Determinants of Private Investment in Saudi Arabia: The Role of Government Investment

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Abstract. Investment plays a major role in economic growth and development. With the recognition, in recent years in less developed countries (LDCs), of the private sector as a major player in the development of these economies, private investment takes the lead in the long term growth. The government in Saudi Arabia spent massively on the development of basic infrastructure and economic services during 1973-1982 period. This study attempts to examine the impact of the government policies on the development of the private sector investment between 1970-1993. The results show that the variables employed here, especially government investment and activities, have the right signs and have significant impacts on the private investment. It is important for policy makers to pay attention to the long term consequences of arbirtray reduction in spending on basic economic services and infrastructure.

Introduction

Fixed investment plays a major role in economic growth and stabilization of the economy. The accumulation of real physical capital has long been regarded as one of the major factors in economic development. Fluctuations in investment also have a significant impact on the general functioning of the economy.

In recent years, there has been growing recognition in developing countries, that the private sector could play a significant role in economic development. A broad consensus has also emerged on the importance of promoting private sector development and increasing its share in total investment in these countries for long term growth. Thus, it is important to understand the factors that govern the level of investment, especially private investment in these countries.

The main purpose of the paper is to examine the role of the government policies and an attempt is also made to determine whether public investment and consumption have impacts on private investment. The following section presents a brief review of the Saudi Arabian economy and its changing structure, followed by a brief discussion of the development of the private sector investment. Determinants of private investment in Saudi Arabia with a mathematical approach and empirical results are presented in the following section. The last section includes a conclusion, recommendations and policy implications.

The nature of the Saudi Arabian economy

As indicated by various Five Year development Plans (1970-1995), the economic system in Saudi Arabia is based on the principles of free market economy where a substantial part of the production and distribution of goods and services is left to individuals and groups enjoying freedom in their dealings and transactions. The government always emphasized that it will uphold the market system and encourage the private sector to play a fundamental role in the accelerated growth and development of the economy, but indicated in the mean time that it will take all necessary measures to make the market system conform to the larger social interests of the country.

The Saudi Arabian economy has depended and still depends on the production and export of crude oil as the main source of national income. Oil is a national wealth extracted and utilized by the government in the public interest since there is no private ownership of oil or oil concessions. That is, revenues accruing from the sale of oil go to the national treasury to finance government activities and expenditures. It is mainly through these expenditures, among other channels, that oil affects economic development in Saudi Arabia and this gives the government a dominant influence on the performance of the economy.

Given the primitive state of the Saudi Arabian economy in general and the situation of the private sector in particular in the early stages of the development, the emphasis was put on the development of basic infrastructure and expanding social services. Thus, the government spent massive amount on infrastructure during 1973-1982 period and indicated that its main objectives were to increase the participation of the private sector through structural changes in the economy. To achieve this it adopted a policy of giving the private sector opportunities to undertake many of the economic tasks and made sure that it would not engage in any activities undertaken by the private sector. Due to the fact that the financial sector was in a rudimentary state the government aided the private sector in many ways and made available to it long term loans at low or free interest rates. The primary vehicle for carrying out government support for the private sector financial system development in Saudi Arabia are the specialized credit funding agencies. These agencies include: Saudi Industrial Development Fund, Real Estate Development Fund, Saudi Agriculture Bank, and Saudi Credit Bank.

Since oil revenue is the main source of income for the government, which uses it to increase domestic expenditure, as mentioned above, the changes in this source of income

directly and indirectly affect the output of the other sectors of the economy. Because of the drop in oil prices and revenues in recent years, there is uncertainty about the government's ability to maintain its past level of expenditure and economic policies. This uncertainty could have an adverse impact on the private sector decisions on future spending on consumption and investment. In this regard, the consistent emphasis on the role of the private sector within a market oriented economy was always paralleled with an emphasis on reducing the dependence on the production and export of oil as the main source of national income. But, despite the diversification policy, the economy tends to depend heavily on oil production. As such the country is highly vulnerable to external economic factors and to fluctuations in oil markets. That in turn, creates the need for government intervention to stabilize domestic economy.

Private investment

Saudi Arabia was characterized by immense diversity and until at least the period of 1973-1974 oil boom, was fragmented geographically and economically. In general, because of its relatively small population the country suffers from small market size which denies many local producers the advantages of economies of scale. Historically since producers were dispersed geographically, they suffer from relatively high transportation and communications costs which in turn severely limited the opportunities for domestic trade. These elements have all worked to reduce the rate of return on many types of private investment, thereby enhancing the potential for an active role and intervention by the government.

Most attention was given to the private sector investment. The government not only formulated policies designed to encourage private investment, but also participated directly in economic activities. The government indicated that, public investment purpose was to help to break down some of the discontinuities inherent in the early phases of the country's development. Most importantly in this regard, it has to help to create an environment in which economies of scale could be obtained in many areas by the private enterprises. To facilitate a strong and more diversified private sector, the government helped to create a positive environment for the private sector and established new institutions to further the interest of this sector. In short the government policy was to encourage the private sector to take an active role in the country's investment and economic growth and development.

Oil revenues have facilitated the rapid growth and expanding of the government expenditures. In particular government investment as percentage of total investment increased from slightly over 7 percent in 1960 to 42.9 percent in 1965, 53.3 percent in 1970, 47.5 percent in 1975 and 72.6 percent in 1980. Public sector share in investment has declined somewhat in 1985 due to oil price declines. Then it increased in 1990 to 57.2 percent to decline again in 1992 to 24.8 percent. Similarly, public sector consumption increased from slightly over 20 percent of total consumption in 1960 to 63 Percent in 1965, 46. 9 percent in 1975 and 50.4 percent in 1982. Again, this share fall slightly to 45.1 percent in 1985 due to the decline in oil revenues. It declined again in 1990 and 1992 to around 40 percent. The net result is that the expansions of the

expenditures of the public sector have risen as a percentage of total expenditures from around 20.0 percent to stay around 50.0 percent. This growth in the government sector has apparently not been on the expense of the private sector with overall private sector investment expanding at slightly under 9.8 percent per annum over the 1965-1985 period. The growth of the private sector for the period 1970-1993 was around 10.0 percent per annum. The following table shows real private gross domestic investment (PGDIR) and real government gross domestic investment (GGDIR) between 1970-1993 in billion SR (1984 = 100),

	1970	1975	1980	1985	1990	1993
PGDIR	7.246	18.168	30.408	35.068	22.650	56.512
GGDIR	6.426	22.560	70.172	32.443	34.417	17.595

Although the private sector in Saudi Arabia has developed rapidly, it is still dependent on the government initiatives. Looney [1, p.155] noted that the private sector in Saudi Arabia is lagging behind, " It appears that the private sector, while in general benefiting indirectly through the impact of oil revenues on overall purchasing power, had difficulties in efficiently absorbing these revenues. This private sector has clearly been demand rather than supply driven."

Determinants of private investment in Saudi Arabia

A number of studies have examined the relationship between public investment, especially in infrastructure, and output, productivity or performance of private sector investment. Some of these studies found strong link between public and private investments and in turn economic growth. Other studies criticized these findings and argued that these studies have ignored the influence of factors other than public investment. Their concern was with the efficient use of public spending on infrastructure. For survey of these studies see for example: Aschauer [2]; Blejer and Khan [3]; Cordoso [4]; Greene and Vilanueva [5]; Munnell [6]; Oshikoya [7]; Ramirez [8]; and Tatum [9].

Because of the problems inherent in the less developed countries, one line of research in studying private investment in these countries, following MacKinnon [10] and Shaw [11] complimentarily theory, advanced the hypothesis that private investment in these countries is positively related to the accumulation of domestic real balances and public investment. Laumas [12]. In another line of research attempt has been made to retain the neoclassical model, but it addressed explicitly the analytical and data problems involved in its application to developing countries. Blejer and Khan [3], Khan [13], Tun Wai and Wong [14].

It has been suggested that private investment in developing countries is positively related to the growth of real output proxied by Gross Domestic Product (GDP), availability of credit to the private sector, general market conditions, and most importantly to government investment. It is assumed also that uncertainty will have a negative impact on private investment.

Growth of real GDP (YRt): The relationship between private investment and the growth of real output can be derived from a flexible accelerator model with the assumption that the real production function has a fixed relationship between the desired capital stock and the level of output.

General market conditions (GMt): It is assumed that the private sector would respond quickly to changes in desired investment if market conditions are favorable. This variable is estimated as the difference between actual GDP and its trend at 5 percent growth.

Availability of credit to the private sector (CRt): In contrast to developed countries, one of the principal constraints on investment in developing countries is the quantity rather than the cost of financial resources. The availability of credit allows the private sector to expand and import the needed equipment's necessary for production. Thus, the degree of the availability of credit is expected to be positively correlated with private investment.

Uncertainty (UNCt): Irreversible nature of long term private investment expenditures has been emphasized to have negative impact on investment behavior. Changes in uncertainty, usually associated with unpredictability, instability, and imperfect credibility of macroeconomic policies have a very significant impact on private investment. (Cordoso [4] and Pindyck [15]).

Government investment (GIt): Government investment strongly influences private investment and the growth of the economy in developing countries and its significance depends on the type of public expenditure. It is believed that certain types of public investment provide a significant stimulus to private investment and thereby serve as a powerful instrument of stabilization and growth policy. There are several reasons to believe that private investment is positively correlated with public investment. First, the creation of infrastructure facilities such as transportation, communication, electric power, irrigation, and so on tend to reduce the unit cost of output and create the conditions conducive to private sector investment. Second, the government might start projects that require high financing beyond the attainment of the private sector in developing countries, which results in establishing forward or backward industries by the private sector. This enhances private investment through reduction in production costs. Third, when resources are not fully employed an increase in government investment stimulates demand for private investment. These kind of government investment are complementary to private sector investment and therefore encourage private investment. The complementarily hypothesis is crucial because it implies that public investment has direct and indirect influence on economic growth. These indirect effects are channeled through private investment and national output. Public investment directly enhances growth by providing the climate for private investment through public goods provision. In addition, public investment may increase current output which in

turn stimulates higher private investment and higher growth. On the other hand, public sector investment utilizes already scarce physical and financial resources that would otherwise be available to the private sector. The monopoly power of the government gives it an advantage over the private sector. Laumas [16 and 12]. The financing of government investment through taxes , borrowing or inflation reduces also the financial resources available to the private sector. In these cases government investment crowds out private investment and therefore discourages private sector spending on investment. The overall relationship between government investment and private investment depends on the relative strength of the two effects. That is, if on average, government investment is complementary to the private sector investment, then government investment is conducive to the private investment, but on the other hand, if government is disruptive to the private investment , then government investment will tend to crowed out the private sector investment. The overall impact can only be established through empirical analysis. The advantage of linking private investment to government investment is in relating the effect of different government policies to private sector investment, thereby, establishing an empirical relationship.

Methodology

Following Barth and Cordes [17] and Ramirez [8] the link between private and public investment spending can be explained when the aggregate production function is written as:

$$Y = f (N, Kp, Kg) + e$$

$$f1, f2 > 0 ; f3 \geq < 0; f11, f22 < 0; f12 > 0; f13 \geq < 0; f23 > < 0 \qquad (1)$$

Where Y is the level of real output, N denotes employment. Kp and Kg are the stock of private and public capital respectively, e denotes error term, f1 is the marginal productivity of labor, f2 is the marginal productivity of private capital, f3 is the marginal productivity of public capital, f11 is the change in marginal productivity of labor, f22 is the change of marginal productivity of private capital, f12 is the change in the marginal productivity of labor with respect to private capital, f13 is the change in the marginal productivity of labor with respect to public capital, and f23 is the change of marginal productivity of private capital with respect to public capital. Public and private capitals can be substitute, complement, or independent.

By treating the public capital as a separate input in the production function, an increase in public investment, other things being equal, will have the following three effects. (1) The case where the public capital stock is productive and complements the private capital, an increase in the public capital stock will increase output directly as any other factor of production (F3>0). It will indirectly increase private investment and output by raising the marginal productivity of private capital stock (F23>0). It will also increase output through its positive impact on the marginal productivity of labor,

i.e., by increasing the amount of both private and public capital per worker (F12 and F13>0). (2) In the case where public and private capital stock are direct substitute, an increase in public investment generates a positive direct effect, but a negative indirect effect that could more than offset the positive effect, that is [(F3+F13)+(F23)-(F12)]<0. (3) In the case where private and public capital stocks are independent an increase in public investment will generate a direct positive effect on output, but the effect on private investment might be zero, (F23 = 0).

Following Blejer and Khan [3], Khan [13], Ramirez [8] and Tun Wai and Wong [14], we can estimate a flexible accelerator investment model that captures some of the characteristics of developing nations such as Saudi Arabia. This choice of the modified accelerator model over other formulations of the neoclassical investment models rests on the fact that in countries such as Saudi Arabia there are, to begin with, no published capital stock series or reliable estimates for rate of depreciation and given the fact that there is no official interest rate in Saudi Arabia thereby preventing investors from equating the marginal product of their capital to its rental price, the available quantity of resources rather than their cost or price, tend to be the binding constraint. This has been the case in allocating financial resources, where it is relied on commercial and development banks to channel investable funds to business projects. In the formulation of the flexible accelerator model (Chenery [18]) it is often assumed that the desired capital stock is proportional to the level of expected output. (Blejer and Khan, [3]; Khan, [13]; and Tun Wai and Wong, [14]).

$$K^*pt = \alpha Y^*t \qquad (2)$$

Where K^*pt is the capital stock that the private sector desires to have in period t, and Y^*t is the expected level of output in period t. The actual stock of private capital is assumed to adjust to the difference between the desired stock in period t and the actual stock in the previous period:

$$\Delta Kpt = \beta (K^*pt - Kpt-1) \qquad (3)$$

or

$$Kpt = \beta K^*pt + (1-\beta)Kpt-1 \qquad (3a)$$

Where β is the coefficient of adjustment, such that $0 < \beta < 1$, and Δkpt is the change in actual capital stock between two periods or net private investment. Equation (3) indicates that net private investment in any given time period t is some fraction, β , of the desired change for that period. It is theoretically possible for the actual capital stock to adjust instantaneously to its desired level ($\beta = 1$) or for no adjustment to take place at all ($\beta = 0$), but in practice β lies between these two extreme cases. Equation (3a) on the other hand, enables us to rewrite the partial adjustment model because it explicitly shows that the actual capital stock in period t is a weighted average of the desired capital stock and the capital stock in the previous period.

Since the data on investment for most developing nations- including Saudi Arabia- are in gross term, equation (3) must be transformed into gross investment term for estimation purposes. Gross private investment, IPt is defined as:

$$IPt = \Delta Kpt + \delta Kpt\text{-}1 \tag{4}$$

Where δ is the rate of depreciation of the private capital stock. Equation (4) can be written in lag operator term as:

$$IPt = [1\text{-}(1\text{-}\delta)(L)]Kpt \tag{5}$$

(L) is the lag operator, and it is defined as, (L)Kpt = Kpt-1.

Writing equation (5) in terms of K we can relate the stock of private capital to the level of gross private investment as follows:

$$Kpt = IP/ [1\text{-}(1\text{-}\delta)(L)] \tag{6}$$

equation (6) can now be substituted in equation (3a) to obtain

$$IPt / [1\text{-}(1\text{-}\delta)(L)] = \beta K^{*}pt + (1\text{-}\beta)IP\ t\text{-}1/ [1\text{-}(1\text{-}\delta)(L) \tag{7}$$

multiplying both sides of equation (7) by the term in brackets, we have

$$IPt = \beta[1\text{-}(1\text{-}\delta)(L)]K^{*}pt + (1\text{-}\beta)IPt\text{-}1 \tag{8}$$

If we now substitute for K*pt from equation (2), we obtain an equation for basic accelerator model for gross private investment,

$$IPt = \alpha\beta[1\text{-}(1\text{-}\delta)(L)Y^{*}t+(1\text{-}\beta)IPt\text{-}1 \tag{9}$$

equation (9) has the advantage of not requiring information on capital stock or net private investment, and therefore it can be applied to available gross investment data for the Saudi Arabian economy.

For estimation purposes, it is more appropriate to derive equation (9) by directly specifying a partial adjustment function for IPt, rather than Kpt-1,

$$\Delta IPt = \beta(IP^{*}t \text{ -}IPt\text{-}1) \tag{10}$$

where IP*t is the desired level of gross investment. In the steady state. IP*t is given by :

$$IP^{*}t = [1\text{-}(1\text{-}\delta)(L)]K^{*}t \tag{11}$$

Combining (10) and (11) and solving for IPt, and then using equation (2), yields an equation exactly equal to equation (9). Now, one can use equation (11)- after substituting from equation (2) for the desired capital stock- to specify desired gross private investment not only as a function of the desired level of real output, but also of a number of a relevant variables.

It is argued (Coen, [19]) that in order to achieve the desired level of investment, private investors react to the gap between desired and actual investment, as measured by the β coefficient. It is also argued that the reaction of private investors depends on some basic factors (Blejer and Khan, [3]; Khan, [13]; Ramirez, [8]; and Tun Wai and Wong, [14]), as the general market conditions, the availability of credit to the private sector, the level of public investment and uncertainty. Thus, the coefficient of adjustment, β , is specified as a function of the factors mentioned above in relation to the discrepancy between the desired and actual investment,

$$\beta = b0 + 1/IP^*t - IPt\text{-}1(b1GMt + b2\ CRt + b3\ GIt + b4\ UNCt\ ) \qquad (12)$$

Where: IPt is private investment, GMt is general market conditions, CRt is credit available to the private sector, and GIt is public investment. Substituting equation (12) into equation (10) we get:

$$\Delta IPt = [b0 + 1/IP^*t - IPt\text{-}1(b1GMt + b2\ CRt + b3\ GIt + b4\ UNCt)](IP^*t - IPt\text{-}1) \quad (13)$$

simplifying equation (13), we have:

$$IPt = b0\ IP^*t + b1\ GMt + b2\ CRt + b3\ GIt + b4\ UNCt + (1\text{-}b0)IPt\text{-}1 \qquad (14)$$

substituting equation (11) into equation (14) we get:

$$IPt = b0\ [1\text{-}(1\text{-}\delta)(L)]K^*t + b1GMt + b2CRt + b3GIt + b4\ UNCt + (1\text{-}b0)\ IPt\text{-}1 \quad (15)$$

If we substitute the desired demand for capital stock given in equation (2) into equation (15), we get a basic accelerator model for private investment,

$$IPt = ab0[1\text{-}(1\text{-}\delta)(L)Y^*t + b1GMt + b2\ CRt + b3\ GIt + b4UNCt + (1\text{-}b0)IPt\text{-}1 \qquad (16)$$

In the case of Saudi Arabia we expect the following signs for the coefficients,

$$\alpha b0 > 0, \quad b1 > 0, \quad b2 > 0, b3 > 0, \quad b4 < 0,$$

The only remaining unobservable variable in equation (16) is Y^*t, it can be estimated in a variety of ways, but dealing with the limited set of data for developing countries in general, and Saudi Arabia in particular limit our choice. Thus, for estimation purposes we use first order autoregressive process of the form,

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$$Yt = \gamma 0 + \gamma 1 Yt\text{-}1 \qquad\qquad (17)$$

Where $\gamma 0$ is the average level of real output, $\gamma 1$ is the autoregressive parameter. These predicted values from equation (17) were defined as expected output. A direct estimate of the rate of depreciation , δ, is also needed to estimate equation (16). Since there are no official published capital stock for Saudi Arabia, a 5 percent was chosen as an arbitrary value.

Empirical Results

Data used in this study are annual data which covers the period 1970 - 1993. Monetary and financial data are obtained from Saudi Arabian Monetary Agency (SAMA) reports, different issues. Data on GDP, Private Gross Domestic Investment (PGDI), Government Gross Domestic Investment (GGDI), are obtained from Ministry of Planning "Facts and Figures" different issues. All variables in Tables 1 and 2 are for non-oil sectors and in real terms. Variables in table 1 are in log form. In Table 2 the variables are either in ratios to GDP or in growth rates to minimize the effect of hetrosekedastic residuals. All variables are included in model 1 Table 1, only government consumption was excluded because of its relation with government investment. Different models are used to check for the effect of different variables in isolation form the other variables. Results in Tables 1 and 2 indicate that:

The growth rate of GDP (YRt) in Tables 1 and 2 has the anticipated positive sign and significant at 5 percent level. That is an increase in real GDP has a positive impact on private investment which indicates that private investors react quickly and positively to the changes in GDP. The response to general market conditions (GMt) in Tables 1 and 2 appears to be strong as the coefficient for this variable is statistically significant at the 5 percent level. This is an important indication which might suggest that private investors tend to react quickly to favorable situations. As regards the effect of changes in credit to the private sector (CRt) on private investment in Tables 1 and 2 , the results show that this variable has a positive and significant effect on private investment at the 1 percent level which implies direct role of monetary policy in influencing private investment behavior. There is a complementarily between real balances and private investment. Empirical results show also that uncertainty (UNCt) in Table 2 could have a negative impact on private investment. This may be due to the uncertainty about the stability of the government expenditures and macroeconomic policies in the future. This may be due to the uncertainty about future oil revenues and in turn government expenditures and investment. Fluctuations in oil revenues affect output and increase uncertainty and thus reduce investment.

Government investment(GIt) and consumption(GCt) in Tables 1 and 2 were found to have positive and significant effects on private investment at 5 percent. This might be due to the fact that the government provides the basic infrastructure and services used by

the private sector. This also suggests that there is a complementarily between private investment and government investment and consumption. On the other hand, there were some indications of crowding out of private investment by government investment, (Table 1 model 1) which might be due to the fact that the government in Saudi Arabia owns natural resources and competes with the private sector in obtaining scarce resources as skilled labor and lately financial resources. Increase in total government spending provokes a deficit that is in part financed by borrowing from local credit market. This form of financing can have a detrimental effect on private investment because high fiscal deficits reduce the availability of credit to the private sector. Laumas [16 and 12]. Lagged values of private investment (PIt-1) in Tables 1 and 2 have positive signs and highly significant. This suggests that private investors adjust rapidly to build on their investment and indicates continuity in accumulating capital.

Table 1. Dependent variable IPt

Variables	1	2	3	4	5
C	1.39	1.23	04	0.12	2.45***
	(0.69)	(0.79)	(0.39)	(0.08)	(1.800)
Yrt	0.099	0.08***	0.111**	0.123**	0.012
	(1.47)	(1.82)	(2.07)	(2.593)	(1.270)
GMT	0.135	0.11***	0.158**	0.18*	
	(1.33)	(1.73)	(2.12)	(2.97)	
Git	-0.026				0.052**
	(-0.242)				(1.923)
GCt				0.052	
				(0.952)	
CRt	0.29*	0.154**			0.200*
	(2.99)	(2.33)			(2.69)
IPt-1	0.37	-.435**	0.345	0.33	0.650*
	(0.172)	(2.03)	(1.267)	(1.26)	(5.120)
AR(1)	0.56	0.506	0.437	0.47	0.42
	(1.63)	(1.87)	(1.23)	(1.464)	(1.855)
Adj-R-seq.	0.981	0.983	0.973	0.977	0.980
SER	1.587	1.583	1.892	1.809	1.718
F	139.02	263.98	155.184	201.21	233.738
D.W.	1.44	1.65	1.62	1.534	1.767

Variables in Table 1 are in long forms.
significant at 1 percent level, ** significant at 5 percent level, Figures in parentheses are t-statistics values. SER = standards erros of regression. Adj.-R-seq. = adjusted Coefficient of Determinant, DW = Durbin-Watson statistics.
C = constant term, IPt = private investment, Yrt = real GDP, GMt = general market conditions, Git = government investment, GCt = government consumption, CRt = credit available to the private sector, IPt-1 = lagged value of private investment.

Table 2. Dependent variable IPt

Variables	1	2	3	4	5	6	7	8
C	0.131	0.067	0.17	0.14	0.15	0.15	0.15	0.023
	(13.91)	(2.45)	(20.7)	(16.8)	(13.76)	(15.89)	(13.63)	(1.06)
Yrt	0.087	0.711	0.053	0.118***	0.13	0.143	0.135	0.118*
	(1.25)	(1.12)	(0.85)	(1.80)	(1.44)	(1.52)	(1.46)	(2.51)
GCt		0.16*						
		(3.00)						
GMt			0.0003*					
			(3.89)					
CRt			0.001*					
			(2.92)					
DORt					-4.28			
					(-0.53)			
DGEt						-7.28		
						(-0.43)		
							-3.64	
							(-0.42)	
IPt-1								0.793*
								(5.98)
AR(1)	0.40	0.152	0.38	0.55	0.62	0.57	0.62	0.46
	(2.57)	(0.75)	(2.88)	(3.90)	(4.18)	(4.10)	(4.17)	(1.85)
MA(1)	0.92	0.92	1.01	0.92	0.93	0.91	0.93	0.49
	(12.24)	(15.47)	(27.23)	(13.8)	(15.8)	(8.67)	(18.73)	(1.49)
R-Seq.	0.815	0.756	0.848	0.736	0.773	0.78	0.77	0.74
SER	0.0113	0.013	0.0103	0.0137	0.013	0.013	0.013	0.013
F	20.8	14.92	26.08	12.83	15.46	15.77	15.44	25.89
DW	1.46	1.83	1.56	2.03	1.68	1.46	1.65	

Variables in Table 2 are in growth, changes or ratios to GDP.
*Significant at 1 percent level, ** significant at 5 percent level, *** significant at 10 percent level.
Figures in parentheses are t-statistics values. SER = standards errors of regression.
R-seq. = adjusted Coefficient of Determinant, DW = Durbin-watson statistics.
IPt = ratio of private investment to GDP, Yt = growth rate of GDP, Git = ratio of government investment to GDP, GCt = ratio of government consumption to GDP, CRt = Change in credit available to the private sector, GMt = general market conditions (the diffeence between actual and tend of GDP),
DORt, DGEt and DGRt are changes in oil revenue, change in government revenue and change in government expenditures, respectively (proxies for future uncertainty). IPt-1 = lagged value of ratio of private investment to GDP.

Conclusion, Recommendations and Policy Implications

With increased oil prices and revenues during the 1970's and early 1980's, the government of Saudi Arabia spent massive amounts on infrastructure, but with reduced oil revenues, however, there are concerns and uncertainty about the ability of the government to continue its past and current economic policies and maintain that level of expenditures.

Empirical results show that the growth of GDP, general market conditions, and the availability of credit to the private sector have positive impact on private investment. Government investment and consumption were also found to have positive effects on private investment. This is a sign of complementarity between government investment and consumption and private investment, but there are some indications of crowding out by government investment. On the other hand, it was found that uncertainty could have a negative impact on private sector investment.

Most of the economic growth witnessed in Saudi Arabia during the last 25 years was a result of the government spending from oil revenue. The drop in oil prices and in turn oil revenues since 1983 had an adverse effect on the Saudi Arabian economy. Thus, for Saudi Arabia to maintain its economic growth, it is important to have effective monetary and fiscal tools that will allow the necessary monetary and fiscal policies to be carried out. In addition, the development of financial and capital markets is crucial for the economic development of the country. Developed financial and capital markets can mobilize savings and channel them to productive use. Studies of the determinants of growth in less developed countries show the growth of the capital stock as being a crucial factor in explaining the rate of economic growth. World Bank Report [20, p.29] notes:

> As more saving moves through the financial system, financial depth increases. .....Faster growth, more investment, and greater financial depth all come partly from higher saving. In its own right, however, greater financial depth also contributes to growth by improving the productivity of investment. Investment productivity is significantly higher in the faster growing countries, which also have deeper financial system. This suggests a link between financial development and growth."

With respect to fiscal policy, public sector investment plays an important role in augmenting private capital formation. Because private investment activity enhances future growth of real income, these statistical results support the assertion that public policy has permanent effects on real output. A reduction in investment on infrastructure by this sector as a policy would discourage private investment and may retard growth. Public investment in infrastructure facilities that are complementary to private sector investment is required to put the economy on higher long term growth path. Furthermore, expanded restructuring of public sector expenditure may, therefore, be required to

achieve this goal. The efficiency of resources use in the public sector is as important as the level of investment. Thus, in short, there should be an effort to maintain adequate levels of investment in social and economic infrastructure. It is also important for policy makers to pay attention not just to the level of government expenditures but also to its composition. Cuts in investment should fall only on investments that are not directly related to the development of infrastructure. There should be an awareness of the consequences of private investment and long term growth of a cross the board reduction in capital spending and expenditures that involves deep cuts in infrastructure investment.

Finally, since economic growth and development are the main objectives of the government investment, issues for growth policy should go beyond the traditional measures of saving and investment to emphasizes on investment in economic infrastructure through technology and people. Not only are investments in research and people genuine investments, they may also generate beneficial extrnalities defused widely by knowledge and skills.

References

[1]   Looney, R. *Economic Development in Saudi Arabia.* Greenwich, CN: JAI Press, 1990.

[2]   Aschauer, D. "Is Public Expenditure Productive". *Journal of Monetary Economics*, 23, No. 2 (1989), 177-200.

[3]   Blejer, M. and Khan, M. "Government Policy and Private Investment in Developing Countries". *IMF-Staff Papers*, 31, No. 2 (1984), 379-403.

[4]   Cordoso, E. "Private Investment in Latin America". *Economic Development and Cultural Change*, 41, No. 4 (1993), 832-848.

[5]   Greene, J. and Vilanueva, D. " Private Investment in Developing Countries". *IMF-Staff Papers*, 38, No. 2 (1991), 33-58.

[6]   Munnell, A. "How Does Public Infrastructure Affect Regional Economic Performance". *New England Economic Review*, (September/ October, 1990), 11-32.

[7]   Oshikoya, T. "Macroeconomic Determinants of Domestic Private Investment." *Economic Development and Cultural Change*, 42, No. 3 (1994), 573-596.

[8]   Ramirez, M. "Public and Private Investment in Mexico,1950-90." *Southern Economic Journal*, 61, No. 1 (1994), 1-17.

[9]   Tatum, J. " Public Capital and Private Sector Performance." *Review*, FRB-St. Louis, 73, No. 3 (1991), 3-15.

[10] MacKinnon, R. *Money and Capital in Economic Development.* Washington: The Broodings Institute, 1973.

[11] Shaw, E. *Financial Deepening in Economic Development.* NY: Oxford Univ. Press, 1973.

[12] Laumas, P. "Monetization, Financial Liberalization, and Economic Development". *Economic Development and Cultural Chang*, 38, No. 2 (1990), 377-390.

[13] Khan, A. "Macroeconomic Policy and Private Investment in Pakistan". *Pakistan Development Review*, 27, No. 3 (1988), 277-291.

[14] Tun Wai, U. and Wong, C. "Determinants of Private Investment in Developing Countries". *Journal of Development Studies*, 19, No. 1 (1982), 19-36.

[15] Pindyck, R. "Irreversibility, Uncertainty and Investment". *Journal of Economic Literature*, 29, No. 3 (1991), 1110-1148.

[16] Laumas, P. "Schumpeter's Theory of Economic Development and Underdeveloped Countries". *Quarterly Journal of Economics*, 76, No. 4 (1962), 653-659.

[17] Barth, J. and Cordes, J. "Substitutability, Complementarily, and the Impact of Government Spending on Economic Activity". *Journal of Economics and Business*, 32, No.2 (1980), 235-42.

[18] Chenery, H. "Overcapacity and the Acceleration Principle." *Econometrica*, 20, No.1 (1952), 1-28.

[19] Coen, R. "The Effect of Cash Flow on the Speed of Adjustment". In: *Tax Incentives and Capital Spending*, G. Frumm, (Ed.), Washington: The Brookings Institute, 1972, 131-196.

[20] World Bank *World Development Report.* New York: Oxford University Press, 1989.

تأثير الاستثمارات الحكومية على استثمارات القطاع الخاص بالمملكة

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ملخص البحث. تؤدي الاستثمارات في رأس المال دوراً مهماً في النمو والتنمية الاقتصادية . ومع تزايد الاهتمام بدور القطاع الخاص في التنمية الاقتصادية تبرز أهمية استثمارات القطاع الخاص في التنمية الاقتصادية على المدى الطويل . لقد أنفقت الحكومة في المملكة العربية السعودية بشكل كبير على استحداث وتنمية البنية التحتية الاقتصادية خلال السنوات الماضية . هذه الدراسة تحاول البحث في تأثير دور السياسات الحكومية على تطور ونمو استثمارات القطاع الخاص في المملكة . تبين النتائج الإحصائية أن المحددات التي استخدمت في هذه الدراسة ، وخصوصاً استثمارات وإنفاق القطاع الحكومي ذات علاقة قوية ولها تأثير كبير على استثمارات القطاع الخاص . إن من المهم لمنفذي السياسات الاقتصادية أن يهتموا بالأثر السلبي الكبير الذي يحدثه خفض الإنفاق على الاستثمار في البنية التحتية والخدمات الاقتصادية المهمة على المدى الطويل . ومن هنا فإنه يجب الاهتمام بهذه النتائج لما للبنية الاقتصادية التحتية من أثر كبير على النمو الاقتصادي على المدى الطويل .