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The Impact of Investment on Job Creation in Middle-Income Arab Countries: An Empirical Study

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Abstract. This paper aims to take advantage of the Keynesian approach in framing the relationship between the size of employment and capital accumulation. In addition, the study will try drafting a new approach for calculating the opportunity cost based on defining the job opportunity through the size of investments needed for its creation. This study is based on the assumption that there is a correlation between the increasing employment rates and the size of investments in the economy. In order to test this hypothesis a time cross-sectional data analysis method has been used (Pooled Data) as well as PWT (Penn World Table). The findings showed that there is a strong positive relationship between the net capital formation at constant prices and created jobs. It was also showed that the efficiency of employment is very low in the countries studied but not exceeding 1 per thousand. Hence, it is recommended that economic policy-makers in those researched countries need to focus on improving the investment environment -locally and regionally- in order to mobilize more investment.

Keywords: Efficiency of Employment, Job Cost, Flexible Employment Creation, Pooled Data Analysis.

Introduction

Most approaches dealing with the unemployment problem have considered the accumulation of capital as one of the factors or determinants that can explain change in unemployment rates in the economy (see Keynesian and neo-Keynesian approaches in Ibrahim, 2002). Other approaches have advocated essential roles to organizational variables, such as: wages, taxes, labor, and collective bargaining, considering them as essential factors for the interpretation of the change in unemployment rates.

The facts that have been recorded across countries and over time indicate that the most important ways to address the low employment rates and increasing unemployment rates are adopting stimulating economic policies, which may promote economic growth through increased levels of investment in the economy. Thus, we can say that the increase in the rate of investment plays a direct role in enabling enterprises to create and increase the number of new jobs. This can be done through creating new economic institutions by the investors, which contribute to the creation of new jobs and thus increase employment rates (Blomström et al. 1997; Bond and Reenen, 2007; Drèze and Malinvaud, 1994).

This paper attempts to take advantage of the Keynesian approach in framing the relationship between the size of employment and capital accumulation. Thus, there will be an estimation of the size of the investment needed for addressing the problem of unemployment and the formation of jobs for new entrants to the labor market in the economy, especially in the economies of the Arab countries of middle-income.

However, this paper is not trying to exclude the impact of other variables on increasing employment rates, especially economic growth, increasing aggregate demand and stimulating market labour policies. Based on observations from certain countries and the history of economy, the article focuses on the significant role of investment size (rate) in creating job opportunities.

The study is based on the hypothesis that: there is a correlation between the increase in employment rates and the size of investments in the economy. In order to investigate this research hypothesis, an econometric methods will be used. The test will be applied to the six Arabs countries by using penn World Table (PWT) Data Base for 1969-2010. For data analysis, a Pooled Time Series, Cross-Section Data method will be adopted.

The paper is divided into three main sections: the first is a brief review of approaches that explain the change in the rates of employment and unemployment; the second section reviews alternative approaches proposed for the relationship between investment and employment; while Section 3 provides an econometric test for the research hypothesis based on time cross-sectional data analysis method.

1. Theoretical Framework

Economic theories addressed the various factors affecting unemployment, with the purpose of using them as variables that drive policy changes to reduce unemployment in size and rate by increasing employment rates in the economy[1].

The growth of capital stock leads to a reduction in unemployment, where it is expected that this increase leads to increased productivity. Which in turn lead to increased production volumes and, consequently, increasing the size of aggregate demand, and that will lead to increased labor supply on the one hand, because of the improved wages, and to increase the demand for labor to cope with all of the current demand and effective demand (expected) on the other hand (Almesbah, 2008).

The basic idea of classical school of thought was that the value of the product demand and the cost of production are totally equal, where revenues obtained will be disbursed as wages and profits for new products. Thus, each purchase is at the same time a process of selling and vice versa, and this is what makes the economy in a state of full employment, leading to the continuation of capital accumulation and consequently increasing investment. This is known as the Say's law. "Similarly, the increase in labor supply results in unemployment in the labor market; leading to lower real wage, and then expand the required amount of work to absorb unemployment and achieve full employment. Accordingly, the balance at the macro level is achieved always by equaling aggregate demand with aggregate supply in all markets" (Al Sheikh Hassan, 2007:11). Therefore, the unemployment in the classical thought does not exist on a large scale.

The Say's law has been reinstated in markets be the Neo-Classicists, "denying the exposure of the [economic] system to the crisis of overproduction, as confirmed by Marxism. Thus, they rejected absolutely the possibility of large-scale unemployment since pure competition enables the economy to reach full employment and therefore cannot conceive unemployment in this system, without being an optional or structural unemployment" (Zaki, 1989:284).

In the Keynesian theory, Keynes himself believes that "the level of employment does not depend on the supply side, but also on the demand side as well, and thus Keynes denies the responsibility of workers for unemployment and delegate it to businessmen who control the demand side, and therefore decides that the volume of employment is determined by effective aggregate demand." (Al Sheikh Hassan, 2007:12). Keynes has focused on the importance of effective aggregate demand, which is divided into the demand for consumer products on the one hand, and the demand for investment products. Thus the second type of demand decides the size of aggregate supply, and consequently the size of production and labour wages.

1. It should be noted that the discussion about practical and theoretical explanation of unemployment rates change, is the same as talking about the interpretation of change in employment rates. The employment rate is only complementary, where (employment rate = 1 - Unemployment rate).

As a result, unemployment is the substantive equivalent of twice the effective aggregate demand, and to eliminate unemployment, the effective aggregate demand must be increased. As for balancing the national income, Keynes advocates to equalling savings with investment. On the other hand, Keynes called for state intervention in economic activity in order to cure the deficiencies in the overall demand for treating compulsory unemployment and using expansionary fiscal policies.

Founding new companies and expanding existing one are prerequisites for employment growth and reducing unemployment. The importance of founding new companies is based on the fact that they constitute -to a large extent- a source of new job opportunities.

The Keynesian theory considered that unemployment is a function in the capital growth (Kg) and with a negative sign. Thus, Monastiriotis (2006) has shown that the growth of capital stock was a nominal explaining factor for unemployment in the United Kingdom and with a negative sign, and thus with a positive sign for employment. Again, Hoon and Kee (2004) concluded that the accumulation of capital in the export sector played a negative role in the unemployment rate.

On the other hand, some Neo-Classical studies used the real interest rate index (nominal interest rate - inflation rate) as a variable interpreter of unemployment since it is considered as a factor for explaining the fixed capital formation (investment). Blanchard and Wolfers (2000) have pointed out that the increase in the interest rate during the eighties in the twentieth-century Europe had a negative impact on capital accumulation, maintaining a high rate of unemployment (low rates of employment).

However, the Keynesian theory links between "effective demand" and job creation, where effective demand depends on the outlook for profits and new investment opportunities. The demand for labor services as a" derived demand" in the sense that it is derived from the demand for final products, which it contributes to their work production. Also, labour demand reflects directly worker productivity" (Ibrahim, 2002: 17).

2. The Research Model

Based on the above we can say that employment rate L in the economy, according to modern Keynesian theory, is directly linked to two variables: the balance of fixed capital K and the rate of real economic growth g (Monastiriotis, 2006). This is a conclusion reached by Karanassou et al. (2007) study about the dynamics of unemployment and labour market.

On the basis of the relationship described in the following equation (1):

$$(1)\ L = f(K, g)$$

We can work in two directions: The first trend is to assume that the relationship between the stock of fixed capital K and the volume of employment in

the economy L is a linear relationship. The second trend is to assume a non-linear relationship between the two variables K and L (logarithmic relationship).

This division aims to derive models for the cost of job opportunity (the ratio of investment to the number of jobs in the economy). The first model concerns the fixed cost of job opportunity, based on the linearity of the relationship between K and L; while the second model concerns the variable cost of job opportunity, which changes according to the change in capital accumulation – and this model benefits from the full logarithmic function.

Assuming that the relationship between capital and labor is a linear relationship, for simplicity, the employment function can be drafted according to the following equation (2):

$$(2)\ L = \alpha + \beta K$$

where α represents the volume of employment affected by factors other than capital stock, particularly economic growth and inflation (Phillips curve effect) in addition to neoclassical factors (institutional frameworks). β represents the fixed impact of the capital stock in employment. It also can be expressed as a marginal tendency for employment in relation to the capital.

From the former equation (2), it can be argued that the change in the volume of employment indicates the change in the size of the capital. So, can be rewritten function 2 as:

$$(3)\ \Delta L = \Delta\alpha + \beta.\Delta K$$

As it is well known, that the first difference of capital stock the ΔK is the net fixed capital accumulation. Thus, the equation of the number of new jobs created by the ΔL in economy because of a change in fixed capital or the net increase in capital accumulation can be written as follows:

$$(4)\ \Delta L = \Delta\alpha + \beta.FC$$

by dividing the both sides of equation (4) by ΔL, and if Δα is represented by $\bar{\alpha}$, the result will be:

$$(5)\ \frac{\Delta L}{\Delta L} = \frac{\bar{\alpha}}{\Delta L} + \beta.\frac{FC}{\Delta L}$$

The first side in the right side of the equation ($\frac{\bar{\alpha}}{\Delta L}$) equals zero because $\bar{\alpha} = 0$, then by amending equation 5, the result will be:

$$(6)\ 1 = \beta.\frac{FC}{\Delta L}$$

The cost of creating a job opportunity CL is no more than the size of net investments employed in the economy in a given period to the number of new workers, or the number of jobs that have been created during the same period, as:

$$(7)\ CL = \frac{FC}{\Delta L}$$

Thus, equation 6 will take the following form:

$$(8)\ 1 = \beta CL \Rightarrow\ Cl = \frac{1}{\beta}$$

This means that the cost of creating new jobs in the economy is no more than the inversion of the marginal propensity for employment in relation with the capital stock in this economy.

We believe that the best form of non-linear to monitor the relationship between investment and employment is the full logarithmic representation of this relationship. One of the most important advantages of the logarithmic representation is that it enables us to get the values of the fixed elasticities of variables to the independent variables (explanatory). This allows obtaining variable marginal propensities of the function by changing the explanatory factors.

In equation 4 we accepted that there is a relationship between the change in the volume of employment involved in the economy at a given moment and the change in the volume of fixed capital in the same period (it is the net capital accumulation). From equation 4, we can write a non-linear function of this relationship as follows (assuming Cobb-Douglas form):

$$(9)\ \Delta L = A * FC^{\delta}$$

where A represents the efficiency of net fixed capital formation, which can be also expressed by the level of technology of new investments, which work on creating jobs in the economy; and δ represents the flexibility to create job opportunities for the formation of net capital. It is a value that lies between zero and one ($0 < \delta < 1$). This means that the value of capital growth rate of 1% will lead to a growth in the volume of employment in the economy at a rate δ%, also reflecting the situation of diminishing yield of the relationship between capital accumulation and the number of new jobs in the economy. Thus, the employment growth rate is less than the rate of growth of capital, because the influence of improved productivity, as in Monastiriotis (2006), and the influence of the high price of the labor force (wages) [because of the high demand for labor] as Ibrahim (2002:30-31) said.

On the other hand, if the value of δ is smaller than one, indicating that investment growth will be faster than the growth of labour. This means that part of the growth of investment, and hence economic growth, is characterized as not creating job opportunities. In this case, new investments are often concentrated in

high-tech sectors as well as in investments for renewing and replacing capital assets and the infrastructure of the economy.

In the case δ>1, it refers to the case of the multiplier effect of investment in generating job opportunities. In this case, new investments are often concentrated in the primary sectors of the economy, with low-tech levels, especially in the agricultural sector as well as investing in the construction sector and infrastructure (roads, dams, bridges, power plants ...). This applies to some extent if the δ = 1.

Here, the issue of economic growth phase (macro or sectoral) and investment trends is raised. It is expected that value of δ in the rich economies (taken by per capita GDP) will decline in comparison to the high δ in poor economies. This means that the flexibility of employment for investment will be high in low-income economies and low for the high-income economies.

From the function No. 9, we can get the cost of job opportunity function by dividing the volume of net capital formation by the number of jobs that have been created in the economy, which will have the following formula:

$$(10)\ \frac{FC}{\Delta L} = \frac{1}{A}.\frac{FC}{FC^{\delta}}$$

and by amending equation (10), our results are:

$$(11)\ CL = \frac{1}{A}FC^{1-\delta}$$

where, 1-δ represents the flexibility of the job cost in relation to investments employed.

Based on previous theoretical analysis, this paper will test the two functional relationships:

1- The Linear function in accordance with the following formula

$$(12)\ \Delta L_{i,t} = \alpha_i + \beta_1.FC_{i,t} + \mu_{i,t}$$

where:

$\Delta l_{i,t}$ The number of jobs that have been created in the economy i in year t.

$FC_{i,t}$ The size of net capital formation at constant prices for the economy i in year t.

β_1 marginal propensity for creating job opportunities in relation to capital formation.

α_i constant factor, which is the sum of constant factor of the function plus the constant effect for each country of the research model, i.e. $\mu_{i,t}$ the error term (for country *i* at time *t*).

1- The Full logarithmic function (Log-Log) in accordance with the following formula:

$$(13)\ ll_{i,t} = \gamma_i + \beta_2 lFC_{i,t} + \varepsilon_{i,t}$$

where:

$ll_{i,t}$ the natural logarithm of the number of jobs that have been generated in the economy i in year t.

$FC_{i,t}$ the natural logarithm of the size of net capital formation at constant prices for the economy i in year t.

β; elastic employment factor (the number of jobs that have been generated in the economy) for each of the capital formation.

γ constant factor, which is the sum of constant of the function (α_0) plus the fixed effect (FE) for each country, as: $\gamma_{\mathrm{i}} = \alpha_0 + FE_i$

$\varepsilon_{i,t}$ represents the error term.

3. Model Estimation

The study model was estimated using the pooled method. the main benefit of using this method is the "increased accuracy in forecasting by increasing observations and linking them to number of intervals" (Aljamal, 2012: 267).

Compared to using cross-sectional data models or time series data models on their own, longitudinal data models have different characteristics, as outlined by Baltagi, 2005), some of which are:

1. Controlling the non-homogeneity of variance, which may appear in the case of cross-sectional data or the case of time series data.

2. Longitudinal data give better efficiency and increase the degrees of freedom as well as less linear variance between variables, and more information content, if they were using cross-sectional data or time series data.

When using the time cross-sectional data, the most appropriate estimation method of two main ones will be adopted, namely:

1 - **Estimating Fixed Effects**: The aim of this model is to know the behaviour of each cross-sectional data set separately by making categorical parameter b0 vary from group to group, maintaining propensities (capabilities of explanatory variables) constant for each group of cross-sectional data. Accordingly, the fixed effects model will be in accordance to the following formula:

$$(14) \quad y_{it} = \beta_{0(i)} + \sum_{j=1}^{k} \beta_j x_{j(it)} + \varepsilon_{it}\ ,\ i = 1,2,\ldots..N\ \ t = 1,2,\ldots.,T$$

The error $\varepsilon_{i,t}$ in the fixed effects model is normally distributed with central tendency of zero and a variance of σ_{ε}^2 For true and impartial parameters of fixed effects model, it is usually required that the variation error is fixed (homogeneous) for all cross-sectional observations, with no self-correlation during the time of the observation between each set of groups of these cross-sectional observations.

2 - **Estimating the Random Effects**: Random effects model is an appropriate model in the case of a malfunction in one of the above-mentioned assumptions of the fixed effects model. The model takes the following formula:

$$(15) \quad y_{it} = \mu + \sum_{j=1}^{k} \beta_j x_{j(it)} + v_i + \varepsilon_{it}\ ,\ i = 1,2,\ldots..N\ \ t = 1,2,\ldots.,T$$

That's where v_i represents the error in the cross-sectional data set i. We note from the above model that it contains two factors for error: v_i and ε_{it}, and we will have the following composite error: $W_{it} = v_i + \varepsilon_{it}$.

Generalized Least Squares (GLS) is a method usually use to estimating the random effects model.

3 - **Pooled Regression Model (PRM):** This method assumes homogeneity of random error variances between the countries under study σ1 = σt with a variation of zero between these countries. It is assumed in this model that the stability of the parameters of the constant factor and the parameters of the propensity for all countries and over time.

It is also assumed that the model meets all the standard assumptions of the multivariate linear regression model, and therefore, the model under consideration can be estimated by Ordinary Least Squares method OLS (Shorbaji, 2011: 15-16).

For opting between the two models, the Hausman (H) test is required, where the null hypothesis H0 is tested. H0 states that the random effects model is the appropriate model, against the alternative hypothesis H1 that the fixed effects model is appropriate, where the distribution of chi square is χ^2 and the degree of freedom is the amount of k. The fixed effects model is the appropriate model if the statistical value is greater than the value of statistical chi square χ^2, and on the contrary, the random-effects model will be the appropriate model for the research data. (Aljamal, 2012: 275).

The PWT (Pen World Table) database has been used for obtaining the data on employees working in the economy within six Arabic countries (Algeria; Egypt; Jordan; Morocco; Syria and Tunisia) for the period 1969-2010. This database provides many of macroeconomic indicators of more than 180 countries over a long period of time. The online published World Bank database was used for collecting data relevant to investment expenditure as well as the index of consumer prices and gross domestic product (GDP).

The tables below (1a an 1b) show the descriptive statistics of the model data for each individual state.

Table (1a): Descriptive Statistics for the model data Capital formation of the Arab countries under study as percentage of GDP.

item	Algeria DAZ	Egypt EGY	Jordan JOR	Morocco MAR	Syria SYR	Tunisia TUN
Mean	23.39	23.48	21.31	22.77	22.28	22.12
Std. Dev.	0.238	0.403	0.439	0.455	0.407	0.382
Skewness	1.869	-0.331	0.360	0.669	0.505	0.213
Kurtosis	6.344	2.902	2.163	2.117	2.401	1.83
Jarque-Bera	32.491	0.579	1.574	3.319	1.782	2.000
Probability	0	0.75	0.45	0.19	0.41	0.37
Observations	31	31	31	31	31	31

Source: Calculated from data by researchers

Table (1b): Descriptive Statistics for the model data Jobs Created in the Arab countries under study (in logarithm)

item	DAZ	EGY	JOR	MAR	SYR	TUN
Mean	5.297	5.633	4.398	5.197	4.972	4.797
Std. Dev.	0.143	0.265	0.317	0.244	0.402	0.094
Skewness	-0.414	-0.076	0.186	-0.633	-2.315	0.062
Kurtosis	2.209	2.702	2.566	3.513	8.551	2.377
Jarque-Bera	1.696	0.145	0.422	2.412	67.478	0.521
Probability	0.428	0.930	0.810	0.299	0.000	0.771
Observations	31	31	31	31	31	31

Source: Calculated from data by researchers

Table (2) shows the correlation coefficients between the variables of the model for each country, where we note that investment shows medium positive correlation and a correlation coefficient of 32.6% for the average number of job opportunities created.

Table (2): correlation coefficients between number of jobs and capital formation

0.28 %	Algeria
0.56 %	Egypt
0.46 %	Jordan
-0.07 %	Morocco
0.31 %	Syria
0.42 %	Tunisia
32.6 %	Average

Source: Calculated from data by researchers

Pooled Least Squares method has been used to estimate equations 12 and 13 after adding an assistance variables: GDP per Capita (YPC) and consumer price index (CPI). The YPC reflect the Okun's Law effect and CPI reflect the Phillips Curve effect.

Table (3): estimation outcomes from function 12 – the dependent variable L (number of jobs created in the economy)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	164640.90	61967.37	2.66	0.009
FC	1.77E-05	0.00	6.87	0.000
YPC	-110.32	40.01	-2.76	0.006
CPI	567.31	522.23	1.09	0.279
AR(1)	0.39	0.07	5.79	0.000
R-squared			0.493	
Adjusted R-squared			0.483	
S.E. of regression			150924.7	
F-statistic			48.458	
Durbin-Watson stat			2.089	

Source: Calculated from data by researchers

The results show in Table 3 that there is an effect of the capital formation in creating jobs in the understudy Arab economies at a level of significance smaller than 1%. The value of the marginal propensity to new posts for capital formation has reached 1.77E-05. This means that the cost of job opportunity, according to equation (8), amounted to 56497.18 U.S. $, which is a high value reflecting the heavy reliance of these economies on investing in sectors that are capital-intensive and weak in job generation. On the other hand, this model explains 49.3% of the changes in the number of new jobs in the economy, and this function represents a real relationship identified by the very high value of the nominal statistic F at a level much less than 1%.

It should be noted that the use of the fixed effects model has not passed the necessary tests as shown in Table 4, where the null hypothesis - that the random effects model is the appropriate model - was rejected.

Table (4): testing fixed effects with F test

Null Hypothesis	Statistical Value	Functional Level
Cross-section F	2.998104	0.0125

Source: Calculated by researchers by using Eviews7

The random-effects model has also been rejected because the results of estimation did not pass Durbin Watson test despite passing the Houseman test, and which endorsed accepting the null hypothesis that the random effects model is the appropriate model[2].

(2) Results are not included, but can be provided by the researchers upon request.

Table 9 shows the results of estimating equation 13 which gives capabilities representing the elasticities of the dependent variable in relation to the independent variables included in the model. This relationship has been estimated using the method of Pooled Regression Model (PRM), where the model was not able to pass the tests for estimating the random effects model and the fixed effects model.

From the table 13, we note that the elasticity of the new job opportunities in the economy is equal to 37.1%, referring that the growth in the capital formation at a rate of 10% will lead to growth rate of jobs of 3.71%, at a significance level of less than 1%.

This result shows that the Understudy economies had reached the stage of diminishing returns and that the capital formation is greater than what is needed for generating job opportunities. The results also indicate that the effect of the growth rate in real GDP per capita was negative, and this is contrary to the theory (Okun's law). This finding suggests that growth in the researched economies was not creating jobs. Moreover, the results showed that the relationship between inflation and job creation is negative, and this does not correspond with Philips Curve that there is a negative correlation between inflation and unemployment, and consequently a positive correlation between inflation and job creation.

Statistically, the results indicate that the model explains 71.7% of the changes in the number of jobs, according to the value of the coefficient of determination, and that the data of the model has been corrected with a rate of 0.539 in order to exceed the problem of serial autocorrelation of errors.

Table (5): estimation outcomes from equation 13 – the dependent variable LL (the natural logarithm of the number of jobs created)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.016	1.970	-0.008	0.993
LFC	0.371	0.065	5.683	0.000
LYPC	-0.454	0.171	-2.662	0.009
LCPI	-0.009	0.044	-0.195	0.846
AR(1)	0.539	0.084	6.416	0.000
R-squared			0.717	
Adjusted R-squared			0.706	
S.E. of regression			0.262	
F-statistic			65.208	
Durbin-Watson stat			2.054	

Source: Calculated by researchers by using Eviews7

4. Findings and Recommendations

The study has investigated the relationship between capital formation and the number of job opportunities created in the Arab economies of middle-income. Hence, time-sectional pooled data have been used for the period 1969-2010 in order to test the existence of a positive relationship between the two variables and estimate the cost of job opportunity in these economies, using estimation methods appropriate

for this type of data. The researchers tried to assess two types of functions: full logarithmic functions (Log-Log) and linear functions.

In application, a choice between many standard time cross-sectional data methods has been carried out, such as: methods of fixed and random effects and pooled data. The results of the application showed that every function differs in relation to the appropriate method in accordance with to the results of the estimation adopted.

As for the estimation outcomes, the study found that there is a positive relationship between capital formation at constant prices and job creation. The cost of job opportunity was in the range of U.S. $ 56498. The study also showed that the relationship between the two variables represents a diminishing yield as the value of elastic modulus for creating job opportunities in relation to capital formation of 37%, which refers to the case of diminishing returns in the context of their relationship.

Henceforth, this study recommends - primarily for economic policy-makers in the researched Arab countries, to focus on improving the investment environment (local and regional) in order to mobilize more investments. The standard findings indicated that there is an urgent need for these investments to create jobs continuously in order to reduce the size of accumulated unemployment and employing returning entrants into the labor market.

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تأثير الاستثمار في توليد فرص العمل في الدول العربية متوسطة الدخل: دراسة تطبيقية

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ملخص البحث. تهدف هذه الورقة إلى الاستفادة من المقاربة الكينزية في تأطير العلاقة بين حجم التشغيل [وبالتالي إمكانيات خلق الوظائف] وبين التراكم الرأسمالي. إضافة إلى صياغة قانون جديد لتكلفة فرصة العمل على أساس تعريفها بأنها حجم الاستثمارات اللازمة لتوليد فرصة عمل جديدة. وتستند الدراسة على فرضية هي: وجود علاقة دالية بين زيادة معدلات التشغيل وحجم التوظيفات الاستثمارية في الاقتصاد من جهة ثانية. ومن أجل اختبار الفرضية السابقة تم استخدام أسلوب تحليل البيانات المقطعية_الزمنية Pooled Data. وتم استخدام قاعدة البيانات PWT (Penn World Table). قُسمت الورقة إلى ثلاثة أقسام رئيسية (عدا المقدمة والنتائج)، يتم في القسم الأول استعراض موجز للمقاربات المفسرة للتغير في معدلات التشغيل والبطالة؛ وفي القسم الثاني استعراض المقاربة البديلة المقترحة للعلاقة بين الاستثمار التشغيل؛ فيما يقدم القسم الثالث اختباراً قياسياً لفرضية البحث بطرقة البيانات المقطعية_الزمنية. أوضحت النتائج أن هناك علاقة طردية قوية بين التكوين الرأسمالي الصافي بالأسعار الثابتة وتوليد فرص العمل. وبينت النتائج أن كفاءة التوظيف منخفضة جداً في البلدان الفقيرة ولا تتعدى ١ بالألف. وتوصي هذه الدراسة بشكل أساسي راسمي السياسات الاقتصادية في البلدان العربية بضرورة التركيز على تحسين البيئة الاستثمارية المحلية والإقليمية من أجل حشد المزيد من الاستثمارات.

الكلمات المفتاحية: كفاءة التوظيف، تكلفة فرصة العمل، مرونة توليد فرص العمل، تحليل البيانات المقطعية–الزمنية.