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Economics, Energy and the Future Stability of Saudi Arabia

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Table of Contents

THE SOCIAL TRANSITIONS OF SAUDI ARABIA.....	2
THE OIL BOOM AND SOCIAL CHANGE	2
DEMOGRAPHIC PRESSURES	3
THE DECLINE IN OIL WEALTH, THE LACK OF ECONOMIC DIVERSIFICATION	4
THE “YOUTH EXPLOSION”	5
THE “OIL CRASH” AND THE FUTURE OF THE SAUDI ECONOMY	7
SAUDI ECONOMIC FAILURES BEFORE THE 1997 “OIL CRASH”	8
THE SAUDI BUDGET AND STRUCTURAL IMPACT OF THE “OIL CRASH”	11
OPTIONS FOR REFORM, FOREIGN AND DOMESTIC STATE DEBT	13
ARMS BUYS AND MILITARY DEBT	16
ADDITIONAL CONSIDERATIONS.....	17
CHANGING SAUDI ENERGY STRATEGY	23
SAUDI ARABIA TRIGGERS THE “OIL CRASH”	24
THE COST OF THE “OIL SHOCK” TO SAUDI ARABIA.....	25
CHANGES IN SAUDI ENERGY INVESTMENT POLICIES	28
SAUDI OIL PRODUCTION	33
THE DEVELOPMENT OF SAUDI OIL RESERVES.....	35
DOWNSTREAM INFRASTRUCTURE AND EXPORT CAPACITY	37
REFINING AND PETROCHEMICALS	38
THE IMPACT OF A MARKET SHARE STRATEGY	40
NATURAL GAS	44

Saudi Arabia remains one of the largest and most powerful states in the Gulf, and a key supplier of world oil imports. In 1998, Saudi Arabia has well over 260 billion barrels of proven oil reserves, or one-quarter of the world's total. Saudi Arabia is the pivotal oil exporter in the Gulf, the Middle East, and the world. It is the world's largest "swing" producer, and Saudi Arabia plays a critical role in ensuring moderate and stable oil prices.

Saudi Arabia is the world's largest oil producer, and the growth in Saudi oil production will outstrip the growth in all of the nations in the Former Soviet Union, in spite of major increases in production by the former Soviet republics in the Caspian and Central Asia. The US Department of Energy estimates that Saudi Arabia will increase its production capacity from 10.6 million barrels per day in 1996, to 23.8 (million barrels per day in 2020.¹ The Department of Energy estimates that Saudi Arabia's production will shift from 14.2% of world production in 1996, to 13.7% in 2000, 13.9% in 2010, and then rise to 20.1% in 2020.

Saudi Arabia has long had close security ties to the US, and has been a reliable exporter of oil since the end of the oil embargo of 1974. It is the only Southern Gulf power strong enough to serve as a strategic counterbalance to Iran and Iraq, and is a critical partner in US collective security efforts in the region.

At the same time, Saudi Arabia faces powerful forces for change. The most visible internal transition will be political: King Fahd's health continues to deteriorate and the Saudi royal family must agree on a successor. For the first time in decades, Saudi Arabia is likely to have a king who is not one of the "seven Sudari." Almost inevitably, this "succession issue" has focused the world's attention on whether Prince Abdullah will come to power, on how the Saudi regime will change, and on whether there will be major changes in its foreign and domestic policy.

External transitions include the reemergence of Iraq as a major force in Gulf security and the world oil market, the uncertain shift towards political moderation and regional cooperation in Iran, the failure of the Southern Gulf states to develop their military forces effectively and develop meaningful collective security arrangements,

creeping proliferation, and the need to redefine dependence on the US for security. They also include the continuity uncertainties in the world energy market, a factor that drives virtually every aspect of the Saudi economy.

Yet, it is the social, economic, and energy transitions in Saudi Arabia that may have a much more lasting effect. It does not face any imminent risk of instability, but it will enter the twenty-first century in the midst of major political, social, economic, and military transitions.

The Social Transitions of Saudi Arabia

In 1973, before the beginning of the oil boom, Saudi Arabia was a nation of roughly 6.8 million people. It had a GNP of less than \$10 billion in market prices, and a per capita income of less than \$2,500. It was largely rural or nomadic and largely pre-industrial in character. While no precise figures are available, its population growth rate was probably under 2.7% and less than 30% of its population was under 14 years of age.²

The Oil Boom and Social Change

The oil boom that began in 1974, transformed Saudi Arabia. By 1997, it was a nation of 19.4 million people. Its economy had become so different that it is impossible to make direct comparisons of its GNP before and after the oil boom. The World Bank estimated in 1995, however, that Saudi Arabia GNP was \$133.5 billion, and that Saudi Arabia's per capita income was over \$7,000. The CIA estimated that its GNP was \$189.3 billion and that its per capita income was \$10,100.³ The CIA estimates for 1996 were a GDP of \$198 billion with a per capita GDP of \$10,200, and the estimates for 1997 were a GDP of \$205.6 billion with a per capita GDP of \$10,600. In contrast, the EIU estimated a GDP of \$135.5 billion for 1996, and \$139.6 billion for 1997.

A quarter of a century of oil wealth transformed a largely agricultural Saudi Arabia into a heavily urbanized, welfare state with a large service sector. Agriculture shrunk to only 9% of the GDP by 1995, while industry rose to 50% and services to 41%. The labor force shifted from a time when 64% of the total worked in agriculture to a force where only 5% works in agriculture while 40% works in government, 25% works

in industry and oil, and 30% works in services. Equally important, a subsistence society has become a welfare society where something like 20% of all personal income comes from government grants, services, and subsidies.⁴

Much of this development was positive. Oil wealth allowed Saudi Arabia to spend some \$1,124 billion dollars on development between 1970 and 1995. Saudi Arabia had 8,000 kilometers of paved roads in 1970, and 67,893 in 1995. It had 27 wharves at its seaports in 1970 and 182 in 1995. It had 3,283 elementary schools in 1970 and 21,854 in 1995. It tripled the number of hospitals, set up 3,300 community health centers. It increased the number of doctors at its hospitals and clinics from 1,172 to 30,306, and its nursing staff from 3,261 nurses to 60,736 nurses and 33,047 technicians. It increased the output from its desalination plants from 5.1 million gallons to 512 million gallons, and its electric generation capacity from 344 megawatts to more than 17,400 megawatts. Saudi Arabia had 119 factories in 1970 and 2,303 in 1995, with an invested capital of \$40.7 billion.⁵

Demographic Pressures

At the same time, Saudi Arabia faces many challenges. Its military forces are not strong enough to defend the Kingdom from Iran and Iraq without US military aid, and it is dependent on a strategic partnership with the US and other Western states. It has not been able to catalyze effective collective security efforts within the Gulf Cooperation Council (GCC) and it still faces serious problems in eliminating its historical rivalries with other Southern Gulf states.

Most important, Saudi Arabia must deal with the social and economic impacts of explosive population growth at a time when much of its oil wealth has diminished in relative terms. The same wealth that transformed other aspects of Saudi society helped raise the average population growth rate to 4.7% during 1980-1995. Although this growth rate declined to an average of 3.3% during 1990-1995, it had risen back to 3.45% in 1995 and grew again in 1996 to 3.6%. While it dropped to 3.42% in 1997, this was still higher than in 1990-1995, and one of the highest rates of growth in the world. The end result is that 43% of the population was under 14 years of age by 1997. The World Bank forecasts

that Saudi Arabia's population will grow by about 3.3% per year over the next five years. As a result, even conservative World Bank estimates project a total Saudi population approaching 31 million people in 2010.⁶

The Decline in Oil Wealth

Oil wealth also led to radical changes in Saudi Arabia's social structure. Urbanization reached 67% of the total population by 1980 and 79% by 1995 -- a total of roughly 14.9 million people. By 1995, over 20% of Saudi Arabia's population lived in cities of over one million -- a total of roughly 14.9 million people. Education changed radically: Only 61% of school age Saudi males ever entered primary school when the oil boom began while the percentage rose to over 80% by 1990. The percentage for females rose from 29% to 73%. Literacy in the population as a whole rose from well under 15% of the population to over 60%, and Saudi society became exposed to the world's media. Saudi Arabia had over 250 television sets per 1,000 people in 1997, and over 95% of the Saudi people had exposure to radio.⁷

Since the early 1980s, however, Saudi Arabia's oil wealth has declined in both absolute and per capita terms. Saudi Arabia's population has grown explosively while oil prices have remained nearly constant. The World Bank estimates that Saudi Arabia's population rose from roughly 9 million in 1980, to 19 million in 1995 -- a rise of 111%. In contrast, the World Bank estimates that Saudi Arabia's GDP dropped from \$156.5 billion in 1980, in current dollars, to \$125.5 billion in 1995. This is a drop of nearly 20% in current dollars and well over 30% in constant dollars. US estimates are similar. They indicate that the Saudi GNP dropped by over 35% during the same period.⁸

The Lack of Economic Diversification

Saudi Arabia has failed to adequately diversify its economy. The output from its show piece petroleum product and down stream operations has been offset by their cost and the diversion of crude oil to feedstock. Domestic energy use has become extremely wasteful, and much of Saudi Arabia's GDP now consists of service industries whose only real function is to increase and meet the demand for imports. Trade makes up nearly 50% of the Saudi GDP today, but less than one percent of Saudi exports is manufactured.

Trade is virtually all in petroleum-related exports and in imports financed by these exports.⁹ While estimates differ, virtually all outside analyses agree that Saudi Arabia's per capita income has declined to less than 40% of its peak at the height of the oil boom.

The World Bank estimates that Saudi Arabia's per capita income dropped by an annual average of 2.9% during 1970-1995, and by a total of nearly 20% during 1985-1995. During the same period, however, Saudi Arabian private consumption rose from \$34.5 billion to \$52.0 billion. This growth in consumption reflected both the impact of population growth and a growing social dependence on imports and services. Private consumption rose from 22% of the GDP in 1980 to 43% in 1995, while government consumption rose from 16% to 27%. At the same time, gross domestic investment dropped slightly from 22% to 20%, and gross domestic savings dropped precipitously from 62% of GDP to 30%.¹⁰

The “Youth Explosion”

Most of Saudi Arabia's young population is not educated to compete in the modern world economy and nearly half of its labor force is foreign. While over 90% of Saudi young males and females reached grade four in 1995, only 5% of males and 2% of females moved on to secondary school. Much of Saudi education is “Islamic,” rather than focused on training students for real world jobs and competitive with the leading economies of the developing world. Saudi Arabia educates women with no idea of the role they should play in the labor force, although female workers have risen from 5% of the labor force in 1970 to over 13%.¹¹ Dependence on welfare, meaningless government and government-related jobs, and foreign labor has left native Saudi youth without a work ethic, while declining per capita oil revenues mean the Kingdom cannot hope to sustain its past pattern of disguised unemployment and subsidies.

Recent increases in education spending will do little to change the character and quality of Saudi education, far too much of which is unfocused, religious in character, reliant on rote learning, and provided by low-wage contract teachers from outside Saudi Arabia. Saudi youth have very uncertain prospects of finding real, productive employment unless Saudi Arabia radically restructures its educational system and

economy. Its government has swollen to the point where it consumes 40% of Saudi Arabia's labor force, and more than half of its native labor force. The Saudi government costs over \$50 billion a year and government spending accounts for 36% of GDP. The Saudi Government is in its fifteenth year of continuous budget deficits.

During the coming decades, Saudi Arabia must make massive new investments to maintain its status as a petroleum power, while making equally massive investments in the national infrastructure necessary to support its rapidly growing population. These investments almost certainly will cost in excess of one-third of a trillion dollars and this is a far larger sum than Saudi Arabia can self-finance, even if it were to shift from almost complete dependence on state investment to dependence on private financing.¹² Saudi Arabia must restructure its economy to deal with declining per capita oil wealth and the need to rely on native, rather than foreign labor. It must transform its society to compete in a world where oil wealth alone is not enough to keep its per capita income from dropping steadily lower, and do so without losing its Islamic and Arab character.

Saudi Arabia may be able to meet these challenges, but the task will be anything but easy. Saudi Arabia faces very real external threats from Iran and Iraq. Although Saudi Arabia has made a serious effort to improve its relations with Kuwait, Oman, and Yemen, change comes slowly in the Gulf. Restructuring Saudi society and the Saudi economy presents the most serious challenge of all, and change must come at a time when Islamic extremism is a serious concern and Saudi Arabia's oil income is not sufficient to meet its social and economic needs. Saudi Arabia's strategic partnership with the West involves inevitable differences in national interest and culture, and its partnership with the US presents at least short term problems in burden-sharing, counter-terrorism, and prepositioning, and longer term problems in defining a stable and equitable division of effort. All of these challenges will require constant attention during the coming decade.

One possible source of conflict is a border dispute with Yemen dating back 60 years. Yemen has long disputed Saudi Arabia's claim to three Red Sea islands and parts of the Rub al-Khali (Empty Quarter), a desert region thought to contain valuable oil fields. Over the years, fighting has erupted along their 1,300-mile frontier. Tensions rose

once again in mid-July 1998 when an armed clash broke out on the Red Sea Island of Duwaima off the coast of Yemen. The fighting lasted for five hours until a cease-fire was negotiated. Each side accused the other of initiating this latest conflict. On July 28, 1998, the two countries agreed to evacuate disputed areas until a solution could be found to the border conflict.

The “Oil Crash” and the Future of the Saudi Economy

Saudi Arabia has systematically mismanaged its economy to create structural problems that are just as serious.¹³ Part of the reason is the “boom and bust” impact of oil revenues. Saudi oil revenues reached a peak of \$133 billion a year in 1981, and dropped to \$46 billion in 1983. These swings in oil revenues were particularly acute at the end of the 1980s. Saudi oil revenues only averaged around \$19 billion to \$25 billion from 1984-1988, about one fifth of their 1981 level, and Saudi financial reserves dropped to as little as one-third of their 1981 level of \$190 billion. Oil revenues were under \$24 billion in 1988.¹⁴

The Gulf War changed this situation as prices firmed and Saudi production rose to compensate for the embargo of Iraq. Total Saudi merchandise exports rose from \$28.3 billion in 1989 to \$4.4 billion in 1990, \$47.8 billion in 1991, and \$50.3 billion in 1992. but this new burst of oil wealth was more than consumed by the cost of the war and aid to the US and other Saudi allies. Further, oil prices and oil revenues dropped sharply in 1993 and remained low in 1994. Total merchandise exports totaled only \$42.4 billion and \$42.6 billion respectively.

Rises in oil prices increased the value of Saudi exports in 1995. Total merchandise exports rose to \$50.0 billion, and stayed at roughly \$56-57 billion in 1996 and 1997. As a result, oil revenues were 20% higher in the first six months of 1995 than Saudi Arabia originally projected. They reached \$50.4 billion, or 88.4% of all exports in 1996.¹⁵ This total, however, scarcely compared to a total of about \$111 billion from exports of 9 million barrels per day in 1981, and a total of \$73 billion from exports of 5.6 million barrels per day in 1992.¹⁶ Furthermore, crude oil continued to account for

roughly a third of Saudi Arabia's gross domestic product, and more than 70 percent of state revenue.

As a result, Saudi Arabia was almost totally unprepared for the crash in oil prices that began in late 1997. Furthermore, this crash interacted with the legacy of the Gulf War and long-standing problems in the structure of the Saudi economy. Saudi Arabia was forced to nearly double its payments for foreign services during the Gulf War. It also had to reduce its foreign investments, and increase its investment payments, to the point where its new foreign investment income now averages only one-third of its pre-Gulf War level. During the late 1980s, Saudi Arabia received a net balance of well over \$9 billion a year from investment income. This income dropped to less than \$7 billion in 1991, reached a low of \$1.4 billion in 1994, and has since ranged from \$2.8 to \$3.8 billion a year.¹⁷

Saudi Economic Failures Before the 1997 “Oil Crash”

Long before the Gulf War, Saudi Arabia began to systematically spend more than it earned. During the late 1980s the Kingdom's deficits on current account ranged from \$4.1 billion to \$9.8 billion. This figure increased dramatically from \$4.2 billion in 1990 to \$27.6 billion in 1991. Since that time, the deficit has slowly dropped to \$17.8 billion in 1992, \$17.3 billion in 1993, \$9.1 billion in 1994, and \$5.3 billion in 1995. Saudi Arabia has issued reports for 1996 that project the value of non-oil exports to be 42% higher than in 1994, and indicate a current account surplus of \$200 million and estimates for 1997 range from a surplus of \$200 million to a deficit of \$1.4 billion. Depending on the length and severity of the drop in oil prices, the current account deficit for 1998 could range anywhere from \$3 to \$9.5 billion, or be equal to 2%-7.5% of the GDP.

The resulting financial problems became serious by the late 1980s. Saudi Arabia's FY1988 budget was projected at 141.2 billion Riyals (\$37.7 billion), down 17% from the 1987 level of 170 billion Riyals. Oil revenues were unofficially projected at 65.2 billion Riyals. The 1988 deficit was projected at 35.9 billion Riyals (\$9.57 billion) versus deficits of about 50 billion Riyals in each of the previous four years.

Saudi Arabia sought to reduce this deficit through 12-20% import duties, and local borrowing in the form of some \$8 billion in bonds.¹⁸ If it had not been for Iraq's invasion of Kuwait, these measures might have reduced Saudi Arabia's budget deficits, but the cost of the Gulf War made the situation much worse. Although Saudi oil revenues rose, Saudi Arabia had to spend nearly \$65 billion on the costs of the crisis, ranging from payments to members of the UN Coalition to expenses for the Saudi military and refugee housing. Estimates of these costs differ, but the IMF puts them at around \$65 billion, of which \$12.8 billion was paid to the United States.¹⁹

The Saudi budget deficit grew from 6.4 percent of gross domestic product (GDP) in 1990 to 11% of the GDP in 1993, forcing the government to make cuts in expenditures. This resulted in a 1994 budget plan calling for a 19 percent cut in government spending from \$52.5 billion in 1993 to \$42.7 billion. This was followed by the 1995 budget plan which, based on an underlying oil price assumption of \$14.00-\$14.50 per barrel, called for an additional cut of 6.25% in spending. A combination of austerity measures and unexpectedly high oil revenues reduced Saudi Arabia's deficit to 8% of the GDP in 1994 and 6% in 1995.²⁰

Additional increases in oil prices gave the Saudi government total revenues of 177 billion Saudi Riyals in 1996, instead of projected revenues 131.5 billion Riyals. This additional income could have given Saudi Arabia a slight budget surplus for the first time in recent history. In practice, however, Saudi spending leaped from a projected level of 150 billion Riyals to an actual level of 194 billion -- following a pattern that the Saudi budget always expands to consume every increase in oil revenues. As a result, the official estimate of the 1996 deficit reached 17 billion Riyals, close to the 18.5 billion Riyals that had originally been projected.

These figures omit a portion of Saudi Arabia's extraordinary expenditures on the Gulf War. If these additional expenditures were included, the Saudi fiscal deficit might have reached \$37 billion during 1990-1991, and \$10 billion during 1992. The war made Saudi financial management so uncertain that Saudi Arabia was forced to adopt a working budget for 1991 because it could not keep track of its expenditures. It then had

to raise its estimated 1992 expenditures by 27% over the 1990 budget to allow for unanticipated costs.²¹

Saudi Arabia also experienced a drastic drop in liquidity because of the cut in its oil revenues and its expenditures for the Gulf War. It had to borrow some \$7 billion, \$4.5 billion from internationally syndicated loans and \$2.5 billion from local banks. This need to borrow while paying interest created new tensions with Saudi Arabia's Islamic fundamentalists -- who believe that interest is forbidden by the Koran.²² Central bank reserves dropped from more than \$100 billion to around \$35-40 billion, and Saudi Arabia had to cut some defense expenditures, including the delay and cancellation of certain arms purchases.²³ Saudi Arabia made the last payment on its \$4.5 billion debt in June, 1995, but continued to run a budget deficit. This deficit reached \$7.4 billion in 1993 and rose to \$10.7 billion in 1994 -- a rise that finally triggered more decisive action by the Saudi government.

The Saudi Arabia did not ignore these problems. It sought to eliminate all deficits by the year 2000 as part of its Sixth Five Year Plan, which covers the years 1996-2000. The IMF's Article IV report for 1995 still estimated, however, that the Saudi budget deficit might well return to a level equaling 10% of the GDP by the year 2000 -- unless the Saudi government made further cuts in expenditures and increases in non-oil revenues.²⁴ The IMF report also indicated that Saudi Arabia might run a net deficit on current account of \$8 billion to \$10 billion by the year 2000, and that domestic debt may rise from 77% of GDP in 1994 to 110% in the year 2000.

Unexpected rises in oil prices during 1995-1997, and record profits by Saudi Arabia's downstream and industrial operations -- like those of the Saudi Basic Industries Corporation (SABIC) -- led the Saudi government to estimate a deficit of just under \$4 billion for 1995, or 4.1% of GDP, while IMF experts believed that the Saudi government might not be able to reduce its annual deficits in 1995 and 1996 to less than 4% of its GDP. In fact, some IMF experts estimated that the Saudi deficit would be closer to \$5.5 billion instead of \$4.0 billion.²⁵

Saudi deficit predictions for 1996 originally totaled \$4.9 billion in current dollars, and would have created a deficit of around 15 billion Saudi Riyals or 3% to 4.1% of the Saudi GDP.²⁶ However, a surge in oil prices brought Saudi Arabia some \$8 billion more in oil revenues in 1996 than it had originally projected. This extra revenue produced a nominal growth rate of around 8.7% of the GDP, or twice the 4.3% growth rate Saudi Arabia had projected in 1995. In fact, Saudi Arabia could have eliminated most of the Saudi deficit if the government had not proved unwilling to pursue the additional spending cuts and revenue increases required to meet the country's fiscal needs.

Once Saudi planners realized they could safely forecast increased oil revenues, however, they cut back on many of the plans to control government spending they had begun to implement in 1995. They allowed the deficit in the 1996 budget to rise sharply over the deficit for 1995. Saudi reporting indicates that these increases in total government spending in 1996 raised the total size of the budget deficit by 13% over the 1995 level, and the deficit for 1996 reached \$4.53 billion -- close to the level projected before the increase in oil revenues.

The Saudi Budget and Structural Impact of the "Oil Crash"

The 1997 budget called for total expenditures of \$48.3 billion dollars (181 billion Riyals), revenues of \$43.7 billion dollars (164 billion Riyals), and a deficit of \$4.53 billion dollars (17 billion Riyals). Saudi Arabia originally estimated that this spending would produce a deficit equal to about 3-3.5% of its GDP. A rise in oil prices provided Saudi Arabia with substantial additional funds.²⁷ However spending also increased in 1997 to \$54.4 billion (204 billion Riyals) creating a deficit of \$1.6 billion (6 billion Riyals).

The "oil crash" led to major changes in this situation. Saudi Arabia earned about \$45.5 billion in 1997 from crude oil exports. In 1998, this figure fell by at least 35%, to no more than \$29.4 billion (Saudi Arabia loses an estimated \$2.7 billion for every \$1/bbl fall in the price of oil). In the first half of 1998, the price of Saudi Arab Light has averaged between \$10 and \$13 per barrel, down around \$7 per barrel versus the last few months of 1997. These prices were also well below Saudi Arabia's original oil price

expectations of \$16 per barrel, which were used in its 1998 budgetary calculations. In inflation adjusted terms, these represent the lowest Arab Light prices for a sustained period of time since 1973.²⁸

Table 1 and Figures 1 to 2 show the resulting growth in the Saudi deficit. The 1998 budget originally called for revenues of \$47.46 billion (178 billion Riyals), expenditures of \$52.26 billion (196 billion Riyals) and a deficit of \$4.8 billion (18 billion Riyals). Lower oil prices had a serious adverse effect on these projections, and Saudi revenues fell short by as much as 15 billion dollars in 1998, or by 30 percent of projected revenue.²⁹

Saudi Arabia announced on December 28, 1998, that its actual 1998 budget deficit had soared to 46 billion Riyals (\$12.3 billion), versus a corrected deficit estimate of 18 billion Riyals in mid-1998. This deficit was more than twice the size of any deficit Saudi Arabia had incurred in recent years even though actual spending in 1998 was 189 billion Riyals, rather than the projected 196 billion Riyals. The problem was that revenues were only 143 billion Riyals, rather than the forecast 178 billion. The overall economic impact was that the Saudi GDP declined by 10.8% in 1998, instead of rose by the forecast 1.6%.³⁰

Saudi Arabia also announced that it now estimated that its budget for 1999 would be 165 billion Riyals and that its revenues would be 121 billion Riyals. This created an estimated deficit of 44 billion Riyals for 1999, which was nearly the same as in 1998, although the total budget was 13% lower. Figure VIII.15 shows that Saudi Arabia also had to cut back significantly on domestic investment in public service and infrastructure programs to minimize the reduction in annual services, welfare, and entitlements.³¹

What Saudi Arabia did not do was reform prices in any significant way, or introduce new taxes and take other measures to boost revenues. The most it did in 1998 was to reduce subsidies to the national airline by raising business and first class fares on domestic routes and introduce a departure fee for international flights. It did announce more realistic electricity prices for major consumers but deferred actual implementation until the expected merger of regional power companies in 1999. It did not announce rises

in water and gasoline prices, and did not raise the prices for visas, permits, other petroleum products, and telephone services as it did in 1995.³²

Options for Reform

This explains why some Saudi experts now feel that the IMF was correct in calling for major reforms in addition to the steps the Saudi Arabia set forth in its Sixth Development Plan long before the “oil crash.”³³ So does the fact that Saudi Arabia remained dependent on oil revenues for 88% of total export earnings, about 75% of state revenues, and 40% of GDP. The proposed IMF reforms included: ³⁴

- Freezing total government expenditures at their 1995 level;
- A consumption tax of 5%; an excise duty of 10% on goods like jewelry, clothes, and vehicles; a 2% turnover tax for local and foreign companies;
- A 20% increase in gasoline and diesel fuel prices in 1996 and subsequent price rises to match inflation;
- An annual wage cut of 1% in government wages in 1996-1997 and a 2% cut in 1998-2000,
- Market prices for gasoline and diesel fuel, and
- Further reductions in all subsidies to the minimal level necessary to preserve the social safety net.

It is clear from these figures that there are growing limits to Saudi Arabia’s ability to pay for both “guns and butter.” A combination of Saudi Arabia’s economic problems, budget deficit, and growing population has steadily increased the burden of military spending per capita relative to GDP per capita. As a result, the recent level of military spending per capita is significantly lower, but still imposes a strain on the Saudi budget and on Saudi capability to meet domestic economic and social needs.

Foreign and Domestic State Debt

Budget deficits are only part of the problem. Saudi Arabia also faces a problem with debt. It was forced to liquidate a substantial amount of its foreign investment to pay for the Gulf War and its budget deficits. Estimates indicate Saudi investments dropped to

as little as \$7-30 billion in the early 1990s.³⁵ Foreign debt rose from practically zero to 2% of GDP in 1990-1991 and then to 4% in 1992-1993, although the debt dropped to 1% in 1994.³⁶ The Saudis were forced to acquire their first sovereign loan since the Gulf War in the amount of \$433 million dollars to finance an aircraft purchase from Boeing.³⁷

Saudi Arabia dealt with these foreign debt problems by (a) paying off foreign debt at the cost of increasing domestic borrowing, (b) by delaying payments to foreign contractors, and (c) using the windfalls it has obtained from unexpectedly high oil prices to reduce its domestic debt. In May of 1995 the foreign debt was retired however, these measures have had a negative impact on the Saudi private sector, whose growth is perhaps the most important single priority in the Saudi economy. Increased public borrowing has created a substantial government public debt that has affected Saudi banking and investment capabilities. It has also created a backlog in payments to foreign companies that some sources estimate reached several billion dollars in 1995.³⁸

The Saudi foreign debt was not high by regional standards. Nevertheless, Saudi Arabia's net outstanding domestic debt increased from about 23-24% of GDP in 1989-1991 to 53% in 1992, 63% in 1993 70% in 1994, and may reach 80.1% in 1998. Domestic borrowing equal to, or greater than 55% of GDP is normally an indication of serious economic problems, but the linkage between these borrowing requirements and the payment of wartime costs, and the fact that Saudi Arabia does not raise revenue from income tax, makes it difficult to apply such indicators to Saudi Arabia.³⁹ Some economists argue that this level of debt is sustainable because of the limited exposure of banks to government debt, and their healthy position in terms of foreign assets.

This public borrowing allowed Saudi Arabia to finance major foreign purchases like the purchase of some \$6 billion worth of Boeing and McDonnell-Douglas air liners, but it also raised the Saudi domestic debt to creditors to \$94 billion by March, 1995, or about 75% of the GDP. This level reached \$120 billion by March, 1998, or about 80.1% of the GDP. By the end of 1995, government debt consisted of about 30% of the consolidated balance sheet of Saudi banks.⁴⁰ By 1998, government debt consisted of about 25% of the total assets in Saudi banks.⁴¹

These Saudi policies led to a reluctance on the part of some international banks to approve loans for certain projects long before the oil crash. In January 1996, Saudi Consolidated Electric Company for the Eastern Province (Sceco-East) sought a \$500 million loan as part of a \$1.4 billion project to boost capacity at its Ghazlan power-generating plant. The uncertain political climate, the distortion of cash-flow assumptions by Saudi subsidies and Sceco's debt to another government entity, Saudi ARAMCO, all raised doubts in the minds of international financial institutions as to the Saudi government's future repayment ability. Some banks were unwilling to invest in a venture with government subsidized companies, such as Sceco, believing them not to be commercially viable risks. This reaction from financial institutions underscores the need for faster privatization.⁴²

The Saudi government only avoided further massive increases in domestic borrowing during 1993-1995 by delaying or defaulting on a significant number of domestic contracts. Saudi Arabia owed its farmers nearly \$3 billion in subsidy payments in early 1996. While it has since "paid" them much of the money, nearly \$2.5 billion of the payment consisted of non-interest bearing certificates that are little more than IOUs which defer actual cash transfers.⁴³ The government provided interest-bearing bonds worth more than 5,200 million Saudi Riyals (\$1.387 billion) to pay off its overdue debts more than 120 major contractors, and asked other contractors to forgive the government's debt because of past profits.⁴⁴

While the government repeatedly denied that it was delaying and defaulting on its payments, virtually every Saudi businessman and foreign businessman operating in Saudi Arabia had practical evidence that these denials were false.⁴⁵ These delays and defaults raised still further questions about how long the Kingdom could continue its rate of domestic borrowing, and how much such borrowing might conflict with its efforts to privatize and diversify its economy.

Saudi Arabia was able to deal with some of these problems in 1996. Unexpectedly high oil revenues allowed Saudi Arabia to pay some \$5.9 billion (22 billion Riyals) to its domestic creditors. It still, however, remained at least \$1.3 billion to \$2.7 billion in

arrears.⁴⁶ The Saudi Ministry of Health remained notorious for its failure to pay its bills. The government also created potential future problems by initiating more new projects than it was clear it could pay for.⁴⁷ Estimates of the current domestic debt vary but some feel it could be as high as 120 billion dollars, about 80 percent of GDP.

As a result, Saudi Arabia delayed many of the budget reforms it had planned in 1995 and was scarcely prepared for the oil crash that began in late 1997 and continued throughout 1998, then increases the Saudi deficit to \$13-15 billion. It seems likely that the significant erosion of oil prices will require further borrowing on the part of the government which could raise the domestic debt up to 127 billion dollars or 90 percent of GDP. These problems were so severe that reports circulated that Saudi Arabia was seeking to borrow \$5 billion from Abu Dhabi as an emergency bridge loan. Saudi Finance Minister Ibrahim al-Assaf, denied these reports, but it was clear that the Kingdom faced severe challenges.⁴⁸

Bank claims on the government and quasi-government agencies rose to 28.5% of the total assets of Saudi commercial banks in late 1998. Saudi commercial banks still held enough foreign investments to have a \$7.3 billion foreign interbank surplus plus foreign investments of nearly the same value. According to some estimates, this gave Saudi banks the capability to raise up to \$11 billion to help the government in 1999, although only at the cost of a massive short-term draw down in foreign assets. According to some estimates, the government also took some \$5 billion in Aramco assets and income in 1998, and planned a major draw down in 1999.⁴⁹

Arms Buys and Military Debt

The government was successful in rescheduling its military debt, but only at the cost of increasing the total cost of the debt, including interest. By 1994, its arms purchases during and after the Gulf War had raised its total Foreign Military Sales (FMS) debt to the US to \$23 billion. Saudi Arabia had additional military debts to Europe and to US firms that had sold to Saudi Arabia through commercial sales. This military debt interacted with Saudi civil debts, and forced Saudi Arabia to reschedule its FMS debt. This rescheduling took place in November 1994, and did more than create an extended

payment schedule. Saudi Arabia reduced the number of end items it bought, and reduced spending on munitions, military construction, and sustainment. It also eliminated orders to deal with worst case contingencies. King Fahd also issued four major guidelines: No new programs, reduce the total FMS debt to \$10 billion, stretch out all military program payments where possible, pay all bills on time, and avoid new starts.

Saudi Arabia did not adhere strictly to these guidelines, and Saudi arms purchases and infrastructure spending was not reduced at anything like the levels required. Nevertheless, the guidelines had a significant impact. Saudi Arabia's total FMS debt dropped from \$23 billion in FY1994, to \$18 billion in FY1995, \$14 billion in FY1996, and an estimated \$10 billion in FY1997. However, Saudi Arabia did not halt all program starts, and did not make all of its military payments to other countries and US contractors on time. The rise in oil prices and revenues in 1995 and 1996 also led Saudi Arabia to slowly increase orders, as part of what one senior advisor called an, "insatiable appetite for new hardware." Prince Sultan, the Minister of Defense also rejected US advice to limit further major arms purchases and stay strictly within the \$10 billion limit, and threatened to buy from other countries if the US does not sell.

It was only in 1999 that Saudi Arabia began to make serious cuts in its arms orders, and cancelled a \$1.7 billion arms deal for pilotless spotter planes and G6 self-propelled howitzers with South Africa. Interestingly enough, South African Defense Minister Joe Modise explained to parliament that the Saudis had asked to delay the \$1.7 billion deal two years because Saudi Arabia still owed \$7 billion from the Gulf War and was being pressed for payment by its creditors.⁵⁰

Additional Considerations

This economic history is a warning that fundamental shifts may be taking place in even the wealthiest Gulf energy economies that US energy policy must recognize. There are, however, several additional factors that must be considered to understand the problem's true importance:⁵¹

- First, Saudi Arabia's public reporting on its budget conceals major additional military expenditures that are being paid for off-budget through the transfer of

oil, and off-budget expenditures paid through royal accounts.⁵² Recent Saudi budgets have not specifically identified military spending, but have lumped it together with various programs into an “other spending” category. This “other spending” accounted for 54% of the 1996 budget, and still seems to have understated the true cash flow for arms imports.⁵³ Other sources indicate that the final cost of the deficit was \$5.9 billion if payments for past arrears are included, and that this still left an additional \$1.3-2.7 billion in arrears from previous years.⁵⁴

- Second, oil windfalls are not a substitute for sound economic planning, and it is doubtful that Saudi Arabia can increase the share of the budget that goes into investment to the levels it will require over the next decade. Even if Saudi Arabia can control military expenditures and gets high oil revenues, many of the bills for Saudi Arabia’s rapid population growth are coming due. Education rises from a level of around 27 billion Riyals during 1995-1996 to 41.7 billion Riyals in 1997 and 45.6 billion Riyals in 1998. While Saudi Arabia probably underspent on education and vocational training during the half decade following the Gulf War, this still brings the cost of education to 23% of the 1997 budget (\$11.1 billion) with the percentage remaining constant for the ‘98 budget. Furthermore, Saudi Arabia has not increased most public sector and government salaries since the 1980s. Even in a country with relatively low inflation, this creates a major potential demand for added government spending.⁵⁵
- Third, Saudi Arabia’s welfare program is rising in cost. The 1997 budget allocated \$4.73 billion for health and social development and \$1.9 billion for domestic subsidies. It also allocates \$1.72 billion for municipal services and water, \$1.78 billion for transportation and communications, and \$2.2 billion for infrastructure, industry, and water.⁵⁶ The 1998 budget allocates \$5.3 billion for health services and social development, \$2 billion for municipal services and water, \$3.1 billion for transportation and communication and \$2.8 billion for infrastructure, industry and electricity. A review of spending on autonomous governmental institutions indicates major increases in subsidy-related spending on Saudi, flour mills, power, desalination, railways, ports, etc.⁵⁷ A large amount of current expenditures for municipal services, water, transportation, communications, and infrastructure still goes to pay for such subsidies while the Kingdom underinvests in the maintenance, upgrading, and expansion of capacity. Saudi Arabia cannot sustain such subsidies when its own estimates indicate that it needs so much investment in new capacity. For example, Saudi estimates indicate a requirement for an least 4.5 million new housing units by 2020, at an estimated cost in excess of \$260 billion (980 billion Riyals). They also include 22,500 new primary schools, 6,000 new institutes of higher education, 5,400 clinics, and 360 hospitals.⁵⁸
- Fourth, Saudi Arabia’s economic problems have already affected its energy investments. The EIA reports that the “oil crash” has forced Saudi Aramco (whose expenditures account for around 6% of Saudi GDP) to reassess its

capital expenditure program, to delay a series of upstream and refining projects (at an estimated savings of \$2 billion this in 1998), and to defer bidding on the \$150-\$200 million Haradh (phase 2) crude oil production increment project, its only upstream oil project in the tendering process. This decision apparently leaves Saudi Arabia with only two major energy projects under bidding—the \$2 billion Hawiya natural gas processing plant, and an \$800 million upgrade of the Rabigh oil refinery. The Hawiyah gas project is part of an ambitious expansion plan for the Saudi Master Gas System, through which Saudi Arabia hopes to increase domestic gas consumption and free up oil for export. Aramco also is pushing ahead with delineation of the deep Khuff natural gas reservoir.⁵⁹

Table 1
Saudi Arabia's Annual Budgets

<u>Fiscal Year</u>	<u>Revenues</u>		<u>Expenditures</u>		<u>Deficit</u>	
	<u>B Riyals</u>	<u>B \$US</u>	<u>B Riyals</u>	<u>B \$US</u>	<u>B Riyals</u>	<u>B \$US</u>
<u>Actual</u>						
1990	118	31.5	143	38.1	-25	-6.7
1991*	118	31.5	143	38.1	-25	-6.7
1992	151	40.3	181	48.3	-30	-8.0
1993	169	45.1	197	52.5	-27.8	-7.4
1994	120	32.0	160	42.7	-40	-10.7
1995	135	36.0	150	40.0	-15	-4.0
1996	177	47.2	194	41.7	-17	-4.53
1996 (Original)	131.5	35.07	150	40	-18.5	-4.9
1997	204	54.4	210	56	-6.0	-1.6
1998 –Estimate 12/97	178	47.5	196	53.3	-18	-4.8
1998 –Actual 12/98	143	38.1	189	50.4	-46	-12.3
<u>Estimated in Spring 1998</u>						
1999	159	42.4	207	55.2	-48	-12.8
2000	165	44.0	217	57.9	-52	-13.9

3.75 Saudi Riyals = \$1

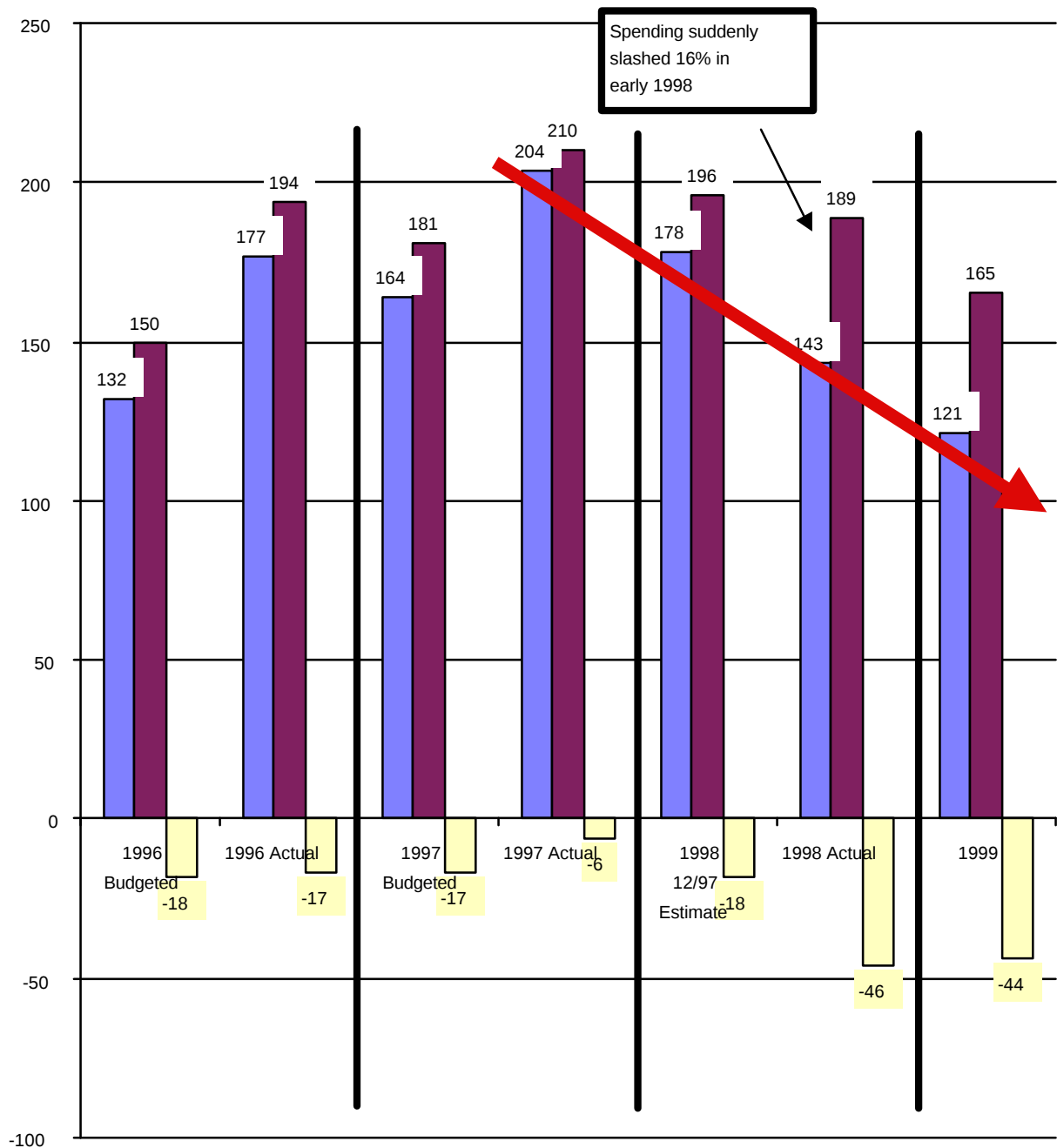
* Major off-budget expenditures to finance Gulf War

Source: Data for 1990-1995 are adapted from data provided in the monthly newsletter of the Information Office, Royal Embassy of Saudi Arabia, Volume 12, Number 2, February, 1995, p. 3. Data for 1996-1998 have been adapted from IMF Article IV report 1994, Saudi Arabia, Volume 14, Number 2, February, 1997, p. 3; Middle East Economic Digest, "Special Report: Saudi Arabia", March 10, 1995, pp. 25-48 and Middle East Economic Digest, January 12, 1996, pp. 15-16. Corrected data for 1998 are from Reuters, December 28, 1998, 1728.

Figure 1

**Pressures on the Saudi Budget: The Problem of Predicting the Future of a One
Commodity, State-Driven Economy**

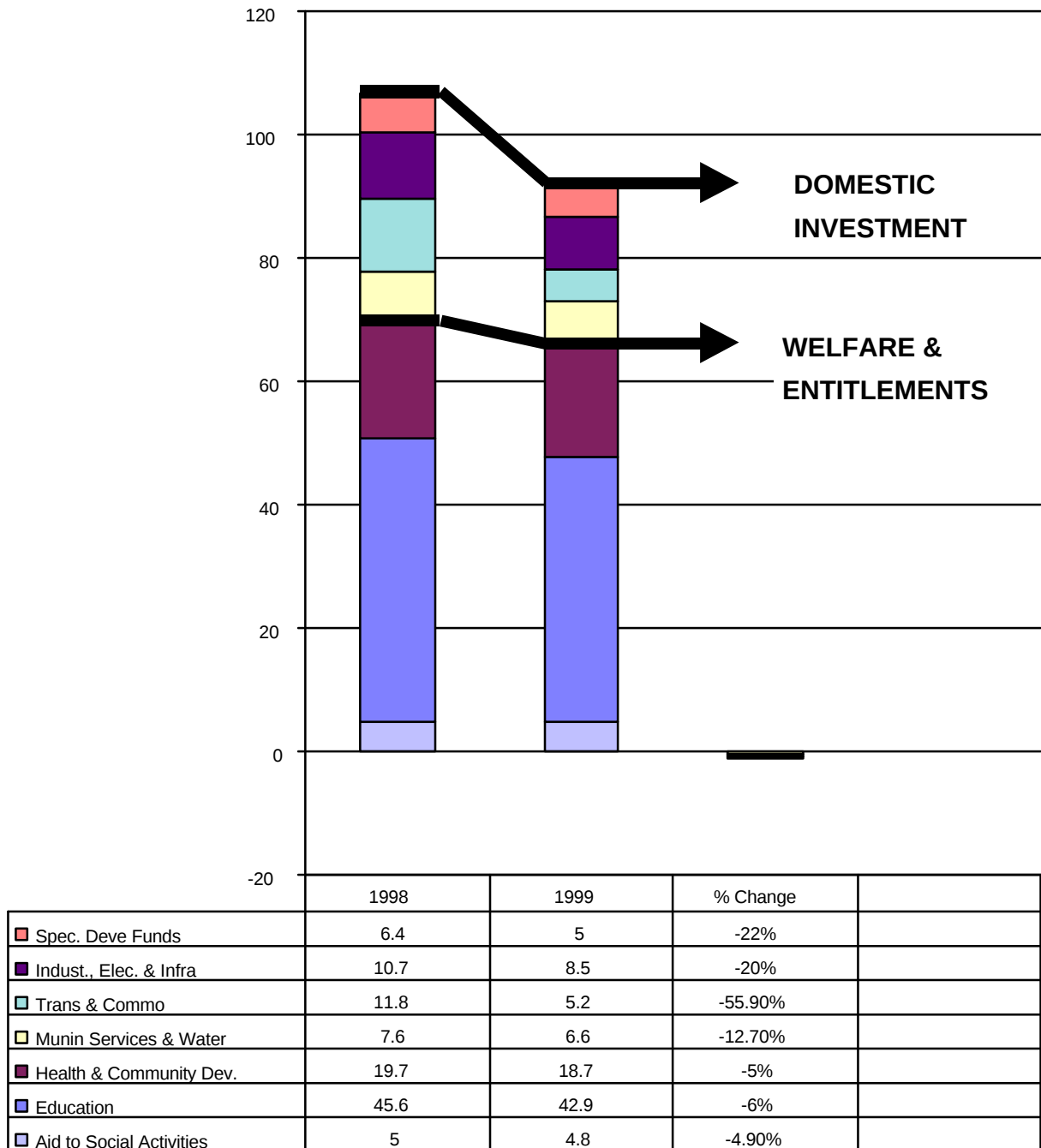
(in billions of Saudi Rials)



Source: Adapted by Anthony H. Cordesman from US-Saudi Business Brief, Winter, 1998, p. 1, and Reuters, December 28, 1998, 1728.

Figure 2**Pressures on the Saudi Budget: The Entitlements Problem**

(in billions of Saudi Rials)



Source: Adapted by Anthony H. Cordesman from US-Saudi Business Brief, Winter, 1998, p. 1, and Reuters, December 28, 1998, 1728.

Changing Saudi Energy Strategy

Saudi Arabia is the key supplier of world oil imports, and is one of the largest and most powerful states in the Gulf. In 1998, Saudi Arabia has well over 260 billion barrels of proven oil reserves, or one-quarter of the world's total. Saudi Arabia is the pivotal oil exporter in the Gulf, the Middle East, and the world. Saudi Arabia currently has a production capacity of over 10 million barrels a day. It produced at levels well in excess of 8 million barrels from 1991 to the present, and averaged over 8.4 million barrels a day in 1998 – roughly 30% of total OPEC crude production). It is the world's largest producer, and its surplus production capacity allows it to act as “swing” producer, and play a critical role in ensuring moderate and stable oil prices.⁶⁰

Both the Department of Energy and the International Energy Agency estimate that the growth in Saudi oil production will outstrip the growth in all of the nations in the Former Soviet Union, in spite of major increases in production by the former Soviet republics in the Caspian and Central Asia. The US Department of Energy estimates that Saudi Arabia will increase its production capacity from 8.6 million barrels per day in 1990, and 10.6 million barrels per day in 1996, to 10.9 (10.6-11.8) million barrels per day in 2000, 11.2 (10.6-14.1) million barrels per day in 2005, 13.5 (10.6-17.2) million barrels per day in 2010, 17.2 (13.5-24.1) million barrels per day in 2015, and 23.8 (18.2-33.7) million barrels per day in 2020.⁶¹

To put the resulting growth in Saudi production capacity in perspective, Saudi Arabia is already equal to all other states in the Gulf combined, and will remain so through 2020 in spite of major increases in production by Iran and Iraq. Saudi production capacity is 150% of all production capacity in the FSU today, and the Department of Energy estimates that it will rise to 180% by 2020. The Department of Energy estimates that Saudi Arabia's production will shift from 14.2% of world production in 1996, to 13.7% in 2000, 13.9% in 2010, and then rise to 20.1% in 2020.

Saudi Arabia Triggers the “Oil Crash”

This immense energy potential does not, however, mean that Saudi Arabia has a strong economy or can afford to develop its energy resources at the level required to meet world demand. In fact, Saudi Arabia was a major factor behind the recent crash in oil prices.

Saudi Arabia has long been a leader in OPEC's production quota decisions, and it was Saudi pressure that led to OPEC's decision of December 1, 1997, to raise the oil production ceiling by 10% -- although actual OPEC production increased by less than 2% between November 1997 and February 1998). This decision gave Saudi Arabia its highest oil output quota in more than 15 years. The Kingdom secured a new quota of 8.76 million barrels per day (bpd) at OPEC's ministerial meeting in Jakarta. This quota was 760,000 bpd higher than the quota it had held over the last four years, although Saudi Arabia had recently been pumping between 8.2 million bpd and 8.3 million bpd in the months leading up to the agreement.

Saudi Arabia took this action despite the fact that it meant that OPEC's overall production ceiling rose from 25.03 million bpd to 27.5 million bpd, and the concern of other states in the 11-member group that oil prices would fall because of increased supplies. Saudi experts felt that demand and prices were firm enough so that the benchmark price of Brent crude would average \$20 a barrel even with the new OPEC ceilings. Brent was then trading at \$19 a barrel, equivalent to around \$17.50 for a typical Saudi export barrel.

Saudi motives for this action were clear. Saudi officials stated that the rise in quota was necessary to increase the Kingdom's cash flow and funding for its 1998 budget and five year plan, reduce or eradicate its \$4.5 billion budget deficit, and clear contractual debt -- some of which stretched back to 1991 -- and smooth over any difficulties in loan repayments (such as the \$4.3 billion loan Saudi Arabia took out in November, 1997 to pay for new aircraft for the country's national airline Saudia). Saudi Arabia also sought funding to pay for new infrastructure projects and military equipment, such as replacements for some 100 aging US F-5 warplanes.

The result, however, was a massive drop in oil revenues whose financial impacts still cannot be estimated. Several factors caused the problem. Asia was Saudi's largest crude export market, accounting for 60 percent of sales, with its main buyers in Japan and South Korea. (\$1=3.75 Riyals). Asia was already in an economic downturn and slid into a major recession even before the new quota went into effect on January 1, 1998. A mild winter and low demand for heating fuel and uncertainty over the volume of Iraqi crude exports under the United Nations "oil-for-food" deal made things much worse.

Oil prices fell sharply from the \$23 range in October, 1997, reaching a nine-year low of \$12.80 a barrel on the New York Mercantile Exchange in March, 1997. Prices rose to as high as \$16.50 a barrel when Saudi Arabia, Mexico and Venezuela agreed to a joint cutback of 1.325 million barrels per day, but then dropped back to levels which often fallen below \$10 a barrel in spite of further efforts to limit production.⁶²

Saudi Arabia now faces massive budget deficit and investment problems in spite of a second cutback in production.⁶³ Commodity-driven economies are always at high risk, and have learned the hard way that there is no reliable way to predict or manipulate the price of oil. Supply and demand projections by OPEC, IEA, and EIA also agree that future average oil prices -- and Saudi Arabia's real oil revenues -- are highly unlikely to rise back to anything approaching their peak levels for the foreseeable future.⁶⁴ Consulting firms like Petrofinance predict that Saudi Arabia faces budget and current account deficits of 9% until prices rise, and Saudi revenues may also drop even further in the near to mid-term if Iraq is allowed to fully resume full production and/or sanctions on Iran are ended. UN plans already call for Iraq to more than double its oil sales to \$10.56 billion annually in 1998, and even the US is steadily less interested in enforcing economic sanctions on Iran.⁶⁵

The Cost of the "Oil Shock" to Saudi Arabia

The current decline in oil revenues represents a major challenge for the Saudi government (since oil export revenues account for nearly 90% of total Saudi export earnings). Aside from the overall oil price decline that is affecting all world oil producers,

Saudi Arabia's difficulties are being compounded by the economic crisis in Asia, since Asia accounts for around 60% of Saudi oil sales.

The Department of Energy estimates that Saudi Arabia earned about \$45.5 billion in 1997 from crude oil exports. In 1998, this is expected to fall by 35%, to around \$29.4 billion (Saudi Arabia loses an estimated \$2.7 billion for every \$1/bbl fall in the price of oil). Since January 1998, the price of Saudi Arab Light has averaged between \$10 and \$13 per barrel, down around \$7 per barrel vs. the last few months of 1997. These prices also are well below Saudi Arabia's original \$16 per barrel oil price expectations originally assumed for use in 1998 budgetary calculations. In inflation adjusted terms, these represent the lowest Arab Light prices for a sustained period of time since 1973.

These massive cuts in revenues mean that Saudi Arabia faces major budget deficits in the interim, and is heavily dependent on oil revenues, for 88% of total export earnings, about 75% of state revenues, and 40% of GDP). The drop in Saudi export revenues has also come just as the Saudi economy appeared to be recovering from the adverse impacts of the 1990/91 Gulf War, and will result in a significantly lower or negative rate of GDP growth compared to an average 4.4% annual growth rate over the past two years). It will also probably lead to a much higher budget deficit (possibly 4.8% of GDP) in 1998.

These financial pressures are particularly serious because of the failure of Saudi economic reform. Despite periodic efforts to diversify its economy, Saudi Arabia's economy is essentially oil-based (although investments in petrochemicals have increased the relative importance of the downstream petroleum sector in recent years). In 1997, 88% of Saudi Arabia's export revenues were derived from the sale of crude oil, natural gas liquids, and refined products. The Saudi economy appears largely to have recovered from the hardships experienced as a result of the 1991 Persian Gulf war, for which the Kingdom incurred a \$55 billion debt (repaid as of May 1995).

Saudi Arabia has applied for membership in the World Trade Organization (WTO) as part of a strategy aimed at increasing integration into the world economy. In order to gain acceptance into the WTO, however Saudi Arabia would need to cut tariffs,

which is complicated by the Saudi commitment to a common Gulf Cooperation Council (GCC) tariff and customs union, which despite 14 years of negotiation are still not in place. Progress now seems unlikely.

The Saudi government has accepted a 1995-1999 development plan that seeks to reduce state involvement and increase private sector (including foreign) participation in the economy. The government is likely to move slowly, however, towards any major economic reforms (cuts in subsidies, increases in taxes, privatization, financial sector reform) due to concerns over the possible social unrest that such moves could entail. Saudi Arabia has a policy known as “Saudiazation,” the goal of which is to increase employment of its own citizens by replacing 60% of the estimated 5-6 million foreign workers in the country. In order to do so, Saudi Arabia has stopped issuing work visas for certain jobs, has moved to increase training for Saudi nationals, and has set minimum requirement for the hiring of Saudi nationals by private companies.

Given this background, Saudi Arabia can seek to cope with lower oil short-term energy export revenues in a number of ways, although in practice each option has its drawbacks and difficulties:

- Saudi Arabia could attempt to make further cuts in oil production, hoping that this would raise marginal prices to the point where it would result in a significant increase in real export revenues. It is unclear that this strategy can do anything other than make things worse, however, because other producers are likely to take Saudi Arabia’s market share to maximize their own revenues.⁶⁶
- Saudi could reduce its domestic subsidies (on gasoline, electricity, and water, for instance). Reduction in popular entitlement programs, particularly in areas like health care, housing, jobs, and education, however, could risk political or social unrest.
- Another possibility would be to draw down the country’s large foreign exchange reserves (around \$8 billion). Saudi Arabia also could increase borrowing and/or sell off state-owned (including foreign) assets, although this risks exhausting the country’s once huge financial reserves.
- Saudi Arabia could cut back on defense spending, which accounts for an estimated one-third of the Saudi budget. Cuts in defense, however, are constrained by perceived and actual threats from neighboring countries like Iraq, as well as the need for domestic security.

- Other possibilities for budget cuts include investments in the oil and gas sectors, which Saudi Aramco has already done to some extent. Saudi Arabia's Ministry of Finance and National Economy is pressuring ministries to cut expenditures, especially in their capital budgets. Reductions in wages and salaries for state workers are possible, but less likely, since they would undoubtedly be politically unpopular.
- Finally, Saudi Arabia could raise taxes, although this would also be politically unpopular.

Changes in Saudi Energy Investment Policies

There are some experts who argue that the decline in oil prices and cutbacks in production may serve Saudi Arabia's long-term interests by deterring development of alternative energy sources. These include increasingly economical "unconventional" oil sources such as Canadian tar sands and Venezuelan orimulsion, maintaining Saudi market share against its main competitors both in and out of OPEC, especially in the key US market; and deterring marginal non-OPEC oil production investment. This kind of reasoning, however, provides little consolation to a nation that must deal with what is likely to be at least half a decade of severe financial and cash flow problems. It also means that Saudi Arabia must rethink both its investment policies and mid-to-long term energy strategy

It is clear that Saudi Arabia will need increased foreign investment in many of its energy sectors almost regardless of the energy strategy it pursues. Saudi Arabia has recently indicated that it is considering changes in its energy policies which would open up the national oil industry to foreign investment and seek relatively rapid increases in oil production capacity that would ensure that Saudi Arabia remains a dominant swing producer. Crown Prince Abdullah met with several major oil companies on September 26, 1998 visit in Washington. The companies included Mobil, Texaco, Exxon, Chevron, Arco, Phillips Petroleum, and Conoco, and invited them to help develop Saudi Arabia's massive oil resources.⁶⁷ He called for proposals by November 10, 1998. The details of the Saudi proposals and the company responses have not yet been released.⁶⁸

The Crown Prince does not seem to have held a similar meeting with European oil companies, and may be giving US investment a priority because the US offers a

source of capital and as a way of establishing firm market and security links between the US and Saudi Arabia. It is clear, however, that Saudi officials did contact several major European and Asian oil companies in December 1998. These firms included British Petroleum, the Royal Dutch Shell Group, ENI, Elf, and Total.⁶⁹

A considerable debate is already taking place in Saudi Arabia over what kind of energy development strategy the Kingdom should pursue and what kind of foreign investment is desirable.⁷⁰ The incentives for private and foreign investment include Saudi Arabia's massive oil reserves and Saudi Arabia's low extraction costs. The incentives to Saudi Arabia for moving away from a reliance on the state sector are that Saudi Arabia has had more than 10 years of budget deficits. In 1998, the Kingdom's oil revenues had dropped 60% from their level in 1996, and Saudi Arabia faced a budget deficit that could reach up to \$8 billion. There were rumors in October 1998 that Saudi Arabia had had to arrange a private loan from Abu Dhabi of \$5 billion.

Crown Prince Abdullah warned on November 6, 1998, that the Kingdom would have to make further cuts in both investment and entitlements.⁷¹

“Our revenues have been affected by what you call the fall in oil prices. However, we in the Kingdom are making big efforts to maintain equilibrium and mitigate the negative impacts. The state is serious about controlling spending and approving practical plans for providing vital alternatives for the national income. This does not mean dispensing with oil or underestimating its importance. Rather, it means looking vigorously for other sources to back up and consolidate the national income. We will do our utmost so as to not overburden our citizens – especially those of limited or medium income. Our first and foremost concern is the well being and prosperity of our citizens. It is the duty of the state to strike a balance between the policy of rationalizing spending to curb inflation or recession and between reducing the impact of these necessary measures on the lives of citizens.

Other incentives include the need for mid to long-term capital to fund massive civil infrastructure costs, and the need to modernize Aramco's operating procedures and technology base. While Aramco is one of the most efficient State-owned entities in the world, it has suffered from a lack of cash flow for exploration and development in recent years, and efforts at Saudization have created problems because skilled foreign

managers and technicians have been replaced with Saudi who lack their background and experience.⁷²

The key question now is what part of its energy sector Saudi Arabia will open to foreign investment, and there already is a debate over whether this should include oil production, or simply gas production and product. The views of Abdullah Dabbagh, a member of Saudi Arabia's consultative Shura Council, and a member of the council's economic and finance committee provide some possible insight into Saudi attitudes on the question. Dabbagh is also chief adviser to the board of the Council of Saudi Chambers of Commerce and Industry, which he headed for 15 years and is influential in Saudi business circle.

Dabbagh gave an interview on November 18, 1998, on foreign investment in Saudi Arabia's strategic upstream energy sector.⁷³ Dabbagh said that he believed the Kingdom would consider opening its gasfields to foreign investors. "I would say it's a fair possibility that the government would look seriously at suggestions of investing in upstream gas projects. Gas will be the limit because (investment in) upstream oil is out of the question. But I see a possibility that the government might consider favorably a participation by foreign companies (in upstream gas)."

Dabbagh said he would "definitely" support the opening of the upstream gas sector to foreign investors. Dabbagh predicted that low oil prices, the need for advanced technology, and rising Saudi electricity demand would create opportunities in upstream gas. "For the time being, with the decline in oil income, and so on, it might be very hard for us to go it alone. The technology in gas has changed a great deal in the last 10 years or so. Gas is very important. We have to generate a great deal of electricity in the next 20 years." Dabbagh said Saudi businessmen had told him they would seek joint venture opportunities if foreign investors were given access to upstream gas projects. "A lot of businessmen would be interested in that. I am talking about deep-pocket businessmen. The majority of businessmen would like to see the country open up."

Dabbagh also, however, made comments that reflect the fact that some senior Saudis do not support opening up the upstream sector of Saudi oil production to foreign

firms. He said that Prince Abdullah had merely asked US executives for ideas on developing Saudi Arabia's energy sector. "The prince opened the door for ideas. He did not commit himself to anything. We are rational enough to accept good ideas if they come along." Dabbagh said that it would not make sense to allow foreign investment in upstream oil projects in a country that already has more than two million barrels a day of unused capacity. Dabbagh also said that Crown Prince Abdullah had held a question and answer session in early November with members of the Shura Council about his overseas tour, parts of which were televised. However, the Council was not been formally consulted on the issue of foreign investment in the upstream energy sector. Dabbagh's views are similar to those of many insiders, who stress that the Kingdom is interested in foreign investment in areas like gas exploration and production, and the production of gas-to-liquids and superlubricants, rather than upstream oil operations.

The US government and international oil companies have an obvious interest in opening up the oil sector as well. On November 17, US Energy Secretary Bill Richardson issued a statement publicly supporting an expansion of US energy investment in Saudi Arabia, and announced a visit to Saudi Arabia in January 1998 to encourage US investment contacts. Richardson suggested, despite Saudi signals to the contrary, that this might involve the country's prized upstream exploration and production sector.

Richardson told a news conference he understood some form of involvement in Saudi Arabia's upstream was possible, "My understanding is that Saudi leaders want to see upstream investment and joint projects. They haven't been specific entirely yet. I think there are discussions going on with the companies. Saudi Arabia's interest in opening its upstream market has been widely reported -- hailed by industry as a potential major breakthrough. The US government views this as a healthy development. We will encourage it and that will be one of the main purposes of my trip, to encourage this joint upstream investment in both Saudi Arabia and Kuwait."

Richardson was told, however, that the Saudis wished to avoid any foreign investment in oil production in the near term during his visit to the Kingdom in early February 1999.⁷⁴ Saudi Arabia's oil minister, Ali al-Naimi, publicly invited U.S. oil

companies to submit proposals to utilize the kingdom's natural gas reserves for industrial development, while ruling out for the time being any access to its oil reserves, the largest in the world.

Ali al-Naimi, spoke at a press conference in Riyadh after his meeting with U.S. Energy Secretary Bill Richardson, and said ``a successful proposal would be the one on the development of our industrial base being fueled by natural gas.” He added “those companies who invest today to develop the industrial base of Saudi will probably be the ones that will participate in the exploitation of our upstream oil if and when it opens up. We are looking for concepts and proposals that deal with integrated projects, which as far as gas is concerned will give us an end-product such as desalinated water, megawatts for increased power, and petrochemicals. In the area of oil we are looking at improving the efficiencies of our refineries, and we are looking for an improved production of lubricants...reasonable people do reasonable things -- we have 261 billion barrels of oil reserves, we have over 80 oil fields and we are only producing from 8 or 9, we have 2 million barrels of oil per day of extra capacity -- we do not need to expand our oil capacity right now...”⁷⁵

Saudi officials also raised the issue of foreign investment in electricity during Secretary Richardson’s visit. They noted that Saudi Arabia needed about \$120 billion for power generation projects over the next 20 years, with the annual demand growth of for electricity in the kingdom estimated at 4.5 percent. To meet this demand the country must increase its power generation capacity to 70,000 megawatts by the year 2020, from 21,000 megawatts at present, he said.

Saudi Arabia may well be forced to turn to foreign firms in the future, but a number of international oil companies have made it clear that they are interested in the projects the Kingdom already is opening up to foreign investment. Chevron Chief Executive Kenneth Derr said that his firm submitted plans for the development of all areas of Saudi Arabia's energy industry and that said he was ``very encouraged" by his meetings with Saudi oil officials. In December, Texaco Inc. Chairman Peter Bijur had flown Saudi Arabia to present a natural gas development proposal. Atlantic Richfield

Co., Conoco Inc. and Phillips Petroleum Co. have all announced they plan to submit project proposals to the Saudis. Exxon and Mobil also said they are interested in exploring for and extracting oil in Saudi Arabia. Ali-Naimi stated that, "So far we have received concepts, not structural proposals...several of the concepts we have received in gas is exactly what we are looking for." Saudi oil ministry officials said that these proposals could become contracts "before the end of the year."⁷⁶

Interestingly enough, some European companies have warned against the massive early development of Saudi oil resources on the grounds they could lead to a new supply and demand crisis. Franco Bernabe, managing director of Italian energy giant ENI, a company that has actively sought closer involvement in Saudi Arabia, said such a development could lead to sharp price rises, especially at a time when global reserve replacement lagged consumption growth: "We will see a period of low oil prices, but then this period will trigger a new oil crisis."⁷⁷

Saudi Oil Production

Saudi Arabia energy strategy is critical because the Kingdom is the world's leading oil producer, exporter, and holder of spare oil production capacity. Saudi Arabia is a key oil supplier for the United States, Europe, and Japan, although Western Hemisphere producers (Venezuela, Canada, and Mexico) have challenged Saudi Arabia's dominance in the US market in recent years. The Asian market now takes about 60% of Saudi Arabia's crude oil exports, as well as the majority of its petroleum product exports. Europe is Saudi Arabia's second largest oil export market, followed by the United States.

There are three basic energy strategies that Saudi Arabia can pursue:

- Its current strategy of responding to market forces by increasing oil production capacity to try to maintain both moderate prices and a high output of oil to maximize oil revenues. This strategy calls for major increases in oil production for exports, and in gas to meet domestic private and industrial consumption. It also calls for growing Saudi investment in downstream operations and product output to maximize value added sales from oil.
- Leading restraint in production in an effort to maintain high prices and maximize oil revenues. This strategy depends, however, on the Kingdom being able to

persuade enough competing exporters to limit production to levels which will produce more of a marginal increase in oil prices over time than normal market forces, and on the ability to achieve a new equilibrium between supply and demand so that the net real oil revenues to the Kingdom are actually higher than maximizing production.

- Maximizing production capacity to recapture market share and marginalize high cost producers. This strategy would produce limited near term oil revenues, but it would potentially change the oil industry and drive out higher cost producers, increasing Saudi market share and net Saudi oil revenues.

It is important to note that the limited production strategy has to some extent already failed. Two production cuts backs during 1998 did not stabilize prices, and work by the Petroleum Finance Corporation indicates that Saudi Arabia would have to assume at least 50% of a 1.5 MMBD additional cut in OPEC output to drive prices back to \$17 a barrel. This would mean bring Saudi oil production down to levels of around 7.25 MMBD. It is uncertain that such a strategy can be implemented at all. Iran is desperate to produce and maximize cash flow. Iraq has already stated that it will not restrain production, and a number of other nations continue to cheat on their production quotas. A cartel-like strategy seems to be doomed before it begins.

A study by work by the Petroleum Finance Corporation also indicates that such a strategy would only produce tenuous short-term benefits if it did succeed, and would still not relieve the Kingdom's problems in cutting its budgets, implementing economic reform, and obtaining foreign investment. Such a strategy might reduce the 1999 budget deficit from 44.1 billion Saudi Riyals to 31 billion, but it would produce only limited incremental short-term revenues and would probably have negative mid-term impacts because of Saudi Arabia's failure to take sound measures to reform its economy. The end result would be sustained Saudi budget deficits of 36 billion Riyals a year.⁷⁸

The third "market share" strategy is examined in more depth later in this section, but it is important to understand that Saudi Arabia is already planning major mid to long-term increases in production, that make it difficult to distinguish between its existing strategy and some aspects of a market share strategy. According to Saudi Oil Minister Ali Naimi, Saudi Arabia's oil policy currently focuses on maximizing revenues, increasing Saudi market share, and maintaining international oil market stability. Of Saudi Arabia's

total oil production capacity, about 18% is considered medium-gravity, 14% million barrels per day heavy, and the remaining 68% light. In order to maximize its oil revenues without violating its OPEC quotas, Saudi Arabia has increased Extra Light and Arab Super Light production at the expense of Arab Heavy and Arab Medium crude oil. Although some capacity has been shut in, Saudi Arabia is also using field rotations to minimize reservoir pressure damage and preserve the option of bringing the capacity back online within a few months, if needed. Most of Saudi Arabia's spare production capacity is medium crude.

Saudi Arabia produced an average of 6.41 million barrels a day in 1990, 8.1 million in 1991, 8.3 million in 1992, 8.2 million in 1993, 8.1 million in 1994, 8.2 million in 1995, 8.2 million in 1996, 8.6 million in 1997, and 8.4 million in 1998.⁷⁹ Saudi oil production totaled about 9.3 million barrels per day in 1997, including 800,000 barrels per day of natural gas liquids and about 270,000 barrels per day of crude oil produced from its half-share of the Saudi-Kuwaiti Neutral Zone. This compared with what the Department of Energy estimates was a sustainable crude oil production capacity of about 11.3 million barrels per day and what was then an OPEC crude oil production quota of 8 million barrels per day (8.76 million barrels per day as of January 1, 1998). Saudi Arabia was producing close to its OPEC quota (production of natural gas liquids is not counted against the OPEC quota), but about two million barrels per day below its capacity.

At OPEC's November 1997 meeting, Saudi Arabia's crude oil production quota was raised about 10%, from 8 million barrels per day to 8.76 million barrels per day. As of early February 1998, Saudi Arabia reportedly was producing close to this amount. Since that time, however, it has had to progressively cut production in an effort to reduce the world oil glut and stabilize prices. At the end of 1998, Saudi Arabia was producing at levels much closer to 8 million barrels a day.⁸⁰ Saudi Arabia has recently supplied about 16% of US crude imports, competing largely with Venezuela and Mexico.

The Development of Saudi Oil Reserves

Although it has averaged over 2 million barrels per day of spare production capacity (the largest in the world), Saudi Arabia has continued to invest in the

development of its crude reserves. It is completing the final development of the Shaybah field in the Empty Quarter area bordering the United Arab Emirates. The field contains an estimated 7 billion barrels of 40-42° API sweet crude oil, and will ultimately produce 500,000 barrels per day of crude oil and 870 million cubic feet/day of natural gas. Construction work on the field was scheduled for completion by mid-1998. The overall project will cost \$2-\$2.5 billion, and will include three gas/oil separation plants (GOSPs) and a 395-mile pipeline to connect the field to Abqaiq, Saudi Arabia's closest gathering center, for blending with Arabian Extra Light crude. Two US companies are playing a major role in the project: Parsons Corporation (project management) and Bechtel (construction).

Production is being increased in other areas. Within the Neutral Zone, Japan's Arabian Oil Company (AOC) operates the offshore fields (Khafji, Hout), with production capacity of about 350,000 barrels per day. Texaco operates the onshore fields (Wafra, South Fawaris, South Umm Gudair), with current crude oil production of more than 200,000 barrels per day. During 1998, Texaco plans to increase output from its fields and also to drill three exploration wells in the Neutral Zone. AOC's concession on the Saudi side expires in 2000 (an extension has been requested), and on the Kuwait side in 2003. Texaco's onshore concession lasts until 2010.

Saudi capacity to increase production is so great that the EIA estimated in 1998 that the long-term growth in Saudi oil production would outstrip the growth in all of the nations in the Former Soviet Union, in spite of major increases in production by the former Soviet republics in the Caspian and Central Asia. The EIA estimated in 1998 that Saudi Arabia would increase its production from 8.6 million barrels per day in 1990, and 10.6 million barrels per day in 1996, to 10.9 (10.6-11.8) million barrels per day in 2000, 11.2 (10.6-14.1) million barrels per day in 2005, 13.5 (10.6-17.2) million barrels per day in 2010, 17.2 (13.5-24.1) million barrels per day in 2015, and 23.8 (18.2-33.7) million barrels per day in 2020.⁸¹

To put these estimates in perspective, Saudi production is already equal to all other states in the Gulf combined, and the EIA estimates that it will remain so through

2020. Saudi production is 150% of all production in the FSU today, and the Department of Energy estimates that it will rise to 180% by 2020. Past EIA estimates indicated that Saudi Arabia's production will shift from 14.2% of world production in 1996, to 13.7% in 2000, 13.9% in 2010, and then rise to 20.1% in 2020.

Much depends, however, on future world oil demand and prices, and the health of the Saudi economy. So far, Saudi Arabia continues to invest in maintaining and increasing its oil, gas, and petroleum related industries. It has, however, made increasing cuts in its current expenditures on oil and product, partly because it now has substantial surplus production capacity, and has tend to concentrate near term spending on gas. Saudi Arabia has also encouraged private investment efforts, some involving foreign partners.

The strategy Saudi Arabia will pursue in the future is a key issue, as is the way in which the Kingdom will seek to fund its strategy and its resulting success. The current economic crisis and drop in oil prices creates major uncertainties about the future impact of the Gulf on world oil supplies, and the future role of private investment. It also highlights the importance of other s uncertainties Saudi economic reform, Saudi budgets, and Saudi ability to fund the civil investment and entitlement programs that are critical to Saudi security.

Downstream Infrastructure and Export Capacity

Saudi ability to safely ship its oil is also an important strategic issue. Saudi Arabia has attempted to secure its position as an exporter and boost its export capabilities by acquiring new tankers and increasing its overseas crude oil storage capacities. The Saudi fleet currently comprises 23 crude tankers and four product vessels. Saudi Arabia's owned and leased storage facilities, including a 34% stake in Texaco's 17 million barrel Maatschap terminal and a long-term lease on a 5 million barrel facility on St. Eustatius in the Caribbean, had a capacity of over 30 million barrels as of early 1997.

Most of Saudi Arabia's crude oil is exported via the Persian Gulf through the Abqaiq processing facility. In the Persian Gulf, the Kingdom's primary oil export terminals are located at Ras Tanura (5 million barrels per day capacity) and Juaymah (3

million barrels per day). In addition, the Yanbu terminal (3 million barrels per day) serves as the main oil port in the Red Sea.

Saudi Arabia does, however, operate two major oil pipelines that give it some capability to bypass shipments through the Gulf and the Strait of Hormuz. The 4.8 million barrels per day East-West Crude Oil Pipeline (Petroline) is used mainly to transport Arabian Light and Super Light to refineries in the Western Province and to Red Sea terminals for direct export to European markets. Running parallel to the Petroline is the 270,000 barrels per day Abqaiq-Yanbu natural gas liquids pipeline, which serves Yanbu's petrochemical facilities. The Trans-Arabian Pipeline (Tapline) was mothballed following the Persian Gulf War (after providing only limited service to a refiner in Jordan since the 1970s), and the 1.65 million barrels per day Iraqi-Saudi Pipeline (IPSA-2) was closed indefinitely after the start of the Gulf War.

Refining and Petrochemicals

Saudi Arabia is attempting to change its role as an energy exporter by heavily investing in refinery upgrades and expansions. A \$1.2 billion upgrade of the Ras Tanura refinery is nearing completion and its capacity may be further expanded to as much as 1 million barrels per day under longer-term investment plans (through 2007) – although the current oil shock makes any rapid expansion unlikely. In December 1997, Foster Wheeler signed a \$70 million contract for upgrading the 315,000 barrels per day Jubail refinery.⁸²

Saudi Aramco had also planned to upgrade its Rabigh refinery, on the Red Sea coast. This refinery had formerly been a joint venture (Amoco acquired Greece-based Petrola's 50 percent share in 1995), and Saudi plans call for boosting capacity to 325,000 barrels per day at an estimated cost of \$2 billion. Aramco first scaled the project back by 60%, however, and then effectively deferred it indefinitely in the summer of 1998.⁸³

Saudi Arabia has taken aggressive measures to secure market share for its crude oil through refining ventures in the United States, Europe, and Asia. The Kingdom took the first step in this direction in 1988, when it acquired a 50% stake in Texaco's Star Enterprise joint venture. Star Enterprise controls distribution networks in half of the

United States and has continuing contracts to purchase up to 600,000 barrels per day of Saudi crude oil for processing at the venture's three refineries. As of late 1997, Star was being merged with Shell and Texaco to create the largest downstream entity in North America. The newly combined company will have \$13 billion in assets, 13 refineries, and 22,000 retail outlets. According to Texaco's senior vice president, it will account for 13% of US refining capacity and 15% of the US gasoline market beginning in the first quarter of 1998.⁸⁴

Despite recent economic problems in East Asia, Saudi Arabia continues to look to that region for expansion of its downstream oil investments. Saudi Aramco's ambitious, \$3 billion, expansion plan in the Philippines, for instance, still seems to be moving forward. Saudi Aramco and Filipino company Petron (in which Saudi Aramco has a 40% stake) are planning a 250,000 barrels per day refinery, and are considering a 165,000 barrels per day grassroots refinery in Limay, Bataan. Besides the Philippines, Saudi Arabia is negotiating new refining joint ventures in China (an oil refinery and petrochemical complex in Fujian province) and other countries "east of Suez." One possible project is a grassroots refinery in East Java, Indonesia. The proposed refinery would have a capacity of 150,000 barrels per day and would include advanced processes such as atmospheric residue desulphurisation and residue catalytic cracking.

Saudi Basic Industries Corporation (SABIC) accounts for 5% of world petrochemical production. Reduced tariff barriers for petrochemical exports by SABIC are a major motivation behind Saudi Arabia's pursuit of membership in the World Trade Organization. In February 1997, Saudi Petrochemical Company (Sadaf), a joint venture between SABIC and Shell Oil Company of the United States, launched a \$1 billion expansion program that includes a new 700,000 metric ton/year plant for methyl tertiary butyl ether (MTBE). The plant's opening boosts SABIC's total MTBE production capacity to 2.7 million metric tons/year. A large investment also was made in 1997 by the Saudi-Chevron Petrochemical Company, the first petrochemical company in Saudi Arabia to have no direct state participation.

In February 1998, South Korea's Daelim Engineering Co. agreed to build a chemical plant in al-Jubayl for \$170 million. The plant will produce 500,000 tons of ethyl-benzene and styrene monomer beginning in March 2000. In January 1998, Japan's Chiyoda Corp. won a \$500 million order from Saudi Arabia's Eastern Petrochemical Corp. to build an ethylene glycol plant in Saudi Arabia's Jubail Industrial area. The plant is to produce 500,000 tons per year, mainly for export to Southeast Asia. Another project, Yanpet II, is being developed by SABIC and Mobil's Yanbu Petrochemicals subsidiary. The \$2.2-\$2.5 billion project involves construction of a second 800,000-ton-per-year ethylene cracker, with capability to produce polyethylene and ethylene glycol. Yanpet II is expected to be complete in 2000.

The Impact of a Market Share Strategy

This background on Saudi Arabia's existing plans is critical in order to understand the role that a market share strategy might or might not play. There are a number of possible variations on this strategy, but it essentially calls for Saudi Arabia and other low cost Gulf producers to maximize production at low prices.

Saudi Arabia has a particular advantage in any price war strategy because its older fields are so cheap to produce. Saudi Arabia can produce five different grades of crude oil. When oil prices fall, it caps production of some of its lower grade Arabian Heavy crude, pumping the more valuable Arab Extra Light crude from fields like its new Shaybah field in the Empty Quarter instead. This not only keeps production costs down, but also produces higher value oil products per barrel when refined. Shaybah, which began production in July 1998 pumps 500,000 barrels of oil a day, and has production costs of less than \$2 barrel. Shaybah, which cost nearly \$3 billion to develop, has proven reserves of 14.3 billion barrels of oil and an estimated life of 75 years. As Saudi Aramco's Chief Executive Officer Abdullah Jum'ah put it, "We will be here for a long time. When the oil runs out, the field will remain active for another 75 years producing gas." ⁸⁵

At the same time, such a strategy means further short to mid-term budget cuts and taking the political risks inherent in economic reforms. This "Southern Gulf" strategy

also means potential confrontations with Iran, which is a relatively high cost producer, and with Iraq because it cannot take advantage of its status as a potential high volume, low cost producer for at least half a decade because of sanctions and limited production capacity.⁸⁶

The potential advantage of this strategy is that it would put severe pressure on the ability of high cost producers in other regions like the Caspian, US, and Western Canada. It would tend to freeze production in North Sea, and West Africa to compete and attract investment in increasing their volume of production, although Mexico, Venezuela, Libya, and Algeria as also estimated to be low cost producers that would benefit in terms of increased production. The Southern Gulf would essentially price oil at a point where the marginal return on investment in other regions would be far less attractive and restructure the entire oil industry.⁸⁷

The problems with this strategy are several-fold. First, it involves a massive sustained gamble in macroeconomics over half a decade which is acutely sensitive to the future marginal impact of advances in exploration and production strategy in other regions. Second, it requires major efforts at true economic reform, plus considerable budget austerity and additional private investment. Third, it means a potential confrontation with both Northern Gulf states.⁸⁸

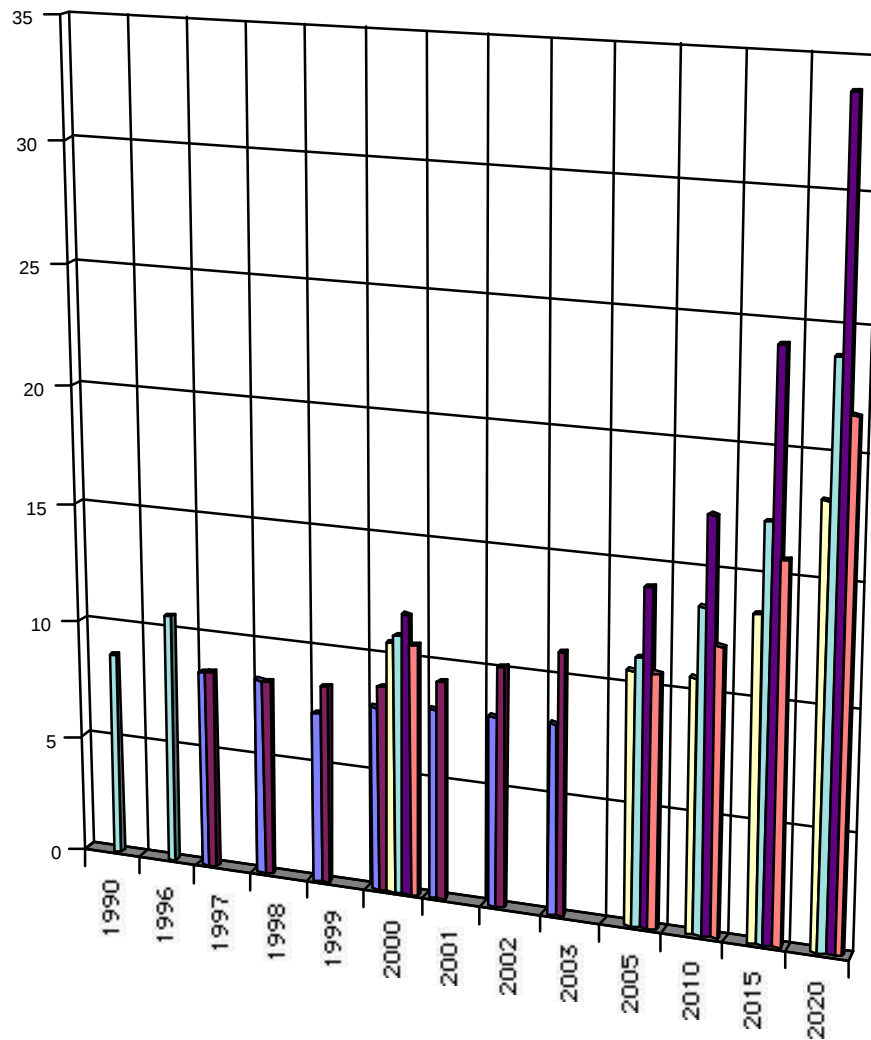
More generally, the net effect of the entire strategy is to raise Saudi production levels to 11.0 MMBD in 2003.⁸⁹ The EIA already projects that Saudi Arabian production capacity will increase its production from 8.6 million barrels per day in 1990, and 10.6 million barrels per day in 1996, to 10.9 (10.6-11.8) million barrels per day in 2000, 11.2 (10.6-14.1) million barrels per day in 2005, 13.5 (10.6-17.2) million barrels per day in 2010, 17.2 (13.5-24.1) million barrels per day in 2015, and 23.8 (18.2-33.7) million barrels per day in 2020.⁹⁰ In fact, Figure 3 shows that the so-called “market share” strategy simply accelerates the strategy Saudi Arabia already intends to pursue by a period of 3-5 years at a maximum.

This brings up a key issue in terms of mid to long-term energy strategy. Virtually any major problem in terms of energy supply tends to increase the central importance of

Saudi Arabia, regardless of whether it pursues a high risk “market share” strategy or not. Saudi Arabia’s combination of massive reserves, high existing production capacity, and low production costs means that it will benefit over time from any major depletion of reserves in other countries that raises oil prices, production problems caused by political or economic reasons, slow-downs in technology gain, declines in the finding of new reserves, or major increases in economic growth in any region. Only major new discoveries of alternative fuels or new technologies can prevent Saudi Arabia from receiving some combination of these benefits over time.

Figure 3

**Saudi Oil Production and Production Capacity Under the Current Saudi,
High-Price-Low Production, and Market Share Strategies**
(In MMbD)



	1990	1996	1997	1998	1999	2000	2001	2002	2003	2005	2010	2015	2020
■ High Price-Low Production	-	-	8.4	8.3	7.2	7.8	8	8	8	-	-	-	-
■ Market Share	-	-	8.4	8.3	8.4	8.7	9.2	10.1	11	-	-	-	-
■ EIA High Price Capacity	-	-	-	-	-	10.6	-	-	-	10.6	10.6	13.5	18.2
■ EIA Reference Capacity	8.6	10.6	-	-	-	10.9	-	-	-	11.2	13.5	17.2	23.8
■ EIA Low Price Capacity	-	-	-	-	-	11.8	-	-	-	14.1	17.2	24.1	33.7
■ EIA High Non-OPEC Capacity	-	-	-	-	-	10.6	-	-	-	10.6	12	15.7	21.6

Adapted by Anthony H. Cordesman from Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998, and DOE/EIA, International Energy Outlook, 1998, April, 1998, DOE/EIA-484(98), Reference Case

Natural Gas

Saudi Arabia's natural gas reserves are estimated at 190.5 trillion cubic feet (Tcf). Most of these reserves consist of associated gas, which comes primarily from the Ghawar field and the offshore Safaniya and Zuluf fields. The Ghawar oil field alone accounts for one-third of the country's total gas reserves. Most new associated gas reserves discovered in the 1990s have been in fields that contain light crude oil, especially in the Najd region south of Riyadh. Most of Saudi Arabia's non-associated gas reserves are located in the deep Khuff reservoir, which underlies the Ghawar oil field, and which has been expanded steadily over the past decade. Another gas field, called Dorra, is located near the Khafji oil field in the Neutral Zone and may be developed by Japan's Arabian Oil Co., depending upon a feasibility study to be conducted in early 1998.

Natural gas development is both a short and long-term energy issue because of its value as feedstock and because it is critical to reducing the domestic demand for oil. With domestic gas demand expected to grow as much as 8% per year through 2007, increasing gas production is a priority for the Saudi government. The gas will be used as feedstock for the growing petrochemical industry as well as for electricity generation. In addition, using gas domestically instead of oil could help free up 200,000-300,000 barrels per day of additional crude oil for export within the next two years. Oil Minister Naimi has made it clear that upstream participation by foreign energy companies in developing Saudi gas resources will not be permitted. Instead, Saudi Aramco will continue to carry out such work. Gas infrastructure work (drilling wells, laying pipelines, etc.), on the other hand, is "completely open to international companies," according to Naimi. Saudi Arabia hopes to add 5 Tcf of recoverable gas reserves each year.

Domestic demand for gas is rising at a rate of 7% per year, and is driving investment in Saudi Arabia's Master Gas System (MGS), which started up in 1982 (prior to that time, all of the country's natural gas was flared). Saudi Arabia has developed an ambitious \$4 billion expansion plan, and key elements of this plan are going forward.⁹¹

In November 1996, a project management contract was signed with the Parsons Corporation (a US company) for construction of a 1.44 Bcf-per-day gas processing plant

at Hawiya. In December 1998, three contracts were signed for the constructions of a fourth gas processing plant at an estimated cost of \$1.4 billion. Hawiya is Saudi Arabia largest gas project in more than 10 years, and is to be completed by the end of 2001. It will raise Saudi output to 5.5 million cubic feet per day.

The Parsons Corporation is also working with a local partner on debottlenecking of the existing Uthmaniyah gas processing plant. The Kingdom's other existing gas processing plants (Berri and Shedgum) are also slated for debottlenecking. Boosting recovery at Berri alone is projected to cost \$500 million, and Canada's Delta Hudson is now preparing tender documents. The combination of the Hawiya plant plus the debottlenecking of the three existing plants will boost Saudi Arabia's gas processing capacity to 6.3 Bcf per day by 2002.

There are no current Saudi plans to export natural gas, but Saudi Aramco still projects that domestic gas consumption could exceed 6 Bcf per day by 2005. Most of this demand will come from industrial consumers, power plants, and petrochemical plants located in the Eastern Province. An important incentive for additional investment in natural gas is to provide a substitute for crude burning by electric utilities. In the summer of 1996, high demand by domestic power plants contributed to Aramco's decision to reduce its crude oil deliveries under some term contracts by 5%.

As a result, Saudi Arabia has a growing interest in foreign investment in its gas industry. Crown Prince Abdullah made this clear at the same time he presented the Kingdom's plan to seek investment in its oil sector during his September 1998 visit to Washington. Chevron, Exxon, Mobil, Texaco, Arco, Conoco, Occidental and Phillips are believed to have an interest in such projects. After other Saudi meetings in Europe in December 1998, British Petroleum, ENI, Royal Dutch Shell Group, Elf, and Total are also reported to be interested in such deals. According to some reports, Saudi Arabia is giving priority to gas deals for internal political reasons, to meet internal gas demand, because of surplus oil capacity, and because of the estimated cost of developing major new discoveries of high pressure and acidic non-associated gas at Khuff.⁹²

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- 1 Department of Energy, Energy Information Agency, International Energy Outlook, DOE/EIA-04884(98), April, 1998, pp. 36, 175-178
 - 2 Based upon the ACDA data base for World Military Expenditures and Military Transfers, and unclassified CIA estimates.
 - 3 Based upon the ACDA data base for World Military Expenditures and Military Transfers, and unclassified CIA estimates.
 - 4 World Bank, World Development Indicators, 1997, Washington, World Bank, 1997, pp. 16, 68, 116, 286; CIA, World Factbook, 1997, Washington, GPO, CD ROM; ;” The World Bank, World Bank Atlas, 1998, Washington, World Bank, pp. 36-37.
 - 5 Saudi Arabia, March 1997, p. 3.
 - 6 CIA, World Factbook, 1997, Washington, GPO, CD ROM, “Saudi Arabia;” The World Bank, World Bank Atlas, 1998, Washington, World Bank, pp. 36-37.
 - 7 World Bank, World Development Indicators, 1997, Washington, World Bank, 1997, pp. 12, 68, 116, 286; CIA, World Factbook, 1997, Washington, GPO, CD ROM, “Saudi Arabia;” The World Bank, World Bank Atlas, 1998, Washington, World Bank.
 - 8 World Bank, World Development Indicators, 1997, Washington, World Bank, 1997, p. 136, 294; historical data base for Table I , US Army Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, various editions.
 - 9 World Bank, World Development Indicators, 1997, Washington, World Bank, 1997, pp. 136, 294.
 - 10 World Bank, World Development Indicators, 1997, Washington, World Bank, 1997, pp. 68, 116, 180, 286; CIA, World Factbook, 1997, Washington, GPO, CD ROM, “Saudi Arabia;” The World Bank, World Bank Atlas, 1997, Washington, World Bank, pp. 36-37.
 - 11 World Bank, World Development Indicators, 1997, Washington, World Bank, 1997, pp. 12.
 - 12 No precise estimate is possible and some private Saudi estimates for water, electricity, energy, roads, housing, facilities, and rehabilitation and improvement of existing infrastructure would exceed one trillion US dollars between 1995 and 2015.
 - 13 Sources on Saudi Arabia include interviews; Economist, January 23, 1999, pp. 41-42; Middle East Economic Digest, January 15, 1999, pp. 2-4, January 22, 1999, pp. 16-17.
 - 14 Congressional Quarterly, The Middle East, 7th Edition, Washington, Congressional Quarterly, 1990, p. 117.
 - 15 EIA, on-line Internet data base on Saudi Arabia, accessed August 26, 1997.
 - 16 Reuters, August 8, 1994, 1013; Middle East Economic Digest, August 18, 1995, p. 3, June 16, 1996, p. 5, October 18, 1996, p. 6, June 13, 1997, pp., 23-25.
 - 17 Middle East Economic Digest, “Special Report: Saudi Arabia”, March 10, 1995, pp. 28-30, April 5, 1996, pp. 35-49, June 13, 1997, pp. 23-25; Saudi Arabia, Monthly Newsletter from the Royal Embassy of Saudi Arabia, Washington, DC, February 1996, p. 3; and interviews with US experts.
 - 18 An effort to impose taxes of up to 30% on foreigners was withdrawn shortly after it was proposed. Nearly two-thirds of the bonds were bought by the Saudi Arabian government. Wall Street Journal, December 31, 1987, p. 4; January 5, 1988, p. 21, January 6, 1988, p. 12, January 7, 1988, p. 16, January 12, 1988, p. 2; Washington Post, December 31, 1987, p. E-3, January 12, 1988, p. C-3; Economist, January 16-22, 1988, p. 59; New York Times, January 6, 1988, p. A-1; Chicago Tribune, January 27, 1988, p. 3-7.
 - 19 New York Times, August 22, 1993; Washington Post, August 29, 1993, p. C-2.
 - 20 Middle East Economic Digest, January 12, 1996, p. 15; Saudi Arabia, Volume 14, January 1997, pp. 1-2.
 - 21 Jane's Defense Weekly, December 5, 1992, p. 5; Business Week, February 15, 1993, p. 50.
 - 22 Middle East Economic Digest, January 17, 1992, pp. 4-5, March 20, 1992, pp. 10-16.
 - 23 Jane's Defense Weekly, December 5, 1992, p. 5; Business Week, February 15, 1993, p. 50.
 - 24 New York Times, June 19, 1995, p. D-2; IMF Article 4 Report, 1994 and Middle East Economic Digest, “Special Report: Saudi Arabia”, March 10, 1995, pp. 28-30; Reuters, August 7, 1995, 0552, 1420; Executive News Service, July 31, 1995, 0905; Middle East Economic Digest, January 12, 1996, pp. 15-16; Middle East Economic Digest, November 3, 1995, p. 38.
 - 25 IMF Article 4 Report, 1994 and 1995; Middle East Economic Digest, “Special Report: Saudi Arabia”, March 10, 1995, pp. 28-30 and April 5, 1996, pp. 30-43; Reuters, August 7, 1995, 0552, 1420; Executive News Service, July 31, 1995, 0905; Middle East Economic Digest, August 18, 1995, p. 3; Middle East Economic Digest, January 12, 1996, pp. 15-16.

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- 26 Middle East Economic Digest, January 12, 1996, pp. 15-16, and calculations by the author.
- 27 Agence France Presse, March 14, 1997; Middle East Economic Digest, September 19, 1997, p. 28..
- 28 EIA Factsheet on OPEC Revenues, September 4, 1998.
- 29 Reuters, December 28, 1998, 1728.
- 30 Reuters, December 28, 1998, 1728.
- 31 Saudi Arabia, Volume 16, Number 1, January 1999, pp. 1-2; Middle East Economic Digest, January 15, 1996, pp. 2-3.
- 32 US-Saudi Business, Vol. IV, No. 1, 1999, p. 2; Middle East Economic Digest, January 15, 1996, pp. 2-3.
- 33 IMF; Middle East Economic Digest, April 5, 1996, p. 43, and October 18, 1996, p. 6.
- 34 IMF Article 4 Report, 1995, and Middle East Economic Digest, April 5, 1996, pp. 30-43.
- 35 Middle East Economic Digest, "Special Report: Saudi Arabia", March 10, 1995, pp. 28-30; Middle East Economic Digest, November 3, 1995, p. 37.
- 36 Middle East Economic Digest, "Special Report: Saudi Arabia", March 10, 1995, pp. 28-30.
- 37 For an overview of recent developments, see Edmund O'Sullivan, "The Kingdom Faces the Future," Middle East Economic Digest, January 22, 1999, pp. 33-44.
- 38 Neu Zürcher Zeitung, April 15, 1995; Executive News Service, August 7, 1995, 0552, August 31, 1995, 0942; Economist, May 27, 1995;
- 39 Middle East Economic Digest, "Special Report: Saudi Arabia", March 10, 1995, pp. 28-30; Middle East Economic Digest, November 3, 1995, p. 37.
- 40 Middle East Economic Digest, April 5, 1996, p. 48.
- 41 Middle East Economic Digest, April 5, 1996, p. 48.
- 42 The Financial Times, January 30, 1996, p. 6.
- 43 Middle East Economic Digest, April 26, 1996, p. 27.
- 44 Middle East Economic Digest, April 26, 1996, p. 27.
- 45 Washington Post, June 6, 1995, p. D-2; Washington Times, June 6, 1995, p. B-6; Executive News Service, August 7, 1995, 0552, August 31, 1995, 0942, Wall Street Journal, September 22, 1995, p. B-4.
- 46 Middle East Economic Survey, January 6, 1997, p. B-1; Middle East Economic Digest, October 18, 1996, p. 6.
- 47 Middle East Economic Digest, January 17, 1997, p. 5, June 13, 1997, p. 24; Wall Street Journal, May 29, 1997; Financial Times, January 2, 1997, Internet.
- 48 Associated Press, December 5, 1998, 0817; New York Times, December 5, 1998, p. A-5; Agence France Press, December 5, 1998.
- 49 Middle East Economic Digest, January 15, 1996, pp. 2-3.
- 50 Reuters, February 9, 1999, 08:24
- 51 For an overview of recent developments, see Edmund O'Sullivan, "The Kingdom Faces the Future," Middle East Economic Digest, January 22, 1999, pp. 33-44.
- 52 Middle East Economic Digest, January 12, 1996, p. 15, June 14, 1996, p. 5; Saudi Arabia, Volume 14, January 1997, pp. 1-2; Middle East Economic Survey, January 6, 1997, p. B-1.
- 53 IMF Article 4 Report, 1994 and 1995; Middle East Economic Digest, "Special Report: Saudi Arabia", March 10, 1995, pp. 28-30 and April 5, 1996, pp. 30-43; Reuters, August 7, 1995, 0552, 1420; Executive News Service, July 31, 1995, 0905; Middle East Economic Digest, August 18, 1995, p. 3, January 12, 1996, pp. 15-16, and calculations by the author.
- 54 Although Saudi budget data seem to involve relatively straightforward reporting, a Saudi official indicates that the true deficit was \$5.9 billion and that arrears exceeded \$3 billion if all debt was counted, and the government was not allowed to unilaterally write off debts to contractors and the failure to pay interest on some arrears. See Middle East Economic Survey, January 6, 1997, p. B-1; Saudi Commerce and Economic Review, February 1996, p. 6.
- 55 Middle East Economic Digest, June 13, 1996, p. 24.

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- 56 Saudi Arabia, February 1997, p. 3; MEM, February 1997, p. 3.
- 57 Middle East Economic Survey, January 6, 1997, p. B-2.
- 58 Wall Street Journal, September 23, 1996, p. B-10D.
- 59 EIA OPEC Earning information sheet, September 4, 1998.
- 60 EIA Country Analysis, "Saudi Arabia," accessed January 7, 1999, and EIA, Monthly Energy Review, January 1999, pp. 130-131.
- 61 Department of Energy, Energy Information Agency, International Energy Outlook, DOE/EIA-04884(98), April, 1998, pp. 36, 175-178
- 62 Associated Press, April 16, 1998, 1657EDT.
- 63 Associated Press, April 16, 1998, 1657EDT.
- 64 There is no consensus in Saudi Arabia on the probable size of future oil revenues. Former oil minister Yamani has been pessimistic. Wall Street Journal. December 11, 1998, p. A-4. The current oil minister, Ali al-Naimi, has forecast an easing of the glut in 1999. Reuters, December 5, 1998, 0231.
- 65 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.
- 66 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.
- 67 Business Week, November 2, 1998, p. 58; Wall Street Journal, November 12, 1998.
- 68 New York Times, December 3, 1998, p. C-6.
- 69 Reuters, November 17, 1998, 1227.
- 70 Reuters, November 17, 1998, 1227.
- 71 Reuters, November 7, 1998, 0541; Middle East Economic Digest, January 22, 1999, pp. 16-17; Middle East Economic Survey, January 18, 1999, pp. D-1 to D-11.
- 72 Business Week, November 2, 1998, p. 58; Wall Street Journal, November 12, 1998.
- 73 Reuters, November 17, 1998, 0218.
- 74 Reuters, January 9, 1999, 0336.
- 75 Bloomberg, February 6, 1999, 1048.
- 76 Bloomberg, February 7, 1999, 0403.
- 77 Reuters, November 17, 1998, 1227.
- 78 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.
- 79 EIA on-line fact sheet Accessed January 1, 1999.
- 80 Edmund O' Sullivan, "The Kingdom Faces the Future," Middle East Economic Digest, January 22, 1999, p. 16-17, and 33-41.
- 81 Department of Energy, Energy Information Agency, International Energy Outlook, DOE/EIA-04884(98), April, 1998, pp. 36, 175-178
- 82 Edmund O' Sullivan, "The Kingdom Faces the Future," Middle East Economic Digest, January 22, 1999, p. 16-17, and 33-41.
- 83 Middle East Economic Digest, January 22, 1999, p. 16.
- 84 Edmund O' Sullivan, "The Kingdom Faces the Future," Middle East Economic Digest, January 22, 1999, p. 16-17, and 33-41.
- 85 Bloomberg News, February 8, 1998, 0420.
- 86 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.
- 87 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.

88 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.

89 Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share or Price Defense?," Washington, December, 1998.

90 Department of Energy, Energy Information Agency, International Energy Outlook, DOE/EIA-04884(98), April, 1998, pp. 36, 175-178

91 Middle East Economic Digest, January 22, 1999, p. 16-17.

92 Edmund O' Sullivan, "The Kingdom Faces the Future," Middle East Economic Digest, January 22, 1999, p. 16-17, and 33-41.