

An international comparison for Entrepreneurship, Unemployment and Economic Growth for MENA region

SIAGH Ahmed Ramzi,

EcoNature Laboratory - KasdiMerbah University - Ouargla,
Algeria; siagh.ramzi@univ-ouargla.dz

BENZAID Younes,

University of Rennes 1 - *CREM UMR CNRS 6211, France*
And LAREQUAD University of Tunis ElManar, Tunisia;
younes.benzaied@univ-rennes1.fr

BENGRINA Mohammed Hamza

EcoNature Laboratory - KasdiMerbah University - Ouargla, Algeria;

hmazabmg@yahoo.fr

Abstract: Crossways this article, we develop an ambitious research that addresses of emergent global phenomena and raises new questions in entrepreneurship and investigate entrepreneurship in different outlook and other economic context. In order to perceive if and how entrepreneurs matter for economic region characterized over the same link on implemented effect between entrepreneurship, GNI, GDP and unemployment rate. The paper studies the impact of entrepreneurship on economic growth and unemployment. By using a comparison of the level of these measures, the study considers different nations of MENA region for the period 2005-2011. The main intention is to formally evaluate the impact of entrepreneurship on both unemployment rate and economic growth levels. Different econometric specifications and estimation methods will be considered to fully demonstrate by comparables measures how entrepreneurship affects economic growth and unemployment on MENA countries. We therefore try to append the low-level researches focused specially to MENA region with the aim of increasing its quality, coherence, scope, and impact. Such understanding is particularly relevant in countries undergoing challenges transformation to a market economy system

Keywords: Entrepreneurship, unemployment, economic growth, GLS regression, MENA countries.

. Introduction.

The importance of Entrepreneurship is recognized worldwide as it acting role in many fields related to human capital, employment, sustainability, poverty, science and technology etc. The development of consideration in entrepreneurship leads to growing academic research into its dynamics and processes. It is the need of the hour to first understand and then craft environments which encourages entrepreneurial activities (Acs and Szerb, 2007). Several studies are focused to study the determinants of entrepreneurship and its dynamics in conjunction with macro level economic growth. That may be mentioned that market conditions and access, finance, culture, technology infrastructure and macroeconomic environments are considered to be the factors that influence entrepreneurship (Holmes and Schmitz, 1990). Also, globalization has led to an increase in the demand and provides opportunities for entrepreneurs to take part in the economic growth. Though this, our research focusing on the macro-economic relation of the economy level and entrepreneurship adequacy. Given that; the theory, while influential, is largely descriptive and difficult to formalize econometrically and consequently, we note that entrepreneurship is missing from most empirical models to explaining economic growth.

We can judge that a lack of reliable empirical data on entrepreneurship impeded the developments in entrepreneurial activity research area over countries.

The heightened interest in the field of entrepreneurship is prompted by several factors: some being, as a means of revitalizing stagnated economies; stimulating developing economies and coping with unemployment problems by providing new job opportunities. In developing economies entrepreneurship is seen as an engine of economic progress, job creation and social adjustment (Guroi and Atsan, 2006). Entrepreneurship has been recognized as an important element in the dynamics of all economies and it is regarded as the driving force in economic growth and job creation (Sunter, 2000).

In this perspective we recall that various studies have investigated the relationship between entrepreneurship and different macroeconomic variables related at region level (Caree et al., 2002; Audretsch and Keilbach, 2004) and especially the impact of dimensions of entrepreneurship as defined in GEM¹ on macroeconomic variables in the developed economies. Results in the developed economies show identical trend of entrepreneurial activity with Gross Domestic Product and Gross National Income (Ahmad et al. 2011).

Crossways this article, it's essential to investigate entrepreneurship in diverse outlook and other economic context in order to perceive if and how entrepreneurs matter for economic region characterized over the same link on implemented effect between entrepreneurship, GNI, GDP and unemployment rate. Although, we suggest trying to examine this effect tendency in a specific economic context outlook in order to answer the question that if and how entrepreneurs matter for economic and especially in MENA region characterized by the same cultural context and different economy structure (Efficiency-Driven or Factor-Driven)². Understanding country differences in entrepreneurship is important because it's widely believed to play a key role in economic development (Audretsch and Thurik, 2001). Such understanding is particularly relevant in countries undergoing systemic transformation to a market economy system such MENA countries.

In MENA economies the Entrepreneurship is the most important driven of private sector and it's not large enough to reduce high unemployment rates. SMEs are the major driver of private sector, where over 90% of the SMEs employ less than 50 employees and contribute to over 2/3 of total formal employment³. This sector is also characterized by a high level of informality; low involvement of women; and concentration in low-growth sectors, serving local markets, with low use of modern technologies, and a low level of product quality, competitiveness, diversification, and innovation (Stevenson 2010). It's evident that growth-potential SMEs need more and higher quality entrepreneurs. But, the SME sector faces a number of barriers to its development: complex and costly administrative procedures affecting entry, operation and exit of enterprises; low access to formal financing; inadequate access to/use of Business Development Services,

¹ *The Global Entrepreneurship Monitor (GEM).*

² *GEM Countries Classified by Economy and Geography, 2010 Global Report.*

³ *The Impact of the Global Economic Crisis on SMEs in the MENA Region. OCDE 2010 Report.*

entrepreneurship/management training, business and market information, and technology; high social security and non-wage labor costs (affects hiring practices); constrained access to some markets; and a weak entrepreneurship culture (Cieřlik & A. van Stel 2012). The lack of timely, comprehensive and comparable data on the SME sector and inconsistent SME definitions (where they exist) impedes effective policy action (Stevenson 2010).

This paper explores the different dimension of entrepreneurship in eleven MENA countries: Algeria, Egypt, Jordan, Lebanon, Morocco, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates and Yemen. Because these countries share the same historic and cultural traditions due to long term links with the Muslim civilization but also the experiences under the colonial regime. We try to inspect developments on the most important economics rates over the period 2005-2011 and by the way see comparable against other OECD countries.

This work can provides an overview of the economic challenges in MENA region, some of which have been brought to light even further by the Arab Spring. The article also reviews the region's economic presentation over past years and the short-term economic impact of recent events. Finally, it highlights the entrepreneurship potential of the MENA region under its effect to economic witch give the way to maximize the great opportunities that lie ahead (O'Sullivan et al. 2011).

Different econometric specifications and estimation methods will be considered to fully demonstrate how dimension of entrepreneurship affect economic growth and unemployment rates on MENA countries for the period 2005-2011. Trough the results obtained the main intention is to formally evaluate the impact of entrepreneurship on both economic growth and employment indicators. The other argument throughout this research is that the current wave of political change on MENA countries can provides a window of opportunity to the competitiveness and better living standards. We will test whether this influence depends upon the level of economic development measured as GDP, GNI and unemployment. With this test we aim to investigate to what extent the role of the model of the entrepreneurial has challenged social and economic response to an economy dictated not just by the dominance of the production factor.

The paper is organized as tree principal parts. Firstly, we illustrate the contribution that surrounds literature views of the more relevant economic ideas and concepts on entrepreneurship, economic growth and unemployment. The second part is related about methodology for consideration measures of entrepreneurship and economic indicators by means of estimation of fixed effect and random effect model and Hausman test, in order to exploit. Finally After summarizes results of the analysis and concludes where the discussions of the findings are exposed for our knowledge study.

2. Literature Review

2.1. Entrepreneurship and economic growth

Entrepreneurship has been studied using different approaches, such as psychological, sociological, anthropological, and an economic one (Héctor Salgado-Banda, 2005). Although copious amounts have been written theoretically and descriptively on how

entrepreneurship affects the economy (Porter, 1990; Baumol, 1990; Lumpkin and Dess, 1996). Everyone considers entrepreneurship to play a decisive role in the cycle that promotes economic growth. We can assert that literature clearly recognizes the benefits and virtuosity of entrepreneurship for economic growth. Growth is a central concept in entrepreneurship context (Casson, 1982; Brush and Vanderwerf, 1992; Chandler and Hanks, 1993; March and Sutton, 1997; Fisher and Reuber, 2003). Aghion et al. (1999) and Reiss and Weinert (2002) study the implications of redistribution policies in promoting entrepreneurship and growth.

From the historical views of entrepreneurship, theoretical and descriptive point of view linking entrepreneurship and economic growth have emerged from various fields of economics and management study, including economic history, industrial economics and management theory. Wennekers and Thurik (1999) and Carree and Thurik (2003) suggest extensive surveys of the diverse literature on the relationship between entrepreneurship and economic growth. In fact, the literature provides that entrepreneurship contributes to economic performance by introducing innovations, creating change, creating competition and enhancing rivalry (Wong and al. 2005). Also, new theories emerging from the field of industrial evolution or evolutionary economics give theoretical thinking linking entrepreneurship to growth (Jovanovic, 1982; Audretsch, 1995). Precisely, Wennekers and Thurik (1999) made a significant contribution on linking entrepreneurship to economic growth. They show the myriad effects and conditions taking place at different levels for entrepreneurial activities to have ultimate impact on economic growth. Moreover and using endogenous growth models developed by Romer (1986) Schmitz (1989) conceptualize a theoretical model and concludes that increasing levels of entrepreneurship generates additional input in the economy. Davidsson (2004) discusses from different perspectives Kirzner's (1973) notion of entrepreneurship his view includes an any entry of new economic activity to the market place as an incidence of entrepreneurship. With all groupings, we can compare economies across similar development levels and geographic locations.

About empirical evidence linking entrepreneurship to economic growth there is only some studies devoted to the econometric link between economic growth at the national level due to the difficulty in obtaining a measure of level of entrepreneurship that can be appropriately correlated to economic growth (Wong et al. 2005). But nonetheless some efforts have been empirically investigate the importance of the impact of entrepreneurship on economic performance, at the firm, region or industry level (e.g. Audretsch, 1995, Audretsch and Fritsch, 2002 and Caves, 1998). However, contributions at the level of the nation state are limited (Blanchflower, 2004; Carree et al., 2002) and the analysis of the link between entrepreneurial activities rates as measured by GEM indicators and economic growth has been limited to correlations with GDP rates, with no attempt to control for other factors (Reynolds et al., 1994, 2005, 2011).

2.2. Entrepreneurship and unemployment

In the language of economic growth, the literature unemployment has been reached in studies on job creation in numerous countries such as the United States (Birch, 1979, 1987), Sweden (Davidsson e t al., 1998) and Canada (Baldwin and Picot, 1995).

Unemployed people tend to possess lower endowments of human and social capital and entrepreneurial talent which may lead to early exit. High unemployment may also imply lower levels of personal wealth reducing the likelihood of becoming self-employed or the survival in the initial stages of business ownership (A. V. Stel et al. 2007). A strand of entrepreneurship literature examines the dynamic nature of causality between business ownership and unemployment. In addition it has been argued that entrepreneurship influences (un)employment. The idea that unemployment is linked to entrepreneurial activity dates back at least to Oxenfeldt (1943), who pointed out that persons confronted with unemployment and low prospects for wage-employment may turn to self-employment as a viable alternative. This was an extension of Knight's view that individuals make a decision among three states – unemployment, self-employment and employment. While some studies find that greater unemployment serves as a catalyst for startup activity (Reynolds, Miller and Makai, 1995; Reynolds, Storey and Westhead, 1994; Hamilton, 1989; Highfield and Smiley, 1987, and Yamawaki, 1990; Evans and Leighton, 1989 and 1990), still others have found that unemployment reduces the amount of entrepreneurial activity (A. R. Thurik, Carree, A. V. Stel, et al. 2008). On the one hand, unemployment rates may stimulate start-up activity of self-employment. On the other hand, higher start-up rates, or higher self-employment, may facilitate industrial restructuring and renewal, decreasing unemployment in subsequent periods. The overlap between these two effects results in ambiguity about the interrelationship between unemployment and entrepreneurial activity (Baptista & Preto 2007). Several empirical studies suggest that not all new firms contribute equally to economic growth. Kirchoff (1994), Storey (1994), Westhead and Cowling (1995) and Birch et al. (1997) maintain that it is rapidly growing firms, rather than small firms in general, that generate the vast majority of new jobs.

The relationship between unemployment and entrepreneurship has received increased attention of researchers and policy makers, in particular as a reaction to the relatively high unemployment levels confronting developed and developing countries in the last decades (Baptista & Van Stel & Thurik, 2006). Entrepreneurship has been suggested as a remedy against high unemployment and stagnant economic growth (European Commission, 2003; Carree & Thurik, 2003; Thurik et al, 2008; Van Stel & Thurik & Verheul & Baljeu, 2007).(Mohammad and al. 2011). The positive effect of entrepreneurship on economic performance has been referred to as the 'Schumpeter' effect. Such as Picot et al. (1998) have found where new firms enhance employment levels by stimulating economic activity and creating new jobs and then observe a unidirectional impact of unemployment on firm start-up. Another approach recognizes increased amount of entrepreneurial activity impact unemployment can be inferred from the literature on Gibrat's Law⁴. Consequently, changing employment from large to small enterprises should have no impact on employment, therefore, a restructuring of the economy from large enterprises and towards small ones — i.e., an increase in self-employment — should have no impact on the unemployment rate (A. R. Thurik, Carree, A. Van Stel, et al. 2008).

⁴Gibrat's Law asserts that firm growth is independent of size (Sutton, 1997)

We focus on this direction of causality in the relationship between unemployment and entrepreneurship new firms create (new) jobs, leading to a subsequent decrease unemployment. Hence, Entrepreneurship may influence economic performance in different ways because entrepreneurs often play a vital role in the early evolution of industries by way of introducing new products or processes and, in the long term, enhancing productivity through increasing competition (A. V. Stel et al. 2007). Reynolds (1999) found a clear association between creative destruction as manifested by firm formation dynamics and economic growth as proxied by job creation. However, Outside of the literature on job creation, numerous studies examine the ambivalent causality between formation of new firms and (un)employment level. Also, Audretsch et al. (2001) provide an overview of the conflicting bi-directional forces underlying this relationship. More recent empirical studies have embraced this two-way causality and modeled entrepreneurship as an endogenous determinant of employment. Audretsch and Thurik (2000) applied these assumptions to construct an estimation equation with change in business ownership as a causal factor in change in unemployment rate.

2.3. The structural fragility of MENA economies

A number of studies have analyzed the growth outline of the MENA region in an international outlook. Makdisi, Fattah and Limam (2007) concludes that the overall growth performance of the MENA region over the period 1960-2000 has been characterized by a higher degree of volatility relative to other regions of the world (Bhattacharya & Wolde 2009). And compared to other regions of the world, they find that capital is less efficient, trade openness less beneficial to growth, and the impact of adverse external shocks more pronounced relative. Their empirical results also show the dominance of capital contribution over that of labor and total factor productivity (TFP) growth in explaining growth performance in the MENA. Hence and except the Gulf countries, the major constraint to growth that has been detected in the literature is the lack of adequate infrastructure. According to the World Bank's Investment Climate Assessments, Nabli (2007) notes that almost half of private sector in the region complain that infrastructure is a moderate to major obstacle to conducting business. Page and Van Gelder (2001) argue that the problem is both with an institutional framework that does not align prices with costs and with lack of an enabling environment that would permit and entice provision by the private sector.

On another side view, a number of empirical studies have argued that labor skill shortages are another key constraint on growth in the MENA region. Page and Gelder (2001) and Karshenas (2001) argue that a prominent feature of the MENA economies is the low stock of human capital and labor skills compared to other countries (Bhattacharya & Wolde 2009). Also in discuss on the important role of labor markets in economic development and their impact on the acquisition and deployment of skills, Pissarides and Véganzonès-Varoudakis (2007) with their re-examination of the relationship of the labor market and economic growth in the MENA region argue that countries region continue to fail to deploy human capital efficiently in spite of high levels of education. This is largely due to the presence of large public sectors which inadequate incentives and/or excessive regulations of the private sector. For some countries the Oil-led growth has created weak structural foundations in Arab economies and also, many Arab countries are turning into

increasingly import oriented and service based economies. The types of services found in Arab countries fall at the low end of the value adding chain, contribute little to local knowledge development, and lock countries into inferior positions in global markets (Elasrag 2012). It's appears that the structural fragility of Arab economies as a result of oil-led growth is highlighted by the evident decline in the share of non-oil productive sectors (agriculture and manufacturing) to GDP in all Arab countries except the high income countries. It should be noted that the rapid increase in manufacturing shares in the latter is due, in part, to the very low initial base in the 1970s and the rapid growth in value added by petrochemical industries (Alasrag 2007).

While national unemployment rates vary considerably, youth unemployment is a serious challenge common to many Arab countries. As unemployment is an economic condition while this would seem to be straight forward, there are several complications in both measuring unemployment within a country and in comparing unemployment rates from country to country. The literature on unemployment in the MENA region reflects mixed views about the proposition that growth has failed to deliver jobs, it's manner that Okun's coefficient is low or insignificant (Moosa 2008). He underling that it may be strange that not many attempts have been made to estimate Okun's coefficient for Arab Countries. Keller, J. and Nabil (2002) suggest that economic growth in the MENA region has been insufficient compared to the region's labor force and that high growth does not guarantee good labor market outcomes. They also suggest that unemployment will persist with high economic growth if it is capital intensive (rather than employment intensive) and point out that employment has strongly expanded despite low levels of growth. This, they argue, is a reflection of the nature of employment creation in the region where public sector employment has been used as a refuge for large portions of the labor force. Differences between the structures of developed economies and those of MENA, as well as differences in the rigidity of labor markets must translate into differences in Okun's coefficients (they should be higher in developed economies). Keller and Nabil reach the conclusion that improving the region's labor market outcomes can be achieved by improving the growth prospects and increasing the employment intensity of growth (O'Sullivan et al. 2011). While the MENA Support by way of government initiatives and policies; existence of stable macroeconomics; favorable legal and regulatory conditions; adherence to corporate governance and transparency in transactions; creation of a knowledge intensive environment and a transparent market environment supported by research and knowledge creation will enable the overall development of the region.

3. Methodology

Based on Entrepreneurship in endogenous growth models because Economic growth in the traditional growth models is achieved by capital accumulation and exogenous technological progress, both of which affected by any entrepreneurial role (Baumol 1968). The model is founded on the concept that the contribution of entrepreneurs to an economy varies (Wennekers et al., 2005; Gries and Naude, 2008) thus our work try to give empirical evidence of the causal relationship effect between some entrepreneurship indicators as independent variables and the most important economic development indicators GNI, GDP and unemployment as suggested by Bosma and al., (2009) and Bosma and Levie(2010).

The data to measure entrepreneurship is collected from "The Global Entrepreneurship Monitor (GEM)" project. GEM generates original data on the institutional framework for entrepreneurship and entrepreneurial attitudes, activity and aspirations using its own methodology that is harmonized across countries. For identical definition and consistent method for data gathering across countries for international comparison the GEM index appears as the favorable and adequate dimensions to use. The OECD (1998) recognizes that measuring entrepreneurship is a very difficult task, since there is no consensus about what would be a reliable and practical set of indicators. Wennekers and Thurik (1999), formulated the macro measurement of entrepreneurship needs to operationalise entrepreneurship as a multi-dimensional concept from typologies that are developed at the micro-level. For this we choose the more significant entrepreneurship dimensions over Entrepreneurial Activity, Aspirations and Attitude as proposed by GEM. We list below key variables attached to measure entrepreneurship, choose from 20 dimensions, as shown in **table 1**.

Table 1. key variables entrepreneurship dimensions

| Variable | Name |
|-----------------|--|
| Busangyy | Informal Investors Rate |
| Teayyfem | Total early-stage Entrepreneurial Activity for Female Working Age Population |
| Teayymal | Total early-stage Entrepreneurial Activity for Male Working Age Population |
| Teayyido | Improvement-Driven Opportunity Entrepreneurial Activity |
| Estbbuuy | Established Business Ownership Rate |
| Babybuuy | New Business Ownership Rate |
| Suboanyy | Nascent Entrepreneurship Rate |
| Knoentyy | Know Startup Entrepreneur Rate |
| Frfailop | Fear of Failure Rate |
| Opportyy | Perceived Opportunities |
| Suskilyy | Perceived Capabilities |

On the other side the data for macroeconomic exogenous variables used in the study i.e. GNI; GDP and unemployment rate is obtained from International Financial Statistics (IFS) elibrary data base of the International Monetary Fund, World Economic Outlook Database and World Bank national accounts data files. GNI per capita, PPP (current international \$) based on purchasing power parity (PPP). PPP GNI is gross national income (GNI) converted to international dollars using purchasing power parity rates. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GDP per capita (current US\$) is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Finally, the Unemployment rate (% of total labor force) is defined as the number of unemployed persons divided by the total labor force (which is the sum of unemployed

persons and employed persons). Unemployment refers to the share of the labor force that is without work but available for and seeking employment.

The analysis is done for eleven MENA countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen). The time span for the analysis ranges from year 2005 to 2011 with annual frequency. There are two types of information in panel data: the cross-sectional information reflected in the differences between subjects, and the time-series or within-subject information reflected in the changes within subjects over time. Panel data regression techniques and tests will be appropriate and allow us to take different types of information. While it is possible to use ordinary multiple regression techniques on panel data, they may not be optimal. The estimates of coefficients derived from regression may be subject to omitted variable bias.

By run Hausman test on the estimates on fixed effect and random effect model result we can inspect which model is appropriate (fixed or random) based on hypothesis: Null: random effect model is appropriate, alt: Fixed effect model is appropriate. In simplest terms, random effects model stands from the point where the independent variables have a random nature, while the fixed effect model considers the independent variables to have no random nature. On the basis data regression techniques model choose fixed and random respectively to detect effect compare each country against each other and the random to estimate overall level of GNI and GDP and the degree of variation across country. The model specification over time and MENA countries is used respectively when GNI and GDP was taken as dependent variable and but for unemployment rate as response variable, Hausman Specification Test proposed to use fixed effect model. But while applying Hausman test on both of fe and re models it is fair to assume that more important test here is the fixed effects model, because within fixed effects model there is a consideration that exogenous effects can play a role in the model, however random effects model can provide better results in estimation.

Estimation model GNI

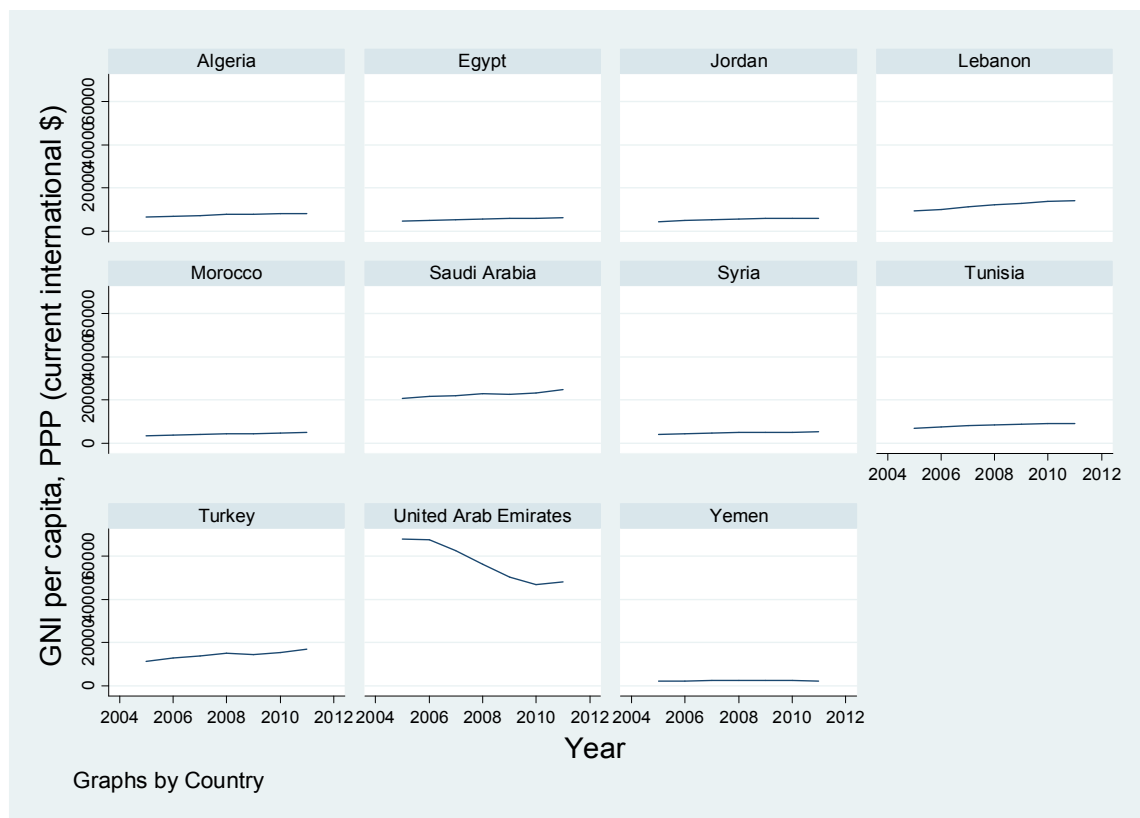
The result of random effect model while treating Gross National Income in **Table 2** shows Wald Statistics 60.83 and Prob> Chi² 0.000 confirm the adequate effect model. R-Square found that 48.34% variation in the GNI explained by independent variables. Where *teayyido* (Improvement-Driven Opportunity Entrepreneurial Activity) is found to be significantly positively related with GNI and we estimate that *teayyido* has induct a part of 477.3888 to the GNI value in other hand *estbbuyy* (Established Business Ownership Rate) and *teayymal* (Total early-stage Entrepreneurial Activity for Male Working Age Population) are found affect negatively GNI levels with significant z values of -3.33 and -2.15 respectively.

Table 2. The result of random effect model GNI

Random-effects GLS regression Number of obs =77Number of groups =11
 Group variable: country1 Obs per group: min =7
 R-sq: within = 0.0685 Wald chi2(11) =60.83Prob> chi2 =0.0000
 between = 0.6869overall = 0.4834 corr(u_i, X) = 0 (assumed)

| GNI | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|----------------|------------------|---|---------|-------|----------------------|-----------|
| suskilyy | 285.8136 | 171.945 | 1.66 | 0.096 | -51.19239 | 622.8196 |
| oppertyy | -149.6295 | 130.4074 | -1.15 | 0.251 | -405.2233 | 105.9643 |
| frfailop | 214.9559 | 185.2624 | 1.16 | 0.246 | -148.1517 | 578.0635 |
| knoentyy | -128.9297 | 164.1443 | -0.79 | 0.432 | -450.6466 | 192.7872 |
| suboanyy | 310.8726 | 665.1005 | 0.47 | 0.640 | -992.7005 | 1614.446 |
| babybuyy | 1523.3 | 1314.798 | 1.16 | 0.247 | -1053.657 | 4100.257 |
| estbbuyy | -1341.913 | 403.2602 | -3.33** | 0.001 | -2132.288 | -551.537 |
| teayyido | 477.3888 | 101.752 | 4.69*** | 0.000 | 277.9586 | 676.819 |
| teayymal | -907.6567 | 422.7127 | -2.15** | 0.032 | -1736.158 | -79.15501 |
| teayyfem | -512.4557 | 605.6306 | -0.85 | 0.397 | -1699.47 | 674.5585 |
| busangyy | 248.6921 | 360.4034 | 0.69 | 0.490 | -457.6856 | 955.0698 |
| _cons | -4889.436 | 9539.364 | -0.51 | 0.608 | -23586.25 | 13807.37 |
| sigma_u | 0 | | | | | |
| sigma_e | 2889.7388 | Rho=0(fraction of variance due to u_i) | | | | |

Figure 1. GNI per capita, PPP (current international \$) 2005-2011 graph by country



Estimation model GDP

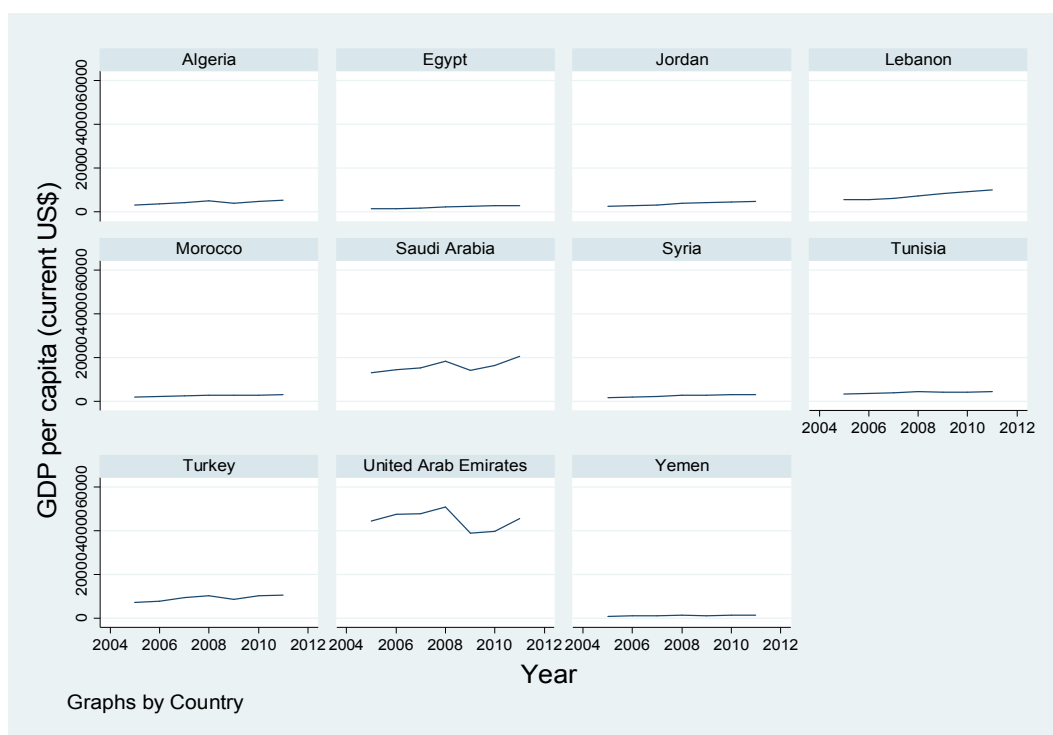
Results on **table 3** shows Wald Statistics 52.11 and Prob > Chi² 0.000 confirm the result of random effect model when Gross domestic product is treated as dependent variable. R-Square found to be 44.50, which means that 44.5% variation in the GDP explained by independent variables. *Suskilly* (Perceived Capabilities), *teayyido* (Improvement-Driven Opportunity Entrepreneurial Activity) is found to be significantly positively related with GDP with z values of 4.07 respectively at 1% level p-values and *estbbuuy* (Established Business Ownership Rate) is found to be significantly negatively with GDP with t values of -3.25..

Table 3. The result of random effect model GDP

| | |
|-----------------------------------|--|
| Random-effects GLS regression | Number of obs =77 |
| Group variable: country1 | Number of groups =11 |
| R-sq: within = 0.0096 | Obs per group: min =7 |
| between = 0.6652 overall = 0.4450 | Wald chi2(11) =52.12Prob> chi2 =0.0000 |
| corr(u_i, X) = 0 (assumed) | |

| GDP | Coef. | Std. Err. | z | P>z | [95% Conf. Interval] | |
|----------|-------------------------------------|-----------|---------|-------|----------------------|-----------|
| suskilly | 265.8664 | 143.2916 | 1.86 | 0.064 | -14.97994 | 546.7128 |
| oppority | -105.3896 | 108.6759 | -0.97 | 0.332 | -318.3905 | 107.6114 |
| frfailop | 194.6601 | 154.3897 | 1.26 | 0.207 | -107.9382 | 497.2585 |
| knoentyy | -69.3773 | 136.7908 | -0.51 | 0.612 | -337.4824 | 198.7278 |
| suboanyy | 282.3581 | 554.2663 | 0.51 | 0.610 | -803.9839 | 1368.7 |
| babybuuy | 1374.813 | 1095.696 | 1.25 | 0.210 | -772.7126 | 3522.338 |
| estbbuuy | -1090.743 | 336.0598 | -3.25** | 0.001 | -1749.408 | -432.0781 |
| teayyido | 345.5316 | 84.79573 | 4.07*** | 0.000 | 179.3351 | 511.7282 |
| teayymal | -750.7758 | 352.2707 | -2.13** | 0.033 | -1441.214 | -60.33799 |
| teayyfem | -392.1839 | 504.7066 | -0.78 | 0.437 | -1381.391 | 597.0229 |
| busangyy | 128.7639 | 300.3448 | 0.43 | 0.668 | -459.9011 | 717.4288 |
| _cons | -8728.449 | 7949.697 | -1.10 | 0.272 | -24309.57 | 6852.672 |
| sigma_u | 0 | | | | | |
| sigma_e | 1666.9057 | | | | | |
| rho | 0 (fraction of variance due to u_i) | | | | | |

Figure 2. GDP per capita (current US) 2005-2011 graph by country



Estimation model unemployment rate

Finally, the results for random effect model not very satisfactory Wald Statistics 17.14 and $Prob > \chi^2 = 0.1037$ and adjusted R squared values above 20%, but not better than fixed effect with non significant F statistics ($F=1.56$, $prob > F=0.1380$), also Hausman specification test prefer fixed effect model over random effect model in case of unemployment rate. The result variation on Entrepreneurial Activity for Male Working Age *teayymalis* found to be the unique significant and positively related to unemployment rate with t values of 2.16 at 5% level p-values so we conclude that with male Entrepreneurial Activity can be extremely change in unemployment rates.

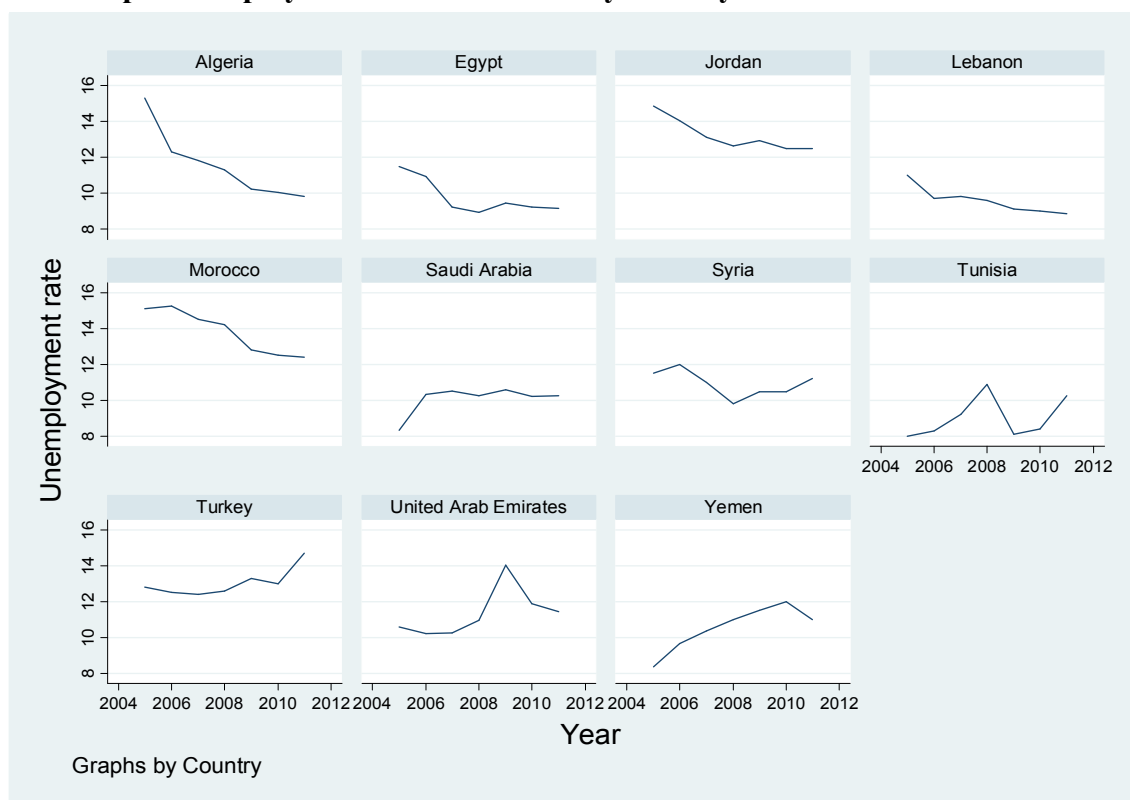
Table 4. The result of Fixed effect model UER

| | |
|-----------------------------------|---------------------------------------|
| Fixed-effects (within) regression | Number of obs = 77 |
| Group variable: country1 | Number of groups = 11 |
| R-sq: within = 0.2375 | Obs per group: min = 7 |
| between = 0.0053 overall = 0.0047 | $F(11,55) = 1.56$ $Prob > F = 0.1380$ |
| $corr(u_i, Xb) = -0.5315$ | |

| UER | Coef. | Std.Err. | t | P> t | [95% Conf. Interval] |
|----------|-----------|----------|-------|-------|----------------------|
| suskilyy | -.0088364 | .0176463 | -0.50 | 0.619 | -.0442003 .0265276 |
| oppoptyy | -.0128594 | .0192307 | -0.67 | 0.506 | -.0513986 .0256799 |
| frfailop | -.0272238 | .0229927 | -1.18 | 0.241 | -.0733022 .0188547 |
| knoentyy | -.0188435 | .0248695 | -0.76 | 0.452 | -.0686831 .0309961 |
| suboanyy | .0436241 | .1062749 | 0.41 | 0.683 | -.1693555 .2566038 |
| babybuyy | -.1436097 | .1351891 | -1.06 | 0.293 | -.4145346 .1273153 |
| estbbuyy | .0549349 | .0539503 | 1.02 | 0.313 | -.053184 .1630537 |

| | | | | | | |
|---|------------|-----------------------------------|----------|-------|-----------|----------|
| teayyido | -.010676 | .0120648 | -0.88 | 0.380 | -.0348544 | .0135024 |
| teayymal | .1055277 | .0487752 | 2.16*** | 0.035 | .00778 | .2032755 |
| teayyfem | .0311331 | .0850025 | 0.37 | 0.716 | -.1392158 | .201482 |
| busangyy | -.0072467 | .0437538 | -0.17 | 0.869 | -.0949313 | .0804378 |
| _cons | 12.48845 | 1.208467 | 10.33*** | 0.000 | 10.06662 | 14.91027 |
| sigma_u | 1.9919429 | | | | | |
| sigma_e | 1.0766052 | | | | | |
| rho | 0.77392279 | (fraction of variance due to u_i) | | | | |
| F test that all u_i=0: F(10, 55) = 12.54 Prob> F = 0.0000 | | | | | | |

Figure 3. Graph unemployment rate 2005-2011 by country



Over all, the postulated equation appears to be reasonably defined, with significant statistics and adjusted R squared values. Collinearity statistics indicate no problems of multi-collinearity between independent variables. Summary descriptive statistics on variables are given in **table 4**.

Table 4. Summarize descriptive statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|----------|-----|----------|-----------|----------|----------|
| GNI | 77 | 13043.45 | 15323.63 | 2020 | 67920 |
| GDP | 77 | 8826.44 | 12320.22 | 811.3747 | 50727.21 |
| UER | 77 | 11.17053 | 1.864834 | 8 | 15.3 |

4. Conclusion

As inspected by (Carree and Thurik, 2003; Acs, 2006; Audretsch 2007) and various strands in the empirical research showing the effect of entrepreneurship on economic growth and different impacts on economic we can widely accept over our study the link between entrepreneurship and economic development. From results with the multiple years of data available for MENA countries, of our analyze on differences between countries and observation of changes over time it is found that some variable under study have no statistically significant impact on GDP, GNI and unemployment rate.

The impact of entrepreneurial activity on macroeconomic variables show identical trend of entrepreneurial activity with Gross domestic product and Gross national Income. Established Business Ownership Rate and Total early-stage Entrepreneurial Activity for Male Working Age Population are negatively with GNI and GDP. Also, Perceived Capabilities and Improvement-Driven Opportunity Entrepreneurial Activity is positively related with GDP and GNI so that conclude that with male Entrepreneurial Activity can be extremely change in unemployment rates.

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