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Deducing Budgetary Priorities in Saudi Arabia: The Impact of Defense Expenditures on Allocations to Socio-Economic Programs

by

Robert E. Looney
Professor, National Security Affairs
Naval Postgraduate School
Monterey, California 93943 USA

Introduction

The 1990 Saudi budget, set at just over that for 1989, and the 1990-95 five year plan, with spending targets on the current price equivalent of five times the 1990 budgetary figure, indicate fairly clearly that Saudi Arabia's days of priming the non-oil economy are essentially over, but that its commitment to price stability remains [Economist Intelligence Unit, 1990, p.4].

The five year plan has proposed growth targets averaging 3.2 percent a year between 1990 and 1995, roughly in line with what might be expected to be the population growth rate. The oil sector is expected to grow at a real rate of 2.7 percent a year, but the oil and gas sector combined by only 2.2 percent. The domestic non-oil economy is expected to grow at 3.6 percent. The overall growth rate in the non-oil sectors is likely to improve when the contraction in government services has flattened out.

Over the medium term, the plan's spending targets suggest a very heavy bias towards defense, social services, and subsidies, with extra revenue to be used to rebuild reserves. As with the 1989 budget, the government's 1990 spending plans anticipate that increased overall revenues would reduce the government's borrowing needs, eliminating the necessity for any further reductions in the country's foreign reserves.

The intention of the budget is to increase the already large human resources development. To meet this objective, reductions in funding must be made in most other sectors. However, these cuts have been minimized in the areas of defense, administration, health and social development. The local subsidies section of the budget has been kept unchanged largely for political reasons to reflect King Fahd's promise to protect the living standards of low income Saudis [Economist Intelligence Unit, 1990, p.4].

While the picture for human resources looks promising, what is the chance that allocations to this sector will begin to expand again? The purpose of this paper is to assess in some detail, based on past budgetary patterns, the manner in which the government tends to revise its actual budgetary expenditures in response to revenue developments during the fiscal year. Do expenditures on human resources vary systematically with unexpected changes in revenues? Does the human resource share of the budget expand or contract systematically with movements in any of the other major budgetary categories? Do defense expenditures come at the expense of social or economic (or both) budgetary allocations?

Fiscal Patterns

Budgetary revenue and expenditures [Economist Intelligence Unit, 1988] increased steadily to 1974, except for 1967/68 when dislocation following the Israeli-Arab war affected all economies in the region. However, the 1973/74 and 1979 oil price jumps, world recession, fluctuations in the world demand for oil, and political instability and warfare in the Gulf have led to sizeable year to year fluctuations in budgetary receipts compared to expectations.

Although the general trend remained buoyant until 1981/82, in 1977/78 and 1978/79 slight budget deficits followed unexpectedly low oil revenues, whereas expenditure and revenue both rose higher than projected during the next two years. The 1982/83 budget was the first in which an absolute decline in revenue was projected, the objective being to arrive at a balance, while in 1983/84 a planned deficit of SR35 billion was budgeted for the first time in recent history.

In 1984/85, the planned deficit was increased to SR46 billion (Table 1) with budget revenue and expenditure figures SR214 billion and SR260 billion respectively. The 1985/86 budget was supposed to balance at SR200 billion, but ended with a SR50 billion deficit. The 1986/87 budget was not published in March 1986 as due, because of uncertain revenue forecasts. Monthly disbursements continued on the basis of average spending in 1984/85. A new budget was finally released at the end of December 1986 to cover the 1987 calendar year. This budget projected revenue at SR117 billion, compared with SR340 billion envisaged in the budget for 1981/82.

Over the same period, the government had reduced government spending from SR298 billion to SR160 billion, a significant achievement, but not enough to close the deficit gap. In 1988, another large budget deficit was projected but the government acknowledged the dwindling size of its budget reserves by launching a local borrowing scheme to cover a substantial portion of the revenue shortfall. Import duties were also raised in an attempt to generate more non-oil revenue, but other measures such as tax increases were rescinded following public protest.

As well as declining oil revenues, the government has had to contend with a drop in overseas investment income, which has resulted from a fall in international interest rates and a reduction in the size of the government's overseas assets from around $150 billion in 1982 to less (estimated) than $60 billion by the end of 1988 [Richie, 1987, p. 169].

Table 1

Saudi Arabia: Government Budget Estimates, 1984-1988

(SR million)

	1984	1985	1986	1987	1988
Total Revenue	**225,00**	**214,000**	**200,000**	**106,926**	**105,300**
Oil Revenue	164,496	164,500	154,250	74,183	73,525
Other Revenue	60,504	49,600	45,750	32,743	31,775
Balance	**-35,000**	**-45,900**	**-**	**-52,720**	**-35,900**
Borrowing	**-**	**-**	**-**	**-**	**30,000**

Source: Saudi Arabian Monetary Agency, Annual Report, various issues.

One of the main problems for the government is that current expenditure has proved very difficult to pare back; there are huge costs involved in running and maintaining the activities established by development project capital inputs--in social services as well as physical infrastructure. Defense expenditure remains a major budget item.

In terms of recently released figures, in 1986 (March-December), actual domestic revenue was only SR16.5 billion, government domestic spending was SR88.2 billion, and government direct foreign exchange spending was SR37.6 billion. By the end of 1987 central government reserve accounts lodged with SAMA had fallen to SR78 billion, down from SR118.5 billion at the end of 1986. This SR40.5 billion drop probably reflects fairly accurately the actual size of the 1987 budget deficit, against a budgeted SR52.7 billion. If the budgeted 1988 deficit of SR36 billion had been fully financed from reserves rather than borrowing, these government deposits might have been halved by the end of 1988 to less than $10 billion.

The growing government preoccupation with cutting its budget deficit is being translated into a number of schemes devised to tap the savings of state organizations (the Pension Fund has around SR60 billion) and the private sector. Expenditure rationalization and efficiency increases have also been attempted but are proving elusive targets.

Government bond issues are the most obvious example of attempts to tap sources of savings other than the government's own

dwindling reserves, the more so since various amendments to the offering terms have been introduced. These changes have gradually widened the groups of potential end-investors. Before the bonds were even offered to banks, it is estimated that some SR14 billion may have been placed with the government Pension Fund. The bonds were then offered to banks, some of which gained permission to place them in a package of national assets offered to private investors in the form of a unit trust.

Finally, towards the end of September 1988 the Saudi Arabian Monetary Agency (SAMA) announced that banks would be able to sell the bonds directly to the Saudi public in minimum tranches of SR1 million; purchasers would get a certificate of purchase rather than the bonds themselves as the banks would still collect interest from them, and would be forbidden to sell them to non-Saudis. Firm details on the number and success of the bond offerings are sparse, which seems to confirm both that the banks' take has been lower than hoped for, and that the scheme itself is still seen as rather controversial.

The success of the government borrowing program will be judged not just by the levels of commercial bank and private sector subscriptions to trance issue, but also by the extent to which these investors are prepared to repatriate funds from abroad to purchase the bonds. As yet there is no firm evidence to show whether the purchases are being financed from domestic or foreign savings.

Figures released published by the Saudi Arabian Monetary Agency [1987] provide an insight into the extent of the government's problem, and the nature of commercial banks' net foreign asset position. In the ten month interval between budgets in 1986, direct government foreign exchange spending stood at SR37.6 billion, domestic spending at SR88.2 billion, domestic revenue at SR16.5 billion, and net domestic cash flows (defined as domestic spending minus domestic revenues) at SR71.7 billion. If the government could cover its direct foreign exchange spending with foreign currency repatriated via the bond issues, it would mean that government oil revenue and overseas investment income could all be put at the disposal of SAMA to meet private sector foreign exchange demand.

On the other hand, if government borrowings are to be covered by riyal savings, and could therefore be classified in the same vein as domestic revenue, it becomes clear that this method of borrowing will decrease the net domestic cash flow, along with the stimulus that the government budget has traditionally given to the economy. This might be expected eventually to lead to less demand for foreign exchange throughout the economy, rather than an increase in foreign exchange availability. Funding the bond issues from domestic resources thus has a much clearer deflationary impact, which might be expected to hurt the independent growth of the private sector.

As far as the commercial banks are concerned, the true extent of their net foreign assets position is often overstated, by a tendency not to net out residents' foreign currency deposits and not to take into account the extent of foreign assets denominated in Saudi riyals. In mid-1987 when Saudi commercial banks' foreign

assets were standing at SR88.6 billion and foreign liabilities at SR16.8 billion, giving a net foreign asset position of SR71.8 billion, the banks were also holding SR28 billion in residents' foreign currency deposits, while their net foreign position in Saudi riyals was SR20.6 billion. In other words, their true net foreign assets position could be more correctly stated at only SR23.2 billion.

The figure for the size of the offshore riyal market is only reported by the Saudi Arabia Monetary Agency [1988], but it might be assumed to have grown in 1987/88 following the removal of withholding tax. Assuming the net figure for this market has not risen to SR25 billion, a truer net foreign asset figure for Saudi commercial banks would seem to be SR17.7 billion--insufficient to cover more than half the planned 1988 budget deficit. It is clear, then, that the commercial banks alone cannot be expected to cover the budget deficit in foreign currency, or at least not until a clearer line of the riyal persuades local depositors to switch out of foreign currency deposits.

The government will undoubtedly have great difficulties in raising sufficient funds to continue expenditures at recent levels. Other methods, expenditure reductions and/or redirection seem more realistic solutions to the country's budgetary problems.

Budgetary Priorities

In recent years, almost all the major categories of the budget have been cut (Table 2). Infrastructure spending in particular has been cut drastically, with few new projects commissioned. The budget for education and health has also been cut, reflecting in part a decline in capital expenditure on new schools and hospitals. The wage bill for teachers, nurses and doctors continues to rise, however. Similar conditions arise with defense expenditures, as basic defense infrastructure is past its peak, the need to purchase new equipment and re-equip is greater than ever [Wilson, 1987, p.93].

In terms of specific allocations (Table 2):

1. Government lending institutions have experienced the greatest reduction in their allocations, declining by 51.9 percent over the 1983/88 period, and with cutbacks accelerating to 67.5 percent for the more recent 1985/88 period.

2. After expanding at an average rate of 20.6 percent over the period following the second oil price increase (1980-82), human resource development averaged reductions of 5.8 and 8.0 percent per annum over the 1983-88 and 1985-88 period respectively. It appears, however, that of the major budgetary categories, human resource development experienced the smallest cutbacks during both the 1983/88 period and over the 1985/88 period.

3. Despite the common perception of their high priority, defense expenditures contracted at a the fairly rapid rate of 11.6 and 14.4 percent per annum over the 1983/88 and 1985/88 periods.

Table 2

Saudi Arabia: Central Government Budgetary Expenditures: 1980-88

(billions of Saudi Riyals)

Category	1980	1983	1985	1988	Average Annual Rate of Growth 1980/ 1983	1983/ 1988	1985/ 1988
Human Resource Development	18.2	31.9	30.4	23.7	20.6	-5.8	-8.0
Transportation & Communications	24.4	32.5	22.2	10.9	10.0	-6.1	-21.1
Economic Resource Dev	14.9	22.0	12.5	5.9	13.9	-23.1	-22.1
Health	9.8	17.0	16.1	10.8	20.2	-8.7	-28.5
Infrastructure	6.9	11.7	9.8	3.6	19.3	-21.0	-28.4
Municipal Services	12.7	26.2	17.1	7.0	27.3	-23.3	-25.7
Defense	56.5	92.9	79.9	50.1	18.0	-11.6	-14.4
Pub Administ	48.0	44.6	43.9	25.1	- 2.4	-10.9	-17.0
Govt Lending Institutions	24.8	23.4	17.5	0.6	- 1.9	-51.9	-67.5
Local Subsidies	0.0	11.2	10.5	5.3	--	-13.9	-20.4

Notes: Based on data from: Saudi Arabian Monetary Agency, **Annual Report**, various issues.

4. The same also applies to local subsidies which have declined at 13.9 and 20.4 percent per annum during the 1983/88 and 1985/88 periods respectively.

As a result of these differential rates of contraction, the relative shares of the major expenditure items have undergone a fairly large realignment (Table 3).

1. There has been a major increase in human resource development, from 8.5 percent of government expenditures in 1980 to 16.6 percent in 1988. Again this increase reflects the contraction of human resource expenditures at a rate considerably less than that experienced by other major categories.

Table 3

Saudi Arabia: Composition of Central Government Budget 1980-88

(percent of Central Government Expenditures)

Category	1980	1982	1984	1985	1986	1987	1988
Human Resource Development	8.5	8.8	10.7	11.7	12.3	14.8	16.6
Transportation & Communications	11.3	11.9	9.6	8.5	7.2	6.8	6.7
Economic Resource Dev	6.9	7.6	5.1	4.8	4.5	4.1	4.2
Health	4.6	4.6	5.2	6.2	6.4	7.0	7.7
Infrastructure	3.1	4.7	3.7	3.8	3.5	2.7	2.5
Municipal Services	5.9	8.8	7.3	6.6	5.9	5.1	5.0
Defense	26.1	27.7	29.0	30.7	32.0	34.0	35.5
Pub Admin	22.2	14.4	18.2	16.9	19.8	19.4	17.8
Govt Lending Institutions	11.5	8.3	7.7	6.7	4.7	2.2	0.4
Local Subsidies	0.0	3.1	3.5	4.1	4.2	3.9	3.8

Notes: Based on data from: Saudi Arabian Monetary Agency, **Annual Report**, various issues.

2. Defense expenditures have maintained their dominant position, increasing from around twenty six percent of the budget in 1980 to over thirty five percent by 1988.

3. Government lending institutions have experienced a dramatic decrease in importance, experiencing a decline in their share of government expenditure from over 11 percent in 1980 to less than half a percent by 1988.

4. Infrastructure expenditures in 1988 were about one half their 1983 share.

5. A similar percentage-wise decline was experienced by transportation and communications.

Human resource expenditures have enabled the country to achieve significant increases in both enrollment rates and teacher student ratios. Although the country lags somewhat behind comparable countries in terms of enrollment rates, it appears to be closing the gap fairly quickly (Table 4). In addition, the pupil teacher ratio is one of the lower ones for countries of Saudi Arabia's level of development.

On the other hand, the relatively low number of pupils reaching the sixth grade indicates that a number of difficulties exist in terms of the quality of education received. It is clear that the country has made some great strides in its efforts to increase the kingdom's stock of human capital. However, it is just as apparent that a great deal more needs to be accomplished.

In this regard, it is of some interest to examine the degree of commitment made by the government to developing the country's human assets. The evolving budgetary patterns examined above are suggestive of the manner in which the Saudi government prioritizes its expenditures. However, simple changes in the relative growth of sectoral budgetary allocations (or their share of the total) while suggestive, are not sufficient in and of themselves to infer the existence of any major commitment on part of the government to certain expenditure categories over others.

A more indicative measure would be to determine the manner in which windfall revenues, gains and losses are allocated. More specifically, how do shortfalls (or surpluses) from the previous fiscal year affect the share of funds allocated to a specific sector this year? If the Saudis approach their budget process through some form of lexicographic ordering of budgetary priorities, then sectors with high priorities would be relatively protected from budgetary cuts. In contrast, these sectors would not be the major beneficiaries of unanticipated windfalls.

This would be especially true in the case of unexpected surplus or deficit in the government's fiscal accounts. For example, if the authorities feel that human resources have a high priority, then activities of this type would be sure to be funded up to a certain point, irrespective of the effect this funding had on other (lower priority) activities. To preserve this level of funding during periods of unanticipated revenue shortfalls, the government would cut back on other activities in the next fiscal year (thus increasing the share of funds allocated to human resource activities). On the other hand, excess funds or unanticipated windfalls would go to fund marginally important activities, thus reducing the share of human resources in the budget.

The model used to test this theory of Saudi budgetary behavior implicitly assumes that the authorities adjust the human resource share of the budget to short run developments in the country's fiscal accounts to maintain a relatively constant level of real resources devoted to human resource development. The specific form of the model relates this year's budgetary share of human

Table 4
Saudi Arabia, Social Indicators of Development

Indicator	1965	1975	Most Recent	Reference Groups	
				Upper Middle Income	Industrial Market Economy
Labor Force					
Total Labor Force (thousands)	1333	2042	3540		
Female (%)	4	6	7	8	38
Agriculture (%)	68	56	48	34	7
Industry (%)	11	13	14	21	35
Participation Rate (%)					
Total	28	28	30	31	47
Male	52	51	51	51	59
Female	3	4	4	5	35
Age Dependency (%)	88.7	92.1	85.9	82.9	49.4
Education					
Enrollment Rates:					
Primary:					
Total	24	58	69	87	101
Male	36	72	77	83	101
Female	11	43	61	70	101
Secondary:					
Total	4	22	42	56	93
Male	7	28	51	55	91
Female	1	15	33	42	93
Pupil-Teacher Ratio:					
Primary	22	20	16	17	19
Secondary	15	15	14	14	15
Pupils Reaching Grade Six (%)	na	67	71	79	99

Source: World Bank (1988).

resource development to developments in the prior fiscal year and the share of other sectoral allocations:

EDU = [UFS(-), EFS(-), OE(?)]

EDU = the share of government expenditures budgeted for human resource development.

UFS = the share of unexpected fiscal surplus from the prior year.

EFS = the share of expected fiscal surplus from the prior year.

OE = the share of government expenditure budgeted for other activities.

Here:

1. The expected fiscal surplus (deficit) from the prior year is defined as the expected level of government revenues minus its budgeted level of expenditures.

2. The unexpected fiscal surplus (deficit) for the prior year is defined as the actual surplus (deficit) minus the budgeted surplus (deficit) surplus.

The results for the period 1979-88 produced several interesting findings (Table 5):

1. Both the lagged unexpected fiscal surplus and the lagged expected fiscal surplus were highly significant in effecting the share of government expenditures budgeted for human resource development during this period. Put differently, the larger each of these surpluses in the previous year, the greater the share of funds budgeted to human resource development in the current fiscal year.

2. Based on the size of the coefficients, unanticipated deficits appear about twice as strong as anticipated deficits in increasing the human resource component of the current year's budget. This result is consistent with the lexicographic ordering model hypothesized above.

3. In terms of potential tradeoffs with other sectors, it appears that: (a) economic resources and defense expand or contract somewhat in line with human resources. On the other hand, human resource development has a negative tradeoff with funds allocated to: (a) public administration and (b) government lending institutions.

4. No apparent budgetary patterns exist between human resource development and funds allocated to: (a) transportation and communication (b) health, (c) infrastructure, (d) municipal services, and (e) local subsidies.

In general, the results of the model confirm the high priority granted human resource development by the Saudi authorities. Resources to this sector have been preserved relative to other sectors during the current period of austerity. Budgetary cuts have occurred in Saudi Arabia but education has been relatively

Table 5

Saudi Arabia: Budgetary Tradeoffs, Total Education (1979-1988)

Lagged Unexpected Fiscal Surplus (UFS)

1. EDU = - 0.10 UFS
(-10.18)

RHO = - 0.49; t = - 1.60 r2 = 0.945; F = 103.53 DW = - 1.71

Lagged Expected Fiscal Surplus (EFS)

2. EDU = - 0.09 UFS - 0.05 EFS
(-18.21) (-6.59)

RHO = - 0.15, t = - 0.42 r2 = o.988; F = 214.12; DW = 2.18

Transportation and Communications (TC)

3. EDU = - 0.11 UFS - 0.05 EFS - 0.21 TC
(-6.75) (-7.00) (1.17)

RHO = - 1.10, t = - 0.30 r2 = 0.991; F = 141.0; DW = 3.08

Economic Resource Development (ERD)

4. EDU = - 0.11 UFS - 0.05 EFS + 0.35 ERD
(-11.85) (-9.86) (2.46)

RHO = - 0.06, t = - 0.17; r2 = 0.994; F = 239.50; DW = 3.47

Defense Expenditures (DE)

5. EDU = - 0.05 UFS - 0.03 EFS + 0.43 DE
(-2.43) (-2.61) (1.99)

RHO = - 0.16, t = - 0.47; r2 = 0.994; F = 233.60; DW = 1.89

Health Expenditures (HE)

6. EDU = - 0.07 UFS - 0.03 EFS + 0.58 HE
(-3.30) (-2.40) (0.93)

RHO = - 0.10, t = - 0.30; r2 = 0.990; F = 243.96; DW = 1.46

Notes: Based on data from: Saudi Arabian Monetary Agency, **Annual Report**, various issues. r2 = coefficient of determination, F = F statistic, DW = Durbin Watson Statistic; RHO = serial correlation term. All variables are in percentages of total central government expenditures.

(continued)

Table 5 (contd)

Saudi Arabia: Budgetary Tradeoffs, Total Education (1979-1988)

Infrastructure (INF)

7. EDU = - 0.09 UFS - 0.05 EFS - 0.16 INF
(-2.87) (-4.88) (-0.16)

RHO = - 0.15; t = - 0.43 r2 = 0.989; F = 115.23 DW = 2.15

Municipalities (MUN)

8. EDU = - 0.12 UFS - 0.06 EFS + 0.49 MUN
(-7.68) (-4.65) (1.53)

RHO = - 0.26, t = - 0.76 r2 = 0.993; F = 191.78; DW = 2.66

Public Administration (ADM)

9. EDU = - 0.06 UFS - 0.03 EFS - 0.31 ADM
(-4.68) (-3.46) (-2.40)

RHO = - 0.75, t = - 0.73 r2 = 0.996; F = 297.04; DW = 2.70

Government Lending Institutions (GLI)

10. EDU = - 0.06 UFS - 0.03 EFS - 0.31 GLI
(-4.68) (-3.46) (-2.40)

RHO = - 0.26, t = - 0.75; r2 = 0.996; F = 297.04; DW = 2.70

Local Subsidies (LS)

11. EDU = - 0.19 UFS - 0.04 EFS - 0.LS DE
(-10.49) (-5.78) (-0.86)

RHO = - 0.08, t = - 0.22; r2 = 0.989; F = 116.75; DW = 2.96

Notes: Based on data from: Saudi Arabian Monetary Agency, **Annual Report**, various issues. r2 = coefficient of determination, F = F statistic, DW = Durbin Watson Statistic; RHO = serial correlation term. All variables are in percentages of total central government expenditures.

spared. The long term nature of the commitment by the government to this sector is also evidenced by the fact that it receives little in the way of quick fixes from short-run windfalls.

However, given the fact that defense expenditures have managed to be relatively stable, given the degree of contraction in government expenditures following the 1982 oil price collapse, it is of some interest to determine which socio-economic categories have suffered as a result of the government's commitment to the country's security. To identify these tradeoffs, a model similar to the one developed above was tested.

SHARE = [DEFENSE(?), AFS(+), UFS(?)]

SHARE = the share of government expenditures budgeted for major categories of expenditure.

AFS = the actual fiscal surplus (as a share of government expenditures) during the current budgetary year.

UFS = the unexpected fiscal surplus (as a share of government expenditure) during the current budgetary year. The unexpected fiscal surplus is defined as the differences between actual revenues and expenditures and budgeted revenues and expenditures.

This formulation allows us to determine the direct tradeoff between defense expenditures and other budgetary categories, while at the same time controlling for any possible austerity affects associated with the government's short run fiscal position.

The results for the period 1979-88 produced several additional findings of interest (Tables 6, 7):

1. Using the shorter run specification, defense expenditures appear to be quite complementary with increased allocations to human resource development (Equation 1, Table 6). In fact, of the various government budgetary categories, the link to human resource developments was the strongest associated with defense expenditures.

2. Defense expenditures were also complementary with allocations to health (Equation 3, Table 6).

3. The major negative budgetary tradeoffs involving defense were concentrated in the economic areas: (a) transportation and communications, (2) economic resource development and, to a much lesser extent, (3) infrastructure.

4. Defense expenditures also tended to come at the expense of a number of administrative allocations including (a) payments to municipalities, (b) subsidies for government lending institutions.

5. On the other hand areas such as general administration and the direct government subsidies program (largely for agriculture) did not suffer a reduction in their relative share of the government budget stemming from the government's commitment to high levels of military expenditures.

Conclusions

As a result of the Gulf War and increasing worries concerning internal security, it might correctly assumed that defense spending would be a higher priority than ever before in Saudi Arabia. While defense has retained its leading share of the budget during the recent period of relative fiscal austerity, the country does not appear to have fallen into a guns vs education syndrome. In fact, the two types of expenditure appear to complement each other in the minds of the Saudi budgetary authorities.

The country appears firmly committed to its responsibility of providing educational opportunities to the majority of its

Table 6

Saudi Arabia: Budgetary Tradeoffs Involving Defense, Social and Economic Allocations, (1979-1988)

(two stage least squares estimates)

Human Resource Development (HRD)

1. HRD = 0.91 DEFENSE + 0.01 DEFU
(14.16) (0.66)

RHO = - 0.23; t = - 0.49 r2 = 0.981; DW = 2.41

Transportation and Communication (TC)

2. TC = - 1.10 DEFENSE + 0.08 DEFU
(-3.79) (1.68)

RHO = 0.15, t = 0.25; r2 = 0.844; DW = 2.88

Health (HE)

3. HE = 0.33 DEFENSE - 0.01 DEFA
(2.81) (-0.51)

RHO = 0.63, t = 0.11; r2 = 0.947; DW = 2.35

Economic Resource Development (ECON)

4. ECON = = 0.82 DEFENSE + 0.07 DEFU
(-2.23) (1.16)

RHO = 0.11; t = 0.18; r2 = 0.554; DW = 2.77

Infrastructure (INFR)

5. INFR = - 0.22 DEFENSE + 0.07 DEFA
(-0.81) 4.70)

RHO = 1.00, t = 2.60; r2 = 0.866; DW = 3.41

Notes: Based on data from: Saudi Arabian Monetary Agency, **Annual Report,** various issues. r2 = coefficient of determination, F = F statistic, DW = Durbin Watson Statistic; RHO = serial correlation term. All variables are in percentages of total central government expenditures.

Estimates were made using a two-state least squares estimation technique incorporating the HILU method of correction for first order autocorrelated errors. DEFU = the unexpected fiscal deficit (as a percentage of budgeted expenditures) DEFA = the actual fiscal deficit (as a percentaged of budgeted expenditures)

Table 7

Saudi Arabia: Budgetary Tradeoffs Involving Subsidies and Defense, (1979-1988)

(two stage least squares estimates)

Municipalities (MUNIC)

1. MUNIC = - 0.81 DEFENSE + 0.03 DEFU
(-2.67) (0.78)

RHO = 0.34, t = 0.78; r2 = 0.706; DW = 2.81

Government Lending Institutions (GOVTLEN)

2. GOVTLEN = - 1.68 DEFENSE - 0.07 DEFA
(-7.65) (-3.41)

RHO = - 0.75, t = -1.27; r2 = 0.986; DW = 2.37

Government Subsidies (GSUB)

3. GSUB = 0.26 DEFENSE - 0.04 DEFU
2.61) (-2.24)

RHO = 0.05, t = 0.03; r2 = 0.760; DW = 2.84

Administration (ADMIN)

4. ADMIN = 1.17 DEFENSE - 0.08 DEFU
(2.48) (-0.86)

RHO = 0.03; t = 0.06; r2 = 0.599; DW = 3.22

Notes: Based on data from: Saudi Arabian Monetary Agency, **Annual Report,** various issues. r2 = coefficient of determination, F = F statistic, DW = Durbin Watson Statistic; RHO = serial correlation term. All variables are in percentages of total central government expenditures.

Estimates were made using a two-state least squares estimation technique incorporating the HILU method of correction for first order autocorrelated errors. DEFU = the unexpected fiscal deficit (as a percentage of budgeted expenditures) DEFA = the actual fiscal deficit (as a percentaged of budgeted expenditures)

citizens. There is little reason to believe this commitment will be sacrificed for the sake of maintaining foreign reserves. Apparently the government takes a longer term view in which the rate of return on its citizens is higher than the financial return on its foreign savings.

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