THE IMPACT OF OIL PRICE CHANGES

ON SAUDI ARABIA'S PUBLIC FINANCES

BY

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1. Introduction

Saudi Arabia's power within OPEC and its major influence on the global oil business stem from being one of the world's largest oil producers and exporters. Thus we must bring into perspective the role that the oil sector plays in the Saudi economy by assessing and quantifying its past, present and future importance. The strategic value of this sector for the economy has been fully felt on the country's macrofinances. In fact, during the booming 1970's and early 1980's huge oil revenues generated systematic budget surpluses. Likewise, faltering oil revenues in the late 1980's have produced systematic budget deficits. Thus, the Saudi strategy to handle its financial resources is likely to be more concerned with safety and liquidity of portfolio investments abroad than with rate of return and risk, It will also be concerned with the optimal drawdown of these funds (Mattione, 1985).

This study has two major objectives. First, to review the Saudi economy and assess the impact of the oil sector during the 1979-1987 period[1]. This will be accomplished by studying the structure of the Gross Domestic Product (GDP), the balance of payments (BP) and the government's fiscal budget[2]. Second, to quantify the future impact of the oil sector on Saudi fiscal macrofinances by designing and estimating a judgemental simulation framework for the 1988-1997 planning period.

2. Oil sector and the economy

The Saudi oil sector includes crude oil, natural gas and petroleum refining. Saudi Arabia is the biggest petroleum producer within OPEC, with an output of around one fifth of the organization's production level. It is the third biggest producer in the world, with some 7% of world output (Petrole

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um Economist, July 1988). Official crude oil reserves are 169.6 billion barrels allowing for 113 more years of production at 1987 levels (Ministry of petroleum and Mineral Resources, 1986).

With a maximum sustainable production capacity of 10 million b/d, Saudi current idle capacity runs at 58%. Idle capacity increases to 66% if production is compared against installed capacity of 12.5 million b/d. This situation is not unique to Saudi Arabia, OPEC countries in general show large proportions of idle capacity [3].

Although the proportion of production that is exported declined from 96.4% in 1979 to 84.8% in 1987, it is still very high. On the other hand, domestic consumption of oil ranges from 2.8% of total production in 1979 to 10% in 1986 which gives the country added flexibility in maintaining a high export proportion of output. However, in volume terms, domestic consumption almost doubled during the 1979 - 1986 period.

Oil exports (crude oil and refined products) can be considered the leading sector which affects the Saudi economy. They account for more than 90% of total Saudi exports. However, the share of petroleum activities in the structure of the GDP dropped by more than half over the 1979 - 1986 period. It plummeted from 64% in 1979 to 31% in 1986. This decreasing behavior is explained by drastic reductions in Saudi crude oil prices and output due to the recessionary environment in the world's petroleum industry. Another factor accounting for this change in the GDP structure is the diversifying effect on the economy of Saudi development investments. In fact, services, agriculture and non-oil manufacturing are rapidly emerging sectors. Agriculture is the fastest growing sector, increasing by more than fourfold from 1.2% in 1979 to over 5% in 1986. Manufacturing increased by more than twofold to 3.95% in 1986. Services is the second largest sector after petroleum. Currently, it accounts for more than a quarter of GDP and includes trade and hotels, financial services, transport and communication, and social and

personal services (Saudi Arabian Monetrary Agency, 1987).

From an international trade and financial perspective, the impact of petroleum on the Saudi economy can be analyzed through the BP. The Saudi BP is characterized by an overall surplus position through the early 1980's and a deficit thereafter (except in 1985 and 1987) . The most important BP component accounting for the surplus position was unprecedented high levels of oil exports during the boom years. Likewise, very low export levels are the single most important factor accounting for the deficit position thereafter.

A closer examination of individual BP positions reveals that during the study period, there was a systematic surplus in the trade balance, a systematic deficit in the services balance, and a systematic outflow of transfers. The deficit in the services balance originates from the heavy toll in the importation of services like freight, insurance and foreign labor. The outflow of transfers derives basically from government contributions to countries in need of financial aid for development and contributions to international organizations, and from workers' remittances abroad.

The current account ran surpluses through 1982 and deficits thereafter. The deficit originated when the surplus in the trade balance dropped by more than threefold in 1982 and on. Thus, the ability to continue offsetting both, deficits in the services balance and the continuous outflow of transfers, was exhausted. However, the current account deficit is of a declining nature, reflecting the relative success of Saudi economic stabilization policies since 1985, to cope with a disadvantageous environment in its foreign transactions. In particular, imports of services were cut down from SR140 billion in 1982 to SR74 billion in 1987, and imports of merchandise from SR118 billion to SR66 billion (Saudi Arabian Monetary Agency, 1987).

Finally, the capital account reflected a systematic outflow of financial re-

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sources through 1982, due to both, payments for imports of goods, services and transfers, and government portfolio investments in foreign securities and banks. From 1983 on, the capital account shows a systematic inflow of funds, reflecting the repatriation of portions of portfolio investments abroad to mitigate a domestic recessionary economic environment. These funds have been applied to reactivating aggragate demand and stimulating a business climate conducive to investment, particularly from the private sector (both domestic and foreign investors).

3. Saudi Fiscal Finances

Through the early 1980's Saudi budgets were in a fiscal surplus position with revenues exceeding expenses by huge margins. Petroleum income accounted for an average 85%of fiscal revenues. However, with the emergence of worldwide crude petroleum glut, and later on the collapse of oil prices, saudi fiscal budgets started showing large deficits (table 1).

Since 1983, when the country experienced its first budget deficit, shortfalls became commonplace in Saudi public finances. Weaker petroleum revenues provided only an average 60% of fiscal revenues during the 1983-1988 period. Overall, the contribution of petroleum income to total revenues decreased from 90% in 1979 to 70% in 1988. Non-oil revenue sources such as proceeds from custom duties, public services fees, and zakat tax revenues have been emphasized to partially compensate for diminished oil revenues. These revenues increased more than threefold to 30% through 1988.

The expenditure side of fiscal finances has also contributed to generate deficits, despite government efforts to balance the budget by restricting outlays and reducing inefficiencies in the use of revenues. Total expenditures in 1988 have been reduced by SR44 billion relative to the 1979 level. However, since government expenditure is the single most important element to pull the Saudi economy out of its current recessionary environment, there is

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TABLE 1
Saudi Arabia : Actual fiscal revenue and expenditure, 1979 - 88 (SRm)

I t e m	1979	1980	1981	1982	1983	1984	1985	1986	1987 (p)	1988 (p)
Total Revenues	211196	348119	368006	246182	206419	171509	131736	76498	118177	105300
Oil Revenue	191105	312819	324790	181086	124751	101807	62445	42464	85434	73525
Oil Royalties	44752	73323	73860	39518	30452	24595	15908	---------	---------	---------
Income Tax on oil and other companies	146353	239496	250930	141568	94299	77212	46537	---------	---------	---------
Other revenue a	200091	35300	43216	65096	81668	69702	69291	34034	32743	31775
Total Expenditure	185724	230416	283258	244912	230186	216363	181500	137422	159646	141200
Recurring Expenditure	96227	83570	112244	102248	124052	121696	118500	---------	---------	---------
Salaries, Supplies and Services	31661	43067	57824	67389	76359	79659	83084	---------	---------	---------
Transfers, Subsidies and Others	64566	40503	54420	34859	47693	42037	35416	---------	---------	---------
Capital Expenditure	89497	146846	171014	142664	106134	94667	63000	---------	---------	---------
Actual Budget Balance b	25472	117703	84748	1270	-23767	-44854	-49764	-60924	-41469	-35900

a Custom duties, fees, Zakat, other.
p Provisional.
b Minus sign indicates deficit, Positive surplus.

Source : Computed from Annual Report, Saudi Arabian Monetary Agency, Research and Statistics Department; Ministry of Planning (1988) ; Saudi Arabia : Country Report, Economist Intelligence Unit, # 3, 1988.

a lower limit below which expenditure can not be further reduced without drastic economic consequences in the level of aggregate demand. During the study period, this level was in the order of SR137 billion, Likewise, the upper limit beyond which the economy tends to be unable to absorb further expenditure without causing inflation and acute shortages in the productive system, was in the order of SR283 billion. This level was more than twofold higher than the observed lower limit.

Although the switch from boom to recession did not cause a major change in the composition of outlays by sector, it did change the composition of expenditures by function. In fact, the share of expenditures on strategic sectors for development averaged 50% of total expenditures over the study period. These sectors include such activities as human resource development. health, communications, economic resource development, and infastructure development.

However, when expenditures are analyzed by function, recurring expenses including salaries, maintenance and current outllays, and transfers, increased from 51% in 1979 to 65% in 1985. Capital expenditure on the other hand, decreased from 48% to 34%.

Capital expenditure tends to be a more important item in a developing country as opposed to recurrent expenditure, in the sense that it creates new reproductive investments, increasing a country's capital base. And a higher level of investment leads to a higher level of development and income. When a significant proportion of the newly generated income is saved and reinvested profitably, and this is done on a regular basis, then the process of development is self-sustaining and of a cumulative nature.

Two reasons have been advanced to explain the Saudi decrease in capital expenditure. First, a lower level of oil revenues, second, a feeling that the major infrastructure requirements for the economy have already been built

(Ministry of Planning, 1988). While these explanations tend to be the outcome of pragmatic decisions to cope with an economic crisis, there is further evidence that the decisions in the allocation of fiscal resources between current and capital expenditure attempt against sound development policies First, fiscal outlays for salaries and current expenditures more than doubled over the 1977-1985 period (SR17 billion to SR45 billion). Second, in the composition of capital expenditure, outlays for strategic human and physical capital formation activities were decreased from one quarter of total capital expenditure to one sixth over the 1979 - 1986 period. These strategic activities include education, health, communications, industry and electricity, agriculture and water, and petroleum and mineral resources.

Although the allocation of fiscal expenditures by function is not the optimal, and the level of oil revenues is down, budget deficits are only temporary setbacks in financing Saudi economic activities due to the government's huge international financial assets including international reserves and foreign assets of the Saudi Arabian Monetary Agency (SAMA)[4]. Fiscal deficits are offset against these assets, which peaked in 1982 at $163.9 billion and decreased by almost half to $ 86 billion through 1987.

4. Simulation framework

A non-econometric judgemental forecasting framework is simulated to quantify the impact of changes in oil prices and output on Saudi fiscal macrofinances. The Simulation Framework takes into account available oil market projections and other relevant information from a variety of sources. The simulation results are based on three oil market scenarios as presented in table 2 as well as the following assumptions :

i   The demand for OPEC and Saudi oil is inelastic with respect to price.

ii   World oil demand will remain relatively flat over the forecasting period.

iii Non - OPEC [5] production peaks in the early 1990's and OPEC will be the residual supplier.

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TABLE 2
Free world crude oil price and demand and supply scenarios, 1988 - 97 (B/Dm)

I t e m	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
LOW PRICE [a] ($ / bbl)	13.61	13.84	14.07	14.28	14.51	15.02	16.40	18.25	19.85	21.02
Oil Demand[b]	48.1	47.5	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4
Oil Supply :										
Saudi Production*	4.3	4.1	3.9	4.3	4.4	4.5	4.6	4.8	4.9	5.0
Rest of Opec*	14.1	13.4	12.8	13.9	14.2	14.7	15.1	15.4	15.8	16.2
Non-OPEC[c]	29.7	30.0	30.3	29.0	28.8	28.4	28.1	27.8	27.5	27.2
Total Demand - Supply	48.1	47.5	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4
MODERATE PRICE [a] ($/bbl)	16.80	17.61	17.81	17.91	17.90	18.77	20.37	22.40	24.70	26.0
Oil Demand [b]	48.1	47.5	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4
Oil Supply :										
Saudi Production*	4.3	4.1	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6
Rest of OPEC*	14.1	13.4	12.8	13.2	13.5	13.8	14.1	14.4	14.7	15.0
Non-OPEC[c]	29.7	30.0	30.3	30.0	29.8	29.6	29.4	29.2	29.0	28.8
Total Demand - Supply	48.1	47.5	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4
HIGH PRICE [a] ($/bbl)	20.10	20.19	20.30	21.19	21.62	22.94	24.88	27.29	30.63	32.81
Oil Demand[b]	48.1	47.5	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4
Oil Supply :										
Saudi Production*	4.3	4.1	3.9	3.9	3.9	4.0	4.1	4.2	4.3	4.3
Rest of Opec*	14.7	13.4	12.7	12.6	12.9	13.1	13.4	13.6	13.8	14.1
Non - OPEC[c]	29.7	30.0	30.4	30.7	30.6	30.5	30.3	30.2	30.1	30.0
Total Demand - Supply	48.1	47.5	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4

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* OPEC = Oil Supply - Non-OPEC (including Natural Gas Liquids), Saudi percentage share of OPEC's Production is assumed constant at its 1987 level of 23.8%.

Source :

a Annual Energy Outlook 1987 with Projections to 2000. Energy Information Administration, U.S. Dept. of Energy, 1987. Prices   are in 1987 dollars.

b Computed using compounded growth rates from : World Energy Database, SRI International, Menlo Park, CA.

c Computed using compounded growth rates from Gordon (1988).

iv   Saudi crude oil production is generated as a fixed percentage of OPEC's production.

v   Saudi oil exports are determined as the balance left after deducting domestic consumption (Al-Sahlawi, 1988).

vi   The exchange rate between riyals and U.S. dollar is constant at. 3.766 SR/$.

To isolate the effect of oil price changes on Saudi fiscal finances, non-oil revenues and fiscal expenditures are kept constant at their 1987 level.

5. Analysis of Results

The results of the simulations are presented in tables 3, 4 and 5. Results indicate a gradual improvement in Saudi fiscal finances under all three scenarios. However, the improvement is stronger and faster under the high price scenario. The fiscal gap is bridged rapidly and the turning point comes in 1996. An increasing fiscal surplus is generated thereafter. Under the low price scenario, the deficit declines slowly and no turning point is achieved.

This result is explained as follows : First of all, Saudi production is lower with higher oil prices due to the residual nature of OPEC as a world supplier, and to the fixed relationship between saudi and OPEC output through the quota system. Since non-OPEC production is positively related to oil price, higher prices will bring about greater non-OPEC output (or slow down its decline) to meet a larger share of world consumption. This reduces OPEC's share and Saudi production and exports (the opposite holds for lower prices).

Secondly, with an inelastic world demand for Saudi oil, petroleum revenues tend to increase with higher prices. Thus, the loss in export volume is much less than the increase in prices (in 1997 export volume decreases by 6.5% and prices increase by 56% relative to the low price scenario). The combination of these major forces results in an improvement in fiscal fi-

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<p style="text-align:center">**TABLE 3**
Saudi fiscal finances at the low oil price, 1988 - 97 (SRm)</p>

I t e m	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Petroleum Revenue	70455	66889	63591	70940	73319	78126	81859	99066	109906	118638
Other Revenues	32743	32743	32743	32743	32743	32743	32743	32743	32743	32743
Fiscal Revenues	103198	99632	96334	103683	106062	110869	114602	131809	142649	151381
Fiscal Expenditures	159646	159646	159646	159646	159646	159646	159646	159646	159646	159646
Balance *	-56448	-60014	-63312	-55963	-53584	-48777	-45044	-27837	-16997	- 8265

* Minus sign indicates deficit, Positive surplus.

TABLE 4
Saudi fiscal finances at the moderate oil price, 1988 - 97 (SRm)

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Petroleum Revenue	86945	85037	80421	83064	84543	90252	99625	111370	124775	133718
Other Revenues	32743	32743	32743	32743	32743	32743	32743	32743	32743	32743
Fiscal Revenues	119688	117780	113164	115807	117286	122995	132368	144113	157518	166461
Fiscal Expenditures	159646	159646	159646	159646	159646	159646	159646	159646	159646	159646
Balance *	-39958	-41866	-46482	-43839	-42360	-36651	-27278	-15533	-2128	6815

* Minus sign indicates deficit, Positive surplus.

TABLE 5
Saudi fiscal finances at the high oil price, 1988 - 97 (SRm)

I t e m	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Petroleum Revenue	103969	97468	90912	93325	95634	103555	114398	126830	143826	155551
Other Revenues	32743	32743	32743	32743	32743	32743	32743	32743	32743	32743
Fiscal Revenues	136712	130211	123655	126068	128377	136298	147141	159573	176569	188294
Fiscal Expenditures	159646	159646	159646	159646	159646	159646	159646	159646	159646	159646
Balance *	-22934	-29435	-35991	-33578	-31269	-23348	-12505	- 73	16923	28648

* Minus sign indicates deficit, Positive surplus.

nances when prices are high, despite declining output and exports.

A solution to achieve fiscal balance in the low price scenario would be the implementation of an adequate devaluation of the riyal to generate more fiscal revenue and bring income to the level of spending. But we believe that there are other intermediate options before considering a major devaluation. For example, the government could resort to deeper domestic deficit financing (bonds), continue drawing international financial assets down, or ultimately seeking foreign borrowing.

As to the drawing down of financial assets strategy, the capacity of financing budget deficits this way is still substantial. International reserves and SAMA foreign assets amounted to SR 323 billion in 1987. In addition to these resources, there are net foreign assets of commercial banks of SR77 billion and central government deposits at SAMA of SR101 billion. In total, financial resources available to the government in financing deficits amount to SR501 billion. Assuming that no additions are made to this total mass of financial resources over the ten-year planning period, they are basically enough to finance the SR436 billion cumulative deficit implied by the low price scenario. Of course, there is still the issue of mobilizing these resources timely and in the needed amount.

The most difficult problem would be to create attractive investment opportunities domestically to persuade the commercial banks to repatriate their sizable foreign holdings.

6. Conclusions and policy recommendations

We have attempted to pull together in a non-econometric judgemental simulation framework, a set of major characteristics underlying the current workings of the oil market and to quantify their impact on Saudi fiscal macrofinances.

OPEC and Saudi Arabia will gain more by following a price maximization strategy, than by trying to hold a fixed volume target with declining

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prices. This is due to the weakening of supply-price relationships as major determinants of OPEC and Saudi oil output, the residual nature of OPEC supply [6], and the fixed quota system among OPEC members. In addition, an inelastic demand for OPEC and Saudi oil tends to generate higher oil revenues with lower output and higher prices.

As to Saudi fiscal expenditures, there is room for optimizing its distribution by function. Its overall distribution by economic activity is well balanced. This can be considered an achievement of Saudi planners in light of serious contractions of oil revenues. More emphasis should be given to capital expenditure on strategic sectors for development as opposed to recurring expenditures. This will tend to increase capital formation, income and employment for a self-sustaining and cumulative development process, provided substantial savings can be continually mobilized into investment. Investment in new projects must not only be import substitution oriented but also export oriented to fully benefit the balance of payments. In addition, investment should not be directed solely to produce merchandise but services. These should include international transportation of cargo by sea and air, engineering and consulting services, financial services (i.e. international insurance) and the local training and development of the workforce. For instance, the local training of manpower will not only reduce imports of training services and foreign labor, but will also help in reducing the outflow of transfers abroad by migrant workers.

Finally, Saudi Arabia has enough financial capability, both domestic and foreign, to weather the expected fiscal deficits until a turning point occurs around the mid 1990's or even to stand the more drastic macrofinances burdens of the low price scenario.

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NOTES

1. Several studies have described the Saudi economy such as Knauerhase (1985), Moliver and Abbondante (1980). Other. studies on the Saudi economy and oil are : Nyrop (1984), Ministry of Planning (1985), Ministry of Petroleum and Mineral Resources (1987).

2. Data was obtained from several issues of the IMF ' International Financial Statistics'; Ministry of Finance and National Economy 'Statistical Yearbook', Saudi Arabian Monetary Agency 'Annual Report' and 'Statistical Summary'; OPEC 'Annual Statistical Bulletin', and Petroleum Economist 'World oil Production'.

3. For example, 1987 idle capacities for Iran, Kuwait, and Libya are 67%, 58% and 61% respectively, while it runs at 56% for total OPEC (U.S. Central Intelligence Agency, 1988).

4. The impact of the oil sector on the Saudi financial system has been studied by Mattione (1989), Abdeen and Dale (1984), Johany, Berne and Mixon (1986), Chatah (1983), and Nimatallah (1967).

5. Non-OPEC countries include Mexico, Norway, the United Kingdom, Canada, and others.

6. The degree of decline in Non-OPEC production after the early 1990's depends on the level of price. For instance, at higher price levels the decline in output will be less marked generating a slowly increasing share of OPEC supply (see table 2).

REFERENCES

Abdeen, A. and Dale, N. (1984) 'The Saudi Financial System', New York : John Wiley & Sons.

Al-Sahlawi, M.A. (1988) 'G.C.C. Energy Demand Outlook to 2000', Energy Economics 10 (1) : 42 - 46.

Chatah, M. (1982) A Monetary Framework for the Saudi Arabian Economy, Unpublished Ph. D. dissertation, the University of Texas at Austin.

Gordon, A. (1988) 'Non-OPEC oil production : Potential for Increasing output', Petroleum Economist 55 (7) : 234-36.

Johany, A., Berne, M., and Mixon, J. (1986) The Saudi Arabian Economy, Baltimore : John Hopkins Press.

Knauerhase, R. (1985) 'The Saudi Arabian Economy', New York : Praeger. Mattione R. (1985) 'OPEC's Investments and the International Financial System', Washington, D.C. : The Brookings Institution.

Ministry of Petroleum and Mineral Resources (1986) 'Petroleum Facts in Saudi Arabia', Technical Affairs, Saudi Arabia.

Ministry of petroleum and Mineral Resources (1987) 'Planning the key to saudi Arabia's Development', OPEC Bulletin 28 (7) : 19 - 31.

Ministry of Planning (1988) 'Achievements of the Development plans 1970-1986', Saudi Arabia.

Ministry of Planning (1985) 'Fourth Development plant 1985-1990', Saudi Arabia, 1985.

Moliver, D. and P. Abbondante (1980) 'The Economy of Saudi Arabia', New York : Praeger.

Nimatallah, Y. (1967) Coordination of Monetary and Fiscal Policies in Saudi Arabia, Unpublished Ph. D. dissertation, University of Massachusetts.

Nyrop, R. (1984) Saudi Arabia, A Country Study, Washington, D.C. : U.S. Government Printing Office.

Petroleum Economist (July, 1988), World Oil Production, 55 (7) : 252. Saudi Arabian Monetary Agency (1987), Annual Report 1987, Saudi Arabia.

U.S. Central Intelligence Agency (1988), International Statistical Review 88 (1) : 2.