

The Role of Investment Components in Kuwait's Economic Growth

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Abstract: An increase in investment, with other things remaining constant, has unambiguous positive effects on the rate of economic growth, particularly its private component which was found, in many previous studies, to have greater effects on economic growth than public investment. This paper examines the extent to which this hypothesis holds true for an oil-exporting country such as Kuwait. Towards this end, the paper used annual data from Kuwait for the period 19872-94 and employed a simple growth model that separates the effects of public and private Sectors investment. Contrary to previous findings, public investment was observed to exert a positive and a greater impact on economic growth than does private investment.

Introduction

Economic growth is one of the most important objectives in almost every country. It results from an interaction among many factors such as primary factors of production-labor and capital-, technical progress and socio-political factors. Because of this interaction, it is difficult to delineate the role of each factor in economic growth. Growth model which traces its roots back to the neo-classical framework of Solow (1956) represents a very important tool with which to study the growth experience of a country and describe the role of each factor in growth process. In such model, the rate of growth of output is related to the rate of capital formation, labor force growth, technical progress and other factors believed to be responsible for economic growth.

Many studies have used growth model to provide empirical evidence to serve their purposes whether the purpose is to show the role of each factor of production in growth process (e.g., Elias (1978), McCarthy et al. (1985), and Burney (1986), among others) or to examine the importance of exports for economic

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performance (e.g., Michaely (1977), Balassa (1978), (1985), Feder (1982) and many others). Most of these studies, however, have not made distinction between the private and public capital or in other words, between the private and public components of investment. Because investment undertaken by private sector is believed to be more efficient and productive, many economists as well as many international institutions like the International Monetary Fund and the World Bank view that greater role of private sector in economic activity, among other factors such as minimum level of government intervention, trade liberalization and more flexibility in financial system as the paving road for achieving a sustained higher rate of economic growth.⁽¹⁾

The importance of private investment as a key factor in promoting economic growth examined by Khan and Reinhart (1990) who used a simple growth model that separates the effects of private sector and public sector investment. The estimation was carried out using a cross-section data from 24 developing countries and the results supported the hypothesis that private investment has a greater impact on growth than does public investment.

Kuwait, together with other Arab states in the Gulf, despite of the fact that they are among the developing countries in the world, have their peculiarity. Unlike most of the developing countries, their economies are characterized by a heavy dependence on oil production and exports, a higher real per capita income compared to other developing countries, a limited supply of indigenous labor force and an undiversified and a small productive base. Over the last two decades, there has been a number of studies that sought to understand and to explain relevant phenomena of these economies. Most of these are macroeconomic studies which aim at understanding the underlying inter-relationships and functioning of the economy, forecasting major macro variables and assessing the impact of various policy measures on the performance of the economy in the short and medium terms. However, no study, as far as we know, has attempted to examine the source of growth in the context of growth model that separates the effects of private and public investment.

For this reason, the purpose of this paper is to provide a quantitative picture of the roles of private and public investment among other factors such as labor force growth, exports or imported inputs, and technical progress in the growth

process. The analysis is carried out using annual data from Kuwait for the period 1972-1994, for which sufficiently consistent data are available. Due to the similarities between Kuwait and other Gulf states, the results could be then generalized for other states.

The plan of the paper is as follows: Section II provides an overview of the Kuwait's economy (1970-94). The basic model to be estimated is outlined in Section III. This is followed by a presentation and discussion of the empirical results in Section IV. Finally, Section V summarizes the main findings.

An Overview of Kuwait's Economy (1970-94)

Kuwait's economy is characterized by heavy reliance on oil sector for its sustenance. Following the two oil shocks of 1973 and 1978/79, major economic aggregates increased substantially (see Table 1). Nominal GDP grew rapidly due to large increases in oil revenues. The rapid increase in assets held abroad and their annual returns contributed to the growth of GNP and national disposable income. With small domestic base, the increase in national income led to a considerable growth in the demand for imported goods and services. Furthermore, the increase in government income and the adoption of vigorous development programs led to significant demand for labor. Given the limited supply of skilled/semi-skilled indigenous labor force, labor requirements were met by an expatriate labor force. This resulted in distortions in populations/labor force structure.

This analysis underlines the main features of Kuwait's economy during the 1970s and early 1980s as follows:⁽²⁾

- 1-A heavy dependence on the outside world with regard to oil revenues, investment income, imports and labor force.
- 2-The prominent role of public expenditure in determining the level of economic activity.
- 3-A limited absorptive capacity with small domestic market.
- 4-A limited supply of skilled indigenous manpower and structural imbalance in the population and labor force composition (the Kuwaiti share in total labor force did not exceed 21% on average, Table 1).
- 5-Low share of commodity producing sector in government investment program.

During the period 1982-90, the economy faced new unfavorable internal and

external conditions which led to further structural imbalances. The fall in oil prices, the stock market crisis in 1982 and the Gulf war are examples of such conditions. Despite of the drop in oil revenues, the Kuwaiti economy during this period is characterized by a continuous increase in public expenditure, particularly, the subsidy program causing further distortion in household consumption behavior, and a continuous rise in the demand for imported goods and labor force leading to a further structural imbalance in the human resource base (Table 1).

Finally, the Kuwaiti economy suffered a devastating setback due to the Iraqi invasion and occupation in the early 1990s. The economy then faced new challenges in addition to earlier structural problems in 1970s and 1980s such as:

- 1-Increasing budget deficit
- 2-Declining income from foreign assets held abroad, and
- 3-Falling trade surplus.

With such new challenges, the government has taken serious steps towards reducing public expenditure, especially through rationalizing its welfare program, and raising non-oil revenues. However, such measures are believed to be a short-run elimination of deficit problem. For maintaining a reasonably high economic growth and ensuring an elimination of budget deficit, the government should seek a permanent solution (rather than temporary solution) which implies removing the imbalances that exist within the system. This requires reducing the size of public sector, diversifying the economy, increasing productivity and expanding the role of private sector in economic activity.

Table 1. Structural Changes in the Kuwaiti Economy (1975-1994)

First: Economic Indicators @	1975		1980		1985		1989		1994	
	Value	% of GDP	Value	% of GDP	Value	% of GDP	Value	% of GDP	Value	% of GDP
Oil Revenues	2128.1	61.0	4434.2	59.5	2094.6	32.4	2035.6	41.1	2234.9	31.1
Public Expenditure	829.6	23.0	2746.8	36.0	3205.0	22.4	2998.1	25.4	4162.7	57.9
Private Consumption	758.7	21.8	2200.2	29.7	3084.0	47.8	3192.7	44.7	2948.5	41.1
Imports	693.2	19.9	1764.9	23.8	1803.0	27.9	1849.0	25.9	3133.0	43.6
Exports	2663.9	76.5	5368.9	72.5	3185.0	49.3	3130.0	43.9	3984.0	55.5
Budget Surplus (Deficit)	2079.7	59.6	1973.0	26.4	860.4	13.3	(630.8)	8.8	(1502.0)	21.0
GDP	3478.0	100.0	7401.2	100.0	6449.9	100.0	7127.9	100.0	7180.0	100.0
Second: Demographic Indicators **	-	-	-	-	-	-	-	-	-	-
Labor Force (% of Kuwaitis)	298.413	18	484.044	15	662.588	14	909.663	14	776.142	16
Population (% of Kuwaitis)	1,006.600	47.2	1,374.921	41.4	1,910,856	35.7	2,040.961	26.7	1,468.902	43.6

* In million KD current prices

** In thousands

Number in parentheses are negative

Source: Central Statistical Office, Annual Statistical Abstract (various issues), Ministry of Planning, Kuwait.

Model

Following Ram (1985), Khan and Reinhart (1990), among others, the role of investment in economic growth can be analyzed in the framework of a production function that relates output to factors of production, and a variable measuring total factor productivity.

$$Y = Af(K, L, X) \quad (1)$$

Where Y is the aggregate real output, K is the stock of Capital, L is the labor force and X represents other factors affecting growth and A measures factor productivity. Eq. 1 can be expressed in terms of growth rates. Taking total derivatives, and manipulating the terms slightly, one gets the following expression:

$$\frac{dY}{Y} = \frac{dA}{A} + A \frac{\partial Y}{\partial K} \frac{dK}{Y} + A \frac{\partial Y}{\partial L} \frac{L}{Y} \frac{dL}{L} + A \frac{\partial Y}{\partial X} \frac{X}{Y} \frac{dX}{X} \quad (2)$$

Since the change in capital stock is simply the amount of investment I , then replacing dK by I gives:

$$\frac{dY}{Y} = \frac{dA}{A} + \left[A \frac{\partial Y}{\partial K} \right] \frac{I}{Y} + \left[A \frac{\partial Y}{\partial L} \frac{L}{Y} \right] \frac{dL}{L} + \left[A \frac{\partial Y}{\partial X} \frac{X}{Y} \right] \frac{dX}{X} \quad (3)$$

Eq. 3 can be expressed as:

$$\dot{Y} = b_0 + b_1 \frac{I}{Y} + b_2 \dot{L} + b_3 \dot{X} \quad (4)$$

Where a dot over a variable represents its rate of growth. The constant term b_0 is assumed to capture the growth in productivity. The terms b_1 , b_2 and b_3 , which denote, respectively, the marginal productivity of capital and the elasticities of output with respect to L and X .⁴

Based on the argument by the proponents of "export led growth" such as Balassa (1978), Tyler (1981), and Feder (1982), the other determinants of growth introduced in addition to capital, labor and productivity of growth is the exports growth. According to this line of argument, exports growth raises factor productivity and leads to economic growth by giving rise to various benefits, such as more efficient utilization of resources and adoption of technical considerations that result from foreign competition and gains of scale effects associated with large international markets. Following that, the variable X in the model above could be the growth of exports. Because many developing countries rely to a large extent on imports of capital and intermediate goods as inputs in the pro-

duction, the variable X , and, therefore, could also be imported inputs as suggested by Lewis (1979).

According to Eq. 4, the effects of private and public investment are merged into a single total investment variable. Therefore, this model does not provide any information regarding the independent effects of private and public investment on growth. To study the effects of each factor independently, total investment I is split into private sector investment PI and public sector investment GI . In this case, Eq. 4 can be rewritten as:

$$\dot{Y} = a_0 + a_1 \frac{PI}{Y} + a_2 \frac{GI}{Y} + a_3 \dot{L} + a_4 \dot{X} \quad (5)$$

Where a_1 and a_2 are the marginal productivities of private and public investment respectively.⁵

Since the purpose is to investigate the relationship between investment and growth, the fourth determinant of growth X is not a primary concern of this paper. In this case, Eq. 5 is estimated using alternatively the growth in exports and imports, thus:

$$\dot{Y} = a_0 + a_1 \frac{PI}{Y} + a_2 \frac{GI}{Y} + a_3 \dot{L} + a_4 \dot{EX} \quad (6a)$$

$$\dot{Y} = a_0 + a_1 \frac{PI}{Y} + a_2 \frac{GI}{Y} + a_3 \dot{L} + a_4 \dot{IM} \quad (6b)$$

Where EX is the growth in the value of exports and IM is the growth in value of imports. Total imports are used as proxy for imported inputs based on assumption that imported inputs are a fixed proportion of total imports.

Empirical Results

Annual observations from Kuwait for the period 1972-94 are used for estimation and testing of parameters in several variants of Eqs. 6a and 6b. The data were obtained from the Annual Statistical Abstract published by the Ministry of Planning in Kuwait and from the Quarterly Statistical Bulletin of the Central Bank of Kuwait. All the monetary variables are at 1984 constant prices. Because of the absence of simultaneous bias, the ordinary least-square (OLS) is used in the estimation. To account for possible structural shifts in the data due to some important events such as first oil shock 1973/74, second oil shock 1978/79, and

Iraqi invasion and occupation of Kuwait 1990/91, several dummy variables taking the value 1 for years 1973-75, 1979-81, 1990-92, and 0 otherwise, have been used. In the case when the coefficient of the dummy is found to be insignificant the equation is re-estimated after deleting the dummy. The estimated dummies reported below are the results of this process.

In the beginning, Eqs. 6a and 6b are estimated when private and total investment are combined as one single explanatory variable. These shall be used as a benchmark against which to compare our other results. We note from the results reported in Table 2-lines (1) and (2), that each of the coefficients, as expected, is positive and statistically significant at 5% level except the coefficient of labor force growth which is found to be insignificantly different from zero. In particular, the investment - income ratio exhibits a positive impact on economic growth. A 10% increase in the investment-income ratio independently augments economic growth by slightly less than 1% in both cases when the growth of exports and the growth of imports are the third factor in the growth model, regardless of whether the increase in the investment-income ratio comes from an increase in private investment or public investment. How would the results, then, differ when the total investment is disaggregated into its public and private components?

Table 2 also reports the results when total investment is split up into private and total investment-lines (3) and (4). By reviewing the results, we find out that the coefficient of public investment, which represents the marginal productivity of public investment, is positive and is significantly different from zero almost at 5% level. Thus, public investment exhibits a very important impact on economic growth of Kuwait, especially when the growth of imports as proxy for imported inputs is introduced in the specification. The coefficient (marginal productivity) of private investment, on the other hand, is found to be not significantly different from zero, indicating that private sector investment has not affected the growth of output over the last two decades. The coefficient of labor force growth continues to be not significantly different from zero and when the growth of exports is used, its sign becomes negative. In this case, one could conclude that labor force in Kuwait has no direct effect on growth. The proper explanation of this is that most variations in GDP are due to variations in oil sector which is the dom-

Table 2. Results for Growth Model
(t-Statistics in Parenthesis)

1.	$\dot{Y} = -0.162 + 0.978 I/Y + 0.56 \dot{L} + 0.261 \dot{EX} + 0.11 D_2 - 0.52 D_3$	$R^2 = 0.660$	$DW = 1.97$
	(-2.01) (2.083) (0.115) (4.431) (2.37) (-4.17)		
2.	$\dot{Y} = -0.182 + 0.861 I/Y + 0.429 \dot{L} + 0.310 \dot{IM} + 0.27 D_2 - 0.57 D_3$	$R^2 = 0.624$	$DW = 2.14$
	(-2.119) (1.749) (0.913) (4.08) (2.11) (-4.71)		
3.	$\dot{Y} = -0.168 + 0.685 PI/Y + 1.645 GI/Y - 0.38 \dot{L} + 0.270 \dot{EX} - 0.43 D_3$	$R^2 = 0.841$	$DW = 2.01$
	(-1.959) (0.886) (2.127) (-0.07) (4.29) (-3.95)		
4.	$\dot{Y} = -0.179 + 0.222 PI/Y + 2.239 GI/Y - 0.233 \dot{L} + 0.341 \dot{IM} - 0.26 D_3$	$R^2 = 0.621$	$DW = 1.89$
	(-2.074) (0.266) (1.962) (0.454) (4.118) (-2.91)		
5.	$\dot{Y} = -0.106 + 0.981 GI/Y + 0.233 \dot{EX} - 0.38 D_3$	$R^2 = 0.727$	$DW = 1.81$
	(-2.69) (2.85) (4.89) (-4.31)		
6.	$\dot{Y} = -0.115 + 0.883 GI/Y + 0.302 \dot{IM} - 0.31 D_3$	$R^2 = 0.694$	$DW = 2.13$
	(-2.67) (2.427) (4.52) (-4.10)		

Note: Y, I, PI, GI, EX, and IM, respectively, are the GDP growth, total investment, private investment, public investment, labor force growth, exports growth and imports growth. D_2 is 1 for 1979-81, and 0 otherwise. D_3 is 1 for 1990-92, and 0 otherwise. The figures in parentheses are t-values.

inant sector in economic activity (its contribution in GDP, on an average, exceeds 65%). Variations in oil GDP results mostly from variation in oil price at oil production and no role for labor force variations.

For further investigation of the role of investment, growth model on the basis of Eqs. 6a and 6b is re-estimated after excluding the private investment and labor force growth variables which are expected not to have any effects on the overall goodness-of-fit of the model because they have insignificant coefficients. The results, as presented in lines (5) and (6) of Table 2, show that the estimated coefficients of public investment, although they decrease in size, become more significant. Like previous findings, exports and imports continue to exhibit positive impacts on economic growth of Kuwait.

On the basis of the above results, one could conclude that the direct effects of public sector investment on growth outweigh the direct effects of private sector investment which is different from the findings of many studies related to developing countries which have shown that private sector investment plays a dominant role in growth relative to either total investment or public sector investment (e.g., Khan and Reinhart, 1990). The important role of public sector investment in the economic growth of Kuwait may be attributed to the characteristics of Kuwait's economy in which the government owns the country's oil and non-oil wealth. Thus, the public sector dominates economic activities, and directly and indirectly the government is the sole producer and supplier of most commodities and services.

On the other hand, how would the results differ if the attention shifted towards analyzing the growth of non-oil output? In other words, what is the role of each factor in the growth of non-oil output? This can be found by re-estimating Eqs. 6a and 6b using the growth of non-oil output as dependent variable, and other variables in growth model related to non-oil sector as explanatory variables. Several variants of Eqs. 6a and 6b were tried and unfortunately, the results generally were not good. Table 3 presents some of these results. As we can see from the Table, most of the coefficients are either insignificant or have incorrect signs.

Considering only regressions (1) and (3), we observe that labor force and export growth are the only factors responsible for the growth of non-oil output. The importance of labor force for economic growth can be easily explained in terms

Table 3. Results for Growth Model (non-oil output)

1. $\dot{Y} = 0.125 - 0.175 I/Y + 0.636 \dot{L} + 0.422 \dot{EX} + 0.23 D_2 - 0.66 D_3, R^2 = 0.386, DW = 2.28$ (1.38) (-0.415) (2.14) (3.27) (2.10) (-4.20)
2. $\dot{Y} = 0.015 + 0.190 I/Y - 0.363 \dot{L} + 0.083 \dot{IM} - 0.07 D_3, R^2 = 0.216, DW = 2.34$ (0.151) (0.391) (-0.605) (1.24) (-2.34)
3. $\dot{Y} = 0.082 + 0.612 PI/Y - 0.825 GI/Y + 0.551 \dot{L} + 0.434 \dot{EX} - 0.33 D_3, R^2 = 0.399, DW = 2.11$ (0.835) (0.785) (-1.10) (1.80) (3.44) (-2.70)
4. $\dot{Y} = 0.001 + 0.517 PI/Y - 0.129 GI/Y - 0.301 \dot{L} + 0.079 \dot{IM}, R^2 = 0.108, DW = 1.68$ (0.11) (0.525) (-0.144) (-0.462) (1.41)

Note. $\dot{Y}$ is the growth of non-oil GDP, I , PI , and GI are total, private and public investment in non-oil activities, respectively; $\dot{L}$ is the growth of labor force employed in non-oil activity; $\dot{EX}$ is the growth of non-oil exports; $\dot{IM}$ is the growth of non-oil imports. D_2 is 1 for 1979-81, and 0 otherwise. D_3 is 1 for 1990-92, and 0 otherwise. The figures in parentheses are t-values.

that most of the activities included in non-oil sector are labor intensive. Therefore, an increase in the growth of labor force independently augments the growth in non-oil activities. Because this paper is addressing the effects of private and public investment, the estimated coefficients of these factors - line (3) - are found to be not significantly different from zero. Thus, on the basis of these estimates there is little doubt that both private and public investment have no direct effect on the growth of non-oil output.

Conclusions

This paper has attempted to shed light on the extent to which Kuwait has gained from the beneficial effects of investment and particularly its private component previously found for most developing countries. Towards this end, the paper used data from Kuwaiti economy and employed a simple growth model that allowed private and public investment to exert differential effects on output growth.

The main finding of this paper is that the marginal productivities of private and public investment differ in Kuwait. Public investment is found to have larger effects than private investment in the growth process as indicated by the level of significance and the size of marginal productivity. When the emphasis shifted towards analysing the growth of non-oil output, excluding oil-sector, the growth of labor force and exports seem to be more responsible for the growth of non-oil output. This finding obviously contradicts that of previously found because most developing countries in that private investment plays a much greater role in the growth process than does public investment. The adverse results can be justified in that public sector which dominates economic activity in Kuwait, and thus, fluctuations in public spending (current or investment) cause similar fluctuations in the level of economic activity.

Emphasizing only on the effects of private and public investment that have been analyzed in this paper, the policy implications should not be thought as encouraging public investment at the expense of private investment. After providing all necessary infrastructures such as roads, telecommunications, electricity and water, schools and hospitals, government should try to promote the role of private investment by creating conditions that make private investment more at-

tractive. Conservative macroeconomic policies, legal protection for private property, easy access to loans and imported inputs by private sector are examples of these conditions. Promoting private investment among other factors, for Kuwait and other states in the Gulf, is seen by many economists as the means for preventing the deterioration in level of per capita income and removing the imbalances that exist within the system.

Notes:

1. These are the basic elements of what is known as the market-oriented adjustment strategy. According to supporters, developing countries with many economic difficulties - rising foreign debt burden, increasing balance of payments and government budget deficits, and in some cases declining economic growth - have to adopt such development strategies. For more review of literature, see Khan and Reinhart (1990), Fosu (1990) and Lim (1994).

2. For more details, see Sirageldin et al. (1985) and Hoque (1994).

3. Eq. 2 is obtained as follows:

First: Taking the total derivative in (1), yields

$$dY = f(K, L, X)dA + A(\partial Y/\partial K)dK + A(\partial Y/\partial L)dL + A(\partial Y/\partial X)dX$$

Second: Dividing throughout by Y and multiplying the third and fourth terms respectively, by L/L and X/X, gives:

$$dY/Y = f(K, L, X)(dA/Y) + A(\partial Y/\partial K)(dK/Y) + A(\partial Y/\partial L)(L/Y)(dL/L) + A(\partial Y/\partial X)(X/Y)(dX/X)$$

Third: Substituting (1) for Y in the first term, one could obtain Eq. 2, namely:

$$dY/Y = dA/A + A(\partial Y/\partial K)(dK/Y) + A(\partial Y/\partial L)(L/Y)(dL/L) + A(\partial Y/\partial X)(X/Y)(dX/X)$$

4. When b_0 , b_2 and b_3 are set to zeros, the familiar incremental capital output relationship known as "ICOR" is obtained. The capital-output relationship as represented by ICOR usually used by the World Bank to determine external financial needs for developing countries.

5. In developing countries, private and public investment are inter-related. One direction of relationship is that public sector investment is financed either through taxes, issuance of bonds, or printing more money (inflation tax). Given the scarce financial resources, private investment will be depressed. The other direction of relationship is that when public investment is allocated towards expanding infrastructural base and providing public goods. This type of public investment could create a better environment for investment opportunities and affect the marginal productivities of private investment, labor and total productivity, a_1 , a_3 and a_0 , respectively.

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