Chapter 9

Saudi Arabia and Offsets[1]

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9.1 Introduction

The dictionary definition of offset is to balance one thing against another, or to compensate. During the Cold War offset became more or less synonymous with a defence or defence-related countertrade; the balancing of an international defence purchase by the supplier buying goods from the customer's economy.

This Chapter deals with such offsets in Saudi Arabia. The geographical, historical and economic background to the offset programmes is outlined, followed by a description of Saudi Arabian offset policy in the context of the development of the Kingdom. The Al Yamamah offset programme is used as a case study. The joint ventures established with a number of foreign companies under offset provisions are described. Finally, the overall impact of offset deals on the national economy is discussed.

9.2 The Kingdom of Saudi Arabia

The Kingdom of Saudi Arabia covers some 2,240,000 square kilometres of the Arabian Peninsula, on the southwestern edge of Asia. It has a coastline 1,760 kilometres in length on the Red Sea, and 560 kilometres on the Arabian Gulf.

The history of Saudi Arabia began many centuries before the prophets, but historical records date back to the time of the prophet Ibrahim (Abraham). However, the modern Kingdom was conceived and carved out in stages during the 20th century, beginning with the late King Abdulaziz ibn Abdulrahman Al-Saud in 1902. The name of Saudi Arabia was attributed to it in the year 1932.

Saudi Arabia is an independent monarchy, governed by the King, Deputy Premiers and a Council of Ministers. King Fahd ibn Abdulaziz, the Custodian of the Two Holy Mosques, succeeded King Khalid ibn Abdulaziz in 1982. He is assisted by HRH Crown Prince Abdullah ibn Abdulaziz, the Deputy Premier and

Commander of the National Guard, HRH Prince Sultan ibn Abdulaziz, the second Deputy Premier, Minister of Defence and Aviation and Inspector General, and by the ministers appointed to the Council of Ministers. This Council is responsible for endorsing state budgets, drawing up economic development plans, and managing defence and foreign affairs.

The Kingdom is divided into 13 administrative regions, each headed by a Governor appointed by the King. All legislation, agreements with other nations and concessions for oil and mineral exploitation are subject to government approval and declaration in the Royal Decrees. Many government bodies have been set up to carry out special programmes, either as autonomous bodies or affiliated to different ministries.

9.3 Development of the Kingdom Since 1970

Since 1970, the Kingdom has carried out five interdependent five-year development plans. The plans have set out systematically to transform the economy of Saudi Arabia and reduce its dependence on crude oil. While each Plan has included a balanced series of measures carrying forward all aspects of economic development, each has also had a focus on a particular aspect of development.

The First Plan (1390–1395 AH; 1970–1975) concentrated on programmes for social and economic development, with total expenditure of SR 32.8 bn. Developments in the oil market in the 1970s significantly increased the resources available, with the result that the Second Plan (1395–1400 AH; 1975–1980) was far more dramatic than originally envisaged, amounting to some SR 500 bn. The Second Plan continued the basic social and economic reforms, concentrating on the industrial sector's contribution to gross domestic production. The Third Plan (1400–1405 AH; 1980–1985), amounting to some SR 800 bn, shifted the focus from building infrastructure to increasing production, especially in the agricultural sector.

Although much had been achieved, the transformation of the economy had not been completed when a downturn in the oil market led to a significant reduction in resources. As a result, the Fourth Plan (1405–1410 AH; 1985–1990) totalled only some SR 100 bn. Initiatives in the Fourth Plan were aimed at private sector agricultural, industrial and commercial development. There was also emphasis on economic and social integration with the member states of the Gulf Cooperation Council (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates).

The current (Fifth) Plan (1410–1415 AH; 1990–1995) is aimed at reducing dependence on crude oil production as the main source of national income.

Industry and agriculture received top priority, with emphasis on the diversification of the production base and the development of manpower to provide a high quality and efficient workforce for the national economy.

When the Council of Ministers endorsed the overall aims of the Fifth Development Plan special emphasis was placed on the following aims:

- constantly developing the Kingdom's self-defence capabilities, while deepening the loyalty and affiliation of citizens
- identifying and implementing all means of increasing the state's revenues, provided there are no unwanted social or economic effects
- upgrading the performance, efficiency and cost effectiveness of Government institutions, without lowering the standard of service rendered to citizens
- increasing the part played by the private sector in the domestic economy through encouraging domestic capital investment inside the Kingdom and setting rules and regulations for financing development plans and programmes by private companies under the supervision of the State
- balancing regional development to meet the needs of the population while ensuring full benefit from the available facilities and services, by selecting centres for growth and development
- encouraging more people to enter the private sector
- replacing non-Saudi manpower with suitably trained and skilled Saudi manpower.

While current rates of growth expressed in real terms have slowed considerably, GDP in current prices grew nearly 50% between 1989 and 1993. Inflation over this period averaged 1.8% (consumer price index). Non-oil private sector activity accounts for some 25% of total GDP, achieving 3.4% growth in 1993 (down from 4.0% in 1992).[3] Table 1 presents some further macro-economic statistics for the Saudi economy in 1993.

Table 1: Selected macro-economics statistics for the Saudi economy in 1993[2]

Total GDP	$120.75 bn
Real GDP growth 1992–1993	0.7%
Oil share of GDP	23.5%
Non-oil private sector share of GDP	24.5%
Exports	$40.7 bn
Imports	$30.5 bn
Trade balance	$10.2 bn

Source: Statistical Summary (various years), Saudi Arabian Monetary Authority, Riyadh.

9.4 Joint Ventures in Saudi Arabian Development

A key factor in the development of the Saudi economy has been technology transfer through a variety of institutional arrangements, principally the joint venture. In each case the key objective has been to obtain the primary benefit of the venture while at the same time enhancing the Kingdom's national capabilities and capacity.

The development of the oil industry, which has provided the means and impetus for the economic development of the Kingdom, is the most far-reaching example. From the earliest days, Aramco (now Saudi Aramco) has been much more than an American conglomerate extracting oil in return for Royalty payments. Partly from necessity and partly because of the relationship which developed between the company and the Kingdom, Aramco effectively took on the role of a development agency. As Moliver and Abbondante point out, 'manufacturing in the Kingdom got its start from Aramco. The oil company was forced to establish various industries to support its workers, since there was essentially no manufacturing sector in Saudi Arabia at the time'.[4]

The contribution made by Aramco extended far beyond ensuring support for its workers. Indeed, the easiest way to meet the needs of the workforce, particularly in the early days, would have been to rely on imports. But Aramco built ports, roads and communities. It was asked by the Government to set up the school system (ABGS, Aramco built Government schools), and the electricity system it established in the Eastern Province became the model for the national system (SCECO, Saudi Consolidated Electricity Company). A policy of 'Saudiisation' ensured that nationals were trained to take over from expatriates, culminating in the appointment of a Saudi chairman, Ali Naimi, in 1989. Technology transfer perhaps reached its peak when Aramco itself was transferred to Saudi ownership in 1980.[5]

The role of Aramco in the development of Saudi Arabia is reflected in the special relationship which developed between the Kingdom and the USA. The US became a major supplier of advice, expertise and qualified manpower in the exploitation of oil and the development of the infrastructure and industry. As the West purchased the oil, the Kingdom purchased the West's skills and expertise, resulting in a mutually beneficial partnership.[6]

The development of a downstream petro-chemical industry was firmly based on the joint-venture concept. Two industrial cities were established under a Royal Commission, at Jubail on the Arabian Gulf and Yanbu on the Red Sea. SABIC, the Saudi Basic Industries Corporation, became the joint venture partner of major international petrochemical companies to establish a series of petro-

chemical plants which have successfully entered world markets. Other ventures include an iron and steel plant at Jubail (HADEED) and an expansion of the Jeddah steel rolling mill to meet domestic needs. These ventures provided a further avenue for the transfer of managerial, professional and technological skills necessary in a modern industrialised economy.[7]

The role of joint ventures in the construction and manufacturing sectors was recognised when joint ventures were given equal treatment with wholly Saudi-owned enterprises in exemption from the requirement to subcontract 30% of the value of their work to Saudi companies.[8] Studies by Aramco showed that in 1983, 30% (by turnover) of construction activity in the Kingdom was carried out by joint ventures, including some of the largest, most complex projects.[9]

At the end of 1992, there were 336 licenced industrial joint ventures in the Kingdom (although not all might be operational). Of these, over 40% are in fabricated metal products, machinery and equipment. The chemicals, petroleum, and plastics products sector has 21% of the joint ventures, with a further 15% in construction materials, ceramics and glass. The US is the most common foreign partner, with 66 joint ventures, followed by the UK (32), Germany (29) and Switzerland (25). France follows (13) and Japan with 5.

Like all markets, Saudi Arabia has its own characteristics, and entry can be difficult for companies originating in a different culture. The use of law based on the Shariah means that many western business practices cannot be directly applied to the Saudi market. Joint ventures enable foreign businesses to rely on their local partner and avoid the steep learning curve facing those new to the Saudi market. However, the partner has to be chosen with great care as the future of the venture rests on the working relationship between the partners.

A further reason for the growth of joint ventures is the range of facilities available to such enterprises. These include interest-free loans of up to half the capital cost from the Saudi Industrial Development Fund (SIDF), a ten-year tax holiday, freedom to repatriate capital and profits, low cost utilities, exemption from duty on essential imports and tariff protection for the products at a level of up to 12%.

In the case of the US, collaboration has progressed beyond individual joint ventures to the point where there is a close commonality of interest in the economic sphere. This in part reflects the history of the development of the oil industry and in part the roles of Saudi Arabia as oil supplier and the US as oil consumer. However, it also reflects the common recognition of collaboration as a beneficial approach to economic activity. The relationship is formalised in the Saudi-US Joint Economic Commission.

9.5 The Saudi-US Joint Economic Commission

The Saudi Arabian-United States Joint Commission on Economic Cooperation was established in June 1974 to promote programmes of cooperation between the two countries in the fields of industrialization, trade, manpower training, agriculture, science and technology. On February 13 1975, the two governments signed a Technical Cooperation Agreement providing a framework within which the Joint Commission began operations. Since that time, the Commission has become an active government-to-government mechanism by which the expertise present in various parts of the United States and Saudi Arabian governments and their respective private sectors can be bought together, to the following ends:

- helping Saudi Arabia achieve its development goals by providing technical expertise in key areas
- strengthening economic and political ties between the two nations
- encouraging better understanding between the American and Saudi Arabian peoples.

The Technical Cooperation Agreement has been extended in five-year increments and is currently valid through to the year 2000.

Since the Joint Commission began operations in 1975, the two governments have signed 36 project agreements. Currently, there are 21 projects in progress, with 15 projects and sub-projects having been completed.

9.6 Administration and Management of the Commission

The Commission is chaired jointly by the US Secretary of the Treasury and the Saudi Arabian Minister of Finance and National Economy. Saudi Arabian Ministries, in conjunction with their counterpart US action agencies, are responsible for the implementation of Joint Commission Projects. Ministerial-level Joint Commission meetings are held alternately in Saudi Arabia and the US/ Delegations attending the meetings include senior officials of the two governments having an active role in the programmes. With the exception of one project on solar energy, all are funded entirely by the Saudi Arabian government. The US Department of the Treasury is responsible for disbursing the funds, according to bilateral agreements. Four of the 21 current projects are managed or supported by private US firms or institutions, under contract to the US Department of the Treasury, Department of Energy and US Customs. King

Abdulaziz University, King Faisal University and King Saud University are involved in projects, along with Saudi Arabian ministries and agencies.

There are clear parallels between the role of joint ventures and intergovernmental collaboration and the development of offset policy. Offsets associated with military purchase can be seen as an extension of the process of technology transfer initiated through joint venture and collaboration.

9.7 The Saudi Arabian Offset Programme

The Saudi Arabian government (SAG) has recognised the new global economic environment and the utility of offsets. Within Saudi Arabia, offset programmes are not seen in the same way as conventional forms of countertrade. Offsets are programmes of private sector projects created by the Kingdom of Saudi Arabia, the UK and French governments, and US companies, leading to partnerships between Saudi companies and UK, US and French firms. The individual projects within these programmes are long-term business partnerships. The Kingdom's goal is to achieve successful business ventures that will mutually serve the interest of all investors. The projects are the choices of investors, as long as they meet the offset requirements. The SAG's effort is directed towards assisting and bringing together foreign and Saudi investors. Once this is achieved, the SAG allows them to pursue their own ventures.

9.8 Technology Transfer

Technology transfer occurs where a seller grants permission for the buyer to use the seller's high technology processes within the businesses created under the offset programme, and helps the buyer acquire the technical skills necessary to make use of that permission. As such, technology transfer is not a type of offset, but is an essential part of almost all offset arrangements.

These technical processes are the result of research and development. They are comparable to patents if they are a seller company's proprietary property, or to national defence secrets if the processes are the property of a seller nation. Usually permission is granted only for use during the specific life of an offset agreement. Both seller company and the nation that developed the technology have financial reasons to restrict the use of the process, since they invested in the development.

The Saudi objective of encouraging the transfer of technology was high on the offset agenda, and appears at face value to be very attractive and most

desirable. However, there are many factors which make the achievement of this objective very difficult.

Where offset arrangements involve transferring production of the military equipment, offset defence purchases may be very expensive because of technology transfer by the seller. At the extreme, the seller will calculate all the possible direct and indirect costs of the technology, and then increase the prices of the defence part of the sale proportionally. Since the seller has invested large amounts of money in the research, they consider it their right to recoup these costs from the transfer. However, governments typically recoup their R&D costs by a levy on direct exports, thus reducing the apparent premium on offset deals. In some cases, such as the Al Yamamah (British Aerospace) contract, offsets are not directly related to the defence sales. There may however, be some increase in price due to the administrative and other costs associated with the offset programme.

The Saudi Arabian government has identified the transfer of technology as a prime motive for the offset programme. Transfer takes place through research and development as well as manufacturing and production. Indeed, research and development ensures the transfer of the capability for technological development, as well as the ability to make use of existing technologies. Offsets can also help a country make the best use of its resources, develop products appropriate for international markets and hence help exports, and support or establish service industries and the economic infrastructure.

For the foreign partner company, offsets can offer a way of buying into a market. Companies can gain access to an otherwise closed or difficult market by offering benefits for the local economy. Joint ventures established under offset regimes can offer continued access to the economy after the primary deal has ended. This compares with the experience of UK companies wishing to sell defence equipment into the US market, traditionally reserved for US companies. Local manufacturing facilities are essential, and may originate from opportunities to sell equipment under offset programmes.

There are other advantages to companies from offset arrangements. Government support and commitment can speed up consideration and approval of projects, and help may be offered in identifying priority sectors and potential ventures. Typically, an offset programme ensures that consideration is given at the highest level to any problems which arise.

Companies generally do not like to part with technology, as its dispersion may have implications for their own future viability. Sharing technology with another nation, even through an offset deal, is not attractive since the effect is to create competition for themselves. In some instances, companies will only offer technology which they know is about to be replaced by new developments. For

military technology, the transfer could also mean giving away a military advantage which was provided by the monopoly of technology. In such cases, even though the company may be willing to share the technology, their government may not.

From the point of view of the buying nation, the technology transfer sounds very attractive, but the use of the technology requires a highly skilled workforce, which can learn and make effective use of the opportunity. There is tremendous competition in high technology. Every nation is trying to maintain its advantage by continuous and vigorous research and development. Today's latest technology is obsolete by tomorrow. The items produced by current technology may not sell tomorrow if another nation has made an advance in that field. Thus acquiring high technology is of limited value without the ability to carry out research and development. It makes the buying nation, at best, a branch factory of the company that permitted the transfer.

The offset experience of other nations suggests that high technology capabilities are still under the control of developed nations. They are not willing to just give away technology to developing nations.

Development of high technology capabilities in defence-related industries is not expected to be economically feasible following the end of the Cold War and the emergence of the so-called New World Order for promoting peace. The world market is flooded with military hardware and developed nations are facing difficulties in making new sales. The global defence industry is shrinking in output and capacity. Under these conditions, there is little opportunity for developing nations to sell defence products which are produced under licence with borrowed technology.

The manufacture and assembly of components, subsystems and major assemblies under licence, as is done in Turkey and Egypt, is difficult for Saudi Arabia, for the following reasons:

- the equipment proportion of the contracts, which would give rise to opportunities for manufacture and assemble, is typically quite small
- as Saudi Arabia's population is small and there is a shortage of skilled workers, there is no pressing requirement to establish factories with the sole aim of providing skilled jobs such as those in defence work
- at a time when the defence industries of developed nations are converting to the production of non-military items, any military production set up in Saudi Arabia should be for dual-use items.
- the Kingdom should concentrate mainly on the production of non-military items that have a wide market, with the possibility to change to military items if needed in the future. The government is the sole customer for

military equipment, while non-military items have unrestricted markets with many customers.

- the sale of all defence-related equipment produced under licence is controlled in one way or another by the nation of origin of the technology
- an offset should be directed towards establishing industry for which there is a big demand, or to produce goods that are consumed in both the military and civil sectors, such as memory chips, communication equipment etc.
- the over-riding problem with the transfer of technology through offsets is that the receiving nation will always lag behind the latest technological developments. If an industrial nation like the US has difficulty maintaining its lead in some technologies, then the developing nations have little chance of keeping pace with developments.

This suggests the important conclusion that offset programmes should emphasise the establishment of research and development centres, working closely with universities such as the King Abdul Aziz City for Science and Technology.

9.9 Saudi Arabian Offset Programme Objectives

Offset programmes in the Kingdom of Saudi Arabia, as in other nations, are initiated along with the purchase of defence products and services. The offset part of the contract is an agreement by the foreign sellers to joint investment in the Kingdom, on a 50–50 basis with Saudi investors. However, the objectives of the Kingdom's offset programmes are somewhat different from those elsewhere. The aim is to achieve sound economic diversification, rather than to sustain or create defence industrial capabilities. Thus investment is encouraged in the fields of advanced technology that have long-term business potential.

The Saudi Arabian offset programme can be seen as an extension of the long-term civil programme of technology transfer to contracts in military sector. Offsets can and are making a valuable contribution to the creation of a diversified economy, but there is a real and overriding problem in that trained Saudis are not available in the required numbers and with the appropriate skills seeking employment of the type offered by the offset projects. Government departments and the private sector are also competing for the available trained Saudis.

The first military offset programme of the Kingdom was part of the Peace Shield purchase of defence equipment. The offset policy was first developed for this programme and subsequently applied to the UK Al Yamamah agreement. The subsequent agreement with the French government was a framework agreement to provide offsets against future contracts. As a matter of policy, all the agreements

were written in a way which made it easier for investors. This led to changes in the Guidelines, which became more flexible than when first set out in 1983.

As well as the transfer of technology through research, development, manufacturing or production, the objectives of offset policy include efficient use of Saudi Arabia's natural resources, establishing industries with export potential, and creating service industries to enhance, develop, support or maintain the infrastructure of the Kingdom.

The 1983 General Guidelines included a list of 'Candidate materials, products, processes and systems' appropriate to the offset programme. This list was not intended to be exhaustive, but aimed at providing examples of appropriate technology. The items on the list were state of the art commercially viable products, rather than research and development.

The objective of transferring high technology into the Kingdom has been clarified. Some early offset proposals were based on attractive high technology which has proved difficult or impossible to transfer. The Offset Committee has increasingly emphasised that the 'transfer' element is more important than the 'high' aspect of technology. The Committee prefers a successful transfer of medium technology to the hope for high technology. Medium technology is more susceptible to transfer and more appropriate to the other objectives of offset policy.

9.10 The Saudi Economic Offset Committee

The Saudi Arabian Government constituted the Saudi Economic Offset Committee (EOC) in 1983 as the primary authority to administer the offset programme. The EOC is composed of high level representatives from the Ministry of Finance and National Economy, the Ministry of Planning, the Ministry of Commerce, and Ministry of Industry and Electricity. The Director General of the Saudi Industrial Development Fund (SIDF) and the Managing Director of Saudi Arabian Basic Industries Corporation (SABIC) are also members The Committee is chaired by the Assistant to the Minister of Defence and Aviation. Lehman Brother Kuhn Loeb, a US international banking firm, was contracted in 1983 to provide advisory staff to the committee. This role has now been taken over by the Carlyle Group.

9.11 EOC Responsibilities

The EOC provides oversight of offset matters within the Ministries, and coordination between Ministries. The responsibilities of the Committee are:

- to determine the requirements of the Saudi Economic Offset Programme
- to approve proposals and packages
- to monitor the progress of the programme
- to facilitate implementation and enhancement of the programme
- to approve offset credits as earned by a contractor.

There have been three major influences on the development of the offset programme: the Peace Shield, Al Yamamah and Saudi-French defence contracts. These programmes have a potential total offset investment of $25 bn over a 25 year period.

9.12 Peace Shield

The $3.8 bn Peace Shield I programme was for the installation of a ground-based air defence capability. According to reports in the *Middle East Economic Digest*, the attitude of potential suppliers changed during the bidding process.[10] During initial discussions between the Kingdom and prospective bidders, 'companies were generally incredulous when told the Saudis would be seeking an offset programme with a high technology transfer content. In the end, the companies came round to the idea, not only that the offset scheme was manageable — but that they could come up with worthwhile proposals'.

The formal request for proposals for Peace Shield was sent to bidders on 26 April 1984. Responses, including offset proposals, were due by 7 November 1984, with the aim of reaching agreement on offset proposals in December 1984. In the event, General Electric was chosen to supply 17 radar stations. Three US industry groups headed by Boeing, Litton and Hughes, placed bids for other Peace Shield support systems. The offset proposals from the three groups were forwarded to the Kingdom with signed memoranda of agreement in December 1984. In February 1985 a contact was awarded to Boeing, which included a 35% offset expectation for the value of the technical equipment.

The EOC's procedures for review, approval and evaluation required detailed documentation from the contractor. A number of pre-signing actions were necessary and were undertaken by all companies bidding for the contracts. The contractor's offset commitment legally began when the supply contract for the sale of defence equipment to the Kingdom was signed.

Once an offset joint venture was implemented, it would receive no more assistance than any other business. However, it would be monitored by the Committee to ensure compliance with the agreement on technology transfer,

the training of Saudi personnel and adherence to the financial and investment plans.

The Saudi Arabian participants are 'companies organised in Saudi Arabia, whose equity capital has been raised fully or in part through public subscription'. Every company must be pre-qualified by the Offset Committee to participate in offset joint ventures.

The bidders on defence contracts come from world-wide industry. In the Peace Shield bid, the prime contract bidders (Boeing, Litton and Hughes) were American, but with some non-American sub-contractors. For subsequent offset contract proposals, the American group would be better described as an international group. Together, the Saudi Group and International Group form the Contractor Group.

Within the Contractor Group, various partnerships and offset projects are arranged. When Boeing was selected as the prime contractor for Peace Shield defence products and services, the obligation for offset joint ventures by Litton and Hughes ceased. However, they were invited, but not obliged, to continue the projects they had proposed. A holding company, Boeing Industrial Technology Group (BITG), was set up with overall project management responsibility for the offset programme. The initial partners were the Boeing Company (49%), Westinghouse (18%), Saudi Amoudi (13%), ITT (11%) and SOMC/Basil (9%). BITG was capitalised at $75 million.

The Boeing offset programme was later described by *Aviation Week and Space Technology* (January 1992) as 'elaborate', with Boeing arranging development of a $600 mn high technology industry in the Kingdom. Currently, the Peace Shield air defence installation is 'at least two years behind schedule' and USAF '... officials partially terminated Boeing's ... contract recently'. The termination was due to allegations of delay in providing computer software for the command and control function.

The offset programme is a separate agreement between Boeing and the Saudi government that will not be 'impacted substantially' by the termination. Boeing, as a member of a series of joint venture companies, was '... expected to develop modern industry in the Kingdom, with emphasis on technology transfer and export potential'. A Boeing spokesman did not expect the Peace Shield termination actions to influence the four offset companies already in operation (Advanced Electronic Company, Aircraft Accessories and Components Company, Al Salam Aircraft Company, and International Systems Engineering), but creation of new offset companies would stop. The four Peace Shield offset companies are 'financed by the Saudi Government, Saudi banks, Boeing and Boeing's Saudi partners'. The fifth Peace Shield Offset Company is the Middle East Propulsion

Company (MEPC) which is almost ready to begin operations. This was formed under a separate offset agreement with General Electric. The partners are General Electric, Pratt & Whitney, Rolls-Royce, together with Saudi companies.

In July 1992, Hughes Aircraft Company took over the Peace Shield installation procurement, valued at $837 mn, and brought in additional offset project proposals worth $200 mn. These new Peace Shield II proposals include direct offset joint ventures in software and systems engineering, and repair of electronic equipment from radars and satellites. Indirect offsets from Hughes parent company, General Motors, concern local assembly of automobile parts and manufacture of petrochemical products used in European automobile manufacturing.

The Boeing and General Electric offset initiative has resulted in five operating companies set up to support the Peace Shield operations. The market prospects beyond Peace Shield support, and the impact on the wider development of the Saudi Economy, are open to question. Technically, the offset obligations may have been met in full or part, but there remains a question as to whether they meet the intent of the programme. The Hughes proposals, along with the Al Sawary and Al Yamamah described below, would appear to offer much more prospect of meeting both the contractual obligation and the wider expectations behind the desire for offset programmes.

The US company AT&T is now involved in an offset programme associated with a contract for the telephone extension project valued at some $4 bn (SR 15 bn), with their local agent Abdullah Said Bugshan and Brothers Co. AT&T will establish local engineering and manufacturing partnerships in the Kingdom, of which three have been discussed so far: Advanced Electronics Co, Riyadh, to produce electronic circuits for AT&T switch and transmission systems; International Systems Engineering, Riyadh, to provide network management and software expertise to the Ministry of PTT; and with the Saudi Cable Co to engineer, manufacture, assemble and treat copper and fibre optical cable. AT&T plan to invest a total of $4 mn over a three year period.[11] It remains to be seen what impact this programme will have on the development of the Saudi economy.

The AT&T offset programme differs in that it is related to a civil rather than a military primary contract. This has raised the issue of offset programmes as non-tariff barriers to trade. According to the Middle East Monitor, the US government view offset requirements as non-tariff barriers, but raise no objection to offsets related to military sales. It does, however, have strong objections to offsets on commercial civil contracts.[12] If offsets are regarded as non-tariff barriers they would be in contradiction of the GATT rules aimed at ensuring competition and free trade. The Saudi offset policy, at least as far as it applies to civil contracts, could be in direct conflict with the recent application by Saudi Arabia to join GATT.

9.13 Al Sawary II

Al Sawary II, agreed in 1990, involves procurement of French built frigates for the Saudi naval forces, at a cost of $3 bn. It is similar to Peace Shield in that it has an investment obligation of 35% of the procurement technical costs over ten years. A total of 37 projects for French offset participation have been proposed, including glass, precious metals, smart cards and agroindustry, with a total capital value of SR1.8 bn.[13] The French participation will be managed by Thomson-CSF, which already has an active business presence in the Kingdom, including the modernisation of the Shahine air defence system. France is the sixth largest exporter to the Kingdom.

9.14 A Case Study of the Al Yamamah I and II Offset Programme

The Al Yamamah agreement was a major defence contract between the Kingdom of Saudi Arabia and the UK. It included the purchase of military aircraft with associated training and support, civil aircraft, helicopters, naval ships and construction projects. British Aerospace is the prime contractor. Estimates of the total value are four to six times larger than Peace Shield, at around $7.6 bn. The contract has so far (July 1994) been worth some £14 bn to the UK economy, with annual revenue currently running at some £2 bn. Over 4000 British Aerospace staff are employed in the Kingdom.[14]

The Al Yamamah contract itself can be viewed as a countertrade deal, in that part of the payment was agreed in terms of 500,000 bpd of Saudi crude oil, to be sold at market prices with the proceeds credited to an escrow account in London, from which British Aerospace and other contractors would be paid by the British Government.[15] Press reports suggested that the figure was increased to 600,000 to cover Al Yamamah II.[16] In addition, the Saudi government has made payments into the account to meet peaks of expenditure.[17]

The defence sales element of Al Yamamah I was signed in September 1985, and Al Yamamah II was signed in November 1988. The first (defence) contract for Al Yamamah I included a commitment by the UK government to use its best endeavours to encourage offset investment. This became an offset programme when a memorandum of agreement was signed by the two governments in July 1988. While there are some similarities to the Peace Shield agreement, Al Yamamah does not have a contractual obligation to offsets, but there is an investment target of £1 bn ($1.5 bn), or 25% of the technical sales cost over ten years. Unlike the Peace Shield offset programme, joint ventures under the

Al Yamamah offset are not restricted to high technology industries and most are not defence-related.

There is not over-emphasis on the transfer of high technology. Rather than seeking state of the art technology, the Saudi government are keen to acquire proven, commercially applied technology which can immediately be put into production to benefit the economy. Any UK company is invited to invest, not just those involved with the defence element of Al Yamamah. In Phase II, the UK companies were again to use 'best endeavours' to generate £1 bn of UK investment in the Kingdom. This approach mirrors the general UK attitude to offsets, which are seen by the UK government as commercial agreements facilitated by association with defence projects.

Under the agreement, British Aerospace receives offset credits for the capital value of investments accepted under the offset programme. These credits are for the total foreign contributions to the capital value of the project (cash, in kind and debt) and are not restricted to the value of the British Aerospace investment. For certain technologies there may be a multiplier applied to the value of investment, which for a highly sought technology such as silicon chips could result in a credit of up to five times the total value of the investment. On the other hand, technology licensing may result in less credit than the value of the project.

In addition to credits for joint ventures, British Aerospace can receive credits for facilitating the export of products from Saudi Arabia. This is not restricted to products from joint ventures set up under the offset programme, but may apply to exports from any Saudi manufacturer. British Aerospace's role can end at the point of contractual negotiations for the export sale. The Saudi supplier remains responsible for the deal. These credits are typically on a one-for-one basis, ie the full value of the export deal is credited to the offset programme. This encourages British Aerospace to seek matches between the products manufactured in Saudi Arabia and those used by the companies which supply British Aerospace. This mirrors the Aramco efforts through the Houston office of the Aramco Local Industrial Development Department to encourage US companies to use Saudi products.

A typical joint venture financial package might involve 50% funding by the Saudi Industrial development Fund (SIDF) at preferential rates (currently 5% initial charge plus 1% a year administration fee on the outstanding balance, but no interest payment). A further 25% of the capital would come from commercial loans, leaving 25% contributed in equity by the partners. Half of the partner's equity may be from the Saudi partner, with the remaining half (12.5% of the total) supplied by the overseas joint venture partners. This may be the technology supplier, or may be shared with British Aerospace. The Saudi partner may

thus contribute 12.5% of the equity in return for half of the company and of the profits, with the foreign technology partner and British Aerospace each contributing 6.25% of the equity in return for a quarter of the company and of the profits.

The majority of offsets under Al Yamamah are expected to be indirect, such as pharmaceuticals (Glaxo and Saudi Import Co), vegetable oil manufacturing, petroleum, food processing (eg sugar refining: Tate & Lyle and Savola), health care and environmental equipment. Direct offset proposals have included a missile engineering factory (British Aerospace and Dowty) to repair and modify the Kingdom's Sidewinder, Alarm, Skyflash and Sea Eagle Missiles, with prospects of markets in other Middle East countries. Rolls-Royce joined the Middle East Propulsion Company, set up under the Peace Shield Offset Programme and which now encompasses all the world's primary jet engine companies. By April 1992, investment under the UK offset programmes totalled SR2.3 bn ($614 mn).

Since both Peace Shield and Al Yamamah offsets supported Saudi Arabian air force contracts, there were mixing and cross-contractual arrangements. In the Al Yamamah proposal, Rolls-Royce entered the MEPC company established under Peace Shield offsets. The electronic capability created by Peace Shield offsets in AEC would support the electronic components of Al Yamamah defence products. AEC production would also include US equipment systems purchased for the Kingdom's armed forces with UK sub-systems. When Dowty sold its shares in AACC after the takeover of Dowty by the TI Group, British Aerospace acquired a 30% share of AACC. A large amount of accounting effort would be needed to identify which programme should receive the offset credit for exports from these companies.

There are a number of potential advantages of using the offset route to new ventures, rather than acting independently. The range of incentives available for joint ventures under Saudi regulations is also available under the Offset Programme. In addition, British Aerospace and its associates are able to offer a range of business support services to help newcomers considering entering the Saudi market. These include project and investment appraisal, introduction to potential partners, and technical and marketing support. Offset companies gain fast-track access through the planning and approval systems. Finally, British Aerospace is prepared to invest in the offset ventures, whether or not they involve British Aerospace technology, and whether or not they involve British companies or markets in which British Aerospace currently operates.[18]

This list of support activity, while important to encourage others to help British Aerospace meet its offset obligations, also reflects the approach taken to the offset programme by the company. Although the terms of the agreement are for "best endeavours", British Aerospace is clearly taking a long-term view of

the potential from offsets. This in part reflects the commercial realities in that future business opportunities for the company in the Kingdom are likely to be influenced by, if not depend upon, the Kingdom's assessment of the offset programme. At the same time, these commercial realities apply also to Boeing, which did not seem to approach the offset issue in the same way.

The need to part with technology, often seen as vital to the competitive position of a company, is not generally a barrier to participation in the offset programme. Saudi Arabia is keen to acquire fully developed and commercially proven technology which can be immediately applied. For most companies, replacements for such technology are already under development. If a market opportunity exists, inevitably some company will move into that market. Establishing a joint venture provides a share of the market and the basis for a long-term presence which many companies see as preferable to the risk of losing the whole market to a competitor.

Initial progress on the Al Yamamah offset programme was certainly slow. This reflected in part the delay in reaching agreement (the offset package was finally agreed some two and a half years after the deal). It also reflects the time it took British Aerospace to realise both the obligations and the opportunities involved in the offset programme. Continuing restructuring and reorganisation within British Aerospace, coupled with declining defence markets eventually focused attention on the importance not just of the Al Yamamah deal but also on the potential offered by the offset programme.

9.15 The Peace Shield Offset Companies

Four companies have been established by the Boeing Industrial Technology Group (BITG). These are now effectively operating as independent companies. A fifth company, the Middle East Propulsion Company, was established by General Electric.

9.15.1 Advanced Electronic Company

AEC is a joint venture between: National Industry Company, Saudi Arabian Airlines (Saudia), Boeing Industrial Technology Group (BITG), National Commercial bank, and Gulf Investment Corporation. There were two objectives behind the establishment of AEC. The first was to provide the Kingdom with the most advanced military and commercial electronics equipment available in the world, at competitive prices. The second was to maximise the synergistic benefits from bringing the latest technology and manufacturing expertise to the Kingdom.

The Advanced Electronic Company (AEC) will initially assemble Jaguar tactical radios for the Saudi Abrams tanks and Bradley armoured vehicles, from parts kits. The kits are supplied by the UK Racal Electronics Group, and are the first Saudi electronics industry production to support indigenous defence requirements. Assembly is expected to reach 200 units a year. In the future it will manufacture the electronic components, together with 20,000 printed circuit boards for other equipment for the Abrams tanks.

AEC must be able to produce a wide variety of electronic products in small quantities. In the developed world, such small quantities would not be practical or economical. The proposed solution is a generic production line with the flexibility to be reconfigured from one type of electronic product to another. This would keep the line in continuous operation and provide income to justify the start-up and operating expenses. AEC's major income generator was not to be production, but the integration of electronic components.

In communications, AEC manufactures and integrates its own designs for use in the Kingdom's armoured vehicles, along with base and hand-held radios. In integration, AEC has completed a definition study for a fully automated air traffic control system for the Kingdom. In the Logistics field, growth has included a recent contract with the Kingdom's Post, Telephone and Telegraph for repair of printed circuit boards, along with maintenance services for Saudi AWACS radar and avionics. Technology transfer has been assisted by placing Saudi personnel on the engineering teams of joint venture partners for on the job training. This exposes the Saudi's to a wider range of projects than would be possible within the Kingdom.

The experience of AEC has been typical of the offset companies. According to *Middle East Business Weekly*, a central issue of the venture's slow development has been the sheer complexity of the project. Development was slow both in putting together the business arrangement and in establishing industrial capability. Under the offset proposal, AEC was to begin to generate gross income in 1986 and to have positive net earnings by 1990. The market was expected initially to be limited to the Kingdom's defence and security forces, and then to expand to the Gulf Cooperation Council countries. Forecasts made in 1985 were for 2000 employees and annual sales of around $388 mn in 1995.

AEC has grown rapidly since its inception in 1988. Sales in 1991 were above SR174 m ($46.5 m), with a total workforce of 240. In August 1994 the company moved into permanent facilities in the industrial park at the King Khalid International Airport at Riyadh. AEC has now received ISO9002 quality certification. Its 1994 sales were SR242 m ($65 m). Total manpower as of

July 1995 is 310, of whom 58% are Saudi. The largest company contract is SR900 m ($240 m) from AT&T to manufacture equipment for the new Saudi telephone system (TEP6). The contract will run for seven years. AEC also has contracts with the Kuwaiti government to repair their Ericsson telephone switching circuit boards and with McDonnell Douglas to manufacture F-15 electronic parts.

9.15.2 Aircraft Accessories and Components Company

Aircraft Accessories and Components Company (AACC) was established to maintain, repair and overhaul aircraft components such as flight controls, pneumatics, fuel and hydraulic systems. Initial technology was provided by the UK Dowty Group, with other equity shareholders being Saudi Arabian Airlines (Saudia), Boeing Industrial Technology Group (BITG), Saudi Advanced Industries Company (SAIC), and Arabian Aircraft Services Company (Arabasco).

The Dowty Group subsequently withdrew from the venture and its shares were acquired by British Aerospace, giving it a 30% stake. AACC has been in operation since October 1990, and reported total revenues of SR17 m ($4.5 m) for the period February 1991 through September 1992. Employees are thought to total 50, with plans to expand to 100 within twelve months. In 1995 the contract with the RSAF was renewed for three years, with total revenue of SR75 m ($20 m). The company is restructuring its ownership and revising its business plans to accommodate further expansion. The company has become the first of its kind in the Kingdom to achieve ISO9002 quality certification.[19]

AACC has a three-year contract with the Royal Saudi Air Force (RSAF) to repair and overhaul C-130 propellers, which is being undertaken in the Kingdom for the first time. Two new contracts have also been initialed: a SR50 m ($13 m) agreement with BAe to overhaul Tornado accessories and an agreement with McDonnell Douglas to overhaul F-15 hydraulics.

9.15.3 Al Salam Aircraft Company

Al Salam Aircraft Company (ASAC) is a repair, overhaul and modification centre for commercial and military aircraft. There is no similar facility in the Kingdom, and only a few in the Middle East. Incorporated in 1988 as a joint venture, it is a equally owned by BITG and Saudi partners and located on the industrial park at King Khalid International Airport in Riyadh.

The initial equity was provided by National Industry Company, Saudi Arabian Airlines (Saudia), Boeing Industrial Technology Group, Saudi Advanced Industries Company (SAIC) and Gulf Investment Corporation. Reported revenue for the period June 1989 to May 1992 was SR 208.6 m ($55.7 m). Forecasts are for a workforce of 850 and $100 m annual sales in

ten years. Latest plans for the period 1993–1996 show an average loss of SR61.3 m ($16.4 m) a year.

ASAC began as a subcontractor to Boeing to maintain aircraft sub-systems. Preliminary plans saw 66% of the work being on RSAF F-15, Tornado, C-130, KE-3A and E-3A aircraft. When Saudia joined the venture in 1987, it added its fleet of 80 commercial aircraft to the customer base. However, the failure to win the C-130 and helicopter maintenance contracts was a significant lost opportunity.

This venture needs extensive facilities for hangars and maintenance shops, together with specialised equipment for maintenance work. As a result, construction, pre-operating and interest costs are high, and difficulty has been experienced in securing additional loans to allow production to start. ASAC started operations in July 1993 from its permanent facility at King Khalid International Airport. The company has overhauled Saudia 737 and Airbus aircraft, and anticipates a contract to overhaul 747 aircraft in 1996. The company also has a contract to maintain the ARAMCO fleet of about 40 aircraft.

9.15.4 International Systems Engineering

International Systems Engineering (ISE) provides planning and integration support for computer software and hardware incorporated in the products of other offset companies. It is thus an exception to the manufacturing requirement imposed on most offsets. ISE will offer a wide range of computer-related systems, development of high-technology software and training for Saudi nationals.

The technology is supplied by the Boeing Industrial Technology Group (BITG) and BDM International. The other equity holder is United Systems Engineering Company, a consortium of six Saudi software companies. Reported revenues for the period June 1989 to May 1992 were SR10 m ($2.7 m). 1993 sales were SR8.6 m ($2.3 m), and 1994 sales grew to SR16 m ($4.3 m). The July manpower is 48, of which 70% were Saudi, including 58% of the technical staff. Current contracts include: Peace Sentinel, SR16 m ($4.3 m) through May 1998; King Fahad Airport, SR41 m ($11 m) through December 1997; TEP6 telephone expansion, SR4 m ($1 m) through September 1995; and miscellaneous International Airport projects valued at SR29 m ($8 m) through January 1998. Forecasts are for sales of $90 m and a workforce of 260 in ten years.

9.15.5 Middle East Propulsion Company

Middle East Propulsion Company (MEPC) is a joint venture capitalized at $70 m, which is involved in several offset programmes. The initial shareholders were National Industrial Company, Saudi Arabian Airlines (Saudia), Saudi

Advanced Industries Company, Gulf Investment Corporation, Pratt & Whitney and General Electric. This represented the Peace Shield offset commitment. When Rolls-Royce joined under the Al Yamamah offset programme, the 50% equity held by Pratt & Whitney and General Electric was subdivided equally with Rolls-Royce. General Electric and Pratt & Whitney have been involved in previous joint efforts to supply Saudi Arabia with engines for military and civil aircraft.

MEPC was set up to establish and operate a civil and military aircraft jet engine repair and overhaul facility at the King Khalid International Airport industrial park, primarily to serve the needs of Saudi Arabia's civil and military aircraft. The Government provided undeveloped land for the project and was to provide infrastructure, for occupancy by 1988. However, the construction contract for fencing and earthmoving was not awarded until August 1989. The project is reported to have been set up in March 1992.

9.16 Al Yamamah Economic Offset Programme

One joint venture is already operating under the Al Yamamah Offset Programme and a further two are in the course of implementation. Other projects are awaiting approval or are under consideration, and some have been cancelled or withdrawn. The three ventures being implemented have a total capitalization of nearly £200m, or one fifth of the objective of £1 bn. The British Offset Office in London coordinates the investment effort with British companies.

9.16.1 Saudi Development and Training Company

The first joint venture under the offset programme to commence operation is equal partnership between British Aerospace and Y B A Kanoo. Based in Dammam, the Saudi Development and Training Company provides development and training packages and personnel profiling services specifically tailored to the needs of clients. The venture has started operations and currently has contracts with ARAMCO, SABIC, BAe, and several banks.

9.16.2 Glaxo Saudi Arabia

Glaxo products have been distributed in Saudi Arabia by the Saudi Import Company (SIC) since 1957. A joint venture was formed in 1983, and by 1994 held 6% of the market with sales of some £20m. Glaxo contributed 49% and SIC 51% of the joint venture's SR98m capital. Under the offset programme a factory is being built in Jeddah to manufacture tablets, creams, ointments, liquids and antibiotics, including Zantac, Zafran, respiratory and dermatological

products. The first production run is scheduled for October 1995. Certification by the Ministry of Health is underway. Further, there are plans to develop new products in the Kingdom. This would result in true technology transfer, including the R&D capability.

9.16.3 Tate & Lyle

The third venture being implemented is a sugar refinery which is due to commence operation in early 1996. Located in Jeddah, it is a joint venture between Tate & Lyle and Savola, a Saudi food company. Tate and Lyle will hold 15% of the equity. The plant will produce 500,000 tons of refined sugar a year for the Saudi and export markets. Refinery construction began in January 1995.

9.16.4 Other Al Yamamah Ventures

British Aerospace has invested in the Peace Shield company AACC and Rolls-Royce in MEPC (see above). Approval has been given for a joint venture between Y B A Kanoo and Al Zamil of Saudi Arabia, Culligan Italiana (the European arm of the US Culligan Group), and British Aerospace to manufacture domestic and industrial scale water treatment equipment. This plant is under construction and is expected to be operational in 1995, using technology supplied by Culligan. The Offset Committee has also approved a venture to manufacture reinforced stone, but the Italian partner Tecnomaiera has withdrawn following bankruptcy.

A project to establish a missile engineering facility is awaiting approval by the Offset Committee. This was proposed as a joint venture between British Aerospace, Dowty and Hughes of the US to modify, upgrade, test, repair and manufacture under licence. The position of Dowty in this venture must now be uncertain following their take-over by the TI Group.

Plans to manufacture protein for fish food from natural gas have been stalled until international agreement is reached on the release of bio-protein into the food chain. The project is a joint venture between British Aerospace and Dansk Bioprotein, who propose to build a pilot plant in Norway to demonstrate the technology before proceeding with the construction of a plant to supply some 40,000 to 50,000 tons a year.

Other proposals include a materials handling system venture with Vanderlande Industries and motor vehicle assembly and manufacture. There have also been plans for a mineral wool plant, and a facility to recycle lubricating oil. After an assessment of the market, Scarab are proposing to licence the production of their street sweeping equipment to gain experience before embarking on production in the Kingdom.

After a hesitant early start, the Al Yamamah Offset Programme appears to be making good progress. Projects with a capital value amounting to one fifth of the objectives of £1 bn are being implemented, and others are awaiting approval or under consideration. British Aerospace are demonstrating their commitment to the intent as well as the letter of the agreement through the range and depth of their contribution. The projects are fully researched and their commercial viability assessed before they are submitted, and British Aerospace is further demonstrating its commitment by investing in most of the ventures. Most of the projects have a true technology transfer element which will increase their contribution to the development of the economy of Saudi Arabia.

9.17 Offsets in the Economy of Saudi Arabia

The task which faced Saudi Arabia at the beginning of the 1970s was to develop an industrialised economy. The offset programmes associated with military procurement contracts should be seen as part of this process of industrialisation and development, and in particular as a contribution to reducing dependence on oil. Offsets continue a well-established process of technology acquisition through collaboration and joint ventures.

As with any large-scale exercise, there were successes and disappointments. A number of high-technology ventures have been established which may not have been without the impetus and encouragement given by the need to meet offset obligations. This is particularly likely in the case of the US Peace Shield programme, where high technology ventures may have implied too much risk for commercial investment left to the market. The UK offset joint ventures are more problematical, not having the same high technology content and being a more natural extension of activities already undertaken in the Kingdom. They represent a natural progression of local capability which the market might be expected to identify and meet, although perhaps offsets brought forward their fulfilment. But all of this can be no more than speculation. We will never know what would have happened without the offset programmes.

The experience of Saudi Arabia offers examples of what can be achieved through offset programmes, and also why they may not fulfil their promise. The Peace Shield Offset Programme administered by the Boeing Industrial Technology Group and General Electric appears to have met the letter of its obligations by setting up five joint ventures. These are all high technology, defence linked companies. British Aerospace, while slower to start, appear to be aiming at the intent rather than the letter of their obligations. Rather than defence-linked activity, British Aerospace are seeking ventures with a long-term

future, in which British Aerospace has an equity stake. It remains to be seen which will be the most viable approach in commercial terms.

Technology transfer needs an environment in which it can succeed. The systems which allow technology to be absorbed must be developed before transfer can take place. As Saudi Arabia chose a market based system, this means the development of a market economy in which businessmen see and pursue opportunities to profit from the technology available. The success of offset programmes in Saudi Arabia will inevitably depend in part on the extent to which this prerequisite has been or can be met.

The future of offset programmes could be threatened by the assessment of offset as a non-tariff barrier to trade, which would conflict with membership of GATT. This is a wider issue than the Saudi offset programme. At the least, the GCC countries will have to decide whether the export opportunities offered by GATT membership will more than outweigh the loss of offset benefits. At the other extreme, international agreement will have to be reached on whether the US government's interpretation of offset agreements under the GATT rules is accepted. In its strictest form, the view that offset is a non-tariff barrier to trade would preclude all GATT members from running offset programmes.

There have been press reports that offset requirements were dropped from Saudi US deals after Peace Shield because '... the offset requirement has slowed the already laborious procurement process'.[20] This suggests that while the technology and economic systems seem to have been created to allow advantage to be taken of technology transfer, bureaucratic and administrative systems are less able to do so. It is to be hoped that the objective of the Fifth Plan to 'upgrade the performance, efficiency and cost effectiveness of Government institutions' will ensure that there are no unnecessary barriers to technology transfer through future offset programmes.

Endnotes

1. The authors would like to acknowledge the assistance of British Aerospace Defence Ltd and the Secretariat of the Saudi Economic Offset Committee in the preparation of this chapter. The interpretation and opinions expressed are those of the authors, as is the responsibility for any errors or omissions which remain.
2. The Saudi Riyal has been fixed at SR3.745:$ since June 1986.
3. Calculated from **Statistical Summary**, Saudi Arabian Monetary Authority, Riyadh, various years.

4. Moliver D.M., Abbondante P.J., **The economy of Saudi Arabia**, Praeger, New York, 1980, p. 60.

5. Al-Farsy F., **Modernity and tradition: the Saudi equation**, Kegan Paul International, London, 1990, p. 102.

6. *Ibid.*, p. 287.

7. *Ibid.*, p. 177.

8. An amendment to Resolution 124 of 29 5 1403, contained in circular 3/1743 of 24 11 1404; MEED, **Saudi Arabia: Joint ventures exempt from 30 per cent rule**, *Middle East Economic Digest*, 21 December 1985, p. 102.

9. Aramco, **Trends of the construction industry in Saudi Arabia**, LIDD, Dhahran, 1984.

10. MEED, **Saudi Arabia: Joint ventures exempt from 30 per cent rule**, *Middle East Economic Digest*, February 1985.

11. *Arab News*, 14 August 1994.

12. MEM, **Offset problems to GATT entry**, *Middle East Monitor*, September 1994.

13. $480 mn: *Arab News*, June 1990.

14. Bird S., paper to the *CBI Conference on Saudi Arabia*, London, 15 July 1994, unpublished.

15. BZW, Barclays de Zoote Wedd report of 14 April 1992.

16. *Financial Times*, 9 September 1994, p. 18.

17. *Times*, 23 December 1992, p. 12.

18. **Investment in the Kingdom of Saudi Arabia**, BAe, 1994.

19. *Arab News*, 13 August 1993.

20. Marlowe L., **Saudi Arabia**, *Financial Times Supplement*, December 12 1990, p. 11.