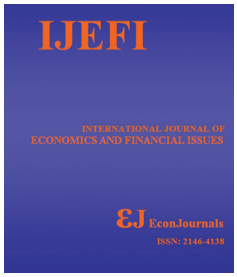

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Gross Domestic Product Development and Employment in Egypt (2000-2013)

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ABSTRACT

The paper is focused on unemployment in Egypt during the period 2000-2013. The unemployment is slightly increasing year by year and represents serious problem because of its structure, when it is menace mainly to young absolvents of universities, which amount is also increasing in observed period. The next analyzed factor is gross domestic product (GDP). In the paper is examined its effect on unemployment. The study also reflects the impact of Arab Spring in 2011. Data has been obtained from Central Agency for Public Mobilization and Statistics, Central Bank of Egypt and Food and Agricultural Organization of the United Nations. There have been used methods of chain indices to reflect the development of observed indicators, and linear regression to describe the trend development. Regards the relationship of GDP and unemployment, Pearson correlation coefficient and elasticity coefficients have been used. Results show strong relationship between the GDP and unemployment in Egypt. Based on obtained data has been found, that there are needed reforms which would help to involve women and young absolvents to the job market. These changes require deep structural changes in whole economy.

Keywords: Unemployment, Employment, Egypt, Gross Domestic Product, Value Chain Index, Education, Effectiveness
JEL Classifications: E2, R1, R100

1. INTRODUCTION

1.1. Unemployment

Unemployment is a situation where a person is not able to find a job but would like to have a full time job. Unemployment may sometimes be referred to as the body of economy. The level of unemployment can differ and vary with different economic situations and other conditions as well. Unemployment is an important issue regardless the time, it CA not be assumed that unemployment was important in only the past, the present or the future. It's an important issue during all times, and for all countries (Toth et al., 2014).

Unemployment is a function of not only the number of the unemployed persons, but also the length of unemployment. Some countries have low rates of unemployment but for a long duration, while others have high unemployment rates but for short duration. That is the reason why, based on the nature of unemployment the policies implemented to deal with unemployment would differ in each case (Maitah et al., 2015).

The importance of research in the field of unemployment, competitiveness and effectivity of production is to be able to fully understand the nature of unemployment and factors affecting the economic cycle. However, most of unemployment duration analysis has focused on developed countries, for example, France by van den Berg and van Ours (1999) and Portugal by Portugal and Addison (2008) and transition economies such as: Slovak Republic by Lubyova and van Ours (1997), Czech Republic by Maitah and Urbankova (2015) and Russia by Grogan and van den Berg (2001). Fewer studies have focused on unemployment duration in developing countries.

1.2. Unemployment in Egypt

Unemployment is a very significant problem facing Egypt. Many people suffering severely from unemployment, in fact, it

is considered to be the most critical problem that has been facing Egypt for over a few decades and has been increasing since year 1960 when the total number of unemployed people was less than 200,000 but increased to reach 850,000 in 1967, and by 1986 this figure exceeded 2 million (CAPMAS, 2014). Job opportunities were growing at a slower rate compared to the growth rate of population.

1.3. Egyptian Labor Market

The Egyptian Labor Market is mainly characterized by high rates of unemployment among highly educated job seekers, low rates of return on education, increasing trends of informality in the labor market, the shifting of dominance from of public sector employment to private sector employment, low-levels of labor productivity, and scarcity of skilled workers needed to match and satisfy the needs of a more competitive and globalized economy (Amin, 2014).

One major and crucial symptom of the above challenge based on the most recent labor survey in 2006 is that more than 80% of unemployed are new entrants to the labor market; moreover, unemployment seems to be classified by education attainment except university graduates (Khorshid et al., 2011).

From Figure 1 the highest unemployment rate is observed to be in the university graduates as well those with intermediate level of education. On the other hand, the lowest rates are in those who are able to read and write as well as illiterate population, this is due to the fact that those people work in jobs that don't require skills and knowledge such as farmers (Maitah et al., 2013).

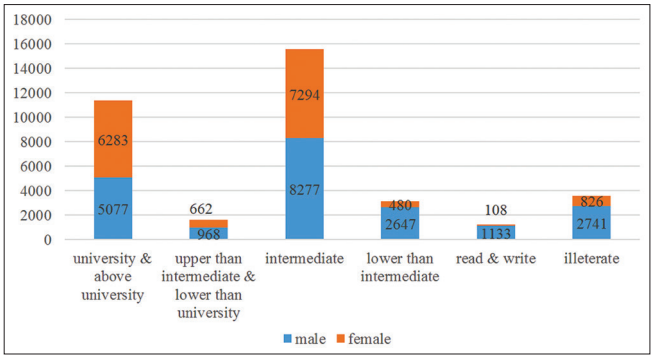
In the past 20 years Egyptian unemployment was fluctuating at a considered to be a high level ranging between 8% and 12%. The debate on employment and unemployment in Egypt has been a main feature of public policy during the last few years. Having unemployment recording double-digit figures, the social actors have realized that it is time to face the problem. That is why, after launching economic reform programs in the mid-2000s it started to decrease in a rather stable manner (Table 1). Although, there was slight increase in unemployment level as a result of the global financial economic crisis, but in 2010 unemployment went down again to reach 9.5% by the end of 2010 (CBE, 2014).

Egypt's unemployment rate in the last quarter of 2010 was 9.5%; after the increase that was witnessed reaching 11.9% in the first quarter under the impact of the political unrest (CAPMAS, 2014).

1.4. Structure of Unemployed Persons in Egypt

Unemployment in Egypt is concentrated mainly among young, educated new entrants to the labor market. More than 93% of the unemployed in Egypt in 1995 were under 30 years of age of whom 95% had a secondary education or higher. Unemployment is strongly related to the expectation of a guaranteed job in the public sector, particularly in one of the State Owned Enterprises, after graduation. This makes young educated persons stay unemployed from 1 to 3 years, waiting for this guaranteed job. On the other hand, the poor who do not have access to education, and therefore, do not have the expectations of these kinds of guaranteed jobs, either do casual wage work or create their own source of living through any sort of self-employment (Afifi, 2011).

Figure 1: Distribution of unemployment in 2013 by educational status and gender (unit 00)



Source: Authors, CAPMAS, 2014

Table 1: Annual of labor force status by gender (2000-2013)

Employment and labor	Year													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Labor force	189011	193395	198768	203596	208713	221040	232060	242500	246520	253030	261800	265290	270205	276225
Male	147018	152129	155339	158387	158790	170760	180810	185110	191200	194100	201400	205406	208736	211664
Female	41993	41266	43429	45209	49923	50280	51250	57390	55320	59430	60400	59884	61469	64651
Unemployment rate in %	8.98	9.22	10.17	11.1	10.32	11.2	10.6	8.9	8.7	9.4	9	11.99	12.7	13.2
Unemployed														
Male	7439	8519	9833	11863	9432	11936	12078	10773	10784	10132	9869	18220	19412	20743
Female	9545	9314	10375	10538	12111	12560	12269	10565	10660	13651	13632	13612	14814	15646
Total	16984	17833	20208	22401	21543	24496	24347	21339	21444	23783	23501	31831	34226	36389
Male	5.06	5.6	6.33	7.49	5.94	6.99	6.68	5.82	5.64	5.22	4.9	8.87	9.3	9.8
Female	22.73	22.57	23.89	23.31	24.26	24.98	23.94	18.41	19.27	22.97	22.57	22.73	24.1	24.2
Total	27.79	28.17	30.22	30.8	30.2	31.97	30.62	24.23	24.91	28.19	27.47	31.6	33.4	34
Employed														
Male	139579	143610	145506	146524	149358	158824	168732	174337	180416	183968	191531	187186	189324	190921
Female	32448	31952	33054	34671	37812	37720	38981	46825	44660	45779	46768	46272	46655	49005
Total	172027	175562	178560	181195	187170	196544	207713	221161	225076	229747	238299	233459	235979	239926

Source: CAPMAS, 2014

Another crucial reason behind the above challenge is the discrimination based on gender which continues to be a major issue in the Egyptian labor market. Women suffer from higher unemployment rates than men according to official statistics. Those who work earn significantly less than men in the private sector, even after taking into consideration education and experience. These gender gaps are not only large, but they are also increasing over time (Assaad and Arntz, 2002; Khorshid et al., 2011).

The main reasons behind unemployment can be summarized in the following list:

- Overpopulation: The population is increasing day by day, however, job opportunities cannot be created at the same proportion, and as a result, a huge percentage of people remain unemployed.
- Education system: This factor plays an important role in unemployment problems. There is mismatch between skills required in the job market and skills provided by Egyptian education system. There is huge gap between what students study and what they need to acquire for getting a job.
- Suffering from a falling economy: Government unable to fix fiscal policy, recession all over the world.
- Political unrest, Governmental instability, social security, investment insecurity that's why some sectors are facing tremendous problem like, tourists visits, foreign investment etc.
- Government policy: The government has no comprehensive strategy to have job creation policy, face poor governance, mismanagement of resources etc.
- Effect of Economic policies: The country weak and unrealistic economic policy is a direct cause of high unemployment in Egypt, Lack of open market economic policy, lack of competitive investment policies, and high tax rates policy are the main factors of unemployment (Eekelen et al., 2001).

As mentioned earlier, Egypt's current employment problem is mainly due to the inadequate labor absorption of graduate students and the mismatching between the educational systems and what the market requires from skills and trainings.

1.5. GDP and Unemployment in Egypt

The relationship between productivity in given sector, employment and GDP has been described by Mikhalkina et al. (2015) and Maitah et al. (2014).

Several factors have led to the difficult situation in the labor market:

Looking to the supply side, many factors played a role in the situation reached currently such as population growth rate and the other factors mentioned earlier.

On the demand side economic growth played the vital and the most important role along different phases and periods of time, as explained in the following:

Generally, Egypt witnessed a rapid GDP growth rate during the early sixties reaching 6.1% annually or examining by sector basis (28.5% for agriculture and 21.6% for industry to GDP in 1965/66). However, the decrease witnessed in the unemployment rate from 2.7% in 1960 to 1.15% in 1966 was not a result of the high growth rates achieved during this period but was a result of the government guaranteed employment policies pursued in 1961.

These policies led to a sizable increase in the labor force in the public and governmental sectors as a result of the public sector's rapid growth that took place after nationalization and the increase in the number of graduates as a result of the expansion of free education that was applied then.

During the period 1973-1986 the Egyptian economy achieved exceptionally high growth rates that reached 10% in the second half of the seventies as a result of adopting the open door policy and the increase in oil prices which lead to flows of foreign exchange triggered mainly by the oil boom in the Gulf countries. This period included the implementation of the first 5-year plan (1982/1983-1986/1987) adopting expansionary economic policies.

During the second 5-years plan (1987/1988-1991/1992) economic growth slowed down and GDP increased by an average of 3-4%. This was due to many factors of which, the most important were the external shocks (the decline in oil prices and the implications of the Gulf crisis), in addition to the contraction faced in the investment activities and the deflationary measures adopted by the government to implement the first phase of the Economic Reform and Structural Adjustment Programme (ERSAP) launched in 1990.

The second half of the nineties witnessed internal and external developments leading to a remarkable growth of the economy reaching an average of 5-6% in the period between 1997/1998-1999/2000. This growth was the result of the reforms implemented in ERSAP-1, as well as debt forgiveness of the Paris Club and also the sharp increase in capital inflows.

Growth resumed gradually and increased to 4.1% in 2003/2004 (after the decline recorded during the period 2000-2003 due to external shocks such as the Asian crisis and September 11th, 2001) up to 7% in 2007/2008, this was due to high oil prices, the increase in Suez Canal and tourism earnings, as well as the growth in the construction sector.

The growth rates faced another decrease, declining from 7% end of 2007/2008 to 4.1% in the first quarter of 2008/2009 as tourist revenues declined by 7.8%, Suez Canal revenues of declined by 2.5%. Deficit of trade balance rose by 25% of during the first quarter of 2009, the deficit in the balance of payment by 75% (CAPMAS, 2014; Nassar, 2011).

1.6. Unemployment after January 2011 Revolution

The revolutionary wave in the Arab world, starting with Tunisia and moving to Egypt, is considered to be a turning point in the Arab region, leaving the economies to face various challenges; economically and politically.

In Egypt, the revolution negatively impacted the economic indicators; the growth rate decreased to reach 1.8% in 2011 compared to 5.3% in 2010, budget deficit increased recording 10% in 2011 compared to 8.1% in 2010 (CBE, 2014).

On the same hand, the above mentioned indicators also affected the unemployment rate, increasing the rate to reach 12% by the end of 2011 (Khattab, 2012).

Egypt is also facing to structural changes in many areas, Smutka et al. (2015) found with changes in rural population should come also administrative reorganization.

Not only did the Egyptian revolution negatively impact the unemployment rate, other revolutions that took place during the same period also were players in increasing the Egyptian unemployment rate. As announced by Hamdi Abdel-Azim, professor of economics at Al-Sadat Academy for Administrative Sciences, the Egyptian workers who returned back to Egypt from Libya, Tunisia, Yemen and Bahrain, due to the political unrest which took place in these regions, have been added to the millions of the unemployed registered by the government. According to the Ministry of Foreign Affairs, over 180,000 workers returned from Libya by 10 March 2011 leading to the increase in Egypt's unemployment rate 11.9% in the first quarter of 2011 (which was the highest record in 10 years), compared to 8.9% in December 2010 (Nowar 2011).

After 2011, the economic challenges continued in Egypt, even after having the presidential elections, this was due to the uncertainty which had various impacts on the economy, of which; the decrease in foreign direct investment (FDI) which as a fact had its impacts on unemployment.

Economic growth has fell behind, the fiscal and balance-of-payments deficits have deteriorated, and foreign exchange reserves have fallen to a critical minimum level (Maitah and Smutka, 2012).

Since the revolution of January 25, 2011, Egypt has experienced major political challenges and a period and a phase of democracy transition. Despite the election of Mohammed Morsi in June 2012, as the first democratically elected president, political instability remains to be dominating holding back the economic growth. Real GDP growth which has not returned to the pre-revolution rate of over 5.1% in 2009/10. The growth rate slightly increased in 2011/12 to reach 2.2% against 1.8% in 2010/2011 (CBE, 2014).

On the demand side, economic activity during 2011/12 was driven by private and public consumption, which compensated for the decline witnessed in investment and the widening of trade deficit. Total private and public consumption presented 90.9% of GDP and investment presented 15.3% in 2011/12, compared to 87% and 16.7% respectively in the previous year.

Observing Egypt's foreign income revenues, it will show a decline driven by Europe's economic distress, negatively impacting the balance of payments; exports, which went primarily to Europe, Egypt's main trading partner, decreased by almost 0.1% to reach USD 27 billion in both 2010/11 and 2011/12, which is more than 8% below the level recorded in 2007/08. On another hand, tourism has been hit very hard due to the political instability, security problems and border attacks in Sinai. As a result, tourism revenues decreased by 11% to record the amount of USD 9.4 billion (3.1% of GDP) in 2011/12.

Net FDI inflows declined for the fourth year in a row, recording an amount of USD 2.1 billion (0.8% of GDP) in both 2010/11 and 2011/12, presenting a step down from a peak of USD 13.2 billion (8% of GDP) in 2007/08 before to the global financial crisis.

All the above mentioned factors and figures had their impact on unemployment; by the end of 2013, the number of unemployed people reached 27.3 million people of whom, 69% were aged between 15 and 29, and more than 82% of those young people held diplomas and university degrees, as per Central Agency for Public Mobilization and Statistics (CAPMAS). This lead to the increase of unemployment rate to record the highest rate of all times, recording 13.4%. The unemployment rate among male workers reached 10%, while among females it was 25% (CAPMAS, 2014).

According to CAPMAS quarterly Labor Force Sample Survey for Q1 2013/2014, the size of the labor force recorded 27.6 million persons, which is the same level recorded during the same period of 2012/2013, however, the number of unemployed people reached 3.6 million, increasing unemployment rate to record 13.4%.

In their study, Abo-El Azayem et al. (2012) conducted a study showing that the government of Egypt failed to achieve the goal of creating job opportunities for females as during the period of the study (2000-2009) the unemployment rate of females reached 22.7% though the females represented only 48.8% of the population.

Another contribution of the study conducted by Ali (2013) and Tomsik et al. (2015) showed that middle age females are less likely to have full time paid jobs and that in general there's discrimination in Egypt against females' role in the economy which represents an obstacle against their access to better education, health and technical skills which eventually negatively affects their opportunities in having better jobs.

2. METHODOLOGY AND DATA

2.1. Methodology

In the paper has been used chain indices for analysis of GDP, unemployment and population development in Egypt during the given period.

2.1.1. Chain index

$$I = \frac{U_{t0}}{U_{t-1}} \quad (1)$$

The linear regression has been used as a tool for observing and prediction of involved variables – GDP and unemployment. This method also allowed to analyze the trend and describe the development of given variables in time.

2.1.2. Linear regression

$$Y' = b_{yx}X + a_{yx}$$

where,

$$b_{yx} = r_{xy}\frac{\sigma_y}{\sigma_x} = \frac{N\sum XY - (\sum X \sum Y)}{N\sum X^2 - (\sum X)^2}$$

$$a_{yx} = \bar{Y} - b_{yx}\bar{X} \quad (2)$$

Coefficient of determination is used to find the most appropriate function for given time series.

2.1.3. Coefficient of determination

$$R^2 = \frac{SSR}{SST} = \frac{\sum (y_i - \bar{y})^2}{\sum (y_i - \bar{y})^2} \quad (3)$$

SSR = Sum of squared residuals
SST = Total sum of squares

Pearson correlation coefficient has been used for analysis of relationship of GDP and unemployment during the given period.

2.1.4. Pearson correlation coefficient

$$r = \frac{\sum_{i=1}^{n}\left((X_i - \bar{X})(Y_i - \bar{Y})\right)}{\sqrt{\sum_{i=1}^{n}(X_i - \bar{X})^2 \sum_{i=1}^{n}(Y_i - \bar{Y})^2}} \quad (4)$$

Elasticity has been calculated for each sector of national economy (as a part of total GDP) and employment.

$$\varepsilon = \frac{\Delta E / E}{\Delta Y / Y} \quad (5)$$

Where E: Employment, Y: GDP (King et al., 2011)

The percentage change in employment in response to 1% change in GDP (using Arc elasticity method).

2.2. Data Collection

The primary source of data is obtained from official published indicators and annual reports from CAPMAS, Central Bank of Egypt (CBE) in addition to working papers and articles from economic journals and economic reform reports.

Data about population and GDP growth development have been obtained from Food and Agricultural Organization of the United Nations (FAO).

3. RESULTS

By applying a linear regression model, it was concluded that there's a high positive correlation between the employment rate and GDP in Egypt of correlation coefficient 0.91.

$$r = 0.91$$

This value indicates strong positive relationship between the employment and GDP. It can be said that with GDP growth will increase also employment. But from Figure 2 is obvious that there is some lag and the GDP development is followed by employment changes with approx. one year delay.

The average unemployment (mean) was calculated to result 10.56%. The standard deviation of the time series is 1.836. This statistical measure of dispersion determines the root mean square deviations of the values of the character (1.836%) from the arithmetic average (10.56%). The time series shows a positive skewness of 1.098 (when the skewness is greater than 1.0 or less than −1.0, the skewness is substantial and the distribution is far from symmetrical) and a positive kurtosis coefficient of 0.494 which indicates that the distribution is peaked (Kurtosis quantifies whether the shape of the data distribution matches the Gaussian distribution, which has a kurtosis of 0 and a positive Kurtosis reflects a peaked distribution. An alternative definition for Kurtosis implies that for a standard normal distribution, the Kurtosis 3 which indicates that most of the values of random variables is close to the median).

Observing the employment elasticity to GDP in 2013 using 2004 as the base year as 2004, the employment elasticity to GDP in 2013 was calculated and equaled 0.34%, this calculation is used to assess if the growth of the economy was able to create enough job opportunities or not.

In 1991, Egypt has adopted a reform program as per the agreement and recommendations of the IMF and World Bank. The adoption of this program was due to the suffering of the Egyptian economy from many structural challenges in the late eighties.

In 2004, the program was accelerated to what was called "Third Generation of reform package," and since then, the economy has been growing steadily - till 2010 when the economy was affected by the global financial crisis, this was reflected in the GDP growth that reached above 7% in 2007/2008 compared to 3.1% in 2002/2003 (CBE, 2014, Khattab 2012).

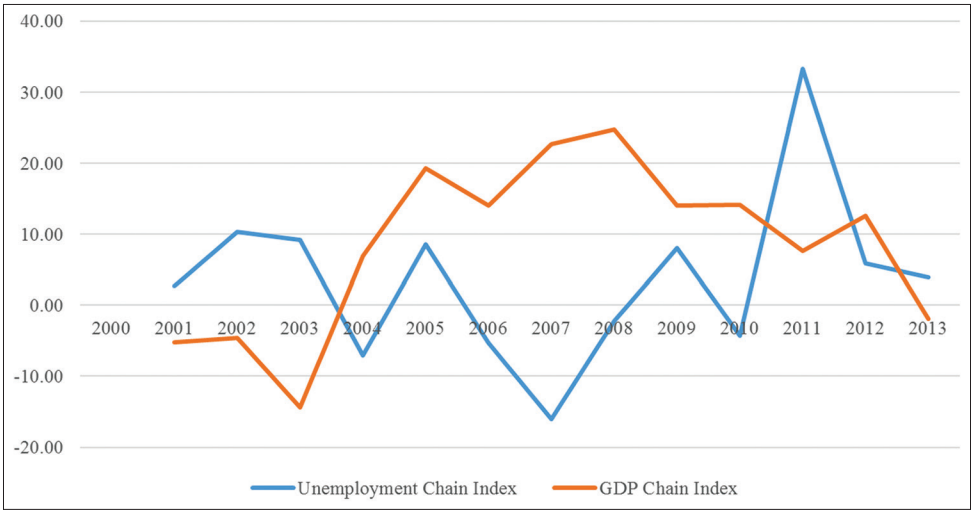
Fiscal reforms which have also been implemented had their impacts on the indicators, attracting FDI to reach USD13.2 billion in 2007/2008 compared to USD11.1 billion in 2006/2007 (Khattab, 2012)

All the above mentioned impacts on the economy were also reflected in the unemployment rate, decreasing from 11.2% in 2004/2005 reaching 8.7% in 2007/2008. Despite the fact that it started increasing again in 2010 due to the influences of the global financial crisis, it started declining again by Q4 2010 reaching 9.1% by the end of 2010 (CAPMAS, 2014).

The Figure 3 illustrates the development of GDP and employment in Egypt during the given period. There have been also calculated linear regression functions for both observed variables with strong coefficients of determinations, which indicate appropriate function model.

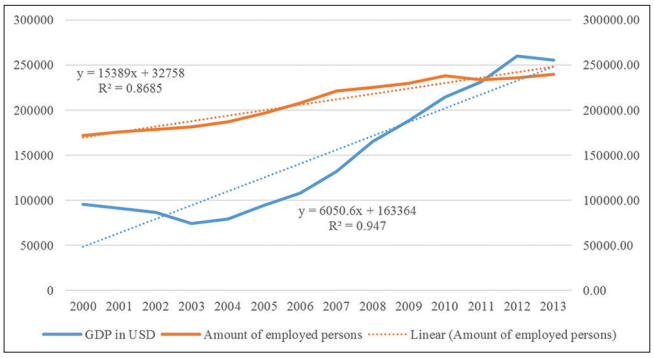
In the Table 2 below is the employment to GDP elasticity by sector in 2013 to some of the major sectors in Egypt from which it could

Figure 2: Unemployment and gross domestic product development – chain indicies



Source: Authors, CAPMAS 2014, FAO 2014

Figure 3: Gross domestic product and unemployment – linear regression model



Source: Authors and CAPMAS 2014

Table 2: Employment to GDP elasticity by sector in 2013

Sector	Employment to GDP elasticity 2013
Agriculture	−0.634
Manufacturing, extraction and petoleum	0.718
Electricity	0.647
Construction and building	2.820
Services	−0.683
Transportation and communication	−0.944

Source: Authors 2015. GDP: Gross domestic product

be observed that construction and building sector was the sector most capable of absorbing new entrants to the market followed by the manufacturing and petroleum sector.

This method has a limitation as it does not allow cross time comparisons

4. DISCUSSION AND CONCLUSION

Unemployment is one of the very challenging obstacles facing developing countries especially after the Arab Spring with revolutions taking place in many of the Arab countries including Egypt leaving their economies unstable with many challenges to overcome.

As per the Egyptian Labor Market Survey (ELMPS, 2012), the increase in the unemployment rate was as the employment growth which made it difficult for the economy to absorb the increase and the new entrants in the labor market.

The challenge which the Egyptian economy is facing regarding employment is twofold. On one hand, the labor market should have the capacity to be able to absorb about 600,000 new job-seekers each year. And on the other hand, the labor market faces an obvious and apparent "quality" mismatch between the supply and the demand. Most of the labor supply especially the newly entrants lack the appropriate qualifications and skills required for the quality jobs created by the private sector. As a result, it is currently common to find fresh university graduates having severe difficulty in entering the job market or find them working in low quality jobs; and at the same time, it is also common to find some sectors such as manufacturing, construction and building, and finance facing problems to find the qualified skilled labor which would be able to increase effectivity of production (Maitah et al., 2014). Companies need to the extent that some business enterprises reached the point of trying to find ways to rely and depend on foreign labor.

Over the last century, the mismatch between education and labor market requirements has grown, leading to the increase in the unemployment among youth university graduates to reach about 45% for females and 25% for males in 2006 (Amin, 2014).

Looking at the unemployment rates in Egypt and the increase that took place to reach 13.2% in 2013 compared to 9% in 2010 (just before the revolution), the Egyptian government should work on putting a strategy to face such a challenge that in turn affects its growth rates and other economic indicators.

In September 2009, The Egyptian Prime Minister commissioned The Egyptian National Competitiveness Council to develop a plan

(Egyptian Competitiveness Strategy) targeting creating more jobs, good and sustainable jobs for Egyptians. This strategy focused on the following areas:

- Investing in people: Preparing the Egyptian youth to be competitive members in the economic society. This requires a more sufficient educational system and training.
- Green transformation: To manage energy and reduce pollution.
- Innovation and R&D: Investing in research and creating a suitable and better environment for R&D (Handousa, 2010).

Choosing a policy regime requires the support from governments to be given to achieve the effectiveness of these policies in addition to the support of interest groups. The best method to achieve this is to ensure the engagement of the stakeholders in the process of reform: Policymakers, consumers, and investors.

Both Egyptian policy makers and other social partners have a common challenge to face which is enabling the economy to achieve and reach its potential in a competitive world. This objective requires many aspects to be looked into and studied in order to find remedies for such as fighting poverty, solving the problem of unemployment and enhancing the competitiveness of the Egyptian economy.

Policy options to tackle the challenges could be listed below:

- Employment-intensive investment policies and programs
- Skills development programs
- Incentives in order to expand work experience programs
- Investment in labor market intermediation services
- Encouraging entrepreneurship
- Well targeted job-placement subsidies
- Reducing obstacles for enterpreneurs
- Attracting FDI (there is needed stable political and law environment).

These objectives will not be achieved in shot-run, they require a long term plan to be set in addition to a detailed strategy on how to implement this plan.

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