<b>0.0000</b>		<b>0.0000</b>	
<b>R<sup>2</sup>-adj.</b>	0.1096		0.2816		0.2836		0.9284		0.5050		0.5539		0.2835	
<b>N. Countries</b>	76		59		17		2		5		3		7	

\*Denote significant at 5% level and \*\*Denote significant at 10% level

Concerning the structural reforms (B) and physical infrastructure (P) variables, the coefficients of these factors are insignificant for all samples except where physical infrastructure is strongly significant and positive for the world sample. This could be because the nature of these indicators is associated with other indicators to improve the economic growth such as macroeconomic stability or external stability, by generating additional indirect benefits in the sense that services constitute an important intermediate input to downstream sectors such as manufacturing. According to Canton et al. (2014), reforms to labour markets that increase labour utilisation and boost output potential is vital to reducing structural unemployment, improving activity and employment rates, and boosting potential growth and welfare. On the other hand, another study by Mussa (1987) and Williamson (1994) suggested that the efficiency of structural reforms depends on success in stabilising the economy. In other words, reforming the economy materialises into growth if applied in a stable macroeconomic environment. In an increasingly volatile environment, a high level of structural reforms increases the disruptive effect of macroeconomic instability. This means that structural reforms should take place at least at the same time as macroeconomic reforms, if not after.

However, the most striking result to emerge from the Table 4 is that the coefficients of human capital (H) and governance (G) indicators are statistically significant and positive for the non-Arab sample, they are statistically significant and negative for the Arab sample. This reflects the poor quality of human resources and governance in ACs and its effect on production output. This result is consistent with relative studies, for instance, regarding the bad condition of human capital and according to the last report from UNESCO (2014): the average adult literacy rate in the region only reached 72.9% in 2012. In addition, as Huebler and Lu (2015) prove that the evidence demonstrates that school systems in the region are generally of low quality. Necessary skills are not learned; most international standardised tests prove that the region is still below the expected level.

Regarding the governance variable, it is significant but with a negative affect not only for Arab sample, but also for all sub-Arab groups, which is consistent with Ahmad and Marwan (2012); Hall et al. (2010); Jalilian et al. (2007); Nabli (2007) who confirms that institutional quality in ACs is very poor and faces many problems. That probably again explains the reasons for 'Arab Spring' in the region.

The coefficients of human capital, physical infrastructure and governance are complementary in understanding why the growth performance of the Arab region has been disappointing. Mo (2001) emphasises this relationship by linking corruption to low growth through reduced human and physical capital. He proves that, for private investors, corruption increases investment and operation costs, as well as uncertainties about the timing and effects of the application of government regulations. Corruption also raises the investment and operational costs of public enterprises, which are detrimental to private investment through inadequate and low-quality infrastructures (Tanzi and Davoodi 1998). The same conclusions have been reached for the effects of bureaucratic quality on the economic activity (Rauch and Evans 2000).

The last notable point in Table 4 is that, although ACs holds near to half of the global oil reserves, a quarter of natural gas reserves, and control almost a third of oil production, the coefficient of percentage of fuel exports to manufactured exports (O) is statistically significant with negative sign, in contrast to the non-Arab sample. This kind of relationship could explain the “resource curse” phenomena in the Arab region. That mean a negative growth and poor development outcomes are related to natural resources. The key reason for the slow growth is that ACs have failed to improve the performance of non-oil sectors (Selim and Zaki 2016). Large petroleum industry and high dependence on oil exports create unemployment and major social disparities and inequalities that fuel economic grievances leading to protest, insurgency, and civil war (Costello et al. 2015).

#### **4. Conclusions and Policy Implications**

The main argument of this paper is there was a significant economic element to the Arab Spring, which relies mainly on the Arab economies failure to achieve sustained inclusive growth. Although ACs had implemented several economic and political reforms, it did not significantly affect the standards of living for Arab citizens. For instance, economically, the Arab region has the worst economic growth of GDP per capita. The regional GDP growth stays lower than the rest of the world regions. Also, the region exhibited highly skewed income and wealth accumulation as well as resource allocation. Politically, Arab nations are among the



worst performers in estimates of global corruption perceptions index. Consequently, in 2011 a wave of protests spread throughout most of the Arab region for economic and political rights.

To capture the origins of that situation, the study evaluated the impact of socioeconomic reforms on economic performance, by estimating an economic growth model for the Arab Region. The main aim is to understand the possible explanations for the Arab Spring: whether the growth performance of the region has been disappointing because ACs economies have lagged regarding reforms, or due to the reform programs themselves missing key components such as governance and quality of institutions.

The research model investigated most of the components of reform programs by generating aggregated reform indicators using principal component analysis. This method allows computing several variables into six separate groups to present the importance of economic reforms, human capital, physical infrastructure and governance to improve the growth prospects of the economies. These factors have been shown to have a powerful impact on growth. They have greatly contributed to the growth process in the study samples.

The empirical results presented that, the Arab World's economic performance in the past 20 years has been below its potential. In addition, the ACs as a whole failed to generate high and sustained growth, did not reap the benefits of globalisation and the world economic integration, and were unsuccessful in dealing with persistently high unemployment rates. Breaking down Arab GDP growth into growth rate for country groups will disclose that only oil exporters show significant improvement (RRLI). Meanwhile, growth rates for other country groups have partially enhanced or remained flat-except in some countries in RPLA during the period 2005-2010, such as Tunisia and Egypt.

The analysis shows, in general, economic stabilisation contributed positively to Arab region's development except during high macroeconomic volatility in some years, especially after 2010—which lead to disruptive growth. In addition, although most ACs implemented better macroeconomic policies, consolidating macroeconomic stability is still a priority for the success of structural reforms, as well as for successful competition with more successful developing countries. These results stress the importance of macroeconomic reforms for the growth prospects and the reform processes of the ACs. Macroeconomic stability remains

important for the government to address and reforming the economy should not be undertaken before stabilising.

As for external stability, it has been identified as another factor affecting growth performances in ACs. The external instability of the 1990s strongly contributed to the economic turmoil of the period. In the 2000s, the renegotiation of the external debt assisted to improve the growth development in the region. The gap regarding external debt and the significant scope for debt reduction indicate, however, it still represents a potentially significant source of growth for the future.

The region is also concerned with achieving progress in structural reforms, which have always lagged behind faster-growing countries regarding forging investment, trade openness, and financial development. In the 1990s, the slow pace of these reforms limited the benefits of macroeconomic stabilisation. In fact, as illustrated by econometric results, attracting FDI, improving trade openness, and financial development would strongly contribute to the economic growth of ACs, in addition to facilitating the integration of the region into the world economy. However, more efforts are still needed to promote faster growth; governments should focus on simplifying the complex procedures for doing business and improving infrastructure. Financial sector reform, especially of state-owned banks, is also crucial to allocate resources to their most productive use and finance diversification. Many of these countries may have to readjust their overvalued exchange rates, which are undermining export competitiveness. Moreover, heightened uncertainty brought about by the introduction of reforms further deters the private sector from investing in an economic activity that does not yield immediate short-term return.

Furthermore, the empirical model confirms that the ACs resource rents have a negative effect on economic growth as well as governance. These results propose that the resource curse in the Arab world is primarily an “institutional curse”, even though it has several macroeconomic manifestations. The political conditions affect economics through how resource rents are collected, allocated and used. Explanations for the failure of the governments of various Arab states to provide the kind of sound governance for their populations that can deliver strong economic progress and meaningful upward mobility have tended to fall into one of three

categories: firstly, the implementation of misguided economic policies that provide government officials with an excessive amount of authority over the allocation of national resources; secondly, the presence of rampant corruption and cronyism throughout the organs of the state; and lastly the lack of accountability caused by a dearth of democracy and political freedoms.

The effects of this misgovernance were so bad for all ACs in particular with no exceptions. For economies with little natural resource income relative to the size of their population (LICs and RPLA), the role of state control of major economic activities has been a key reason as to why resource-poor Arab nations have failed to keep pace with countries possessing more market-oriented economic policies. On the other hand, weak governance in the abundant natural resource countries (RRLA and RRLI) have predated resource discovery and have had adverse implications for macroeconomic management. At the same time, natural resources have consolidated the weak institutional set-up. Over time, the interaction between these two factors became intertwined and prevented ACS from embarking on a sustainable development path.

Therefore, the analysis suggests that for ACs in general and resource-rich Arab countries (RRLI) to avoid the oil curse and achieve sustained growth and development, they must introduce effective political reforms. It is hoped that stronger political institutions will trigger reform in macroeconomic stability in general and in particular the structural reform that would improve the management of natural resources, achieve more savings, and implement more efficient private sector and public spending programs. The main challenge of these reforms is not only to make diversification in their economies but also to reorient their economies toward greater private-sector employment of nationals.

Regarding the human capital impact, it is critical that ACs reduce inequality of opportunity and foster more inclusive growth. Working-age population growth in the region is higher than in all other developing regions except Sub-Saharan Africa, and according to World Bank (2016a), this rate will stay the same over the next decade. From this demographic perspective, it is imperative that labour market and other policy adjustments begin as soon as possible, and that there be a special emphasis on addressing shortcomings affecting youth.

Concerning labour market policies, policymakers in the region should move forward to remove supply-side restrictions, such as improving the quality of and implementing programs to better match labour force skills with those demanded by job markets. These efforts will need to be combined with the removal of constraints to competition and impediments to equality of opportunity among businesses.

To conclude, according to the results of this study, reform is simultaneously political, social and economic. It is thus because real development is not only a question of employment, inflation and GDP growth. It also includes an incentive (profit), property rights (means of governance), resource allocation, and wealth distribution. The economic policy design that addresses these issues cannot ignore their political and social contexts and implications. Ignoring social implications will turn those who stand to reap the most benefits from reform into the enemies of reform. Therefore, there is a complementary relationship between socioeconomic reform and institutions. Political and economic reform should go together.

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## Appendices

### Appendix. 1: List of Countries Included in the Analysis

Arab Countries (ARB)	Central & South Asia (CSA)	East Asia (EAS)	Europe (ECS)	Latin America (LCN)	North America (NAC)	Sub-Saharan Africa (SSF)
Algeria Bahrain Egypt, Arab Rep. Iraq Jordan Kuwait Lebanon Libya Morocco Oman Qatar Saudi Arabia Sudan Syrian Arab Republic Tunisia United Arab Emirates Yemen, Rep.	Azerbaijan Bangladesh India Iran, Islamic Rep. Kazakhstan Russian Federation	Australia China Hong Kong SAR, China Indonesia Korea, Rep. Malaysia New Zealand Singapore Thailand	Austria Belgium Bulgaria Croatia Czech Republic Denmark Finland France Germany Greece Ireland Israel Italy Luxembourg Netherlands Norway Poland Portugal Romania Slovak Republic Slovenia Spain Sweden Turkey United Kingdom	Argentina Brazil Chile Colombia Costa Rica Cuba Ecuador México Perú Venezuela, RB	Canada United States	Angola Kenya Namibia Nigeria South Africa Zambia Zimbabwe

### Appendix. 2: List of the Regions Included in the Analysis, 1995 - 2014

Region ode	No. of Countries	No. of Observations (1995 – 2014)
ARB	17	340
CSA	6	120
EAS	9	180
ECS	25	500
LCN	10	200
NAC	2	40
SSF	7	140
<b>Total</b>	<b>76</b>	<b>1,520</b>

### Appendix 3: List of the Arab Sub-groups Included in the Analysis, 1995 – 2014

Arab Sub-groups	Names of Countries	No. of Observations
<b>Low-income Countries (LICs)</b>	1. Sudan 2. Yemen, Rep.	40
<b>Resource-poor, Labour-abundant (RPLA)</b>	3. Egypt, Arab Rep. 4. Jordan 5. Lebanon 6. Morocco 7. Tunisia	100
<b>Resource-rich, Labour-abundant RRLA</b>	8. Algeria 9. Iraq 10. Syrian Arab Republic	60
<b>Resource-rich, Labour-importing RRLI</b>	11. Bahrain 12. Kuwait 13. Libya 14. Oman 15. Qatar 16. Saudi Arabia 17. United Arab Emirates	140
<b>Total</b>		340

### Appendix 4.1: The Correlation Coefficients of the OLS Residuals Over Time

	uols	uols_1	uols_2	uols_3	uols_4
uols	1				
L1.	0.1771	1			
L2.	0.0116	0.1539	1		
L3.	-0.0623	0.0707	0.2719	1	
L4.	-0.0062	-0.0608	0.2656	0.3486	1

### Appendix 4.2: The Robust of Standard Errors

ly1	Coef.	Robust Std. Err.	t	P>t	[95% Conf. Interval]	
lyy1	-0.33	0.10	-3.42	0.001	-0.52	-0.14
M	-0.38	0.11	-3.45	0.001	-0.60	-0.16
E	-0.12	0.05	-2.24	0.03	-0.22	-0.01
B	0.06	0.08	0.8	0.428	-0.10	0.22
H	-0.28	0.09	-3.16	0.003	-0.45	-0.10
P	0.50	0.14	3.67	0.001	0.22	0.77
G	-0.10	0.05	-1.85	0.071	-0.21	0.01
T	0.01	0.01	1.06	0.294	-0.01	0.02
Oil	-0.01	0.00	-2.43	0.019	-0.01	0.00
pop	-0.06	0.05	-1.24	0.222	-0.15	0.04
_cons	4.04	0.82	4.9	0	2.38	5.69