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Measuring the Effect of Fixed Capital Formation in the Non-oil Sector on Economic Growth and the Crowding-out of Current Expenditure in the Public Budget in KSA an Empirical Study For the Period (1974-2014)

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ABSTRACT: *This study aimed in principle to measure the long-run effect of Fixed Capital Formation of the Non-Oil sector on the economic growth in kingdom of Saudi Arabia and whether the crowding-out of the current Expenditure to the capital Expenditure in KSA exists. To this end, the author based his research on the Johansen Co-integration Test, the Error Correction Model (ECM) and the Granger Causality Test. The results of the study have shown that there's a long-run equilibrium relationship between the growth rate of the Gross Fixed Capital Formation in Non-oil Sector (NOI) and changes that occur to the growth rate of the Gross Domestic Product at constant prices in Non-oil Sector (NOGDP). In addition, the study has reached the conclusion that a long-run change in the growth rate of the Non-oil Gross Fixed Capital Formation (NOI) by 1% will lead to a change in the growth rate of the Non-oil Gross Domestic Product (NOGDP) by 0.169%. The results made it clear that the relationship between changes in the constant- price NOI growth rate and changes in the (NOGDP) growth rate in the long run is a direct proportional relationship (the elasticity coefficient is positive; as the rise in the (NOI)growth rate will result in a rise in the (NOGDP) growth rate and vice versa. Moreover, the causality test results indicate that there's a two-way causal relationship between the growth rate of the Gross Fixed Capital Formation in Non-oil Sector (NOI) and changes in the growth rate of the constant-price GDP in Non-oil Sector(NOGDP). The results confirmed the the existence of crowding –out where the ratio of current Expenditure reached an average of 72.15% over the period 1974-2014. Capital Expenditure constituted only 28.85% of the total actual Expenditure for the same period. Usually sizable portion of the budget is allocated to this current Expenditure to meet an increasing wages and salaries of the public sector and other payments which asserts the imbalance in relative distribution of current and capital Expenditure which entails that Saudi authorities should take important decisions to increase the ratio of capital Expenditure at the expense of the current one specifically on wages and salaries. The researcher has offered a number of recommendations, among which the most significant ones are: The primary focus of the endeavour to stimulate and accelerate economic growth rates in the KSA should be based on achieving greater capital accumulation (i.e. increasing fixed capital formation), which the study proved to have a higher degree of elasticity with relation to economic growth in the long term, Another important recommendation is the need to direct a greater deal of government Expenditure in the KSA towards higher investment Expenditure, along with rationalizing current Expenditure.*

JEL classification:C01; C22
Keywords:*Fixed Capital Formation, Non-oil Sector,Economic Growth,Gross Domestic Product, GDP, Co-integration, Error correction model,Crowding-out, Current Expenditure.*

I. INTRODUCTION

Achieving a long-term economic growth is considered one of the most important goals sought after by both developed and developing nations alike. Economic theories differ substantially as to defining the determinants of economic growth. As the process of economic growth is associated with several economic variables, then defining the source of growth is highly important for stimulating and maintaining economic growth through adopting the appropriate economic policies, and initiating the required structural changes. Consequently, economic growth has become the focus of interest for several economic studies, whether they were theoretical or empirical studies. Sometimes growth is attributed to the growing exports while at other times it's attributed to financial development. On the other hand, some models ascribe economic growth to the positive role of government Expenditure, while others ascribe it to the formation of capital in both government sector and private sector, among other factors. Given the importance of the formation of fixed capital in non-oil sector for stimulating economic growth, and the growing role it plays under the policies adopted by the Saudi Arabian government which aim to diversify income sources and expand production base, the study will examine the influence of Non-oil Fixed Capital Formation on the long-term economic growth in Saudi Arabia, using the Co-integration Test. In addition, the study will examine the presence of a short-run relation, and will define the causal relationship trend, between Non-oil Fixed Capital Formation and economic growth using the Error Correction Model.

II. THE RESEARCH PROBLEM:

The research problem lies in the attempt to answer the following key question:

What is the long run impact of Non-oil Gross Fixed Capital Formation (NOI) growth rate on the constant-price Non-oil Gross Domestic Product (NOGDP) growth rate in the KSA?and whether the crowding-out of the current Expenditure to the capital Expenditure in KSA exists?

In addition to this main question, we may pose several other sub-questions that we deem necessary, as follows:

- What are the most important indicators of progress on the economic growth and the gross fixed capital formation in the KSA?
- Is there a long run equilibrium relationship between the growth rate of the Non-oil Gross Fixed Capital Formation (NOI) and the growth rate of the constant-price Non-oil Gross Domestic Product (NOGDP)?
- Does the growth rate of the Non-oil Gross Fixed Capital Formation (NOI) has an influence on the growth rate of the constant-price Non-oil Gross Domestic Product (NOGDP) in the KSA in the short run?
- What are the proposed policies and measures that should be adopted by the Saudi economic authorities, through which the study would contribute to stimulating and sustaining economic growth, and bringing about the structural changes required to diversify sources of income and expand production base in the KSA?

III. THE RESEARCH OBJECTIVES

By answering these questions, the study endeavours to achieve the following goals:

- To recognize the most important indicators of progress for the fixed capital formation and the economic growth in the KSA.
- To define the impact of the growth rate of the Non-oil Gross Fixed Capital Formation (NOI) on the the growth rate of the Non-oil Gross Domestic Product (NOGDP) at constant prices in the KSA in the long run.
- To define the impact of the growth rate of the Non-oil Gross Fixed Capital Formation (NOI), in the long run, on the growth rate of the Non-oil Gross Domestic Product (NOGDP) at constant prices in the KSA in the short run.
- and whether the crowding-out of the current Expenditure to the capital Expenditure in KSA exists?
- To offer a set of suggested procedures and policies that must be adopted by the economic authorities in the Kingdom of Saudi Arabia, through which the study seeks to contribute to the endeavor to achieve the structural changes required to diversify the sources of income, and to expand the production base and the investment base in order to stimulate and maintain economic growth in the KSA.

IV. THE THEORETICAL FRAMEWORK

Economists have had great interest in searching for the key determinants of economic growth. In his 'The General Theory of Employment, Interest, and Money', Keynes asserts that investment, rather than saving, is the engine of economic growth. Moreover, Keynes believes that planned investment isn't equal to saving, and that income is the variable that strikes a balance between the two. He also attributes the occurrence of economic cycles to the fluctuations in the marginal efficiency of capital. Proceeding from the Keynesian assumption that investment equals savings within a closed economy, whereas growth in the model developed by Harrod(Harrod,1939:pp.14-33),and Domar (Domar, 1946: pp. 47-137), is related directly to savings, and indirectly to the output-capital ratio, on the assumption that there're no substitutions between factors of production; in case there exists positive saving, it would include investment, the thing which expands the productive capacity of the economy. However, Harrod-Domar's assumption that the output-capital ratio is constant was unacceptable for a number of economists, including the 'Neoclassical' economists who haven't assumed a constant output-capital ratio. The Solow growth model (Solow, 1596: pp. 65-94) is considered one of the most well-known neoclassical models which assume that the economy tend to ultimately get close to a steady-state growth rate. The Solow model also assumes that there is a potential for substitution between factors of production, that laboursupply grows at a constant rate and that savingis a portion of revenue that is to be invested. Instead of assuming a fixed output-capital ratio, Solow used a linear homogeneous production function that allows for substitution between capital and labour. The neoclassical models are different from Harrod-Domar's model. Besides not presuming a fixed output to capital ratio, the neoclassical modelsassume that higher savings rates will lead to a higher income per capita, but they won't lead to a permanent increase in the economic growth rates. Therefore, macroeconomic policies may influence individual income, but it don'tinfluence the long-run growth rate. In general, the neoclassical models consider that the rise of population at a constant rate is an important determinant of growth with regard to real individual incomes. Furthermore, these models usually focus on the importance of technology advancement to compensate for the negative effects of diminishing marginal productivity of capital, hence determining long-run growth.

Then came the theorists who developed the Endogenous Growth Theory; particularly Lucas (Lucas, 1988: pp. 3-32) and Romer, (Romer, 1986: pp. 1003-1037), who introduced dynamic models of growth that concentrate on technological advancement; as growth according to this theory depends on the stock of physical and human capital, as well as the level of research and development.

Modern theories of economic growth can be divided into two categories:

First: Research and development models, which agree with the Solow model in their focus on knowledge accumulation as a determinant of economic growth, and on the method of knowlede production as afactor of production, and their definition of the determinants of allocating the resources needed for knowledge production.

Second: Physical & human capital accumulation models, which conflict with the Solow model in their focus on explaining effective labour, and their emphasis on the importance of physical & human capital accumulation, which have major effects on economic growth(Suzan, 2013: pp.104-127).

Below we are going to explain modern growth theories in some detail:

First: Reseach and Development Models (Knowledge Accumulation)

In these models, Romerstatedthat all types of knowledge share a common characteristic as they're all non- competing and they aren't fully subject to market forces. The research and development models were developed by (Aghion, Phelippe and Howitt, 1992: pp. 323-351) the research and development models are based on the fact that effective labour (knowledge/ high technology) is a determinant of economic growth, and that it is considered as a given (endogenous) variable (Romer, 1990: pp. 1187 – 1211).

The determinants of growth in the knowledge accumulation models are:

A- The growing returns of capital and labour

The knowledge production function presumes that there is a potential to increase returns on the factors of production. The greater the allocations devoted to research, development and production inputs (capital and labour) are, the higher positive effects on the rate of economic growth there will be. The function also presumes that the population growth rate and the savings rate are exogenous and fixed variables (just as in the assumptions of the Solow model), i.e.:

$-K'_{(t)}=SY_{(t)}$, $l(t)=nL_{(t)}$ $n \geq o$

However, the models of knowledge accumulation are different form the Solow model in that the former consider knowledge and capital as endogenously growing (self-growing) variables. On the assumption that the stock of fixed capital is constant, then the rate of economic growth in that case will be determined by the stock of knowledge (A), i.e.:

$gA(t)=B\ a^{y}\ L\ \ L_{(t)}{}^{y}\ \ A_{(t)}{}^{Ø-1}$

The knowledge growth rate (A g) depends on the attitude of human capital accumulation and knowledge accumulation ($Ly\ A^{Ø-1}$). Thus, knowledge growth rate will decrease if the rate of new knowledge growth is less than one whole, and it will increase if it is more than that. When both the knowledge growth rate and the new knowledge growth rate are on a par, then an equilibrium state is reached. In this case, the stock of knowledge and the national economic growth both increase at a constant rate, and consequently the state of economic equilibrium is achieved.

(B) The Fixed Capital Stock

Upon introducing the capital factor into the model, there will be two self-growing variables (labour and capital); and on the assumption that these two factors are growing and the production function is used, then the new capital stock in the economy will be K'(t), which is equivalent to:

$K'(t)=S(1-ak)^{oc}(1-aL)^{1-oc}k_{(t)}{}^{oc}A_{(t)}{}^{1-oc}L_{(t)}{}^{1-oc}$

And the increase in the capital stock gk(t) equals:

$gk_{(t)}= k^{/}{}_{(t)}/k_{(t)} = ck(A_{(t)}L_{(t)}/K_{(t)})^{1-oc}$

i.e. the change in the increase rate of fixed capital stock (gk) depends on the attitude of the capital coefficient for skilled labour(AL/K) which equals (gA+n-gk) (knowledge growth rate + population growth rate + capital stock growth rate). If the value of this function is positive, the capital stock increase rate will be rising. If negative, it will be diminishing. If zero, it will be static, and it will be equivalent to the knowledge stock growth rate (A) in this case. Moreover, the knowledge stock growth rate, ga(t), equals:

$gA_{(t)}=AK_{(t)}{}^{B}L(t)^{y}\ \ A_{(t)}{}^{Ø-1}$

The change in the stock of knowledge growth rate g(A), depends on the value of the function :

$^{B}gk+^{y}n+(\text{Ø}-1)gA$

Knowledge growth rate rises if it's a positive value, it decreases if it's a negative value, and it becomes static when the value is zero.

Second: Physical & Human Capital Accumulation Models

According to these models, the determinants of economic growth are:

A- Stocks of physical and human capital. To examine the influence of human capital and natural capital on economic growth, we use the Cobb–Douglas production function, in the same way as in the Solow model. The outcome is calculated as follows:

$Y_{(t)}=k_{(t)}^{oc}H_{(t)}^{B}\quad (A_{(t)}\,L_{(t)})^{1-oc-B}$

Whereas $\alpha>0\quad 0<B$, $\alpha+B<1$,

i.e. economic growth is determined by the stock of human capital (H) and the volume of employment (L), while the returns of production factors (LKH) are assumed to be constant, and the technology advancement is constant and out of the model (the Solow model assumptions). The dynamics of physical capital can be derived, taking human capital into consideration, using this function:

$y(t)=k(t)^{oc}h(t)^{B}$

where the capital coefficient for knowledge equals: K=K/AL, and the human capital coefficient for knowledge equals: h=H/AL, and the output coefficient for knowledge equals: Y/AL, consequently the fixed capital stock K(t) is:

$K_{(t)}=(sk/(n+g))^{1/(1-\alpha)}$

$K^{1-\alpha}=(sk/(n+g))h^{B}$

As the stock of physical capital is an increasing function of h ,the stock of human capital will be as follows:

$H_{(t)}=sHK(t)^{\alpha},\quad h_{(t)}^{B}-(n+g)h(t)\ ,\quad SHK^{\alpha}h^{B}=(n+g)h$

$K=((n+g)/SH)^{1/\alpha}\quad h^{(1-B)/\alpha}$

i.e. the human capital stock is determined by the value of physical capital, human capital, technology and labour (KHAL). In a state of equilibrium the growth rate will be constant for the output and for the stocks of fixed physical capital and human capital, and it will be increasing at a rate equivalent to the output growth rate, whichis equivalent to (n+g).

B- The Effect of Savings Rate:

The increase in the savings rate will lead to an increase in the net capital stock, and the economy will be moving towards a new state of equilibrium, which results in human capital stock growing until a new equilibrium point (E) is reached. The output per labour unit (Y/L) is equivalent to: A (Y/AL) which is $AK^{\alpha}h^{B}$;

The output increases as a result of increased knowledge stock (A) and technology advancement (Al), and with growing human and physical capital (Kh), as a result of increased savings rate, the growth rate will consequently increase at a higher rate than (g) until the economy reaches the new equilibrium, and economic growth will be achieved at a constant rate (g) and the physical and capital stocks will rise at a constant rate; i.e. the increase in the savings rate leads to a temporary rise in the economic growth rate (almost the same effects as in the Solow model). In a state of equilibrium, the net stocks of physical capital and human capital are equal, and they are equal to zero, i.e. (Romer, 1990: pp. 1187 – 1211):

$_{sk}\,k^{*\alpha}h^{*B}=(n+g)$

K*

$_{Sk}\,K^{*\alpha}h^{*B}=(n+g)h$

$Iny^{*}=(\alpha/1-\alpha-B)ins_{k}+(B/1-\alpha-B)ins_{H}-(\alpha+B/1\ \alpha\ B)in(n+g)$

where B denotes to the output elasticity of human capital. The elasticity of the factors of production can be estimated (like the production function in the Solow model); then a change in the savings rate and in the population growth rate will lead to a change in the logarithm of equilibrium output for a unit of labour:

$iny^{*}_{s.low}=(\alpha/1-\alpha)ins_{k}-(\alpha/1-\alpha)\ in\ (n+g)$

V. RESEARCH HYPOTHESES

Based on what is stated in the theoretical section of the study, the researcher will examine the following hypotheses:

- H_0 : There's no long-run equilibrium relationship between the change in the growth rate of the Gross Fixed Capital Formation in Non-oil Sector (NOI) and the change in the growth rate of the Gross Domestic Product at constant prices in Non-oil Sector (NOGDP).
- H_0 : There's no positive and significant long-run relationship between changes in the (NOI) growth rate and changes in (NOGDP) growth rate.

- H_0 : There's no long-run causal relationship between changes in the (NOI) growth rate and changes in the (NOGDP) growth rate.
- H_0 : There's no short-run positive relationship between changes in the (NOI) growth rate and changes in the (NOGDP) growth rate.

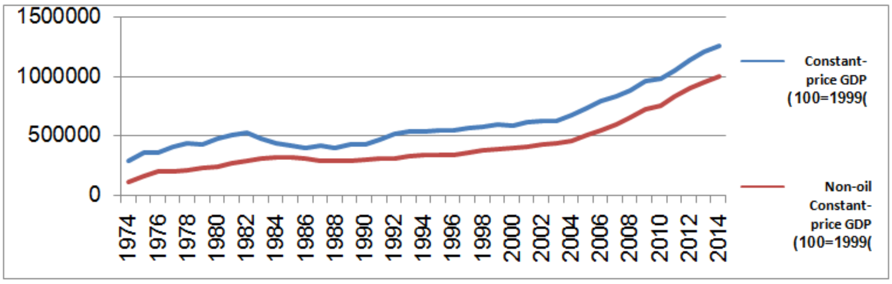
VI. THE PROGRESS OF ECONOMIC GROWTH AND GROSS FIXED CAPITAL FORMATIONIN THE KSA

1. Economic Growth Progress in the KSA

The rate of growth in the constant-price GDP is one of the most important parameters used to measure the economic performance. The most key developments in economic growth in the KSA can be demonstrated using the data included in the 51st Annual Report of the Saudi Arabian Monetary Agency.Through the data included in the said report, referred to in Table (1) attached hereto, and through Figures (1), (2) & (3), we come to the following conclusions:

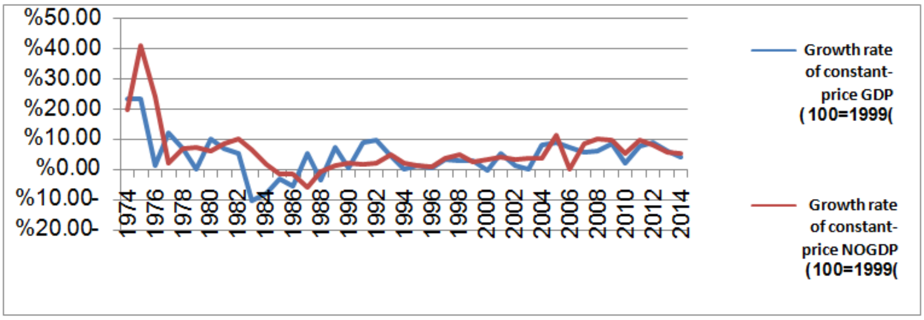
- That the growth rate of the constant-price GDP (1999=100) in the KSA amounted to 4.32 % as a general average for the period (1974-2014). It's also notable that the same rate was negative in many years during the study period, especially during the 1980s, due to the large fluctuations in the real oil prices during this period (according to the 2005 prices), as it decreased from 76.09 US dollars per barrel in the early 1980s to 21.47 US dollars per barrel in the late 1980s. It's a known fact that oil, since it was commercially discovered in the KSA in the 1920s, has kept playing a strategically important role in the Saudi economy. Oil contributes to the Gross domestic Product, the national income, the overall exports and the national budget. In addition, oil leads the economic development in the country, as its revenues constitute the major resource allocated for financing the country's comprehensive development programs. In conclusion, the Saudi economy heavily relies on oil, being an oil-based economy in the first place; cosequently, oil revenues provide the Saudi budget with a key portion of its resources, and they help build up monetary reserves for the national economy.
- The growth rate of the constant-price GDP in the non-oil sector(1999=100) amounted to 6.18 % as a general average for the period (1974-2014). It's also notable that the value of the growth rate was negative in a number of years during the study period, which is attributed, as we previously noted, to fluctuations in the real oil prices. The percentage ratio of the constant-price GDP in the non-oil sector to the constant-price GDP amounted to 64.9% as a general average for the period (1974-2014).

Figure (1) constant-price GDP(1999=100) and the Non-oil constant-price GDP (1999=100) (in millions of SAR)



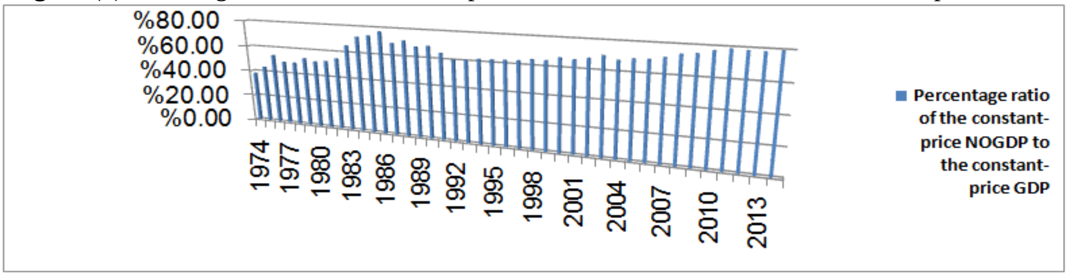
Source: Prepared by the author based of the data for the period(1974- 2014) included in the attachments section (Table 1).

Figure (2) Constant-price GDP growth rates (1999=100)



Source: Prepared by the author based of the data for the period(1974- 2014) included in the attachments section (Table 1).

Figure (3) Percentage ratio of the constant-price GDP in non-oil sector to the constant-price GDP:

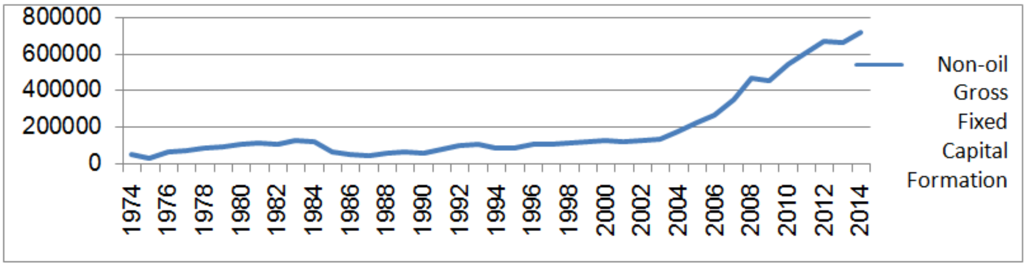


Source: Prepared by the author based of the data for the period(1974- 2014) included in the attachments section (Table 1).

2. Progress of the Non-oil Gross Fixed Capital Formation in Saudi Arabia

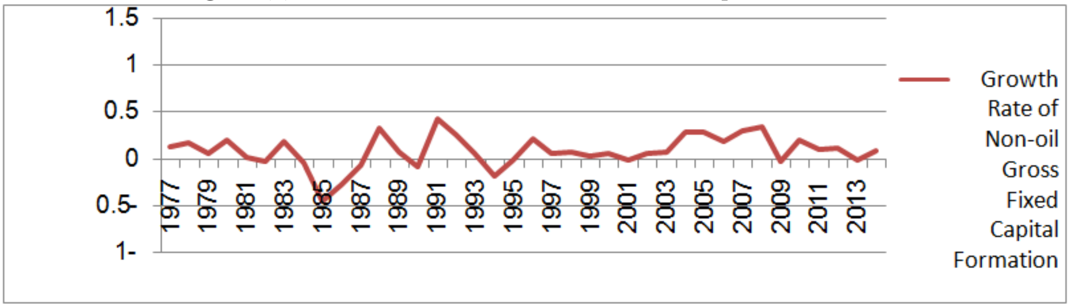
Given the great importance of the gross fixed capital formation in stimulating economic growth in the KSA, and given the growing role it plays under the Saudi government's policies aimed at diversifying sources of national income and expanding the country's production base, the researcher hereinafter is going to deal with the development of the fixed capital formation in the non-oil sector based on the data included in the 51stAnnual Report issued by the Saudi Arabian Monetary Agency. From the data contained in the said report, which is displayed in Table (2) in the attachments section, and also through figures (4) and (5), it becomes clear that the growth rate of fixed capital formation in non-oil sector (NOI) amounted to 9.86%, as a general average for the period (1975-2014), while the same rate is noted to have a negative value for many years during the study period. This can be attributed, as mentioned before, to the extreme fluctuations in the real oil pricesdurig the period, as the oil sector is overdominating the macroeconomic scene and the financial statements in the KSA.

Figure (4) Non-oil Gross Fixed Capital Formation (in Millions SAR)



Source: Prepared by the author based of the data for the period(1974- 2014) included in the attachments section (Table 2).

Figure (5) Growth Rate of Non-oil Gross Fixed Capital Formation

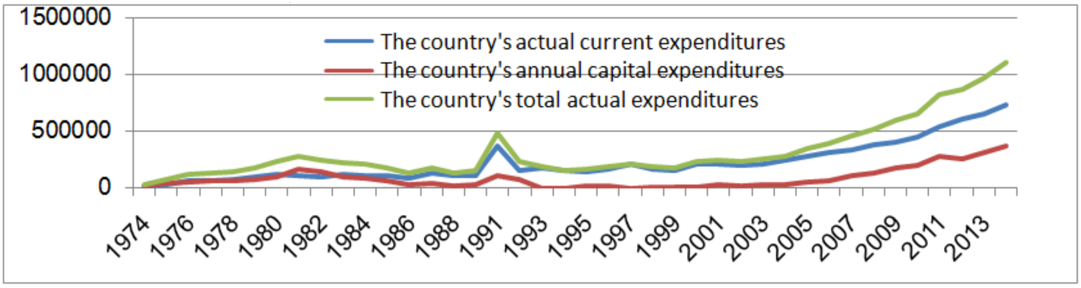


Source: Prepared by the author based of the data for the period (1974- 2014) included in the attachment section (Table 2).

3. The crowding-out of current Expenditure upon capital Expenditure in the Public Budget

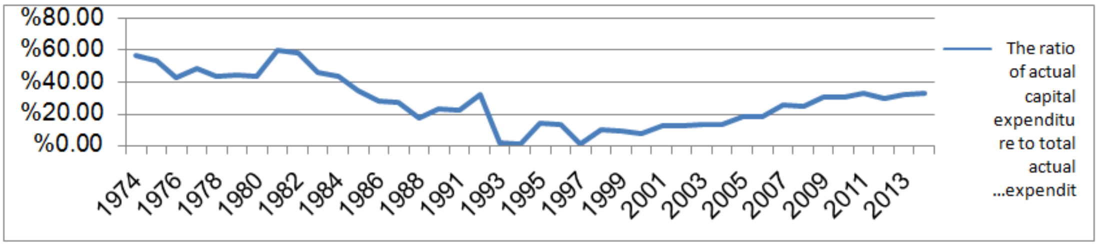
The crowding-out of current Expenditure to capital Expenditure of the KSA public budget can be showed via relative importance of current Expenditure and capital Expenditure to the total actual Expenditure of the kingdom, since KSA has non-diversified economic structure depends on oil revenues, its general budget has been subject to instances of instability due to revenue volatility caused by fluctuations in oil prices. This, in turn, has led to changes and fluctuations in government Expenditure, whether it was capital Expenditure or current Expenditure, as the KSA faced many challenges over decades with regard to the process of financial risk management, due to the dominance of the oil sector over the country's macroeconomic affairs and financial accounts. The relative importance of the actual capital Expenditures compared to the country's total actual Expenditures in the KSA can be demonstrated, in conformity with the data containedin the 51stannual report issued by the Saudi Arabian Monetary Agency. From the data included in that report, and referred to in Table (3) in the attachments section herein, and also from figures (6) & (7), it becomes clear that despite the importance of investment Expenditure in the long-run influence on the economy, and in creating an effective, productive and diversified economy; unfortunately, we find that the percentage ratio of the actual capital Expenditures to the country's total actual Expenditure amounted to 27.85 % only, as a general average for the period (1974-2014), whereas the percentage ratio of the actual capital Expenditures to the country's total actual Expenditures amounted to 72.15 % as a general average for the same period. Usually, a large portion of these Expenditures is allocated for payment of the growing salaries and wages in the public sector, among other payables.

Figure (6) Current and investment Expenditures, and the country's total actual Expenditure, in the KSA (in Millions SAR)



Source: Prepared by the author based of the data for the period(1974- 2014) included in the attachments section (Table 3).

Figure (7) The percentage ratio of actual capital Expenditure to the country's total actual Expenditures in the KSA



Source: Prepared by the author based of the data for the period(1974- 2014) included in the attachments section (Table 3).

VII. MODELS AND METHODOLOGY:

In the present study, the researcher analyses the relationship between the Non-oil Gross Fixed Capital Formation (NOI) growth rate and the constsnt-price Non-oil GDP (NOGDP) growth rate in the KSA, using the Johansen Co-integration Test, the Error Correction Model (ECM) and the Granger Causality Test, in order to define and calculate the relationship between the two variables in the long run, using the E-VIEWS.7 statistical package. The paper relies on the time-series annual data of the (NOI) growth rates and the (NOGDP) growth rates in the KSA during the period (1974-2014) issued by the Saudi Arabian Monetary Agency. In our study of the relationship between the formation of fixed capital in the non-oil sector and the economic growth in the KSA, we will employ the following quantitative tools:

- As for **the independent variable**, it is: the Non-oil Gross Fixed Capital Formation (NOI) growth rate.
- As for **the dependent variable**, it is: the Non-oil GDP (NOGDP) growth rate (1999=100).
- Applying the Johansen Cointegration test and the Error Correction Model (ECM) with the purpose of testing the long-run and short-run relationship between the formation of fixed capital in the non-oil sector and the economic growth in Saudi Arabia, after proving the presence of a co-integration relation, in order to study the long and short run equilibrium relationship between the two variables. The co-integration analysis is intended to define the real relation between the study variables in the long run, unlike the other classical statistical models. That said, the notion of co-integration is based on the idea that in the short run the two time series of the independent variable and the dependent variable may be non-stationary but they tend to integrate in the long run; meaning that there exists a long run steady relation between the two variables, called a co-integration relationship. To express the relationships between these different non-stationary

variables, the issue of non-stationarity must be overcome in the first place through performing the unit root tests and using the error correction models. The stages of the co-integration analysis can be demonstrated as follows: In the first stage, the Unit Roots test is performed in order to recognize how far the time series used in the research are stationary. To avoid spurious results caused by non-stationarity of the variables, we'll conduct the Augmented Dickey-Fuller (ADF) test, the Phillips-Perron (PP) test and the Kwiatkowski Phillips Schmidt Shin (KPSS) test. After proving that the two series of the study variables are stationary and have the same rank order; we then, in the second stage, perform the co-integration tests on the variables using the Engle- Granger method or the Johansen test (in addition to the Gragner Causality Test required by that test). In the third stage of the analysis procedure, we use the Error Correction Model (ECM) to know when the series approach equilibrium in the long run, and to recognize the short run dynamic changes on the series; i.e. that test has the power to examine and estimate the long run and short run relationship between the variables included in the model, and it also has the ability to evade the problemofspurious correlation (William, 2003: p.654).

Now, we'll proceed forward to demonstrate the methodological procedures adopted in the empirical analysis:

1. The Unit Roots Test:

To decide onthe non-stationarity characteristics for the variables' time series in their levels, or in their first differences, the Dickey-Fuller (DF) test, or the Augmented Dickey- Fuller test, is employed, with or without the "time trend". The equation of the DF test is: $\Delta Z_t = \chi + (\rho - 1)Z_{t-1} + \gamma T + e_{1t}$

As for the Augmented Dickey-Fuller test (ADF), it is evolved from the (DF) test, with the addition of the "lagged values" of the dependent variables included in the estimation of the mathematical formula of (DF). The ADF equation is:

$$\Delta Z_t = \chi + (\rho - 1)Z_{t-1} + \gamma T + \delta \Delta Z_{t-1} + e_{2t}$$

Although this test is widely used in econometric analyses, it still suffers from some issues, as it doesn't take the problem of heteroscedasticity and the normal distribution test into consideration; therefore, an additional test is employed to test the presence of a unit root, i.e. the Phillips- Perron (PP) test, which has a better and more accurate testing power than the ADF test. That is especially the case when the sample size is small and when (DF) results are contradictory and inconsistent. The mathematical formula of the PP test is:

$$\Delta Z_t = \phi + (\rho - 1)Z_{t-1} + \gamma (t - \frac{T}{2}) + \psi \Delta Z_{t-i} + e_{3t}$$

: Δ stands for the first difference

The critical values (t) for the null hypothesis test in all the above tests depend on the MacKinnon (1991) values (Patterson, 2002: p.265) (In general, the (ADF) test and (PP) test are used in the unit roots test). This test starts from the following basic relation: $Z_t = \alpha_{t-1} + \beta + \eta_t + \zeta_t$, (Patterson, 2002: p.267).

2. The Johansen Cointegration Test:

This test is much more reliable than the Engle- Granger test because it better fits small samples, and it's also more suitable when the independent variables are more than one. This test can discover existence of unique co-integration i.e. the co-integration exists only in case of dependent variable regressed on independent variables. This is important in the theoryofcoi-ntegrationbecausein case of none existence of unique co-integration, the long run equilibrium relationship between the variables will still be suspected and questionable.

The existence of long run equilibrium is tested between the two stationary series from the same rank order, in spite of the presence of disequilibrium in the short run –such test can be done via the Johansen method and the Johansen &Juselius method, which are usually used in the models that have more than two variables, end even they're better in case of two variable models, because they allow for mutual influence across different variables under study. Such advantage presumably doesn'texist in the Engle –Granger two-step method.

The "Johansen" and "Johansen and Juselius" methodology is designed to test the rank of matrix II. The presence of a co-integration between the time series requires a non-full rank matrix II ($0 < r(\prod) = r < \eta$).In order to determine the number of co integrating vectors, two statistical tests based on the Likelihood Ratio Test (LR) are used; i.e. the Trace Test (λ_{trace}) and the Maximum Eigenvalues Test ($\lambda_{\max}$).

The Trace Test is defined as: $\lambda_{trace} = -T \sum_{i=r+1}^{n} \log(\hat{\lambda}_i)$

The null hypothesis that the number of co-integration vectors is ≤ r is tested versus the alternative hypothesis that co-integration vectors = r (where r =0,1,2). The Maximum Eigenvalue Test is defined as:

$$\lambda_{max} = -T \log(1 - \hat{\lambda}_i)$$

The null hypothesis that the number of co-integration vectors = r is tested against the alternative hypothesis that the co-integration vectors = r + 1. (Elkadeer, 1425: p.198).

3. The Error Correction Model (ECM):

If $Y_t X_t$ were co-integrated asper definition $u_t \sim I(0)$, hence the relationship between $Y_t X_t$ can be expressed inthe error correction model as follows:

$$\Delta Y_t = a_0 + b_1 \Delta X_t - \pi \hat{u}_{t-1} + e_t$$

The advantage of the above model is that it contains all information about long run and short run relationship. In this model b_1 is the double (short run) effect which measures the short run immediate impact of changes in X_t on changes in Y_t. On the other hand, the π is the reaction effect or adaptation effect which explain how much of disequilibrium will be corrected- that's the extent to which any equilibrium from the period before correctionaffects Y_t.

Of course:

$$\grave{u}_{t-1} = Y_{t-1} - \acute{\beta}_1 - \acute{\beta}_2 X_{t-1}$$

where $\acute{\beta}_2$ stands for the long-run response.

The error correction model is preferred to the Engle Granger model as it separates the long run relationship from the short run one. Moreover, it has better characteristics in case of small samples. The estimated parameter in the model is more consistent than in other models as Engle- Granger (1987) and Johansen (1988). To test the extent to which co-integration exists between variables under ECM, Pesaran (2001) introduced a modern approach for testing how far a (short run/ long run) equilibrium relationship exists between variables under ECM, which can be implemented whether the explanatory variables are integrated of order zero I (0) or of order one I (1) ,or whether they are co-integrated of the same order. In addition, this approach can be implemented in case of small samples unlike the previous classical methods In effect, this model can be applied only if the Johansen co-integration test succeeds. (William, 2003, p654).

4. The Gragner Causality Test:

Gragner(1988) stated that if there are two co-integrated time series, there must be one-way causal relation at least between them. According to Granger, a change in (Xt) must cause a change in another variable (Yt); i.e. (Xt➔Yt) that's when prediction of Yt's current values based on Yt's past values is better compared to its current value prediction without using past values.Thisimplies that changes in Xt precedes changes in Yt. In order to measure causalityin the short run between terms of trade and current account, the following formula of the Granger's Causality method was used:

$$Yt = \sum \alpha i Yt\text{-}i + \Sigma \beta j Xt\text{-}j + Ut$$

Ho :βj = o (X ➔ Y)

HA :βj ≠ o (X ➔ Y)(Engle & Granger,1987)

VIII. ANALYSIS AND TEST RESULTS:

1. Stationary test for the two time series of the independent and dependent variables:

First: Using the Augmented Dickey-Fuller Test (ADF):

A- As for the independent variable (NOI): It is clear from table (1) that the unit root for the time series of (NOI) has been tested in its levels (before taking the first difference) using the Augmented Dickey-Fuller Test (ADF). The test results reveal the non-existence of unit root, as the ADF Test Statistic calculated value (-4.323384) is more than the Critical Value (-2.933158) at 5% level of significance. This means rejection of null hypothesis; H_0 i.e. rejection of time series non-stationararity for (NOI);andhence we reject the null hypothesis and consequently the (NOI) variable is stationary.

B- As for the dependent variable (NOGDP): It's clear from table (1) that on testing the unit root for the variable (NOGDP) time series in the level, the test results clarified the existence of unit root, as the ADF Test Statistic calculated value (-2.764405) is less than the Critical Value (-2.933158) at 5% level of significance i.e. acceptance of the null hypothesis H_0, i.e. accepting non-stationarity of the time series for the (NOGDP) variable. After we take the first difference and repeat the test again, the results show that unit root doesn't exist, as the calculated ADF Test Statistic value (-6.201130) is greater than the Critical Value (-2.935001) at 5% level of significance and hence we reject the null hypothesis H_0 i.e. rejecting non-stationarity of the

(NOGDP) variable time series; accordingly, the time series for the variable is stationary in its first differences.

Table (1): Summary results of the time series stationary tests using the Augmented Dickey-Fuller Test (ADF):

Variables	**ADF Test :**					
	At Level			**At First Difference**		
	ADF Test Statistic	**5% Critical Value**	**Decision**	**ADF Test Statistic**	**5% Critical Value**	**Decision**
(NOI)	**-4.323384**	**-2.933158**	**Rejection of Null Hypothesis** H_0	---	---	---
(NOGDP)	**-2.764405**	**-2.933158**	**Approval of Null Hypothesis** H_0	**-6.201130**	**-2.935001**	**Rejection of Null Hypothesis** H_0

Source: Prepared by the author based on Eviews 7.

Second: Using Phillips–Perron(PP) Test:

A- As for the independent variable (NOI) : It is clear from table (2) that the unit root for the time series of (NOI) has been tested in its levels (before taking the first difference) using the Phillips-Perron Test (PP). Test results reveal non-presence of unit root, as the PP Test Statistic value (-22.90721) is more than the Critical Value (-2.936942) at 5% level of significance. This means rejection of null hypothesis; H_0 i.e. rejection of time series non-stationarity for the (NOI) variable; and hence the (NOI) variable series is stationary and steady in its level. This confirms results reached by using the Dickey-Fuller test with relation to the independent variable (NOI).

B- As for the dependent variable (NOGDP): It is clear from table (2) that the unit root for the time series of (NOGDP) has been tested in its levels (before taking the first difference). Test results reveal non-presence of unit root, as the PP Test Statistic value (-6.791470) is more than the Critical Value (-2.938987) at 5% level of significance. This means rejection of null hypothesis; H_0 i.e. rejection of time series non-stationarity for the (NOGDP) variable; and hence the (NOGDP) variable series is stationary and steady in its level.

Table (2): Summary results of the time series stationary tests using the Phillips-Perron Test (PP):

Variables	**PP Test**					
	At Level			**At First Difference**		
	PP Test Statistic	**5% Critical Value**	**Decision**	**PP Test Statistic**	**5% Critical Value**	**Decision**
(NOI)	**-22.90721**	**-2.936942**	**Rejection of Null Hypothesis** H_0	---	---	---
(NOGDP)	**-6.791470**	**-2.938987**	**Rejection of Null Hypothesis** H_0	---	---	---

Source: Prepared by the author based on Eviews7.

2. The Johansen Cointegration Test:

After conducting the stationary tests on the time series under study, the results revealed stationarity of the data in the first difference.When we conducted the co-integration test using the Johansen method, the results included in table (3) in the first row denote rejection of the null hypothesis H_0 i.e., rejection of non-presence of co-integration between the two variables (NOGDP) and (NOI) as the Trace Satistic calculated value (35.62943) is more than the Critical Value (15.49471) at 5% level of significance; which means that there's co-integration between the two variables (NOGDP) and (NOI). Moreover, the data in the second row denote the presence of two equations that achieve co-integration between the study variables; as the Trace Statistic calculated value (10.38684) is more than the Critical Value (3.841466), at 5% level of significance.

From the above, we conclude that there exists a long run equilibrium relationship between the growth rate of Non-oil Gross Fixed Capital Formation(NOI) and the constant-price Non-oil GDP growth rate in the KSA. The results of the study reflect the great importance of fixed capital formation as a key stimulator and catalyst of economic growth in the KSA. These results are in agreement with what is stated by Keynes in his general theory of employment, interest and money; and also they are consistent with the concepts put forward by those who developed the endogenous growth theory, in particular Lucas(Lucas, 1988: PP. 3-32) and Romer (Romer, 1986: PP. 1003-1037).Lucas and Romer introduced dynamic models of growth that focus on technological advancement, the stocks of physical and human capital, and the level of research and development. However, despite the importance of investment Expenditure in terms of its long-term influence on supporting the economy, and on creating an effective, productive and diversified economy, we nonetheless find that the percentage ratio of the KSA's actual capital Expenditures to the country's total actual Expenditures only amount to 27.85%, as a general average for the period (1974-2014); while the percentage ratio of the KSA's actual current Expenditures to the country's total actual Expenditures is 72.15% as a general average for the same period. A large portion of these current Expenditures is often allocated to settle growing salaries and wages in the public sector, besides settling other current payables.

Table (3) TheJohansen Co-integration Test

Sample (adjusted): 1974- 2014				
Included observations: 41 after adjustments				
Trend assumption: Linear deterministic trend				
Series: NOGDP (NOI)				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.459723	35.62943	15.49471	0.0100
At most 1 *	0.223794	10.38684	3.841466	0.0013
Trace test indicates 2 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values *Source: Prepared by the author based on Eviews 7.*				

3. The Error Correction Model: The error correction model

After the variables under study have been subjected to the unit roots tests, which proved that the variable series are stationary after taking their first differences; thenperformingthe co- integration tests, which revealed that a co-integration is present, the following step in the analysis procedure is derived from the Engle and Granger methodology, which includes designing an error correction model, as demonstrated in Table (4). The results in the table show the following:

1. From the results, we note the model's acceptable explanatory power, as the value Adj. R-squared amounts to 67.2 %, meaning that 67.2% of the variations in the dependent variable can be explained by changes in the independent variable. The results also show that the F- statistic 28.3018 is significant at level 5%, meaning that the model as a whole is significant and has an explanatory power.
2. There exists a long-run equilibrium relationship between the Non-oil Gross Fixed Capital Formation (NOI) growth rate and the change that may occur in the constant-price Non-oil Gross Domestic Product (NOGDP); as the results reveal that the elasticity coefficient of the variable (NOI) in the long run is equivalent to 0.169585, which means that a change in the NOI growth rate in the long run by 1% will lead to a change in the NOGDP growth rate by 0.169%.
3. Also, the long run results show that the relationship between change in the Non-oil Gross Fixed Capital Formation (NOI) growth rate and change in the constant-price Non-oil GDP (NOGDP) is directly proportional (elasticity coefficient is positive); consequently, a rise in the NOI growth rate leads to a rise in the NOGDP growth rate and vice versa.
4. On the other hand, the results indicate that in the short run a change in the (NOI) growth rate by 1% will lead to a very minimal change in the (NOGDP) growth rate by -0.02%. These results can be explained by the response lag between the independent variable (NOI) and the dependent one (NOGDP), as the economic return on investment in fixed capital formation (i.e. producing a GDP increase) isn't directly demonstrated in the short run; however, such return is demonstrated clearly in the long run.
5. As for the equilibrium correction factor, it equals (-0.155) indicating that if any disequilibrium occurred between dependent and independent variables, then within a period that is equivalent to (1/-0.155) six years and a half approximately, the variables would go back to their equilibrium state again.

These resultsreflect the importance of fixed capital formation as a key stimulator and catalyst of economic growth in the KSA. They are in agreement with what is argued by Keynes that investment is the key engine of economic growth. Moreover, the results are consistent with the conclusions of Schultz and Backer (Backer, 1990: pp.64-89)، in which it's revealed that physical and human capital is considered of the most important determinants of economic growth. Furthermore, the findings of the study are in harmony with those reached by thedevelopers of the 'endogenous growth theory', particularly Lucas(Lucas, 1988: pp.3-32)) and Romer(Romer, 1986: pp.1003-1037), who have introduced dynamic models of growth in which economic growth relies on the stock of physical and human capital, as well as on the level of research and development. However, unfortunately, despite the importance of investment Expenditure, the percentage of the actual capital Expenditurein the KSA amounted to 27.85% only of the country's total actual Expenditure, as a general average for the period (1974-2014), while the percentage of the actual current Expenditure amounted to 72.15% of the country's total actual Expenditure, as a general average for the same period.

Table (4) Co-integration Equation and Error Correction Model

Vector Error Correction Estimates		
Sample (adjusted): 1974 2014		
Included observations: 41 after adjustments		
Standard errors in () & t-statistics in [ ]		
CointegratingEq:	CointEq1	
NOGDP (-1)	1.000000	
((NOI) (-1)	0.169585	
	(0.02357)	
	[7.19525]	
C	-4.407233	
Error Correction:	D(NOGDP)	D((NOI))
CointEq1	-0.155199	-7.362899
	(0.05608)	(1.42462)
	[-2.76734]	[-5.16831]
D(NOGDP (-1))	0.083172	-2.579501
	(0.10991)	(2.79193)
	[0.75674]	[-0.92391]
D((NOI) (-1))	-0.021749	0.759309
	(0.00847)	(0.21520)
	[-2.56720]	[3.52831]
C	-0.209184	5.836157
	(0.55021)	(13.9767)
	[-0.38019]	[0.41756]
R-squared	0.696483	0.463500
Adj. R-squared	0.671873	0.420000
Sum sq. resids	459.1560	296286.3
S.E. equation	3.522729	89.48597
F-statistic	28.30138	10.65519
Log likelihood	-107.7007	-240.3294
Akaike AIC	5.448817	11.91851
Schwarz SC	5.615995	12.08569
Mean dependent	-0.214853	6.011584
S.D. dependent	6.149764	117.5009
Determinant resid covariance (dof adj.)		98044.77
Determinant resid covariance		79847.29
Log likelihood		-347.7543
Akaike information criterion		17.45143
Schwarz criterion		17.86937

Source: Prepared by the author based on Eviews 7.

4. The Granger Causality Test

After performing stationarity, co-integration and error correction tests, we reach the last step in the econometric analysis procedure adopted in this paper; i.e. conducting the Granger Causality Test in order to know whether there is a causal relationship between change in (NOI)and change in (NOGDP). The test result included in Table (5) demonstrated the following:

1- Rejection of the null hypothesis H_0 in the first row; meaning that a change in the (NOI) growth rate will cause a change in the (NOGDP) growth rate.

2- Rejection of the null hypothesis H_0 in the second row; meaning that a change in the (NOGDP) growth rate will cause a change in the (NOI) growth rate.

3- The above means that there is a two-way causal relation from(NOI) to (NOGDP) and from (NOGDP) to (NOI).

The author explains the interactive relation between the two variables of the study; (NOI) and (NOGDP), by stating that theFixed Capital Formation assumes a substantial role in stimulating economic growth, which is consistent with several studies previously referred to herein. In addition, the increase in economic growth rates plays an important role in increasing incomes, and consequently increasing saving rates; hence increasing investment and capital formation potentials.

Table(5) Engle-Granger's Causality Test

Pairwise Granger Causality Tests

Sample: 1974 2014			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
NOI does not Granger Cause NOGDP	38	11.2701	0.0002
NOGDP does not Granger Cause NOI		5.61047	0.0080

Source: Prepared by the author based on Eviews 7.

IX. CONCLUSIONS

- The results of the study assert that there's a long-run equilibrium relationship between the growth rate of the Gross Fixed Capital Formation in Non-oil Sector (NOI) and changes to the growth rate of the constant-price Gross Domestic Product in Non-oil Sector (NOGDP).
- The study arrived at the conclusion that a long run change in the (NOI) growth rate by 1% will eventually lead to a change in the (NOGDP) growth rate by 0.169% .
- Moreover, the study results reveal that, in the long run, the relationship between changes in the (NOI) growth rate and changes in the (NOGDP) growth rate is a direct proportional relationship (the elasticity coefficient is positive); as any rise in the (NOI) growth rate will result in a rise in the (NOGDP) growth rate and vice versa.
- As for the equilibrium correction factor, it equals (-0.155), which indicates that if any disequilibrium occurred between dependent and independent variables, then within a period equivalent to (1/-0.155) six years and a half approximately, the variables will go back to their equilibrium state again.
- On the other hand, the results indicate that, in the short run, a change in the (NOI) growth rate by 1% will eventually lead to a very minimal change in the (NOGDP) growth rate by -0.02%. This finding can be explained by the response lag between the independent variable (NOI) and the dependent one (NOGDP), as the economic return on investment in fixed capital formation (i.e. producing a GDP increase) isn't directly demonstrated in the short run; however such return is demonstrated clearly in the long run.
- In addition, the results of the tests performed have shown that there's a two-way causal relationship between the growth rate of the Gross Fixed Capital Formation in Non-oil Sector (NOI) and changes to the growth rate of the constant-price Gross Domestic Product in Non-oil Sector (NOGDP), as any change in one of the two variables will cause a change in the other one.
- The previous analysis revealed the existence of crowding –out where the ratio of current Expenditure reached an average of 72.15% over the period 1974-2014.
- Capital Expenditure constituted only 28.85% of the total actual Expenditure for the same period. Usually sizable portion of the budget is allocated to this current Expenditure to meet an increasing wages and salaries of the public sector and other payments which asserts the imbalance in relative distribution of current and capital Expenditure which entails that Saudi authorities should take important decisions to increase the ratio of capital Expenditure at the expense of the current one specifically on wages and salaries.

X. RECOMMENDATIONS

- The primary focus of anyendeavour to stimulate and increase the economic growth rates in the KSA must be based mainly on achieving higher capital accumulations (through increased fixed capital formation) which, as the study has proved, have a high degree of elasticity with relation to the long-term economic growth, in addition to the significant positive relationship that is proved to exist between the two; therefore, it will be most advisable to adopt the conclusions reached by the study in this regard.
- One of the important decisions to decrease the crowding-out of current to capital Expenditure is to redirect public Expenditure in KSA to capital Expenditure and rationing the current especially on wages and salaries which comprise bounces and incentives and other obligations.
- Moreover, another important recommendation concentrates on the need to direct more government Expenditure in the KSA towards investment Expenditure, while rationalizing current Expenditures at the same time.
- Shedding light upon investment opportunities in the KSA in all mass media channels, besides organizing national and international conferences and forums to attract investors through showcasing available opportunities of investment and explaining the incentive system offered to investors.
- Developing a long-term investment strategy thatwouldspecifyrecommendedareasof investment, and divide the KSA into investment regions, according to what is laid out in the development plans and to the requirements of each investment region, without concentrating investments into a certain particular region.
- Establishing centers for research and development in line with the highest standards applied in the developed countries. In addition, alliances should be forged with universities and specialized academic institutions to find solutions for the problems facing the industrial sector. Furthermore, it's highly recommended tosetup research and development units in every company and factory.

- Givinggreater advantages, incentives and tax cuts to investment projects that meet the following criteria:
- The importance of the project to the national economy and the extent to which it contributes to the diversification of the structure of economy.
- The extent to which the project relies on, employs and trains national manpower.
- The level of high technology the project intends to introduce into the country.
- The project's expected capability to fulfill domestic needs and its anticipated volume of exports.

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Annex:

Table (1) Constant-price GDP and constant-price Non-oil GDP along with their growth rates (in millions SAR)

Year	GDP at constnt prices (1999=100)	Growth Rate of GDP at constant prices (*)	GDP at constant prices in non-oil sector (100=1999)	The Constant-Price Non-oil GDP Growth Rate (*)rgdpnoil	The percentage ratio of the constant-price GDP to the constant-price Non-oil GDP (*)
1974	**296938**	**23.09076%**	**113150**	**19.91945%**	**38.1056%**
1975	**365446**	**23.07148%**	**159465**	**40.93239%**	**43.63572%**
1976	**369531**	**1.117812%**	**198028**	**24.18274%**	**53.58901%**
1977	**414102**	**12.0615%**	**202613**	**2.315329%**	**48.92828%**
1978	**441890**	**6.710424%**	**216370**	**6.789791%**	**48.96467%**
1979	**437774**	**-0.93145%**	**231976**	**7.212645%**	**52.9899%**
1980	**481210**	**9.922015%**	**245884**	**5.995448%**	**51.09703%**
1981	**513127**	**6.632655%**	**267301**	**8.710205%**	**52.09256%**
1982	**538354**	**4.916327%**	**294791**	**10.28429%**	**54.75784%**
1983	**481920**	**-10.4827%**	**314199**	**6.583647%**	**65.19734%**
1984	**443383**	**-7.99656%**	**320076**	**1.870471%**	**72.18951%**
1985	**428445**	**-3.3691%**	**315993**	**-1.27563%**	**73.75346%**
1986	**404370**	**-5.61916%**	**311869**	**-1.30509%**	**77.12466%**
1987	**424834**	**5.060712%**	**293697**	**-5.82681%**	**69.13218%**
1988	**408401**	**-3.8681%**	**292324**	**-0.46749%**	**71.57769%**
1989	**436820**	**6.958602%**	**296078**	**1.284192%**	**67.78032%**

1990	**438847**	**0.464036%**	**301909**	**1.969413%**	**68.79596%**
1991	**477816**	**8.87986%**	**307623**	**1.892623%**	**64.38106%**
1992	**522715**	**9.396713%**	**314678**	**2.293392%**	**60.20068%**
1993	**544546**	**4.176463%**	**330302**	**4.965075%**	**60.6564%**
1994	**544928**	**0.07015%**	**337288**	**2.115034%**	**61.89588%**
1995	**550017**	**0.933885%**	**341964**	**1.386352%**	**62.17335%**
1996	**552281**	**0.411624%**	**345138**	**0.928168%**	**62.49319%**
1997	**569968**	**3.202536%**	**357911**	**3.700839%**	**62.79493%**
1998	**584926**	**2.624358%**	**376018**	**5.059079%**	**64.28471%**
1999	**600773**	**2.709232%**	**385222**	**2.447755%**	**64.12106%**
2000	**596805**	**-0.66048%**	**397606**	**3.21477%**	**66.62243%**
2001	**626592**	**4.991077%**	**413650**	**4.03515%**	**66.01584%**
2002	**632583**	**0.956125%**	**427927**	**3.451469%**	**67.64757%**
2003	**633243**	**0.104334%**	**443826**	**3.715353%**	**70.08779%**
2004	**682240**	**7.737472%**	**460329**	**3.718349%**	**67.47318%**
2005	**741299**	**8.656631%**	**511977**	**11.2198%**	**69.06484%**
2006	**795270**	**7.280598%**	**551473**	**7.714409%**	**69.34412%**
2007	**839750**	**5.593069%**	**598315**	**8.493979%**	**71.24918%**
2008	**890289**	**6.018339%**	**658103**	**9.99273%**	**73.92015%**
2009	**964457**	**8.330778%**	**722341**	**9.761086%**	**74.89613%**
2010	**983150**	**1.938189%**	**760442**	**5.274656%**	**77.34751%**
2011	**1056557**	**7.466511%**	**833199**	**9.567725%**	**78.85982%**
2012	**1147483**	**8.605877%**	**899659**	**7.976486%**	**78.40282%**
2013	**1214141**	**5.809062%**	**952102**	**5.829209%**	**78.41775%**
2014	**1262757**	**4.004148%**	**1003359**	**5.383562%**	**79.45781%**

Source: The Saudi Arabian Monetary Agency, the 51st Annual Report, 2015
(*) Prepared by the author

Table (2) Non-oil Gross Fixed Capital Formation and its growth rate (in millions SAR)

Year	**Non-oil Gross Fixed Capital Formation**	**Growth rate of Non-oil Gross Fixed Capital Formation(RINO)** (*)
1975	**28126**	**-43.3663%**
1976	**65031**	**131.2131%**
1977	**72933**	**12.15113%**
1978	**85615**	**17.38856%**
1979	**89929**	**5.038837%**
1980	**107529**	**19.57099%**
1981	**109348**	**1.691637%**
1982	**105623**	**-3.40656%**
1983	**124410**	**17.78685%**
1984	**119280**	**-4.12346%**
1985	**64870**	**-45.6154%**
1986	**47185**	**-27.2622%**
1987	**43652**	**-7.48755%**
1988	**58189**	**33.30203%**
1989	**61914**	**6.401554%**
1990	**56411**	**-8.88814%**
1991	**80489**	**42.68316%**
1992	**100914**	**25.37614%**
1993	**106391**	**5.427394%**
1994	**86104**	**-19.0683%**
1995	**84371**	**-2.01268%**
1996	**101813**	**20.67298%**
1997	**107416**	**5.503227%**
1998	**114849**	**6.919826%**
1999	**117320**	**2.151521%**
2000	**123264**	**5.066485%**
2001	**121262**	**-1.62416%**
2002	**127538**	**5.17557%**
2003	**136616**	**7.117879%**
2004	**175822**	**28.69796%**
2005	**226075**	**28.58175%**
2006	**269185**	**19.06889%**
2007	**347712**	**29.17213%**
2008	**465859**	**33.97841%**
2009	**455275**	**-2.27193%**
2010	**548595**	**20.4975%**
2011	**606246**	**10.50885%**
2012	**673961**	**11.16956%**

2013	**662382**	**-1.71805%**
2014	**721433**	**8.914946%**

Source: The Saudi Arabian Monetary Agency, Fifty First Annual Report, 2015
(*) Prepared by the author

Table (3) The country's annual actual capital Expenditure and its percentage ratio to the country's total actual Expenditures in milions SAR)

Year	The Country's Annual Actual Current Expenditure	The Country's Annual Actual Capital Expenditure	The Country's Annual Actual Expenditure	The percentage ratio of the actual capital Expenditure to the country's total actual Expenditures (*)
1974	15207	19832	35039	56.6%
1975	37931	43304	81235	53.3%
1976	73621	54652	128273	42.6%
1977	71417	66631	138048	48.3%
1978	83488	64484	147972	43.6%
1979	102447	83277	185724	44.8%
1980	132661	104094	236755	44%
1981	113636	171014	284650	60.1%
1982	102248	142664	244912	58.3%
1983	124052	106134	230186	46.1%
1984	121696	94667	216363	43.8%
1985	119865	64139	184004	34.9%
1986	98894	38528	137422	28%
1987	134419	50500	184919	27.3%
1988	116283	24573	140856	17.4%
1989	118303	36567	154870	23.6%
1991	377205	110220	487425	22.6%
1992	162350	76637	238987	32%
1993	184878	3012	187890	1.6%
1994	161380	2396	163776	1.5%
1995	148776	25167	173943	14.5%
1996	171258	26859	198117	13.6%
1997	218880	2392	221272	1.1%
1998	171163	18897	190060	9.9%
1999	167195	16646	183841	9.1%
2000	216958	18364	235322	7.8%
2001	223508	31632	255140	12.4%
2002	203500	30000	233500	12.8%
2003	223530	33470	257000	13%
2004	247649	37551	285200	13.2%
2005	284173	62301	346474	18%
2006	322411	70911	393322	18%
2007	347199	119049	466248	25.5%
2008	388839	131230	520069	25.2%
2009	416594	179840	596434	30.2%
2010	455043	198842	653885	30.4%
2011	550500	276200	826700	33.4%
2012	611626	261679	873305	30%
2013	664047	311967	976014	32%
2014	739658	370245	1109903	33.4%

Source: The Saudi Arabian Monetary Agency, The Fifty-First Annual Report, 2015 (*) Prepared by the author