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Government Budget Deficits and the Crowding out of Private Sector Investment in Saudi Arabia

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Abstract. Recently, effects of large government budget deficits and debt have become popular subject matter for the media. Further, frequent warnings about the dangers of big budget deficits, claim that large deficits will push up future national debt and cost of capital represented by interest rates. Saudi Arabia has a large and persisting budget deficits since 1982 which forced the government to enter the market as a borrower to cover these deficits. Given the impact that government budget deficit can have on economic variables and activities, it is of great importance and concern for policy makers to know how macroeconomic policy actions affect budget deficits and how these actions determine the course of economic activities. The aim of the paper is to investigate the impact of the government budget deficits on private sector activities, especially investment in Saudi Arabia by employing recent developments in econometrics. Results show that government budget deficits have a crowding out effects on private sector investment. Thus, it is possible that financing government budget deficits by borrowing from domestic markets reduces financial resources available to the private sector and discourages private sector investment.

Introduction

In recent years, the possible adverse economic effects of large government budget deficits and debt have become popular subject matter for newspapers and news media. Newspapers and magazines frequently warn about the dangers of big budget deficits, claiming that the recent large deficits are to push up future national debt and cost of capital represented by interest rates. Similarly, in the economics literature, increased attention has been directed towards the potential effects of deficits. One of the principal focuses in this debate has been upon the so called 'crowding out' effect of fiscal policy. In particular, some of the research has attempted to estimate empirically the degree of crowding out that purportedly results from deficit financed fiscal actions.

Therefore, people are concerned about budget deficits because they equate them with increased government borrowing competition with private investors. They fear that when the government borrows more, fewer funds will be available for private investment and interest rates will rise. But does a bigger budget deficit necessarily mean that the government sector is a bigger drain on credit markets?

The debate on the 'crowding out' [1-3] focuses on the impact of the method of financing government spending and, in turn, has led to increased analysis of government budget constraint. This constraint specifies that the total flow of government expenditure must equal the total flow of financing from all sources. Budget deficits or surpluses alter the size of public debt, and the method of financing such deficit or disposing such surplus affects the composition of private wealth.

Most of the studies dealing with government budget deficits, either by testing for the Keynesian proposition or the Richardian equivalence hypothesis, are based on United States data and some industrialized countries. Hence there is a need for further investigation of this issue using data from other countries with different economic structure, since there are few studies dealing with this issue. Further, these studies do not deal directly with the crowding out effect [4-11].

Saudi Arabia has a large and persisting budget deficit since the end of 1982, however, until 1988 the government succeeded in covering these deficits by resorting to its reserve and investment. The year1988 was a turning point when the government entered domestic market as a borrower to cover its budget deficits. These deficits reached about 30 percent and 27 percent of GDP in 1990 and 1991 respectively. Between 1992 and 2000 budget deficits averaged about 10 percent of GDP.

Given the impact that government budget deficit can have on economic variables and activities, it is of great importance and concern for policy makers to know how macroeconomic policy actions affect budget deficits and how these actions determine the course of economic activities. Using annual data covering two periods 1970-2000 and 1982-2000- the first period covers the increase in oil prices and revenue in most of theses years, the budget was in surplus and the second period covers the time with continuing budget deficits- the aim of the paper is to investigate the impact of the government budget deficit on private sector activities, especially investment by employing recent developments in econometrics as stationarity tests, cointegration tests, vector error correction (VEC) tests, variance decomposition (VDC's) and impulse response Functions (IRF's).

Nature of the Saudi Arabian Economy and Government Budget Deficits

It is a known fact, and as indicated by various Five Year Development Plans (1970-2000), that 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. Thus, 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. However, it indicated that it would take all necessary measures to make the market system conform to the larger social interest of the country.

Moreover, with increased oil prices and revenues the government spent massively on economic infrastructure over the period of 1973-1982 and indicated that its objectives were to increase the participation of the private sector through structural changes in the economy. To achieve this goal 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.

Private sector investment was given most of the attention, the government not only formulated policies designed to encourage private investment, but also participated directly in economic activities. It also 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 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.

Further, it should be emphasized that most of the economic growth witnessed in the country during the last three decades was a result of the government spending from oil revenue. Oil revenues have facilitated the rapid growth and expanding of the government expenditure. Thus, with reduced oil revenue and increased budget deficits there are concerns and uncertainty about the ability of the government to maintain its level of expenditure and economic policies.

In most countries the bulk of the government revenue derives from various taxes levied on the private sector of the economy. In contrast, in Saudi Arabia, until recently, almost all of the government revenues come from income generated from oil revenue available to the government. For the period 1970-1983 oil revenues accounted for between 85 and 98 percent of the government's annual income. From 1984 and on this fraction has fallen to less than 75 percent, and the rest comes from government investment abroad, general reserves, other sources of revenue, and borrowing from domestic markets.

Other sources of revenues fall into the following categories: corporate and business income taxes, custom duties, charges for government services and miscellaneous revenues and Zakat. Income taxes payable by foreigners, after a basic exemption, were levied on income earned in Saudi Arabia and ranged between 5 percent and 30 percent.

These taxes were abolished in 1975, however, recently there has been a discussion and debate over reinstating them back.

Business profit taxes are payable by companies and foreign participants in Saudi Arabian companies at rates that ranges from 25 percent to 45 percent. Oil companies are taxed at a uniform rate of 55 percent after making adjustments in gross revenues for royalties of 12.5 percent and cost of production. It should be noted that companies established under the new law of foreign investment are exempted from income tax for 10 years from the date of commencement of production and on future expansions of investment. According to Islamic law Zakat is levied on Saudi individuals, firms and businesses owned by Saudi Arabian nationals on net worth minus fixed assets at a uniform rate of 2.5 percent per annum.

With respect to other revenues as noted by SAMA report in 1975, the government in 1974 and 1975 substantially reduced custom duties on large number of commodities along with the surcharges on all imports and other services. Custom duties were increased in late 1980's to a uniform rate of 12 percent on all commodities other than necessities, however, in 2001 they were reduced to 5 percent.

On January 1, 1995 the government announced new measures to take effect with the new government budget to generate more domestic revenues which include: (1) surcharge imposed on domestic consumption of all refined petroleum products; (2) the rates for monthly consumption of electricity and water were increased; (3) fares for domestic travel on the national airlines carrier-Saudia- were raised between 10 and 20 percent; (4) costs of telephone subscription and calls were increased for more than 100 percent; (5) fees for visas to enter the country and work and residence permits were increased more than 100 times. Again on May 3, 1999 the government announced an increase of 50 percent in prices of gasoline and fees for visas to enter the country for work and residence permits were increased by 100 per cent.

Government expenditures consist of government consumption and investment. Total government expenditures have grown rapidly at a rate of about 38 percent per annum between 1970 and 1982. Expenditures on projects during that period grew at an annual compound rate of 44 percent, while recurrent expenditures grew at a compound rate of 32 percent.

Literature Overview

The contention of the simple Keynesian multiplier analysis is that an increase in government expenditure or a decrease in the rate of taxation induces multiple changes in total spending. This analysis, though, pays little attention to the way government budgets are financed. As a result it has been severely challenged by a number of researchers who argue that government spending financed by means other than money creation may reduce private spending to such an extent that there will be little, if any, net increase in

total spending. Thus, some suggestions indicated that government spending financed by either taxation or borrowing from the public is mainly a resource transfer from the private sector to the government, with little net effect on total spending. Therefore, Arestis [12]asserts that " it can have strong stimulative influence on the economy, if, and only if, the increased government expenditure is financed by monetary expansion."

Crowding out can, in theory, assume a large variety of different forms, including classical crowding out, simple transactions crowding out, ultrarationality, financial crowding out, portfolio crowding out, and portfolio substitution crowding out. Of these forms, transactions crowding out is probably the best known form of crowding out.

Transactions crowding out is the impact of a rise in government spending financed by the sale of government bonds to the private sector of the economy. It should be noted that a key trait of this form of crowding out is a net rise in the rate of interest. Other forms of crowding out, including portfolio crowding out and portfolio substitution crowding out, are also characterized by rising interest rate levels.

Large number of empirical studies investigating the possible existence of crowding out and the degree of crowding out have appeared during the last two decades [12-19]. Although these studies attempt to measure the degree of crowding out per se, they do not attempt to identify or verify the existence of the actual mechanism by which crowding out may be transmitted to the economy at large. For instance, these studies do not attempt to verify whether a budget deficit exercises any impact over interest rates as would be the case for transaction crowding out, portfolio crowding out, and portfolio substitution crowding out and other relevant crowding out forms.

A number of other studies have focused upon the possible impact of the United States federal government borrowing upon interest rates. For instance, Hoelscher [20] empirically examines the effects of federal government borrowing on short-term interest rates. His analysis is based upon regressions that test whether the level of federal borrowing is a statistically significant determinant of the three-month treasury bill rate. Hoelscher [20] obtains extremely low t-values on the relevant coefficients and hence concludes that "Federal borrowing is a relatively unimportant ..... determinant of short term rates." Accordingly, Hoelscher [20] concludes that " to the extent that private expenditures are sensitive only to short term rates, then federal borrowing dose not have financial crowding out effects." Makin [21] has also examined the impact of federal government borrowing on the three month treasury bill rate and finds that federal borrowing has very little (if any) impact upon the three month treasury bill rate. Makin [21] concludes that " Overall, the results reported here regarding the possible significance of 'crowding out' can only be judged as mixed to weak."

Results similar to those of Hoelscher and Makin have also been obtained by Motley [22] and, in the empirical analysis of three month treasury bill rates, by Mascaro and Meltzer [23] who also find that the interest rate yield on ten year treasury notes to be

unaffected by federal budget deficits. Evans [24] examines the impact of federal deficits upon the three month treasury bill rate (and for selected other interest rates) for four separate time periods in the U.S. history and finds no evidence of a positive association between deficits and interest rates.

On the other hand Barth *et al.*, [25] found that, after adjusting the federal deficit for the effects of cyclical activity, the resulting structural deficit has a positive and highly significant impact on 3 month treasury bill rate.

The inconclusive empirical evidence for early studies may be due to a number of estimation problems. These researchers, with the exception of Dwyer [26] Hoffman et al., [27] and Ahking and Miller [28] have estimated monetary reaction functions. However, monetary reaction functions are subject to the problem of being a joint test of the reaction function specification and the existence of a relationship between deficits, money growth, and inflation.

A further problem with this empirical literature is that conclusions are based on single equation estimates. The general approach is to include a deficit variable in a monetary reaction function. The maintained assumption is that deficits are exogenous in the reaction function.

Niskanen [29] developed a monetary reaction function including the deficit as an exogenous variable and a reduced form inflation equation including both the deficit and lagged money growth. He estimated his two equations, however, as a single equation.

In contrast empirical methodology used by Dwyer [26] was different in that he used the vector autoregressive approach. He found that inflation was important in explaining deficits, but deficits were not important in explaining inflation, the growth of nominal GNP, the growth rate of the money stock, or the level of interest rates. In contrast, Hoffman *et al.*, regressed money growth on future and past deficits and Ahking and Miller [28] examined the relationships between deficits, money growth, and inflation in a trivariate autoregressive frame work, which allowed them to treat each variable as endogenous within a three equation system.

An extensive literature has also examined the relationship between budget deficit and inflation. At a theoretical level, Sargent and Wallace [30] showed that under certain conditions, if the time paths of government spending and taxes are exogenous, bond financed deficits are non-sustainable, and the central bank should eventually monetize the deficit. This will increase the money supply and inflation in the long run. These findings have subsequently been generalized for the open economy case and for alternative forms of financing [31].

The empirical relationship between the deficit and inflation in developed countries has been studied in detail by (Hamburger and Zwick [32]; Dwyer, [26], Allen and Smith,

[33]; Hein, [34]; Hoffman *et al.*, [27]; Ahking and Miller, [26], King and Plosser, [35]; Prtopapadakis and Siegle, [36]; Burdekin and Woher, [37], and Ho, [38]).

Empirical studies of developing countries include those of Dornbusch and Fisher [39], Siddiqui [40], Choudhary and Parai [41], Buiter and Patel [42], Dogas [43], Sowa [44], Hondroyiannis and Papapetrou [45], Metin [46; 47]), and Thorbecke [48].

These studies did not yield conclusive results on the relationship between budget deficits and inflation, either in the short run or in the long run. Specifically, Barro (1978) [49], Niskanen [29], and McMillin and Beard [50] found no evidence that government deficits are systematically related to money growth, and hence inflation. On the other hand, Hamburger and Zwick [32], Dwyer [26], Allen and Smith [33], and Hoffman *et al.*, [27] found some evidence that government deficits are systematically related to money growth and exerted a significant inflationary impact on the economy over the long run, yet a growth in nonmonetized debt had a negative short run effect on inflation. Ahking and Miller [28] modeled deficits, money growth, and inflation over 1950-1980 as a trivariate autoregressive process and found government deficit to be inflationary in the 1950's and 1970's but not in the 1960's. Using a rational expectations macro model of Peruvian inflation, Choudhary and Parai [41] found that budget deficits, as well as the growth rate of money supply, have significant impacts on inflation. Similarly, Dogas [43] found that the public deficit affects inflation in Greece. Hondroyiannis and Papapetrou [45] also found a relationship between the Greek government budget and the price level. Sowa [44] using an error correction model, found that inflation in Ghana is influenced more by output volatility than by monetary factors, both in the long run and the short run.

Most economists subscribe to the position that inflation is a monetary phenomenon, at least in the long run. Therefore, they assume that deficits can lead to inflation, but only to the extent that they are monetized. Thus, in their view money financed deficits are inflationary; bond financed deficits need not be. However, Buchanan and Wagner [51] argue that government deficits will be monetized due to political pressure; the monetary authorities do not have a true choice. Therefore, whether bond financed deficits are inflationary or not depends upon the approach to policy of the monetary authorities. If they are stabilizing interest rates, then bond financed deficits are inflationary. That is, bond sales push up interest rates and lower bond rates, this calls forth an expansion in money supply (accommodation) that ultimately leads to rising prices.

Sargent and Wallace [30] questioned whether it is possible that with continuing deficits, monetary authorities will never be obliged to monetize a portion of the government debt. The reason is that in long run growth context, the private sector's demand for government bonds imposes an effective constraint on the degree of independence between monetary and fiscal policy. If fiscal policy dominates and the stock of government indebtness is expanding at a rate faster than the monetary base then

privately held government debt is growing more rapidly than money base. This implies a portfolio shift into privately held government debt; the private sector will absorb this increase only as interest rates on government debt rise. This cannot continue forever. Either interest rates will become too high and/or the demand for government debt will become perfectly inelastic. At this point, monetary policy must accommodate the needs of fiscal policy. That is, given the private sector's demand for government bonds, the fiscal authorities cannot on a continuing basis expand the stock of government indebtness more rapidly than the growth in money base.

Miller [52; 53] argues that government deficits are necessarily inflationary irrespective of whether the deficits are monetized or not. According to Miller, deficit policy leads to inflation through three channels. Monetary authorities might be forced into monetary accommodation of the deficits as argued by Sargent and Wallace [30]. But, even if the monetary authorities do not monetize the deficit, deficits are still inflationary through private monetization and/or crowding out. That is, non-monetized deficits lead to higher interest rates. Higher interest rates crowd out private investment, reduce the rate of growth of real output, and with a given money supply, lead to higher prices. Higher interest rates also spur the financial sector to innovate in the payment system and makes government bonds more substitutable for money.

Although most of the discussion on the relationship between deficits and inflation focuses on the role of deficits in causing inflation, other arguments hypothesize that inflation leads to adjustments in the government deficit. That is, in a progressive tax system, inflation pushes tax payers into higher marginal tax brackets. Thus, if the government holds the ratio of government expenditure to gross national product constant, then inflation should lower (increase) the deficit (surplus). This allows authorities to simultaneously reduce tax rates and expand government expenditure. Thus, inflation leads to changes in government deficit.

Barro [54] has also offered a theory of public debt that bears on issues of inflation and government deficits. In the model he assumes that the objective of the government is to "... minimize the present value of revenue-raising cost ...." This assumption produces the conclusion that the ratio of real government expenditure to real income and real tax revenue to real income are constant over time. The consideration of inflation and the government budget constraint demonstrates that increases in anticipated inflation lead to larger government deficits.

Further, many theories that subscribe to crowding out argue that budget deficit works through higher interest rates to crowd out the private sector. That is, deficits in part create financial market pressures that elevate interest rates; those higher interest rates in turn act to discourage interest sensitive private expenditures (especially investment). Decline in the latter expenditures in turn act to reduce real GDP growth. Indeed, as Carlson and Spencer [55] explain, government budget deficits " ... could adversely affect the confidence of the private sector in its economic future .... 'resulting

in' an induced increase in liquidity preference ... and a diminished marginal efficiency of investment schedule ..."

In view of the above observations, it is not surprising that many studies of the economic impacts of the budget deficits empirically investigate the effect that such deficit may exercise over interest rates. As indicated above, an extensive literature has evolved in the last two decades that focused primarily on short term rates of interest rates but also to some significant degree on long term rates. The findings of most of the studies dealing with shorter term rates imply that budget deficits exercise no significant effect (Ostrosky, [57] among others), however, there are notable exceptions (Barth and Bradley, [58], Barth *et al.*, [59], [25]; Tanzi, [60]; Cebula, [61], [62]; Vamvoukas, [63; [64]). On the other hand mostly all of the empirical studies on budget deficits and long term interest rates find that deficits do not exercise a significant impact on such rates (e.g., Belton and Cebula, [65-73].

On the international front, the impact of the budget deficits on trade balance has been subject of investigation by Fitzgerald [74]; Darrat [75]; Bahmani-Oskooee [76]; Bahmani-Oskooee and Payesteh [77; 78]); Diwan [79]; Abell [80]; Dua [81]; Rosensweig and Tallman [82]; Miller and Russek [83]; Cebula, and Koch [84]; Brazelton [85]; Belton and Cebula [86]; Rahman *et al.*, [87]; and Murthy and Phillips [88] who through using different methodology, have all concluded that budget deficits do contribute to trade deficits. Further, Evans [89] investigated the effects of budget deficits on the value of the dollar and found that the U. S. budget deficits do not raise the value of the dollar, however, Rahman et al., [87] conclude that " both long run and short run Granger causality stems from the real budget deficits to the real exchange rates."

Methodology

By considering some simple accounting identities and letting Y denotes gross domestic product; T revenues (taxes), C consumption, and G government spending (purchases), then private saving is

Y-T-C, and public saving is T-G. Adding these terms yields national saving, S:

$$S = Y - C - G \tag{1}$$

The other crucial accounting identity is the one that divides GDP into four types of spending:

$$Y = C + I + G + NX \tag{2}$$

Where output Y is the sum of consumption C, investment I, government purchases G, and net exports NX. Substituting this expression for Y into (1) yields:

$$S = I + NX \tag{3}$$

This simple equation says that national saving equals the sum of investment and net exports. When budget deficits reduce national saving, they must reduce investment,

reduce net exports or both. The total fall in investment and net exports must exactly match the fall in national saving.

The most frequently used as a measure of budget deficit (Karras, [90]) is the difference between government expenditure and revenue:

$$DEF = G - T \tag{4}$$

Where:

DEF =budget deficit; G = government expenditure; T = government revenue.

According to some studies [15; 86; 91-96], the impact of government budget deficit on private investment can be formulated as follows:

$$I=f(Y, DEF, i, inf) \tag{4}$$

Where:

I=private sector investment, Y=gross domestic product GDP; i= interest rate; inf=inflation.

For estimation purposes equation (4) can be expressed as follows:

$$I/Y= a + Y + DEF/Y + i + inf + e \tag{5}$$

Other studies [97-101] have included public investment and availability of credit to the private sector as additional factors in the arguments of private investment function in developing countries.

$$I/Y= a + Y + DEF/Y + GI/Y + CPS/Y + i + inf + e \tag{6}$$

Where: GI/Y is the ratio of public investment to GDP and CPS/Y is the ratio of credit available to the private sector to GDP.

Several researchers have examined time series variables properties and concluded that most macroeconomic time series data follow random walk. While Nelson and Plosser [102] documented that 14 major macroeconomic variables exhibit non stationarity behavior over time, Hall [103] shows that the aggregate consumption follows a random walk process.

Further studies by Granger and Newbold [104], Granger [105], Phillips [106] and Ohanian [107], have demonstrated that if time series variables are non stationary, all regression resukts with these series will differ from the conventional theory of regression with stationary series. That is, regression coefficients with non stationary variables will be spurious and misleading. Therefore, analysis of time series properties of variables used in macroeconomic research is particularly important when examining the relationship between variables that exhibit a common trend [105; 108; 109]. Thus, to avoid spurious relationships and misleading results and to provide evidence to the impact of the government budget deficits on private investment, before proceeding to the

cointegration analysis and the estimation of long run relationship, the time series properties of the individual variables were examined by conducting stationarity tests. A variable that is stationary in level terms is I(0). However, time series containing a unit root follows a random walk and requires first differencing to obtain stationarity, and said to be first order integrated I(1).

Researchers have developed several procedures to test for the order of integration. The most popular ones are augmented Dlckey-Fuller (ADF) test due to Dickey and Fuller [110; 111]) and Phillips-Perron (PP) test, due to Perron [112] and Phillips and Perron [113].

Augmented Dickey-Fuller (ADF) test relies on rejecting a null hypothesis of unit roots (the series are nonstationary) in favor of the alternative hypothesis of stationarity:

$$\Delta Xt = \mu + (\alpha - 1)\, Xt\text{-}1 + \sum_{t=1}^{n} \gamma\, t\Delta Xt\text{-}1 + ut \tag{7}$$

Where, Xt is a random variable, Δ is first difference operator, ut is a stationary random error, t is time period, n is number of lags for the dependent variable which is chosen to ensure that the residuals are white noise. The t-statistics of (α-1) is used to test the null hypothesis that this coefficient is equal to zero (that is α =1). However, the critical values of the t-statistics do not have the familiar distribution. Several authors have constructed appropriate critical values for the distribution of the t-statistics (i.e., MacKinnon, [114] and Fuller, [115]).

Arbitrariness of lag lengths may affect the reliability of statistical tests and seriously bias implications of the results. Thus, to determine the proper lags for each variable, the Akaike's final prediction error criterion (FPE) is used as suggested by Hsiao [116; 117].

A problem with the ADF is that it involves the inclusion of extra differences terms in the testing equation which results in a loss of degrees of freedom and a resultant reduction in the power of the testing procedure. Alternatively, the Phillips-Perron (PP) approach allows for the presence of unknown forms of autocorrelation and conditional heteroscedsticity in the error term. Perron [112] demonstrated that if a series is stationary about a linear trend but no allowance for this is made in the construction of the unit root test, then the probability of a type II error will be high. Thus, PP test corrects for serial correlation in equation (7) using a non parametric procedure. This procedure modifies the statistics after estimation in order to take into account the effects that autocorrelated errors will have on the results. Asymptotically, the statistics is corrected by appropriate amount, and so the same limiting distribution applies. Perron [112] suggests estimating the following regression by ordinary least squares:

$$Xt = \mu + \lambda(t - T/2) + \delta Xt\text{-}1 + ut \tag{8}$$

There are more than one method of conducting cointegration tests. However, the

empirical testing in this study uses the multivariate cointegration method developed by Johansen [118] and Johansen and Jueslius [119]. This approach is preferred to the Engle-Granger [108] method because the Engle-Granger cointegration procedure suffers from several econometrics shortcomings. Banerjee *et al.*, [120]; Davidson and MacKinnon (1993)[121]; and Stock (1987)[122] have shown that there is a considerable small sample bias in estimates derived from the Engle-Granger procedure. It has been demonstrated by Banerjee *et al.*, [123] and Banerjee *et al.*, [120] that the size of the small sample bias is inversely related to the magnitude of R-squared in the Engle-Granger residual based cointegrating regression. In addition , Davidson and MacKinnon [121] contend that " a relatively low value of R-squared from the co-integration regression should be taken as a warning that the two step procedure may not work well."

Moreover, the Engle-Granger procedure ignores the possibility of multiple cointegrating relationships. Economic variables can exhibit more than one long run relationship in a cointegrated equilibrium space. Further, Engle-Granger method relies heavily on a super-convergence results and employs ordinary least squares estimation (OLS) to derive the parameter estimates of the long run or cointegration equations. However, OLS estimates are extremely sensitive to the arbitrary normalization implicit in the selection of the dependent variable in the cointegration regression equation [120; 124; 125]. This suggests that different arbitrary normalizations can yield different empirical outcomes.

In addition, Engle-Granger procedure does not incorporate short-term dynamics in the co-integrating regression. Not incorporating short run dynamics results in increased bias, loss of information and thus reduced efficiency of the parameters of interest in the co-integrating relationships. Finally and most importantly, the Engle-Granger procedure does not enable the researcher to test for various restrictions or exclusions on individual elements of the observed co-integrating vectors. In testing of hypotheses related to long run economics relationships, this shortcoming of the Engle-Granger procedure is a serious problem.

On the other hand, Johansen-Jueslius approach is able to overcome these shortcomings and provides a very flexible format for investigating the properties of the estimators under various assumptions about the underlying data generating process. Further, as Gonzalo [126] in his study comparing the performance of the co-integrating tests using a Monte Carlo approach, has demonstrated, that the Johansen-Jueslius procedure performs better than other estimators of long run parameters even in the presence of abnormal errors and unknown dynamics. Another advantage is that, unlike Engle-Granger method, the Johansen-Jueslius procedure is capable of determining the number of cointegrating vectors in the relationship. In the case of more than two variables, Banerjee *et al.*, [120]; and Cuthbertson *et al.*, [127] have shown that Johansen-Jueslius procedure is preferred and Gonzalo [126] found that it is the most powerful even for the bivariate system.

The Johansen-Jueslius method applies the maximum likelihood procedure to

determine the presence of cointegrating vectors in non stationary time series.

The Johansen-Jueslius approach to testing for cointegration considers P-dimensional vector autoregressive (VAR) model:

$$Xt=\Pi Xt\text{-}1 + \ldots\ldots\ldots + \Pi Xt\text{-}k + \epsilon t \quad (9)$$

This autoregressive model may be written as conventional error correction model as follows:

$$\Delta Xt=\mu + \Sigma \Gamma t \Delta Xt\text{-}1 + \ldots\ldots + \Pi k Xt\text{-}k + \epsilon t \quad (10)$$

Where: $\Gamma = -1 + \Pi 1 + \ldots\ldots\ldots + \Pi t$

$$\Pi = 1 - \Pi t - \ldots\ldots\ldots - \Pi k$$

The Π matrix contains information about the long run relationship between the variables. Let the rank of Π matrix be denoted by r: when $0<r<p$, the Π matrix may be factored into $\alpha\beta'$, where α may be interpreted as p x r matrix of error correction parameters and β as a p x r matrix of cointegrating vectors. The vector of constant, μ, allows for the possibility of deterministic drift in the data series. Maximum likelihood estimates of α, β and Γ are derived in Johansen [118]. To test the hypothesis that there are at most r cointegrating vectors, one can calculate the trace statistics (λtrace). The maximum eigenvalue test (λmax) is based on the null hypothesis that the number of cointegrating vectors is r against the alternative of r+1 cointegrating vectors. Johansen and Jueslius [119] provided appropriate critical values for (λtrace) and (λmax) statistics and MacKinnon [114] and Osterwald-Lenum [128] developed an extended version of these critical values. The presence of a significant cointegration vector or vectors indicates stable relationship between the relevant variables.

The vector error correction F- and t-tests do not provide an indication of the dynamic properties of the system, nor do they allow us to gage the relative strength of the Granger causal chain or degree of exogeneity amongst the variables . The variance decompositions (VDC's) are obtained from the moving average representation of the VAR model, by partitioning the variance of the forecast error of a certain variable into proportions attributable to innovations in each variable in the system and can provide an indication of these relativities. A variable that is optimally forecast from its own lagged values will have all its forecast error variance accounted for by its own disturbances. The information contained in VDC's can be equivalently represented by impulse response functions (IRF's). The IRF's and VDC's are also obtained from the unrestricted VAR form of the model, although they could be computed via a dynamic multiplier analysis of VAR systems with cointegration constraint. To trace the dynamic effects of the shocks, the estimated VECM is reparameterized to its formulation in levels. With this reparameterization, the error correction terms are incorporated into the first period lagged terms of the autoregression. The model is then inverted to obtain the impulse response functions that capture the effect of deviations from long run equilibrium on the dynamic path followed by a variable in response to initial shocks. Intuitively, IRF's trace the response over time of a variable, say X, due to a unit shock given to another variable,

say Y.

Data and Empirical Results

Time series data for Saudi Arabia are used in this study with annual data for the period 1970-2000. All variables are in real terms (1984=100).

The choice of annual data is based on the fact that most of the data are reported annually. Moreover, it has always been suggested that more observations are better, because more observations allow us of better discrimination among hypothesis. However, Shiller and Perron [129] have argued forcibly that, particularly when analyzing the long run characteristics of economic time series, the length of the time series is far more important than the frequency of observation. Further, Hakkio and Rush [130] point out that, co-integration is a long run concept and, hence requires long run span of data, thus they suggest that there is little gain from increasing observations using higher frequency with the same span, but there is a gain from using the same frequency data with a long time span. Kennedy [131] suggests also that the power of unit root tests depends much more on the span of the data than on the number of observations, that is, "for macroeconomic data where long business cycles are of importance, a long span of annual data would be preferred to a shorter span with say, monthly data, even though the latter case may have more observations". Because, "the longer span has a greater chance of containing a structural break."

Although gross national product (GNP) is a good indicator of the overall level of economic development and activity in any economy, however, it could be argued that, for Saudi Arabia, this variable does not accurately reflect the level of economic activity within the economy. This is attributed to the economy's reduced ability to influence the oil production level and the price of oil in international markets. With the extraction and export of oil production being dominant component of GDP and government revenue to a large part of the economic activity within the country is determined outside its system and has very little control over it. Therefore, as Saudi Arabia is an oil-based economy, in which most economic activities are linked to oil, it is generally believed that this basic important characteristic has a bearing on every aspects of economic activity. While, during the last two decades, the significance of oil in the economy has declined, it remains the dominant sector. Thus, non-oil GDP represents income and the data on this and other variables are obtained from Ministry of Planning "Facts and Figures" different issues and from Saudi Arabian Monetary Agency (SAMA) annual reports different issues.

Tables 1-5 and Fig. 1-3 show the empirical results. Table 1 presents stationarity tests results which indicate that the variables are non stationary in levels, however, with first difference they become stationary, thus they are I(1). Co-integration tests are presented in Table 2, these results suggest that a long run and stable relationship between the variables exists. Further, the results indicate that government budget deficit has a long run significant impact on private sector investment.

Table 1. Unit roots tests

Variables	ADF		PP	
	Level	Defferenced	Level	Defferenced
Y	-0.1656	-2.4129	0.4001	-2.718***
PI	-0.3412	-5.280*	0.0573	-3.995*
GI	-2.2863	-2.943**	-1.7261	-3.014**
CBP	-1.2159	-4.311*	-1.6263	-5.025*
DEF	-2.8603	-5.340*	-2.2402	-4.183*
i	-2.949	-5.259*	-2.3173	-4.398*
inf	-2.656	-3.918*	-2.310	-4.849*

in all tables * significant at 1%, ** significant at 5%, *** significant at 10%.

Table 2. Johansen-Jueslius cointegration test

Eigenvalues	λtrace	5%forλtrace	Hypothesis
		PI=f(Y,DEF,GI)	
0.5880	69.233	54.64	r=0*
0.5422	38.199	34.55	r≤1**
0.2278	10.856	18.17	r≤2
0.0504	1.808	3.74	r≤3
		PI=f(Y,DEF,GI,CBP)	
0.8394	128.55	59.46	r=0*
0.6305	66.37	39.89	r≤1*
0.4246	32.516	24.31	r≤2*
0.3168	13.726	12.53	r≤3**
0.0224	0.771	3.84	r≤4
		PI=F(Y,DEF,i,inf)	
0.8001	120.42	77.74	r=0*
0.5651	64.07	54.64	r≤1*
0.3281	34.93	34.55	r≤2**
0.2784	21.01	18.17	r≤3**
0.2396	9.59	3.74	r≤4*
		PI=F(Y,DEF,GI,CBP,i,inf)	
0.9339	258.137	136.61	r=0*
0.8782	185.784	104.94	r≤1*
0.5971	94.205	77.74	r≤2*
0.5463	63.295	54.64	r≤3*
0.4139	36.424	34.55	r≤4**
0.3675	18.261	18.17	r≤5**
0.0760	2.687	3.74	r≤6

Table 3. Vector error correction (VEC) test results

ΔPI= -0.008 + 0.221ΔPIt-1 –0.101ΔPIt-2 +0.001ΔYt-1 +0.001Δyt-2 –0.014ΔDEFt-1
(-2.05)** (1.89)** (-1.65)*** (1.93)** (1.79)*** (-1.60)***
-0.007ΔDEFt-2 –0.05Δit-1 –0.22Δit-2 –0.090Δinft-1 –0.027Δinft-2 –0.59VECt-1
(-1.84)** (-1.50) (-1.28) (1.60)*** (-1.50) (-2.933)*
Adj-R-sq= 0.694, F = 4.37**, Log. Lik. = 103.49, AIC = -5.382, SC = -4.843.

ΔPI=-0.008 +0.075ΔPIt-1 –0.095ΔPIt-2 +0.001ΔYt-1 +0.001ΔYt-2 –0.03ΔDEFt-1 –0.0.02ΔDEFt-2
(-1.3) (1.43) (-1.65)*** (1.775)** (1.89)** (-1.60)*** (-1.683)***
+0.186ΔCBPt-1 –0.201ΔCBPt-2 –0.132Δit-1 –0.178Δit-2 –0.236Δinft-1 –0.10Δinft-2 –0.29VECt-1
(1.761)** (-2.06)** (-1.612)*** (-1.89)** (-4.424)* (-1.86)** (-2.692)*
Adj-R-sq =0.786, F = 4.709**, Log. Lik. = 106.24, AIC= -5.53, SC= -4.85.

ΔPI= 0.071ΔPIt-1 –0.455ΔPIt-2 +0.217ΔYt-1 +0.01ΔYt-2 –0.008ΔDEFt-1 –0.004ΔDEFt-2
(1.39) (-2.864)* (1.975)** (1.07) (-1.69)*** (-1.834)**
–0.14ΔGIt-1+0.351ΔGIt-2 –0.015ΔCBPt-1 –0.011ΔCBPt-2 –0.150VECt-1
(-1.91)** (2.06)** (-1.66)*** (-1.98)** (-1.733)***
Adj-R-sq= 0.684, F= 4.77**, Log. Lik. = -77.305, AIC= 5.352, SC= 5.851.

ΔPI=0.854 –0.151ΔPIt-+0.337ΔPIt-2 +0.197ΔYt-1+0.117ΔYt-2 –0.0432ΔDEFt-1 -0.0114ΔDEFt-2
(0.84) (-1.792)** (2.25)** (1.60)*** (1.91)** (1.60)*** (-1.82)**
-0.105ΔGIt-1 +0.459ΔGIt-2 –0.129ΔCBPt-1 –0.13ΔCBPt-2 –0.22Δit-1 –0.186Δit-1 –0.28Δinft-1
(-1.65)*** (2.60)* (-1.99)** (-1.873)** (-1.60)*** (1.46) (-1.94)**
-0.303Δinft-2 –0.519VECt-1
(-2.154)** (-1.62)***
Adj-R-sq= 0.800, F= 4.55**, Log.Lik. = -69.727, AIC= 5.196, SC= 5.921.

* significant at 1%, ** significant at 5%, *** significant at 10 %.
Adj-R-sq= Adjusted R squared, F= F-statistics, AIC= Akaike criteria, SC=Schwarz criteria.

Table 4. OLS Regression analysis

Varables	1970-2000		1982-2000		1988-2000	
C	0.191	0.064	0.236	0.208	0.327	0.299
	(8.267)*	(3.33)*	(18.86)*	(5.176)*	(7.81)*	(5.349)*
Y	0.002	0.0013	0.001	0.001	0.0002	0.0003
	(2.901)*	(3.067)*	(1.798)**	(2.307)**	(1.700)**	(2.447)**
DEF	-0.052	-0.0055	-0.1556	-0.132	-0.156	-0.113
	(-1.717)***	(-1.876)**	(-4.735)*	(-2.90)*	(-3.154)*	(-2.038)**
i	-0.695	-0.439	-0.459	-0.883	-0.251	-0.136
	(-2.433)**	(-2.914)*	(-2.947)*	(-4.145)*	(-6.188)*	(-5.3490*
inf	0.206	0.107	-0.2446	-0.230	-0.412	-0.323
	(4.225)*	(2.223)**	(-1.90)**	(-2.06)**	(-2.526)*	(-2.168)**
GI	---------	0.348	----------	0.281	----------	0.323
		(6.824)*		(3.062)*		(1.71)***
CBP	----------	0.275	----------	0.001	----------	0.126
		(6.68)*		(1.99)**		(1.65)***
Adj-R-sq	0.554	0.738	0.716	0.863	0.903	0.944
F	9.293*	13.62*	8.80*	12.613*	18.716*	17.165*
D.W	1.992	1.503	1.364	2.27	2.63	2.10
LogLik	87.85	101.32	56.49	63.44	43.98	47.63
AIC	-4.73	-5.24	-5.42	-5.94	-5.99	-6.25
SC	-4.51	-4.93	-5.17	-5.59	-5.78	--5.95

* significant at 1%, ** significant at 5%, *** significant at 10%. Log. Lik.=Log Likelihood, AIC=Akaike Information Criteria, SC=Schwarz criteria.

Table 5. Variance decomposition

A-Variance Decomposition of ΔDEF:		1970-2000		
Period	**S.E**	**ΔPI**	**ΔY**	**ΔDEF**
1	25.516	0.000	0.000	100.00
2	27.447	0.094	5.033	94.873
3	29.377	0.082	4.950	94.968
4	30.517	0.299	7.401	92.301
5	30.586	0.338	7.534	92.128
10	30.702	0.478	7.711	91.811

B-Variance Decomposition of ΔDEF:		1982-2000		
Period	**S.E**	**ΔPI**	**ΔY**	**ΔDEF**
1	18.078	0.000	0.000	100.00
2	22.983	0.011	18.803	81.803
3	23.224	0.212	18.592	81.197
4	23.322	0.411	18.993	80.596
5	23.416	0.452	19.174	80.374
10.	23.513	0.655	19.437	79.909

C-Variance Decomposition of ΔDEF:1988-2000				
Period	**S.E.**	**ΔPI**	**ΔY**	**ΔDEF**
1	12.837	0.000	0.000	100.00
2	13.097	0.173	2.064	97.764
3	25.802	2.615	10.895	86.491
4	32.922	6.538	29.234	64.228
5	40.250	4.906	21.510	73.585
10	100.242	9.591	28.623	64.591

According to Engle and Granger [108] a system of co-integrated variables can be represented by a dynamic error correction model. Thus, we proceed to test for error correction by using the Johansen-Juesluis vector error correction (VEC) test and table 3 shows the results. The coefficients on this VEC term, which ranges around between 0.20 and 0.60, reflect the process by which the dependent variable adjusts in the short run to its long run equilibrium. This VEC term provides also a channel through which Granger causality can occur in addition to the traditional channel through lagged independent variables [105].

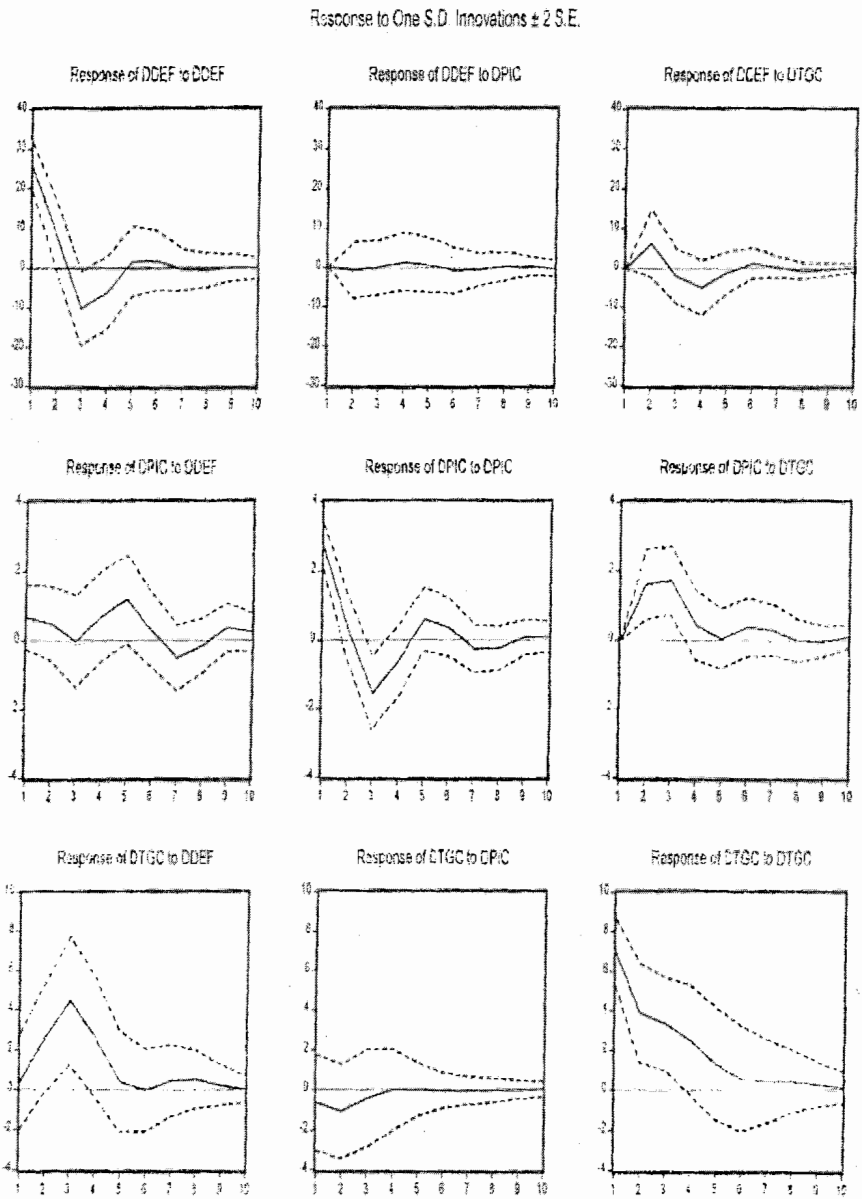

Fig. 1. Impulse response functions: 1970-2000.

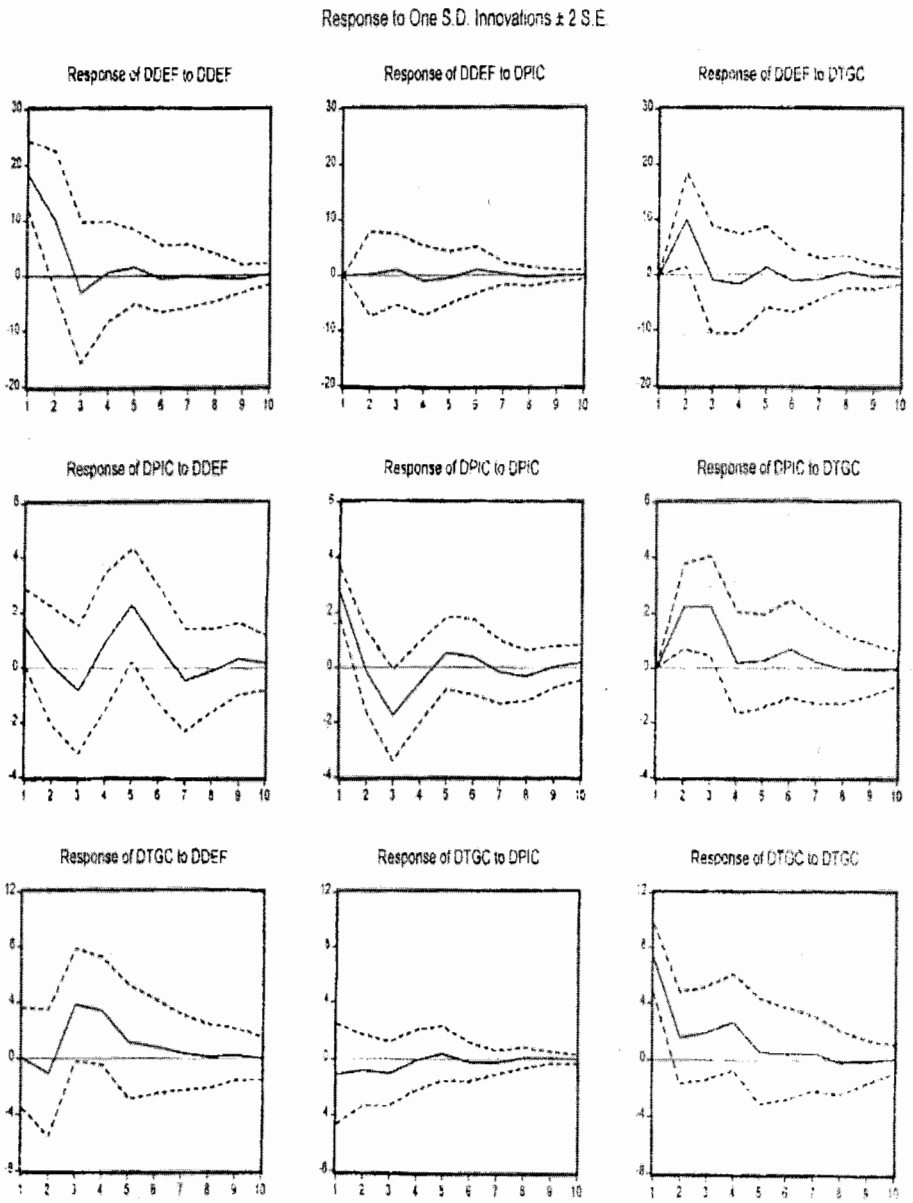

Fig. 2. Impulse response functions: 1982-2000.

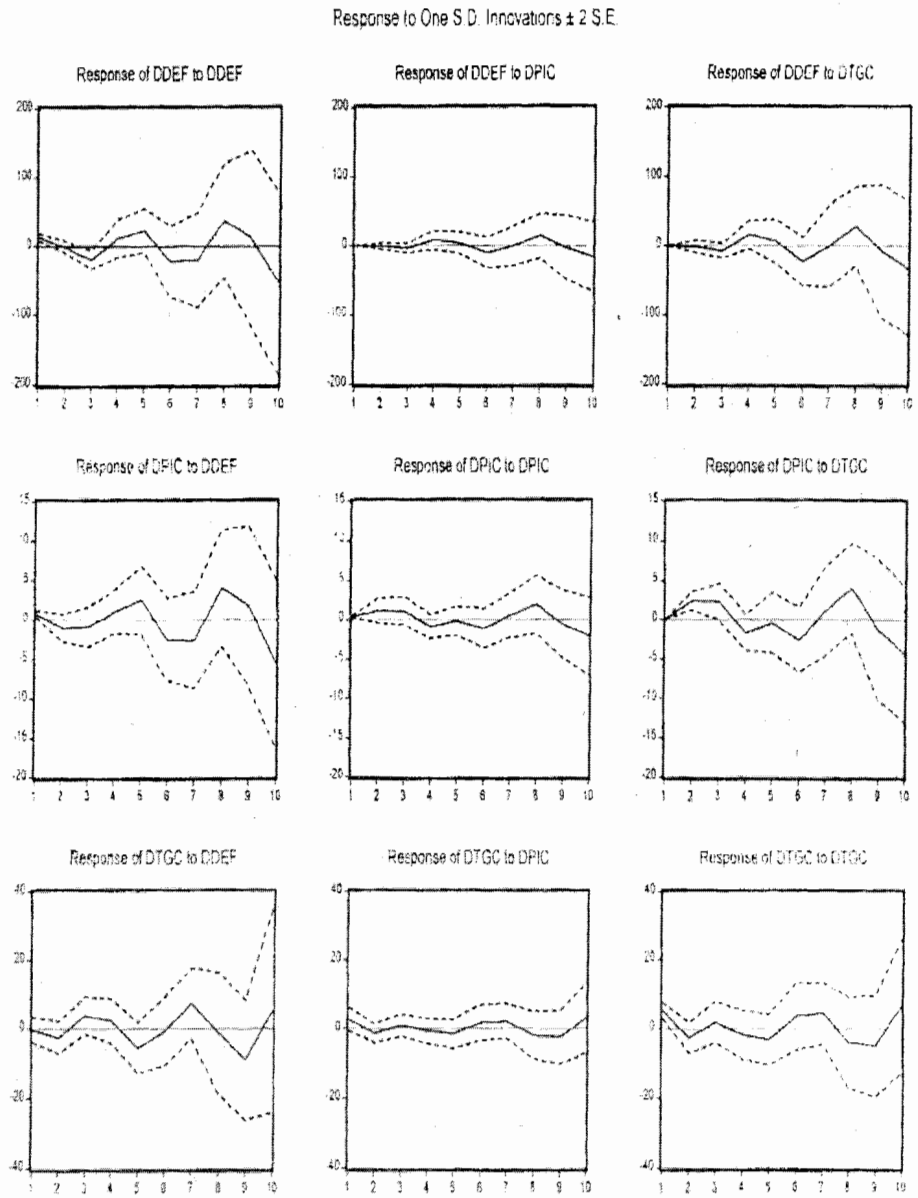

Fig. 3. Impulse response functions: 1988-2000.

Table 4 presents an OLS regression analysis for three periods, first for the period 1970-2000, this period includes the huge surplus in the government budget however there were years with small deficits, second for the period 1982-2000, the time when the government announced for the first time that its budget is in deficit but it was able for a while to cover these deficits with its accumulated reserve, the third period 1988-2000 covers the time starting with the year 1988 when the government resorted to domestic borrowing. These results show that budget deficits have negative impacts on private sector investment in all periods. The coefficients of this term ranges between -0.052 to -0.156 and are significant at 5%. These results suggest that government budget deficits crowed out private sector investment and may reduce private investment by up to 0.156 and in turn reduce the growth of real output. Further, these results are in agreement with the findings of Ibrahim and Kumar, [132]; Bahmani-Oskooee [10]; Cebula [61; 62]; Vamvoukas [63-64]), and Vavouras [11] among others.

These results are also supported by the results obtained from the variance decomposition (VDC's) in table 5 in which that the innovations in (DEF) cause shocks in (PI) by the amount of 0.09 and 0.48 percent for the period 1970-2000. This shock effects increase for the period 1982-2000 to reach 0.655 and to the period 1988-2000 to jump to 9.59 percent and in the case of (Y) it ranges between the amount of 5.03 to 7.71 percent for the period 1970-2000, however, this effect increases to the amount between 18.8 to 19.44 for the period 1982-2000 then for the period 1988-2000 this effect reaches 28.62. The impulse response function (IRF's) results shown in Fig. 1-3 also show that the effect of the innovations can have negative impacts on both (PI) and (Y).

Taking these results together, it can be seen that persistent government budget deficits can crowd out private sector activities including investment and in turn discourage economic growth. The fact that the results obtained for the period 1970-2000 show negative relationship between government deficits and private sector investment, even when there were times with budget surplus, may be due to the nature of the economy where the government owns natural resources and in certain cases it competes with the private sector in recruiting human resources and until recently, to the lack of developed financial and capital markets (Laumas, [133]; Raynold, [134]; and Darrat, [135]).

Conclusion and Policy Implications

This paper provides an examination of the impact of government budget deficits on private investment. Mainly the concern was whether government budget deficits crowd out or crowd in private investment in Saudi Arabia. Stationarity tests, Johansen-Juesluis cointegration tests, Vector Error Correction (VEC) tests, Variance Decomposition (VDC's) test and Impulse Response function (IRF's) tests are used to test the hypothesis that government budget deficits have impact on private investment.

The results show that a long run and stable relationship exist between the variables.

Therefore, the government budget deficits have affected private investment. Further, (VEC), OLS, VDC's and IRF's results indicate that the effects are negative. That is, government budget deficits crowd out private investment and in turn reduce real income growth.

This finding might be due to the fact that the government in Saudi Arabia competes directly with the private sector in many areas, including human resources and in financial and capital markets by entering these markets as a borrower. The monopoly power of the government in developing countries, including Saudi Arabia, gives it an advantage over the private sector in competing over these resources. Thus, it seems that financing of government budget deficits by borrowing from domestic markets reduces financial resources available to the private sector and in turn cause interest rates to rise which leads to crowding out of private investment and therefore discourages private investment.

The rapid increase in oil prices and revenues enabled the government in the 1970's and early 1980's to spend massively on social and economic infrastructure, however, the drop in oil prices and the fluctuation in government revenue after 1982 forced it to run a deficit since then to maintain a certain level of expenditure. Further, because of persistent deficits, policy makers were forced to choose among priorities and various social sectors. With these constraints, some of these sectors were less vulnerable to cuts than others, thus public investment and administration were subject to canceling and postponement. That is, the reduction in public investment caused by government budget deficits may reduce the rate of capital formation which implies in turn slower rate of growth and productivity of the private sector.

Because of the possibility suggested by the results that government budget deficits can negatively affect private investment, public expenditure should be directed toward productive activities that enhance economic growth and encourage private sector future investment which enhances capital formation. Thus, public expenditure that facilitate economic growth is required to put the economy on long term growth path.

Government budget deficits can be reduced by either increasing government revenues or reducing government expenditure. However, if reducing government expenditure is the choice then cuts in government expenditure should fall only on those expenditures that are not related to the development of social and economic infrastructure. There should be an awareness of the consequences of an inefficient increase in government revenue or decrease in government expenditure that can have long term negative effects on the economy.

To maintain economic growth, it is important to have effective fiscal and monetary policies tools that allow these policies to be carried out. Therefore, development of economic institutions including financial and capital markets is crucial for the treatment of government finance. Developed financial and capital markets can mobilize savings

and channel them to productive use, thus reducing the cost of financing public and private economic activities which enhance economic growth and development.

References

[1] Looney, R. "Budgetary Priorities in Saudi Arabia: the Impact of Relative Austerity Measures on Human Capital Formation." *OPEC Review*, 15 (1991), 133-152.

[2] Mansour, T. "Monetary Policy and Central Bank Financing of Government Budget Deficits in Jordan." *Abhath Al-Yarmouk*, 10 (1994), 265-281.

[3] Taher, F. and Qabil, M. "Development of Budget Deficits in Saudi Arabia- 1973-1992." *Journal of the Gulf and Arabian Peninsula Studies*, 82 (1996), 187-221.

[4] Al-Moneef, M. " Budget Deficits and Economic Reforms in the Countries of the Gulf Cooperation Council." *Journal of the Gulf and Arabian Peninsula Studies*, 83 (1996), 187-215.

[5] Al-Melhem, I. "Means of Deficit Treatment in Saudi Arabia Budget." *Journal of Social Sciences*, 26 (1998), 97-115.

[6] Al-Twijry, H. and Al-Hassn, A. "Effective Factors on Budget Deficit in Saudi Arabia." *Journal of the Gulf and Arabian Peninsula*, 97 (2000), 85-107.

[7] Alshebel, A. and Al-Hassan, A. "Effect of Budget Deficit on Monetary Policy in Saudi Arabia." *Journal of King Saud University* (Administrative Sciences), 13 (2001), 201-218.

[8] Majed, A. and Daqamseh, M. "Internal Public Debt and Budget Deficits Jordanian Case." *Economic Horizons*, 87 (2001), 45-87.

[9] Buiter, W. "Crowding Out and the Effectiveness of Fiscal Policy." *Journal of Public Economics*, 1977 (309-328.

[10] Bahmani-Oskooee, M. "Do Federal Budget Deficits Crowd Out or Crowd in Private Investment." *Journal of Policy modeling*, 21 (1999), 633-640.

[11] Vavouras, I. "Public Sector Deficits: Their Economic and Policy Determinants in the Case of Greece." *Journal of Policy Modeling*, 21 (1999), 89-100.

[12] Abrams, B. and Schitz, M. "The Crowding Out Effect of Government Transfers on Private Charitable Contributions." *Public Finance*, 33 (1978), 29-39.

[13] Anderson, C. and Jordan, J. "Monetary and Fiscal Actions: A Test pf their Relative Importance in Economic Stabilization." FRB-St. Luis *Review*, 1968

[14] Arestis, P. "The Crowding out of Private Expenditure by Fiscal Actions: An Empirical Investigation." *Public Finance*, 34 (1979), 36-49.

[15] Cebula, R. "Crowding out and Fiscal Policy in the United States: A Note on the Recent Experience." *Public Finance*, 40 (1985), 133-136.

[16] Keran, M. "Monetary and Fiscal Influences on Economic Activity: The Historical Evidence." FRB-St. Louis-*Review*, 1969

[17] Keran, M. "Monetary and Fiscal Influences on Economic Activity: The Foreign Experience." FRB-St. Louis-*Review*, 1970

[18] Sullivan, B. "Crowding out Estimated from Large Scale Econometrics Model." FRB-Dallas- *Business Review*, 1976 (June), 1-17.

[19] Zahn, F. "A Flow of Funds Analysis of Crowding Out." *Southern Economic Journal*, 45 (1978), 195-206.

[20] Hoelscher, G. " Federal Borrowing and Short Term Interest Rates." *Southern Economic Journal*, 50 (1983), 319-333.

[21] Makin, J. "Real Interest, Money Surprises, Anticipated Inflation, and Fiscal Deficits." *Review of Economics and Statistics*, 65 (1983), 375-384.

[22] Motley, B. "Real Interest Rates, Money and Government Deficits." FRB-San Francisco- *Economic Review*, 3 (1983), 31-45.

[23] Mascaro, A. and Melzer, A. "Long and Short Term Interest Rates in aA Risky World." *Journal of Monetary Economic*, 12 (1983), 485-518.

[24] Evans, P. " Do Large Budget Deficits Produce High Interest Rates?" *American Economic Review*, 75 (1985), 68-87.

[25] Barth, J., Iden, G. and Russek, F. "Federal Borrowing and Short Term Interest Rates: A Comment."

Southern Economic Journal, 52 (1985), 554-559.
[26] Dwyer, G. "Inflation and Government Deficits." *Economic Inquiry*, 20 (1982), 315-329.
[27] Hoffman, D., Low, S. and Reineberg, H. "Recent Evidence on the Relationship Between Money Growth and Budget Deficits." *Journal of Macroeconomics*, 5 (1983), 223-231.
[28] Ahking, F. and Miller, S. "The Relationship Between Government Deficits, Money Growth, and Inflation." *Journal of Macroeconomics*, 7 (1985), 447-467.
[29] Niskanen, W. "Deficits, Government Spending and Inflation: What Is the Evidence?" *Journal of Monetary Economics*, 4 (1978), 591-602.
[30] Sargent, T. and Wallace, N. "Some Unpleasant Monetarist Arithmetic." FRB-Minneapolis-*Quarterly Review*, 5 (1981) (5), 1-17.
[31] Scarth, W. "Can Economic Growth Make Monetarist Arithmetic Pleasant?" *Southern Economic Journal*, 53 (1987), 1028-1036.
[32] Hamburger, M. and Zwick, B. "Deficits, Money and Inflation." *Journal of Monetary Economics*, 7 (1981), 141-150.
[33] Allen, S. and Smith, M. "Government Borrowing and Monetary Accommodation." *Journal of Monetary Economics*, 12 (1983), 605-616.
[34] Hein, S. "Discussion." In: *The Consequences of Government Deficits*, ed. L. Mayer, Boston: Kluwer Publishing, 1983.
[35] King, R. and Plosser, C. "Money, Deficits and Inflation." In: *Understanding Monetary Regimes*, Carnegie-Rochester Conference Series on Public Policy, 22, 1985.
[36] Protopapadakis, A. and Siegel, J. "Are Money Growth and Inflation Related to Government Deficits? Evidence from Ten Industrialized Economies." *International Economic journal*, 1 (1987), 79-96.
[37] Burdekin, R. and Wohar, E. "Deficit Monetization Output and Inflation in the United States." *Journal of Economic Studies*, 17 (1990), 50-63.
[38] Ho, L. "Government Deficit Financing and Stabilization." *Journal of Economic Studies*, 17 (1990), 34-44.
[39] Dornbusch, R. and Fisher, S. "Budget Deficits and Inflation." In: *Development in an Inflationary World*, ed. M. Flanders and A. Razin, New York: Academic Press, 1981.
[40] Siddiqui, A. "The Causal Relation Between Money and Inflation in A Developing Economy." *International Economic Journal*, 3 (1989), 79-96.
[41] Choudhary, M. and Parai, A. "Budget Deficits and Inflation: The Peruvian Experience." *Applied Economics*, 23 (1991), 1117-1121.
[42] Buiter, W. and Patel, U. "Debt, Deficits, and Inflation: An Application to the Public Finance of India." *Journal of Public Economics*, 47 (1992), 171-205.
[43] Dogas, D. "Market Power in a Non-monetarist Inflation Model for Greece." *Applied Economics*, 24 (1992), 367-378.
[44] Sowa, N. "Fiscal Deficits, Output Growth and Inflation Targets in Ghana" *World Development*, 22 (1994), 1105-1117.
[45] Hondroyiannis, G. and Papapetrou, E. "Cointegration, Causality and Government Budget Inflation Relationship in Greece." *Applied Economics Letters*, 1 (1994), 204-206.
[46] Metin, K. "An Integrated Analysis of Turkish Inflation." *Oxford Bulletin of Economics and Statistics*, 57 (1995), 513-533.
[47] Metin, K. "The Relationship Between Inflation and the Budget Deficit in Turkey." *Journal of Business and Economic Statistics*, 16 (1998), 412-422.
[48] Thorbecke, W. "Budget Deficits, Inflation Risk, and Asset Prices." *Journal of International Economics*, 21 (2002), 539-553.
[49] Barro, R. "Comment from Unreconstructed Ricardian." *Journal of Monetary Economics*, 4 (1978), 569-581.
[50] McMillin, D. and Beard, T. "The Short run Impact of Fiscal Policy on Money Supply." *Southern Economic Journal*, 47 (1980), 122-135.
[51] Buchanan, J. and Wagner, R. *Democracy in Deficit: The Political Legacy of Lord Keynes*. New York: Academic Press, 1977.
[52] Miller, P. "Deficit Policies, Deficit Fallacies." FRB-Minneapolis-*Quarterly Review*, 4 (1980), 2-4.
[53] Miller, P. "Higher Deficit Policies Lead to Higher Inflation." FRB-Minneapolis-*Quarterly Review*, 7 (1983), 8-19.
[54] Barro, R. "On the Determination of the Public Debt." *Journal of Political Economy*, 87 (1979), 940-971.

[55] Carlson, K. and Spencer, R. "Crowding Out and Its Critics: An Empirical Investigation." *FRB- St. Louis-Review*, 57 (1975), 2-17.
[56] Evans, P. "Interest Rates and Expected Future Budget Deficits in the United States." *Journal of Political Economy*, 95 (1987), 34-58.
[57] Ostrosky, A. "Federal Government Borrowing and Interest Rates." *Southern Economic Journal*, 56 (1990), 802-803.
[58] Barth, J. and Bradley, M. "Evidence on Real Interest Effects of Money, deficits and Government Spending." *Quarterly Review of Economics and Business*, 29 (1989), 214-224.
[59] Barth, J., Iden, G. and Russek, F. "Do Federal Deficits Really Matter." *Contemporary Policy Issues*, 3 (1984), 79-95.
[60] Tanzi, V. "Fiscal Deficits and Interest Rates in the U.S. An Empirical analysis." *IMF-Staff Papers*, 32 (1985), 551-576.
[61] Cebula, R, "A Note on the Impact of Structural Budget Deficits on Commercial Bank Interest Rates, 1963-1994." *Public Finance Review*, 25 (1997), 442-450.
[62] Cebuka, R. "The Impact of Structural Budget Deficits on Commercial Bank Interest Rates: Reply." *Public Fiance Review*, 28 (2000), 195-198.
[63] Vamvoukas, G. "A Note on Budget Deficits and Interest Rates: Evidence from a Small Open Economy." *Southern Economic Journal*, 63 (1997), 803-811.
[64] Vamvoukas, G. "Budget Deficits and Interest Rates in a Small Open Economy-Another Look at the Evidence: Reply." *International Economic Journal*, 16 (2002), 31-35.
[65] Belton, W. and Cebula, R. "Deficit and Real Interest Rates in the United States: A Note on the Barro Theory versus the Cukierman-Meltzer Theory of Government Debt and Deficits in a New- Ricardian Framework." *Economic Internazionale*, 45 (1992), 289-295.
[66] Cebula, R. "Federal Government Budget Deficits and Interest Rates: An Empirical Analysis for the United States." *Public Finance*, 43 (1988), 337-348.
[67] Cebula, R. "A Note on Federal Budget Deficits and the Term Structure of Real Interest Rates in the United States." *Southern Economic Journal*, 57 (1991), 1170-1173.
[68] Cebula, R, "An Empirical Analysis of Federal Budget Deficits and Interest Rates Directly Affecting Savings and Loans." *Southern Economic Journal*, 60 (1993), 28-35.
[69] Hoelscher, G. "New Evidence on Deficits and Interest Rates." *Journal of Money, Credit and Banking*, 18 (1986), 1-17.
[70] Thomas, L. and Abderrazak, A. "Long Term Interest Rates: The Role of Expected Budget Deficits." *Public Finance Quarterly*, 16 (1988), 341-356.
[71] Thomas, L. and Abderrazak, A. "Anticipated Future Budget Deficits and Term Structure of Interest Rates." *Southern Economic Journal*, 55 (1988), 150-161.
[72] Darrat, A. "Do Structural Federal Budget Deficits Impact Commercial Bank Interest rates? A Comment." *Public Finance Review*, 28 (2000), 187-194.
[73] Darrat, A. "On Budget Deficits and Interest Rates: Another Look at to the Evidence.: *Economic Journal*, 16 (2002), 19-29.
[74] Fitzgerald, E. "A Note on Capital Accumulation in Mexico: the Budget Deficit and Investment Finance." *Development and Change*, 11 (1980), 391-417.
[75] Darrat, A. "Have Large Budget Deficits Caused Rising Trade Deficits?" *Southern Economic Journal*, 54 (1988), 879-887.
[76] Bahmani-Oskooee, M. "Effects of the US Government Budget on Its Current Account: An Empirical Inquiry." *Quarterly Review of Economics and Business*, 29 (1989), 76-91.
[77] Bahmani-Oskooee, M. and Payesteh, S. "Budget Deficits and the Value of the Dollar: An Application of Cointegration and Error Correction Modeling." *Journal of Macroeconomics*, 15 (1993), 661-677.
[78]Bahmani-Oskooee, M and Payesteh, S. "Do Budget Deficits Cause Capital Inflow? Evidence from the United States, *Quarterly Review of Economics and Finance*, 34 (1994), 63-74.
[79] Diwan, I. "Foreign Debt, Crowding Out and Capital Flight,' *Journal of International Money and Finance*, 8 (1989), 121-136.
[80] Abell, J. "Twin Deficits During the 1980s: An Empirical investigation." *Journal of Macroeconomics*, 12 (1990), 81-96.
[81] Dua, P. "Interest Rates, Government Purchases, and Budget Deficits: A Forward-Looking Model." *Public Finance Quarterly*, 12 (1993), 470-478.
[82] Rosenweig, J. and Tallman, E. "Fiscal Policy and Trade Adjustment: Are Deficits Really Twins?"

Economic Inquiry, 1993 ( ), 580-594.
[83] Miller, S. and Russek, F. "Are the Twin Deficits Really Related?" *Contemporary Policy Issues*, 7 (1989), 91-115.
[84] Cebula, R. and Koch, J. "Federal Budget Deficits, Interest Rates, and International Capital Flows: A Further Note." *Quarterly Review of Economics and Finance*, 34 (1994), 117-120.
[85] Brazelton, W. 'An Empirical Note on Deficits, Interest rates, and International Flows." *Quarterly Review of Economics and Finance*, 34 (1994), 113-116.
[86] Belton, W. and Cebula, R. "International Capital Inflows, Federal Budget Deficits, and Interest Rates, 1971-1984." *Quarterly Journal of Business and Economics*, 34 (1995), 3-13.
[87] Rahman, M., Mustafa, M. and Bailey, E. "US Budget Deficits, Inflation and Exchange Rate: A Cointegration Approach." *Applied Economics Letters*, 3 (1996), 365-468.
[88] Murthy, N. and Phillips, J. "The Relationship Between Budget Deficits and Capital Inflows: Further Econometric Evidence." *Quarterly Review of Economics and Finance*, 36 (1996), 485-494.
[89] Evans, P. "Is the Dollar High because of Large Budget Deficits?" *Journal of Monetary Economics*, 18 (1986), 227-249.
[90] Karras, G. "Macroeconomic Effects of Budget Deficits: Further International Evidence." *Journal of International Money and Finance*, 13 (1994), 190-210.
[91] Cebula, R. "Crowding Out; An Empirical Note." *Quarterly Review of Economics and Business*, 18 (1978), 119-123.
[92] Cebula, R. " The Crowding out Effect of Federal Government Outlay Decisions: An Empirical Note." *Public Finance*, 36 (1981), 329-336.
[93] Bradley, M. "Government Spending or Direct Financing: Which Causes Crowding Out?" *Journal of Economics and Business*, 38 (1986), 203-214.
[94] Tridimas, G. "Budgetary Deficits and Government Expenditure Growth: Toward More Accurate Empirical Specification." *Public Finance Quarterly*, 20 (1992), 275-297.
[95] Cebula, R. and Belton, W. "Government Budget Deficits and Interest Rates in the United States Evidence from Closed and Open Systems Put into Perspective, 1955-1989." *Public Finance*, 48 (1993 (48), 188-209.
[96] Cebula, R., Killingwarth, J. and Belton, W. "Federal Government Budget Deficits and the Crowding out of Private Investment in the United States." *Public Finance*, 49 (1994), 168-178.
[97] Leff, N. and Sato, K. "Macroeconomic Adjustment in Developing Countries: Instability, Short run Growth and External Dependency." *Review of Economics and Statistics*, 62 (1980), 170-179.
[98] Leff, N. and Sato, K. "Estimating Investment and Savings Functions for Developing Countries: With an Application to Latin America." *International Economic Journal*, 2 (1988), 1-17.
[99] Khan, A. "Macroeconomic Policy and Private Investment in Pakistan." *Pakistan Development Review*, 27 (1988), 277-291.
[100] Albatel, A. "The Role of Finance in Promoting Private Investment in Saudi Arabia." *Journal of the Gulf and the Arabian Peninsula*, 92 (1999), 195-224.
[101] Albatel, A. "Determinants of Private Investment in Saudi Arabia: the Role Government Investment." *Journal of King Saud University (Administrative Sciences)*, 12 (2000), 29-44.
[102] Nelson, C. and Plosser, C. "Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications." *Journal of Monetary Economics*, 10 (1982), 130-162.
[103] Hall, R. stochastic Implications of Life Cycle Permanent Income Hypothesis: Theory and Evidence." *Journal of Political Economy*, 86 (1978), 971-987.
[104] Granger, C. and Newbold, P. "Spurious Regressions in Econometrics." *Journal of Econometrics*, 2 (1974), 111-120.
[105] Granger, C. "Developments in the Study of Cointegrated Economic Variables." *Oxford Bulletin of Economics and Statistics*, 48 (1986), 213-228.
[106] Phillips, P. " Understanding Spurious Regressions in Econometrics." *Journal of Econometrics*, 33 (1986), 311-340.
[107] Ohanian, L. "The Spurious Effects of Unit Roots on Vector Autoregression : A Monte Carlo Study." *journal of Econometrics*, 39 (1988), 251-266.
[108] Engle, R. and Granger, C. "Cointegration and Error Correction: Representation, Estimation, and Testing." *Econometrica*, 55 (1987), 251-276.
[109] Johansen, S. "Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Autoregressive Models." *Econometrica*, 59 (1991), 1551-1580.

[110] Dickey, D. and Fuller, W. "Distribution of the Estimators for Autoregressive Time Series with a Unit Root." *Journal of the American Statistical Association*, 74 (1979), 427-431.
[111] Dickey, D. and Fuller, W. "Likelihood Ratio Statistical for Autoregressive Time Series with a Unit Root." *Econometrica*, 49 (1981), 1057-1072.
[112] Perron, P. "Trends and Random Walks in Macroeconomic Time Series: Further Evidence from a New Approach." *Journal of Economic Dynamics and Control*, 12 (1988), 297-302.
[113] Phillips, P. and Perron, P. "Testing for a Unit Root in Time Series Regression." *Biometrica*, 75 (1988), 335-346.
[114] MacKinnon, J. "Critical Values for Cointegration Tests." In: Engle, R. and Granger, C. (Eds.), *Long run Economic Relationships: Readings in Cointegration*. Oxford: Oxford University Press, 1991.
[115] Fuller, W. *Introduction to Stistical Time Series*. New York: John Wiley and Sons, 1996.
[116] Hsiao, C. "Causality Tests in Econometrics." *Journal of Economic Dynamics and Control*, 1 (1979), 321-346.
[117] Hsiao, C. "Autoregressive Modeling and Money-Income Causality Detection." *Journal of Monetary Economics*, 7 (1981), 85-106.
[118] Johansen, S. "Statistical Analysis of Cointegrating Vectors." *Journal of Economic Dynamics and Control*, 12 (1988), 231-254.
[119] Johansen, S. and Jueslius, K. "Maximum Likelihood Estimation and Inference on Cointeration: With Application to Demand for Money." *Oxford Bulletin of Economics and Statistics*, 52 (1990), 169-210
[120] Banerjee, A., Dolado, J., Galbrath, J. and Hendry, D. *Cointegration, Error Correction, and the Econometric Analysis of Non stationary Data*. Oxford: Oxford University Press, 1993.
[121] Davidson, R. and MacKinnon, J. *Estimation and Inference in Econometrics*. Oxford: Oxford University Press, 1993.
[122] Stock, J. "Asymptotic Properties of Least Squares Estimator of Cointegrating Vectors." *Econometrica*, 55 (1987), 1035-1056.
[123] Banerjee, A., Hendry, D. and Smith, G. "Exploring Equilibrium Relationships in Econometrics Through Static Models: Some Monte Carlo Evidence." *Oxford Bulletin of Economics and Statistics*, 48 (1986), 253-277.
[124] Enders, W. *Applied Econometric Time Series*. New York: John Wiley and Sons, 1995.
[125] Muscatilli, V. and Hurn, S. "Cointegration and Dynamic Time Series Models." *Journal of Economic Surveys*, 6 (1992), 1-43.
[126] Gonzalo, C. "Five Alternative Methods of Estimating Long Run Equilibrium Relationship." *Journal of Econometrics*, 60 (1994), 203-233.
[127] Cuthbertson, K., Hall, S. and Taylor, M. *Applied Econometrics Techniques*. New York: Phillip Allen, 1992.
[128] Osterwald-Lenum, M. "A Note with Fractiles of Asymptotic Distribution of the Maximum Likelihood Cointegration Rank Test Statistics: Four Cases." *Oxford Bulletin of Economics and Statistics*, 43 (1992), 461-472.
[129] Shiller, R. and Perron, P. "Testing the Random Walk Hypothesis: Power versus Frequency of Observation." *Economics Letters*, 18 (1985), 381-386.
[130] Hakkio, C. and Rush, M. " Cointegration: How Short is the Long Run?" *Journal of International Money and Finance*, 10 (1991), 571-581.
[131] Kennedy, P. *A Guide to Econometrics*. Cambridge: The MIT Press, 1998.
[132] Ibrahim, S. and Kumar, F. "Comovements in Budget Deficits, Money, Interest Rates, Exchange Rates and the Current Account Balance: Some Empirical Evidence." *Applied Economics*, 28 (1996), 117-130.
[133] Laumas, P. "Monetization, Financial Liberalization and Economic Development." *Economic Development and Cultural Change*, 38 (1990), 377-390.
[134] Raynolds, P. "The Impact of Government Deficits when Credit Markets are Imperfect: Evidence from the interwar period." *Journal of Macroeconomics*, 16 (1994), 55-76.
[135] Darrat, A. "Budget Balance Through Spending Cuts or Tax Adjustments?" *Contemporary Economic Policy*, 20 (2002), 221-233.

مزاحمة عجز الميزانيه الحكوميه لأستثمارات القطاع الخاص في المملكه

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ملخص البحث. في الوقت الحاضر، فأن تأثير عجز الميزانيه المزمن وتراكم الدين العام يطغى على الأحاديث العامه كما يتناوله الاعلام بشكل دوري. اضافة الى ذالك فإن هناك تحذيرات متكرره من قبل بعض المختصين على إن استمرار عجز الميزانيه سيؤدي الى تراكم الدين العام وسيزيد من تكاليف أقتراض القطاع الخاص، متمثلا بارتفاع أسعار الفائده.

تعاني المملكه منذ العام ١٩٨٢م من عجز مزمن في الميزانيه الحكوميه، مما أرغم الحكومه على دخول أسواق رأس المال المحليه كمقترض لتغطية هذا العجز.

وبناء على التأثير الكبير لعجز الميزانية على الأنشطة الاقتصادية في المملكة فإنه من المهم لصناع لقرارات والسياسات الاقتصادية أن يكونوا على بينة عن مدى تأثير السياسات الاقتصادية الكلية على الأنشطة لاقتصادية. ولهذا فإن الهدف من هذه الدراسة هو معرفة مدى تأثير عجز الميزانية على أنشطه القطاع الخاص، خصوصا الاستثمارات الخاصة في المملكة باستخدام الأساليب الحديثة في الاقتصاد القياسي.

توضح النتائج التي تم التوصل إليها على أن عجز الميزانيه الحكوميه في المملكه يؤدي إلى مزاحمة لقطاع الحكومي للقطاع الخاص- خصوصا الأستثمارات الخاصه- في أسواق رأس المال عندما تدخل الحكومه كمقترض من هذه الأسواق وهذا بدوره يثبط من عزيمة القطاع الخاص ويعوق الطلب على الاستثمار لارتفاع تكاليف الاقتراض من أسواق رأس المال المحليه.