



THE FLETCHER SCHOOL OF LAW AND DIPLOMACY

**Will the inflow of Foreign Direct Investment lead to the
privatization of the energy sector in Saudi Arabia?
An analysis of the energy sector in Saudi Arabia and a Granger
causality analysis between privatization and FDI in Developing
Countries**

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I. Introduction

“The era of the oil boom is over”¹. This widely quoted phrase from a speech by the Saudi Crown Prince Abdullah summarizes the challenges of Saudi Arabia today. Saudi Arabia, as a resource rich country with a relatively small population managed, through playing a key swinger role in OPEC internationally and nationalizing its economy, to use the oil revenue to build a state legitimacy. But the end of the 1990s, will eventually show, that Saudi Arabia could not escape the paradox of plenty. Although Saudi rulers acknowledge somewhat early, that relying on a one source the oil as a single source of revenue, can lead to economic deterioration, recent numbers show that they have failed in diversifying their economy. Saudi Arabia is heavily dependent on oil revenues for around 90% of total export earnings, about 70%-75% of state revenues, and 40% of GDP². At current Saudi production, a \$1 increase in the average price per barrel results in an additional \$3 billion in annual revenues and vice versa³. Like many other countries endowed with natural resources, Saudi Arabia is too facing economic deterioration. But this paradox, as Terry Karl explains, “is not evitable, paradox can be resolved and development trajectories can be altered”⁴

A window of opportunity seems to be opened recently in resolving this paradox. In May 2001, Saudi Arabia selected companies to participate in the huge \$25 billion "Saudi Gas Initiative," the first “major reopening of Saudi Arabia's upstream hydrocarbons sector to

¹ Obeid, Nawaf, “The oil Kingdom at 100: Petroleum policy making in Saudi Arabia”, Executive Summary, the Washington Institute for Near East Policy, available at www.washingtoninstitute.org/pubs/nawafexec.html”

² EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

³ American Embassy in Saudi Arabia, Saudi Arabia 2001 Economic Trends, <http://usembassy.state.gov/riyadh/wwwhet01.html>

⁴ Karl, Terry Lynn, “The paradox of Plenty, Oil Booms and Petro-States”. University of California Press, 1998.

foreign investment since nationalization in the 1970s”⁵. Prior to this, Saudi Aramco the State Owned Enterprise had an undisputed monopoly of all the processes involving the upstream oil and gas sectors.

Saudi Arabia's government in its 2000-2005 development plans officially accepted the need to reduce state involvement and increase private sector, but has moved very slowly in this direction. To date, there has not been a single sale of state assets to private control, and privatization largely has been limited to allowing private firms to take on certain service functions.

In this context one can wonder if the foreign direct investment in the Gas initiative would lead such efforts to take place sooner than later. An optimistic analyst went further by saying “The gas initiative will build up the Saudi economy, especially through its knock on effect on other industries”⁶

This paper’s primary aim is to analyze the potential privatization of the Saudi energy sector, especially because of its crucial importance, and the role, if any, that FDI might play in achieving this goal. For this, the potential privatization of other non-energy sectors, such as the Telecommunications and Airline Industries, while highly important, are beyond the scope of this study and will be analyzed strictly in the context of looking at the potential privatization of the energy sector.

This paper in this context wants to be truly multidisciplinary especially focusing on political economy science, strategic management and empirical studies. In the author’s

⁵ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

⁶ Arabia.com , Saudi awards multi-billion dollar gas projects
<http://www1.arabia.com/saudi/business/article/english/0,5508,47082,00.html>, May 19, 2001 visited on October 26, 2001

view, the interaction of FDI, nationalization and privatization in the Saudi Arabian energy sector, can only be understood by observing all three approaches together. With all the above in mind, the paper is structured as follows. The first part provides a definition of the Saudi energy industry, a discussion on the importance of FDI to the host country, and the reasons behind the changing attitude of Saudi Arabia toward FDI. The second part analyzes the advantages and inconveniences of nationalizing the energy sector. The third part advances the case that the privatization of the Saudi Arabian Energy sector, is an idea which time has come. The final part analyses empirically if there is any Granger causality between FDI and Privatization in a general model that includes the developing countries available to us, than we would sub-sample by looking at resource-rich and the Middle East and North Africa (MENA) countries. The conclusion presents first an answer to the initial hypothesis, and then secondly offers some policy recommendations.

II. Saudi Arabian energy sector and foreign direct investment

A. Saudi Arabian energy sector

The Saudi energy sector is composed of the oil industry, the gas industry and the power industry. While the oil industry was the main driver for Saudi Arabia economic boom, the gas industry with the growing importance of the natural gas as the future fuel is becoming more and more a primary asset. On the other hand the power industry has been always dependent on government subsidies generated mostly from the oil industry.

1 The oil and gas industry

1.1 Organizational structure

Although we will be discussing the efficiency of Saudi Aramco in more details in the privatization part, it is important in order to discuss the different industries in the Saudi energy sector, to look at how the Saudi Petroleum decision making is structured and for this we have to understand the organizational structure of Saudi Aramco. Its story resumes the story of the energy sector, and specially the oil industry.

The history of the oil in Saudi Arabia goes back to 1933 when the Kingdom signed concession agreement with major oil companies, but it was not until 1938, that Standard Oil Company (Known later as Chevron) discovered oil in commercial quantities in Dammam Well Number 7.

Standard Oil of California soon realized that it cannot develop these resources on its own, it partnered with Texaco, Standard Oil of New Jersey (later known as Exxon), and Mobil (Exxon and Mobil now are a single company ExxonMobil) in 1948. This partnership took the name of the Arabian Oil Company, or ARAMCO. The discovery that transformed the prospects of for the oil industry in Saudi Arabia was the discovery of the Ghawar field in 1948, which proved later to be the largest single-oil bearing structure in the world.⁷The Saudi oil went on being discovered and developed in cooperation with the US oil companies, until the mid 70's when the Saudi Government acquired 100% ownership of Aramco, and ended the concessions run by the four US companies.⁸

1.1.1 Saudi Aramco structure

Saudi Aramco is the largest oil company in the world, and with a monopoly on over a quarter of the world oil reserve, can be described as the most important and critical one.

Saudi Aramco is a highly vertically integrated company, with 5 business areas

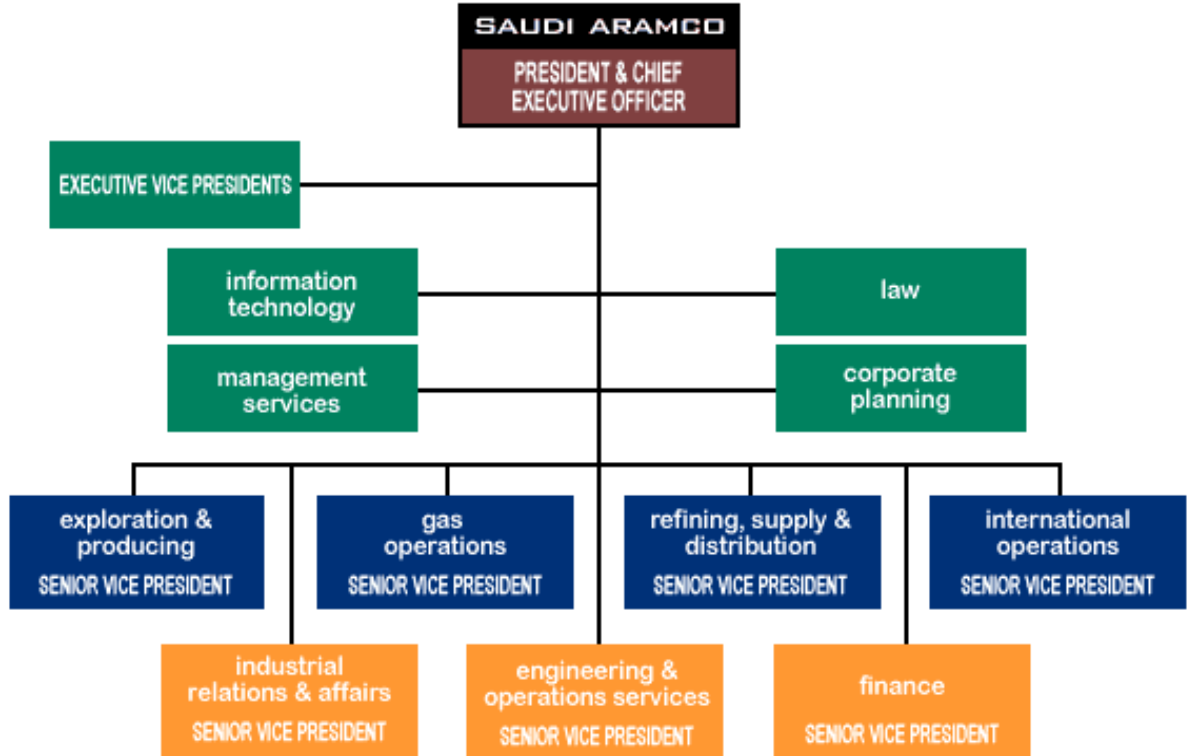
⁷Bahgat, Gawdat Jamil, The new political economy of the oil in the Arabian/Persian Gulf States: A Comparative Analysis. The Journal of Energy and Development, Vol. 26, No.1

⁸ Ibid

- Exploration and Producing: Manages all activities related to the upstream development for oil and gas
- Manufacturing: Oversees all the downstream development of oil and gas
- International Operations: Handle International sales and the marketing and shipping of both oil and refined products, and oversees the company's overseas downstream businesses
- Finance and Relations: Direct the company's financial and Investment activities, provides personnel, and handles government and public affairs.
- Engineering and operations Services: Manage corporate engineering activities, project management and related support services

The management of Saudi Aramco reports to its owner, the Saudi Government, through the Supreme Council for Petroleum chaired by King Fahd. Both the Supreme Council and the Council of ministers oversee the formulation of Saudi policy and approve its overall direction. The Saudi Aramco follows the dictates of the Saudi government once government policies are set. The Saudi Aramco Board of Directors, chaired by Oil Minister Ali Al Naimi, makes high level planning, budgeting and operational decisions⁹

⁹Saudi Aramco www.saudiaramco.com, October 22, 2001



Adapted from Saudi Aramco Website¹⁰

1.2 Upstream Industries

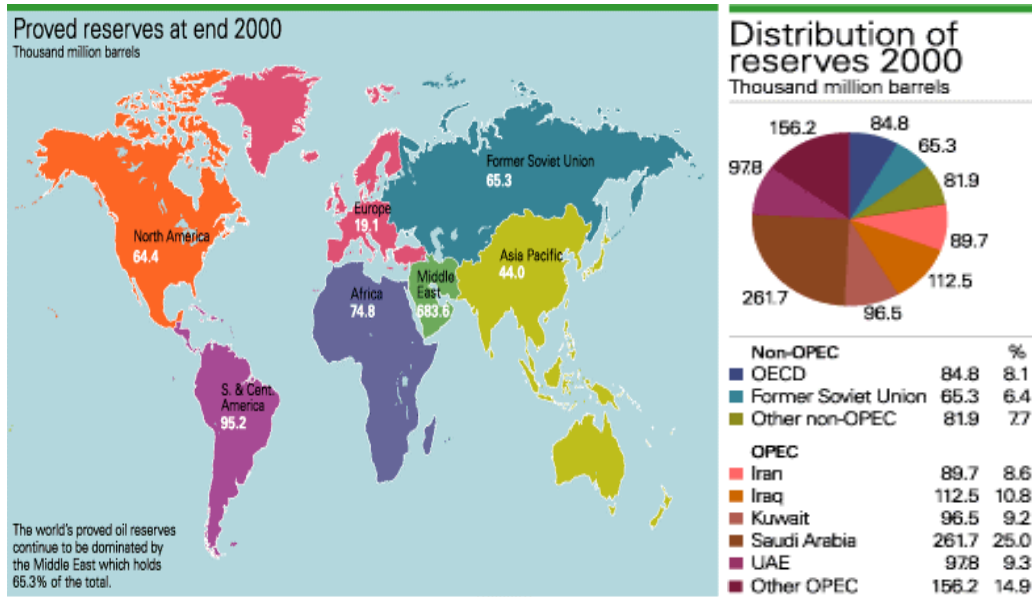
1.2.1 Oil Industry

Today Saudi Arabia oil reserves make up over 25% of the entire world's proven reserves. The United States' Department of Energy estimates that Saudi Arabia has 25.4% of total proven oil reserve. This compares with 11% for Iraq, 9.6% for the United Arab Emirates, 9.2% for Kuwait, 8.6% for Iran, 13% for the rest of OPEC, and 22.6% for the rest of the world.¹¹ BP in its Statistical Review of World Energy has approximately the same estimates.¹²

¹⁰ Saudi Aramco Organizational chart. www.saudiaramco.com, October 22, 2001

¹¹ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

¹² BP Statistical Review of World Energy, http://www.bp.com/centres/energy/world_stat_rev/oil/reserves.asp, October 20, 2001



BP Statistical review of World Energy 2001¹³

According to this statistics, Saudi Arabia has 261.7 billion barrel of proven oil reserves (excluding the Neutral Zone with Kuwait). Over half of these reserves are contained in eight fields, and 90% of all Saudi production comes from the four largest fields in Saudi Arabia, Ghawar, Safaniyah, Abqaiq, and Berri. The Ghawar field has alone some 70-85 billion barrels and it's the world's largest on-shore oil field. The Safaniyah field has 19 billion barrels, the Abqaiq field has 17 billion barrels and Berri has 11 billion barrels.¹⁴ Three companies, Saudi Aramco, Saudi Arabian Texaco and Japan's Arabian Oil Co (AOC in the neutral zone) produce all the crude oil in Saudi Arabia with Saudi Aramco controlling most of the country upstream, and producing more than 95% of all Saudi crude oil and NGL.

Saudi hydrocarbon are not important for their size only, Saudi oil is among the world's cheapest to produce, with a cost of lifting a barrel that ranges between 1\$ to 3\$. Even more important than the low cost of lifting the oil, is the excess production capacity the

¹³ Ibid

¹⁴ Cordesman, Anthony. Saudi Arabia enters the 21st century: Chapter 6., www.csis.org

Saudi can draw on in times of crisis, with an excess capacity in the 2.6 to 2.8 million barrel/day range.¹⁵

1.2.2 Natural gas industry

“I often hear of Saudi Arabia referred to as the world’s largest oil-producing country, the "oil-rich giant," the "heavyweight of Middle East oil" and the global leader in crude oil exports. While these are true if not sometimes exaggerated, they overlook our other strategic resource – natural gas- and its Importance to the Kingdom. Perhaps oil is the first thing associated with Saudi Arabia by the outside world, but to us gas is equally essential for our economic growth”¹⁶

H.E. Ali I. Al-Naimi, Saudi Arabia Minister of Petroleum & Mineral Resources

In the early years of the Saudi oil industry, natural gas was seen largely as a nuisance; it was generally either flared or reinjected into oil formations, both to get rid of it and to maintain a pressure in crude oil reserves¹⁷. It was not until 1982 that the Saudi Government asked Aramco to build a Master Gas System (MGS). The MGS “was one of the largest engineering and construction projects ever carried out in the world”¹⁸. Today the network consists of 64 gas oil separators plants, a 726 mile NGL pipeline and three large gas processing plants¹⁹. The three plants combined can process 4 billion standard cubic feet of raw gas per day. A relevant thing to note is that the MGS was developed in order to tap associated gas resources, however Saudi Arabia is also rich in non associated gas.

¹⁵ American Embassy Ryad, Saudi Arabia. Embassy reports: Saudi Arabia Oil and Gas trends, May 1999. <http://www.usembassy.state.gov/posts/sa1/wwwhogr.html>. October 20, 2001.

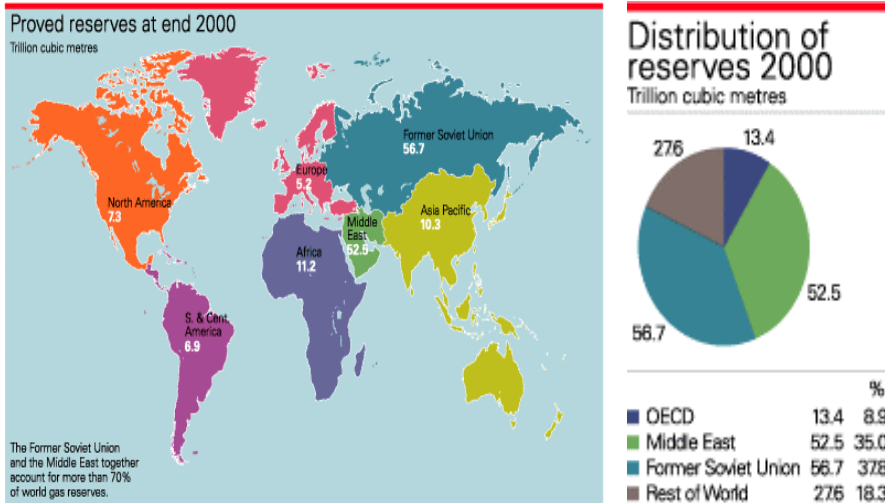
¹⁶ H.E. Ali I. Al-Naimi. The achievement and the future of Saudi Arabia Natural gas; 2nd Saudi Arabian Conference on Gas Utilization for Power & Industrial Development, Yanbu Industrial City, Saudi Arabia October 1997. <http://www.us-saudi-business.org/alnaimi.htm> October 20, 2001.

¹⁷ American Embassy Ryad, Saudi Arabia. Embassy reports: Saudi Arabia Oil and Gas trends, May 1999. <http://www.usembassy.state.gov/posts/sa1/wwwhogr.html>. October 20, 2001.

¹⁸ Ibid

¹⁹ Ibid

The US Energy Information Administration (EIA) estimates that Saudi Gas reserves ranks fourth worldwide, after Russia, Iran, and Qatar, at 204.5 trillion cubic feet²⁰. BP Statistical Review of World Energy 2001, estimates that Saudi Arabia has 213.8 trillion cubic reserves which is equivalent to 4% of world reserve²¹



BP Statistical review of World Energy 2001²²

Two thirds of Saudi gas consist of associated gas mainly from the onshore Ghawar and the offshore Safaniya and Zuluf fields, with the Ghawar field accounting for the third of the country's total reserves. Most of Saudi Arabia's non-associated gas reserves (Mazalij, Al-Manjoura, Shaden, Niban, Tinat, Al-Waar, etc.) are located in the deep Khuff reservoir, which underlies the Ghawar oil field²³

The driving force behind the development of the natural gas has been the demand for the gas itself in Saudi Arabia. Indeed additional gas production is being encouraged as a feedstock for the country's growing petrochemical industry, as well as for electricity generation, from 1975 the generating capacity of electricity companies grew 16 fold to

²⁰ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

²¹ BP Statistical review of World Energy 2001, www.bp.com October 20, 2001

²² EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

²³ Ibid

nearly 19000 megawatts and is expected to lead to an additional 37000 megawatts by 2020²⁴, as well as for desalination plants and other industrial establishments. The main incentive being, that the use of gas instead of oil domestically will help free up additional crude oil for export²⁵. Aramco set itself a goal of discovering a minimum of 5tcf of gas each year from 1995 onwards, and has been successful in achieving this goals, if not exceeding it sometimes²⁶.

1.3 Downstream Industries

The Saudi Downstream business has been more open toward foreign investment than the upstream sector. This form of FDI comes in the form of 2 joint ventures in the oil refining sector and many join ventures over the last 20 years in the petrochemical sector²⁷. The reasons behind the openness of the downstream sector to foreign direct investment can be traced to two main reasons. In contrary to the upstream sector, and specially the oil, the downstream sector if it is opened to foreign direct investment does not constitute a threat for the sustainability of revenues, as the main revenue is the export of oil , and secondly the downstream sector needs the technological know how that comes with foreign direct investment.

1.3.1 Oil refineries

Saudi Arabian Marketing and Refining (SAMAREC) merged with Saudi Aramco in 1993, integrating vertically integrate the oil industry²⁸

²⁴ American Embassy Ryad, Saudi Arabia. Embassy reports: Saudi Arabia Oil and Gas trends, May 1999. <http://www.usembassy.state.gov/posts/sa1/wwwhogr.html>. October 20, 2001.

²⁵ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

²⁶ American Embassy Ryad, Saudi Arabia. Embassy reports: Saudi Arabia Oil and Gas trends, May 1999. <http://www.usembassy.state.gov/posts/sa1/wwwhogr.html>. October 20, 2001.

²⁷ Cordesman, Anthony. Saudi Arabia enters the 21st century: Chapter 6. www.csis.org

²⁸ Ibid

Saudi Aramco presently has seven oil refineries in the kingdom, and the Japanese Arabian Oil Company used to own and operate a refinery in the neutral zone. Five of Saudi Aramco's oil refineries are owned and operated by Saudi Aramco, while two of them are joint ventures between Saudi Aramco and Mobil and between Saudi Aramco and Shell. The total refining capacity in the Kingdom is around 1.75 million barrel a day, while Aramco has around 1.6 million barrel a day of refining capacity outside the country²⁹

1.3.2 Petrochemical industry

Saudi Arabia has created a massive Petrochemical industry, with the Kingdom investing more than \$29.5 billion by 1996³⁰. Actually the petrochemical industry is the most open toward foreign direct investment with many oil multinational having joint ventures with the Saudi Basic Industry Corporation (SABIC), which controls 5 to 10% of the global petrochemical market

Mobil (now ExxonMobil) signed a contract in 1996 to invest 1 billion in a joint venture with the Saudi Government that created a petrochemical joint venture in Yanbu, with Mobil owning 30%. Shell for its part signed a contract in 1997 to invest 1\$ billion in a joint venture between SABIC and Shell, that created a petrochemical company Saudi Petrochemical Company.

Other subsequent American, Italian, Finish, Korean and Japanese outflow of foreign investments have been invested in the petrochemical industry³¹.

2. The Power Industry

²⁹ Ibid

³⁰ Cordesman, Anthony. Saudi Arabia enters the 21st century: Chapter 6, page 31. www.csis.org

³¹ Ibid

While the power sector is a state owned sector, it's the part of the energy sector that is not controlled directly by Saudi Aramco. Although most of the investment and the subsidies that the government has put in this sector, came most of them from revenues generated by Saudi Aramco.

The electricity sector was constituted of 10 state owned regional power companies which controlled 85% of the country power supply. This sector always operated at a loss because they had been required to sell power below cost to Saudi consumers, as well as due to inefficiencies and difficulties with non payment of bills. In 2000, the 10 companies merged into a joint stock company, Saudi Electric Company, owned 50% by the Saudi Government³²

B. Foreign Direct Investment: Theoretical approach and changing attitude of the Saudi

1. Theoretical approach to Foreign Direct Investment

OECD defines Foreign Direct Investment as it reflects “the objective of obtaining a lasting interest by a resident in one economy, in an entity resident in an economy other than that of the investor”³³. In opposition to portfolio investment, where the investment tend to be a passive one, in the FDI the investor operates and manages the entity invested in and its assets are part of the multinational business of the investing entity. While there is a concession that the FDI might benefit both the investing entity (the Firm), and the host country, this paper will focus primarily for the benefit of our analysis on the importance of the FDI for developing the host country.

³² EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

³³ Organization for Economic Co-operation and Development, Benchmark definition of Foreign Direct Investment, Third Edition 1999 available at <http://www1.oecd.org/daf/investment/fdi/Benchmark.PDF> October 20, 2001

Indeed, the role of the FDI in the developing countries and in the economies in transitions has grown dramatically over the course of the 1990s; from \$24 billion per year in 1990 to more than \$120 billion in 1998.³⁴

John Dunning argues that the principal criteria by which host countries are evaluating FDI in the 1990s, is its contribution to the “improvement of the competitiveness and productivity of the resources and assets creating capabilities located within their areas of jurisdiction”³⁵. However, the different motives for FDI lead to different contributions for the host countries.

In this context, Dunning provides us with an excellent overview of some possible FDI contributions that can upgrade the country’s competitiveness advantage or at the same downgrade it depending on the country’s characteristics. While we will first list these contributions as provided by Dunning, we will analyze in a second part why Saudi Arabia was restricting FDI in its upstream sector and recently has allowed it

The FDI might contribute to the development of the host country:³⁶:

- By providing additional resources and capabilities, namely capital, technology, management skills access to markets. On the negative side, Dunning argues that this can provide too few or the wrong kind of resources and assets, can cut off foreign markets, and can even fail to adjust to localized capabilities and needs
- By injecting new entrepreneurship management styles, work cultures and more competitive marketplaces. On the negative Dunning warns of the inability of

³⁴Theodore H. Moran: *Foreign Direct Investment and Development: The New Policy Agenda for Developing Countries and Economies in Transition*, Institute for International Economics 1998

FDI in Developing Countries and Economies in transition: Opportunities, dangers and new challenges

³⁵ Dunning, John: *Assessing the Costs and Benefits of Foreign Direct Investment :some theoretical considerations*, in *Foreign Investment and Privatization in Eastern Europe*, edited by Patrick Artisien-Maksimenko and Matija Rojec. Palgrave Editions, 2001

³⁶ Ibid

- foreign entrepreneurships, management styles and working places to accommodate to the local culture.
- By a more efficient resource allocation competitive stimulus and spill over effects on suppliers and or/customers, it can help upgrade domestic resources and capabilities, and the productivity of indigenous firms; it can also foster clusters of related activities to the benefit of participating firms. The negative effect of this is that it can limit local production down to low-value activities, while importing higher value intermediate products
 - By adding to the host nation's gross domestic product (GDP), and providing additional tax revenue for the government. The negative effect being the risk of transfer pricing other devices to lower taxes paid by host government
 - By improving the balance of payments, through import substitution, export generating or FDI seeking investment. The negative side will be limiting exports and promoting imports, and out competing firm that export more than they import.
 - By better linking the host economy with the global marketplace, and helping to advance economic growth by fostering a more efficient international division of labor. The negative effect would be that the firm impose its own international division of labor which might be inconsistent with the government policy
 - By more directly exposing the host economy to the political and economic system of other countries; the values and demand structures of foreign households; the attitudes to work practice, incentives and industrial relation and foreign workers, and to the many different customs and behavioral norms of foreign society. The

negative side is the political and social unrest that the FDI can produce which would lead in the worst-case scenario to the destabilization of the regime.

As already discussed, the firm incentives for FDI are different and the potential contribution of FDI varies from a country to a country. From the host country standpoint, it depends on each country to make its own reasoning and its own balance between the positive and the negative contributions of FDI.

While historically Saudi Arabia preferred to restrict FDI in the Energy sector, recently it has changed its policy allowing a major FDI in the Gas Initiative.

2 Changing Saudi attitude toward FDI

The Saudi Government at the end of the 1990s started to encourage foreign direct investment and is undertaking steps to improve the investment climate through the adoption of a new foreign direct investment law and the establishment of the Saudi Arabian General Investment Authority³⁷.

Improvement of the investment climate was seen as an important part of the Government's broader program to liberalize the country's trade and investment regime, diversify an economy overly dependent on oil, and join the World Trade Organization (WTO).

The new foreign direct investment law, approved in April 2000, permitted foreigners to invest in all sectors of the economy, except for specific activities contained in a "negative list" that are off limits to foreign investors. Foreign investors are no longer required to take local partners and may own real property for company activities. They are allowed to transfer freely money from their enterprises outside of the country and can sponsor

³⁷ The U.S Commercial Guide, Country Commercial Guides for SAUDI ARABIA
http://www2.usatrade.gov/website/ccg.nsf/CCGurl/CCG-SAUDI_ARABIA2002-CH-7:-002F3F88

their foreign employees. They are also eligible for low-cost funding from the Saudi Industrial Development Fund (SIDF) for up to 50 percent of a project³⁸. The new foreign investment law also established minimum levels of investment for agricultural projects. In April 2000; the Council of Ministers also established the General Investment Authority (SAGIA) to provide information and assistance to foreign investors. The Commission operates under the umbrella of the Supreme Economic Council and is headed by SAGIA Governor Prince Abdullah bin Faisal bin Turki. SAGIA's duties include formulating government policies regarding investment activities; proposing plans and regulations to enhance the investment climate in the country; and evaluating and licensing investment proposals. All foreign investment projects must obtain a license from SAGIA. Local investors continue to apply to the Ministry of Industry and Electricity's foreign capital investment committee for licenses³⁹.

SAGIA has set up an Investor's Service Center (ISC) to assist foreign companies. The ISC provides licenses to foreign companies, support services to investment projects, detailed information on the investment process, and coordinates with government ministries in order to facilitate investment procedures. The Center must decide to grant or refuse a license within 30 days of receiving the application and supporting documentation from the investor. SAGIA has already approved more than 200 new licenses for projects valued at more than \$8.5 billion⁴⁰.

SAGIA has developed a negative list of sectors off-limits to foreign investment. There were a total of 22 areas identified in the industrial and service sectors. The list included upstream petroleum exploration and drilling, real estate investment in Mecca and

³⁸ Ibid

³⁹ Ibid

⁴⁰ Ibid

Medina, insurance, printing and publishing, education, telecommunications, electricity transmission and distribution, distribution services in wholesale and retail trade, land and air transportation services, fisheries and toxic centers, blood banks, and quarantines.⁴¹

But recently in May 2001, Saudi Arabia took a big step toward opening investment in a crucial sector, originally part of the restricted sectors, the upstream gas sector.

3 Reasons inherent to the Saudi energy sector itself

The main reason behind Saudi Arabia opening up its energy sector seems to result from the need for develop projects in this sector, and the lack for reasons explained later, of Saudi capital.

3.1 Oil industry

Prior to the Saudi Aramco acquisition of SAMAREC, the later had plans to invest more than \$40 billion dollar over a 10 year period to upgrade the refining sector, these plans were put aside, and according to a study by APS Energy some of the oil refineries are being expanded, but a further expansion would depend on the Saudi oil income, and may bring the capacity to 2.65 million barrel per day by 2007, making Saudi Arabia the biggest export refiner in the world⁴².

The EIA reported that Saudi Arabia has revived proposals for downstream oil project and gas development (See the Saudi Gas Initiative) amount to \$100 billion after its improved financial situation in 1999. These include a \$1.2 billion upgrade for the Ras Tanura refinery, and a \$1.8 billion upgrading of the Rabigh refinery

3.2 Gas industry

⁴¹ Ibid

⁴² Chammas, Pierre, Saudi Arabia: Petroleum Industry Review. Arab Press Service Group, available at www.aps-energygroup.com, visited October 22 2001

Saudi Arabia realizing that it cannot develop its gas industry without significant foreign investment capital, selected companies to participate in the huge (\$25 billion) "Saudi Gas Initiative," the first major reopening of Saudi Arabia's upstream hydrocarbons sector to foreign investment since nationalization in the 1970s⁴³. The Initiative aims to integrate upstream gas development with downstream petrochemicals and power generation, and is seen as the key to Saudi Arabia's entire foreign investment strategy. Companies selected for the three "core ventures" under the Gas Initiative are:

- 1) South Ghawar: ExxonMobil, Shell, BP, Phillips;
- 2) Red Sea: Exxon plus an Enron/Occidental partnership;
- 3) Shaybah: Shell, Total, Conoco. Core Venture 1 will be one of the world's largest integrated gas projects, including exploration, pipelines, two gas-fired power plants, two petrochemical plants, two desalination units, and more in South Ghawar. Core Venture 2 will involve exploration in the Red Sea, development of the Barqan and Midyan fields on the Red Sea coast in northwestern Saudi Arabia, as well as construction of a petrochemical plant, a power station, desalination capacity, and more. Core Venture 3 will involve exploration near Shaybah in the Rub al-Khali ("Empty Quarter") of southeastern Saudi Arabia, development of the Kidan gas field, laying of pipelines from Shaybah to the Haradh and Hawiyah gas treatment plants east of Riyadh, construction of a petrochemical plant in Jubail, and more⁴⁴.

3.3 Power industry

Saudi Arabia's rapidly growing population is increasing demand on electric needs, and as already mentioned, at least an extra 37000 megawatts of additional power generating

⁴³ Arabia.com, Saudi awards multi-billion dollar gas projects
<http://www1.arabia.com/saudi/business/article/english/0,5508,47082,00.html>, May 19, 2001

⁴⁴ Ibid

capacity will be needed by 2020, a cost of more than \$4.5 billion a year for the next 20 years⁴⁵.

According to the EIA report, besides generation, Saudi Arabia requires additional investment in power transmission. For instance only two of the country's power regions are connected. Creating a unified national grid could require over 20000 miles of additional power transmission lines⁴⁶

4 Reasons exogenous to the Energy Sector

Besides the reasons already inherent to the development of the energy sector, foreign investment is also needed for many reasons. Gawdat Bahgat, in his article the new political economy of oil in the Arabian/Persian Gulf states: A comparative Analysis⁴⁷, has found that the change in the Saudi officials regarding FDI in the energy sector (The Saudi Gas Initiative) can be explained by at least four reasons, which can be sorted in two microeconomic and two macroeconomic reasons

On the microeconomic side, Saudi Arabia needs foreign investment to stimulate its economy, over the two last decades, the Saudi GDP growth rate has averaged only 0.2 percent. Secondly Saudi Arabia needs FDI to open up more job opportunities; the Saudi economy is not able to generate enough employment opportunity for the thousand of young job seekers entering the job market annually, and foreign investment in the Saudi energy sector can open up new employment opportunities.

On the macroeconomic side, Saudi Arabia's share of the global energy market is facing strong competition from other producers who have attracted over the last several years

⁴⁵ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, October 20, 2001

⁴⁶ Ibid

⁴⁷ Bahgat, Gawdat Jamil, The new political economy of the oil in the Arabian/Persian Gulf States: A Comparative Analysis. The Journal of Energy and Development, Vol. 26

substantial financial and technological resources from the International Oil Companies (Caspian Sea, Offshore West Africa, and Gulf of Mexico). And Finally a US investment in the energy sector would strengthen the security ties between the US and Saudi Arabia. An interesting question arises here, what happened, so Saudi Arabia, with its huge natural resource cannot provide anymore the capital needed for new projects and has to turn to attract Foreign Direct Investment? Has the blessing of having huge natural resource turned to be a curse?

II. Saudi Arabia: The blessing and the curse of natural resource rich countries

A. The Blessing of Nationalization: A SOE that created state legitimacy

When talking about national oil companies in oil exporting countries, Fariborz Ghadar describes them as having “many important function that grew out of their historic mission to develop a crucial sector of the economy”⁴⁸. He explains that the national oil companies played an important role in developing infrastructure and promoting social programs and took the lead in “promoting modernization in their countries”⁴⁹

In this context, and looking at Saudi Arabia, saying that Saudi Aramco, a State Owned Enterprise has created a state legitimacy cannot be considered as an exaggeration.

Contrary to the common belief that SOE drain on the state budget, Saudi Arabia provides us with an example of an SOE that has practically for over two decades provided the state with most of its revenues and helped build the state legitimacy. This is obvious in the government revenue and distribution model, and in the role of the oil, Saudi Aramco main asset, in reshaping the Saudi Legitimacy.

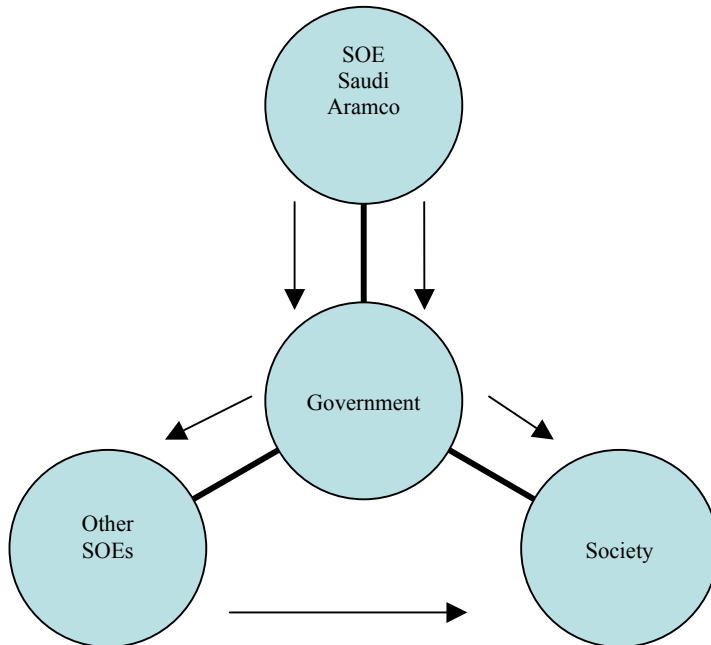
1 The government revenue and distribution model

⁴⁸ Ghadar, Fariborz, : “Oil the Power of an Industry”, in Vernon, Raymond ed. “ The Promise of Privatization”, Council on Foreign Relations, Inc 1988

⁴⁹ Ibid

Aramco since its nationalization can be described as the Saudi Arabian cash cow for public finance purposes. Little financial information is available on the government revenue and distribution model, but with some information, the state revenue and expenditure should be easy to guess. First by the Saudi optimistic numbers, the oil, which Aramco has a monopoly over it provides 70-75% of the states revenue. Secondly, the non oil sector companies, such as Saudi Basic Industries, the Saudi Electric Company, and the Saudi Telephone Company are also state owned and subsidized by the government, selling their product be it, petrochemicals, electricity, or telecommunication below market price (*Infra Privatization of the Saudi energy sector*). Finally after Nationalization as we are going to see below, Saudi Arabia shifted from an extractive to a distributive state, eliminating most of the taxes.

A simple revenue and expenditure model for Saudi Arabia



2 Political and Social effects

2.1 Importance of the oil factor in reshaping the legitimacy: The shift from extractive to distributive state

Immediately following the nationalization most of the taxes were withdrawn, direct and indirect ones. Most of the taxes on Saudis and fees on resident foreigners were eliminated, foreign companies were given tax holidays, and the government even stopped collecting Zakat in 1976. Indirect taxes, going from the “mainstays of the old treasury”, pilgrim fees and taxes on services in the holy cities of Mecca and Medina, to tobacco taxes or even fishing taxes, were rescinded or cancelled. With the end of taxation, the extractive bureaucracy which employed once” more Saudis than all other administration departments combined”⁵⁰ was precipitated toward a rapid dismantling. It was soon replaced by a distributive system made possible by plenty, creating a new bureaucracy orientated toward finding ways to flow the oil revenue into society.

Many development plans extending for 5 years were carried on giving the newly distributive agencies the means to allocate these revenues through subsidies, loans, state contracts and even gifts to the Saudi population. The “massive social welfare program that the Saudi government set up in 1973, was again enlarged after the second oil boom of 1981”⁵¹, providing Saudis with huge allowances. Social security and pensions were raised, health services were expanded and made available free of charge for all Saudi nationals, interest-free loans were granted, everything from date production to fishing was subsidized” making new ventures risk-free and highly profitable”⁵²

⁵⁰ Chaudhry, Kiren Aziz. *The Price of Wealth, Economies and Institutions in the Middle East*. Cornell University Press, 1997

⁵¹ Ibid

⁵² Ibid

2.2 Effect of the oil revenue on Saudi Society

The flow of money and its channeling to the society through the concept of distributive state had major effects on the society.

Kiren Aziz Chaudry describes the major social change as the “rise of a large new Nejd private sector to institutional and political prominence over the old commercial elites of the Hijaz”⁵³. In fact while the province of Najd was one of the poorest in the Kingdom before the oil boom, it changed after to the richest enclave. “With only 26 percent of the total urban population, it was home to 44 percent of those in the highest income bracket”⁵⁴. The situation in the past was the concentration of the Saudi merchant class in the Hijaz area, where it was the “principal commercial center because of the annual hajj”⁵⁵, but the huge influx of oil revenues into the kingdom, however, has produced structural changes in the Saudi business community, giving way to the rise of the Nejd new-elite business class. This rise “occurred largely through the sectoral development program”⁵⁶, which created a “kinship-based partnership” between this Nejd class and the bureaucracy. In 1983, a study of the Korean contractors in the Kingdom puts the percentage of agencies held by traditional families in 1983 at only 13.6 percent of the total and those of the tribal leaders outside the Najdi region at 12.7 percent. In contrast the new elite class held 50 percent of these agencies. The expanding role of this

⁵³ Ibid

⁵⁴ Ibid.

⁵⁵ John A. Shaw and David E. Long. *Saudi Arabian Modernization. The Impact of Change on Stability*. The Washington Papers/89 Volume 10. Published with The Center For Strategic and International Studies, Georgetown University, Washington, D.C Praeger. 1982

⁵⁶ Chaudhry, Kiren Aziz. *The Price of Wealth, Economics and Institutions in the Middle East*. Cornell University Press, 1997

entrepreneur class rested “on links with the middle and upper echelons of the bureaucracy rather than with the royal family”⁵⁷.

Another important change was the spread of education and the rise to power of technocrats, in fact “the mammoth expansion of the Saudi educational system was facilitated by the enormous rise in state revenues from the sale of oil”⁵⁸ The first attempts to advance Saudi education were done by Ibn Saud in 1946, and for this purpose he relied on Egyptian teachers. The first ministry of Education was created under Saud in 1953, and the first secular university, Ryad University, was established in 1957. But the rapid industrialization of the country after the oil boom expanded the education system to an unprecedented rate⁵⁹. This education saw in the same time an international extension, by the growing number of Saudi studying abroad. In 1975 their number counted 5000 compared to 20000 Saudis studying in Saudi Universities. In 1985, their number continued to rise, and counted 18000, most of them believed to be attending American Schools, compared to 80000 Saudi studying in national university⁶⁰

This education trend, locally and internationally, had two opposite effects. While the growing of graduate of Saudi University, “ who knew very little English and had little contact with the West, were largely conservative “, the graduates who returned to their country with PhD and master’s degree were appointed to” key positions in the government’s bureaucracy and education system”⁶¹, and introduced a wave of modernization to the Kingdom. These technocrats have started to reshape the political

⁵⁷ Ibid

⁵⁸ Mordechai Abir, *Saudi Arabia : Government, Society and the Gulf Crises*. Routledge, London and New York 1993

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid

legitimacy in Saudi Arabia. In fact, while” members of the royal family have always held the national security positions”⁶² we started to see since the 1960s, the first generation of modern educated Saudis became “available and rose quickly to position of influence”⁶³.

A pioneer among these was Zaki Yamani who was Petroleum minister from the 1960s till the mid 1980s.

The influence of the technocrats managed to grow in importance in Saudi Arabia. Since 1995, the Saudi cabinet includes “15 members with postgraduate degrees from Western Universities” heading well-organized and relatively modern ministries⁶⁴, while other western educated experts are conducting the planning and management of the Kingdom. But their position was still fragile and they could be revoked at any moment, they are considered more as a servant than politician.

The rise of the Nejd business class, the education of the Saudi society, and the growing role of the technocrats have widely changed the Saudi society, giving it a more moderate aspect, and a certain drift away from tribalism. This helped the replacement of the nomadic tribesman with the notion of Saudi common man.

It seems that the concentration of the oil revenues in the government hands through nationalization has succeeded in helping to forge a Saudi National identity which is replacing the tribal identity. But, what is interesting to analyze, is how did the Ulema, in this Wahabi faith country copped with these changes.

⁶² John A. Shaw and David E. Long. *Saudi Arabian Modernization. The Impact of Change on Stability.* The Washington Papers/89 Volume 10. Published with The Center For Strategic and International Studies, Georgetown University, Washington, D.C Praeger. 1982

⁶³ Ibid

⁶⁴ Anthony Cordesman *Saudi Arabia, guarding the desert Kingdom,* West View Press 1997

Although Saudi Arabia is often described a theocracy, its puritanical Islamic laws and regulations are maintained more strictly than ever since the 1950s⁶⁵, the role of the Ulema in the political process remains marginal. But following the rise of fundamentalism following the Iranian revolution, the Saudi rulers tried to improve their relation with the ulema. It was actually an Ulema fatwa that permitted the government in 1979, to storm the holly place of Kaaba and end the rebellion of the Mecca, by some neo-Ikhwan. After this event, the Saudi rulers decided to “strengthen the historic alliance between church and state”⁶⁶, thus, the support of the religious establishment for the modernization seemed necessary. This demanded a religious “stick and carrot policy”. In fact the regime was convinced of “the wisdom of accepting some of the ulema’s demands concerning the enforcement of Wahhabi religious practices, as long as the ulema did not attempt to interfere with the kingdom’s development and conduct of government”⁶⁷. Hence, the government was applying a policy of paradox. While it was trying to modernize the country, it was at the same time giving more prerogatives to the ulemas. The King on internal matters consulted them regularly; the government gave them more prerogatives in the field of education, and the religious police was strengthened. Mordechai Abir explains the situation as” this unique combination (Church and state), coupled with oil wealth, provides the regime with a working formula for countering militant fundamentalism, on the one hand and radical nationalism on the other. As long as the Saudis continued to nourish the above ethos and respected the special position of the ulema in Saudi Wahabi Kingdom, they were assured of the continuity of their historic

⁶⁵ Mordechai Abir, *Saudi Arabia : Government, Society and the Gulf Crises*. Routledge, London and New York 1993

⁶⁶ Ibid.

⁶⁷ Ibid

alliance with the ulema. That and economic prosperity ensures the Saudis of the support of most of the conservative majority of their subjects”⁶⁸

In this context, one can understand the importance of the state controlling the oil industry, through nationalization. But while it helped create a state legitimacy, develop the country, and control the fundamentalism, it also made the country a rentier state, relying on the oil for the state revenue and expenditure.

B. The Negative Effects: The Paradox of plenty

“In one generation we went from riding camels to riding Cadillacs, the way we are wasting money, I fear the next generation will be riding camels again”

King Faisal of Saudi Arabia (quoted from a newspaper interview with his oil minister, Sheikh Zaki Yamani)⁶⁹

While it appeared that the inflow of the oil revenues has forged a state legitimacy and thus justified the importance of the concentration of such important resources in one State Owned Enterprise and the channeling of its resources through the government, it has on the other hand created a huge dependence on a single natural resource. While many authors have warned of the negative effects of relying on natural resources, Saudi Arabia with its huge oil reserve thought it would be immune of such warnings. The end of the 20th century proved how wrong the Saudis were.

1. Theoretical approach to relying on a single resource

I found two authors to be particularly interesting in analyzing the effect of natural resource abundance. Thorvaldur Gylfason approached this issue from a purely economic theory, studying the effects of natural resource abundance on growth, Terry Lyn Karl approached from a political economy standpoint studying the particular case of oil

⁶⁸ Ibid

⁶⁹ Quoted in , Gylfason, Thorvaldur; Lessons from the Dutch Disease: Causes, Treatment, and Cures, For Statoil-Econ Conference volume, the paradox of plenty, 22 March 2001. Available at www.his.is, October 26, 2001

exporting country, explaining why these natural resource rich countries provided repeated occurrence of similar patterns across different cultures.

Gylfason found that experience “appears to indicate that extensive natural wealth if not well managed reduces economic growth in the long run”. While he agrees that in the short term these resources provide tremendous wealth and economic growth, he warns that in the long run “the nation might be actually worse off with its natural resources than if it lacked them”. In analyzing why this happens, he found that “an abundance of natural resource riches is taken to influence some variable or mechanism “x” which impedes growth”⁷⁰. To date he argues, there are five possible channels of transmission from “natural resource abundance to sluggish economic growth”.⁷¹

Channel 1: The Dutch Disease

The Dutch Disease goes back to the time when gas was discovered in the Netherlands in the late 1950's. The effect of this discovery was a substantial increase in gas exports, which lead to an increase of the real exchange rate of the guilder, making things more difficult for other services and industries. While the Netherlands recovered fairly quickly, the “Dutch Disease” continued to carry its name.

While Terry Lynn Karl defines it generally as “a process whereby new discoveries or favorable price changes in one sector of the economy causes distress in other sectors”, Gylfason gives a more thorough definition. He explains that natural resource boom and the associated surge in its exports tend to increase the value of the local currency and maybe exchange rate and volatility, while the result is that the export may fall relatively

⁷⁰ Ibid

⁷¹ Gylfason, Thorvaldur, “Lessons from the Dutch Disease: Causes, Treatment, and Cures”, For Statoil-Econ Conference volume, the paradox of plenty, 22 March 2001. Available at www.his.is/~gylfason, October 26, 2001

to GDP, or at least becomes biased toward this natural resource and away from manufacturing and services.⁷² The story goes that by turning the export biased toward those raw materials, this harms technological progress and innovation, making the Dutch Disease a hamper for economic growth.

This is not the whole story, as experience shows that an increase in primary exports, as an example following a new oil discovery may result in a decrease in total exports. Gylfason argues that this means, "Other exports are reduced to a greater extent than correspond to the initial increase in raw material"⁷³.

Channel 2: Rent seeking and social capital

Primarily production generally returns rent. Natural-resource rent differs from profit, to the extent that most natural resources apart from air and water are limited, making it necessary to regulate their utilization by restricting them. Those to whom the owner of the resource gives greater access, and thus let them obtain "an advantage in excess of the profit which they could expect under conditions of unrestricted access", are in obtaining a rent.

Resource rent varies according to industrial sector. According to Gylfason, it is "generally high in oil production, often around 80% of income, somewhat lower in mining, and still less, for instance in fisheries where it can amount to around one-third of income"⁷⁴

⁷² Gylfason, Thorvaldur and Zoega Gylfi, "Natural Resources and economic Growth : the Role of Investment", CEPR Discussion Paper No. 2743, March 2001, Available at www.hi.is/~gyfason

⁷³ Ibid

⁷⁴ Gylfason, Thorvaldur, "Nature, Power and Growth", Scottish Journal of Political Economy, November 2001. Available also at <http://www.hi.is/~gyfason/pdf/sjpe3.pdf>

The rent seeking behavior, as Gylfason points it out, is the result of the conjunction of ill-defined property rights, imperfect or missing markets and tax legal structures in many developing countries and emerging markets. Extensive rent seeking can “breed corruption in business and government, thus distorting the allocation of resources and reducing both economic efficiency and social “, and in the extreme case, such as – Africa’s Diamond War- rent seeking can” destroy societal institutions and the rule of law”⁷⁵

Channel 3: Education and Human Capital

Third, natural resource abundance may “reduce private and public incentives to accumulate human capital due to a high level of non-wage income.

Channel 4 Free trade, bureaucratic efficiency and Institutional quality

Natural resources abundance may provide people with a false sense of security and lead governments to lose sights of needed sound and growth friendly economic management, including free trade, bureaucratic efficiency and institutional quality

Channel 5: Saving, Investment and Natural Capital

The natural resource abundance may blunt private and public incentives to save and by that reduce the economic growth, and moreover

Gylfason performed an empirical analysis of different natural resource rich countries, applying different principles of econometrics. The most relevant points of his study are as follow⁷⁶:

⁷⁵ Ibid

⁷⁶ For a detailed view of the study, see Gylfason, Thorvaldur, “Lessons from the Dutch Disease: Causes, Treatment, and Cures”, For Statoil-Econ Conference volume, the paradox of plenty, 22 March 2001. Available at www.his.is/~gylfason, October 26, 2001

Natural capital leads to a decrease in economic growth

- In studying 85 countries, the study found that a ten percentage point increase in the natural capital share goes along with a decrease in per capita growth by 1 percent

Natural capital leads to a decrease in gross saving, while gross saving is good for growth.

- In studying 85 countries the study found that an increase in the natural capital share by 10% is associated with a decrease in gross saving by 4% of GDP

Natural capital crowds out social capital, while social capital is good for growth

- In studying 60 countries, the study found that a ten percentage point increase in the natural capital share goes along with an increase in corruption by 1.3 points

Natural capital crowds out human capital, while human capital is good for growth

- In studying 90 countries,, the study found that an 18 percentage point increase in the natural capital share is associated with a decrease in public expenditure on education by 1%

Natural Capital crowds out physical capital, while physical capital is good for growth

- In studying 85 countries, the study found that a ten point increase in the natural capital share goes along with a decrease in investment by 2% of GDP.

In looking at OPEC countries, he found that they are not an exception. He argues that these results tend to be a general pattern, putting forward that out of 65 natural resource abundant countries 1970-1998, only Botswana, Indonesia, Malaysia and Thailand had an investment of more than 25% pf GDP and a per capita growth of more than 4%.

Regarding OPEC countries, Nigeria has been stagnant since 1960 and with the data

available from 1965-1998, Iran and Venezuela had a -1% per capita growth per year, Libya -2%, Iraq and Kuwait -3%, Qatar - 6%⁷⁷

In trying to assess why the natural resource rich countries have failed to take advantage of this blessing, Gylfason ends his study by saying “The problem is not the existence of natural wealth as such... but rather the failure to avert the dangers that accompany the gift of nature”⁷⁸.

Terry Lynn Karl, in her book, *Paradox of Plenty, oil boom and Petro-State*⁷⁹, introduces a complementary explanation to Gylfason approach

Karl, while understanding the importance of natural rent and Dutch Disease for explaining the poor performance of oil rich states, argues that these explanations cannot by themselves give the full answer as they fail to take into consideration the political and institutional process that put forward economic laws and market forces in the first place, and which eventually form strong barriers for change or readjustment. She emphasizes that the “Dutch Disease is not automatic...the effect extent to which it takes effect is the result largely of decision making in the public realm”⁸⁰, and to add “ the fate of oil-exporting countries must be understood in a context in which economies shape institutions and, in turn are shaped by them”⁸¹.

Karl argues that countries dependant on the same export activity are likely to display significant similarities in the capacity of their states to guide development⁸² and as such oil export countries should share some common attributes, “ specially their framework

⁷⁷Gylfason, Thorvaldur, “Lessons from the Dutch Disease: Causes, Treatment, and Cures”, For Statoil-Econ Conference volume, the paradox of plenty, 22 March 2001. Available at www.his.is/~gylfason

⁷⁸ Ibid

⁷⁹ October 26, 2001 Karl, Terry Lynn, “The paradox of Plenty, Oil Booms and Petro-States”. University of California Press, 1998.

⁸⁰ Ibid

⁸¹ Ibid

⁸² Ibid

for decision making and range of choice, even though their actual institutions are quite different”.⁸³

This is truer as the discovery of the oil coincided with the state building of most of those countries. Contrary to European oil exporting countries such as Norway, these oil exporting countries that Karl calls Petro-States were inserted late into the international economy. While Norway was already a developed country, and had a “long tradition of Democracy and market economy since before the advent of oil”⁸⁴, these Petro-states, have grown dependant on revenue from the sale of their primary exports commodities. This dependence as Karl demonstrates molds the state, specially its intervention in the economy and its ability to promote change.

This is more reinforced by the “inextricable link between power and plenty in the mining states”.⁸⁵ It’s because the State is at the centre of this great wealth and not the private sector that the state becomes the primary object of rent-seeking.

In doing a cross-country comparison, she finds that these “Petro-states” share similarities.

First, they are overwhelmingly dependant on a single commodity, the oil, for their exports. Second, they are dependant on a sector that is “highly capital intensive and that is an enclave”⁸⁶. Third they rely on a primary commodity that is depletable. Fourth they are dependent on a resource capable of generating extraordinary rents, and finally the oil rent accrue directly to the state.

⁸³ Ibid

⁸⁴ Gylfason, Thorvaldur, “Lessons from the Dutch Disease: Causes, Treatment, and Cures”, For Statoil-Econ Conference volume, the paradox of plenty, 22 March 2001. Available at www.his.is/~gylfason, October 26, 2001

⁸⁵ Karl, Terry Lynn, “The paradox of Plenty, Oil Booms and Petro-States”. University of California Press, 1998.

⁸⁶ Ibid

In analyzing the Petro-States, Karl warned of the devastating effects of oil booms. She found that while oil boom increases the demand for diversification, these goals become more difficult to achieve. The boom period will provoke a greater "oil-led economic model"⁸⁷, leading to new demands from the state and society, which will ultimately lead to growing budgets, trade deficit and foreign debts. While the oil boom period would give the appearance of a more economically independent state, it would in reality increase the dependence of the state on petrodollars. Oil boom seems to promise a real choice for altering the development trajectory, but when they occur in oil-led developed countries their choice is quite narrow, and Karl to conclude, "In the greatest of ironies, a boom lays the basis for a future bust, this is the Petro-state's special dilemma"⁸⁸

2. Saudi Arabia and absorption of oil rents: Fighting windmills

Oil rents in Saudi Arabia are so large relative to the population that they exceeded domestic absorptive capacity. Although Saudi Arabia tried to adopt "oil windfall absorption" to fight the effect described in the prior section, its efforts can be summarized as fighting windmills. Its absorption strategy was an international one, through accumulating overseas oil reserve, and domestic through investing in diversification both of which have failed

2.1 The Overseas Fund.

While taking the decision of nationalizing its oil and gas exploration in order to secure the bulk of its mineral rent, Saudi Arabia sought at the same time of sterilizing the rent stream in order to escape the Dutch Disease by creating an oversee reserve account.

During the first year of the boom, the Saudi government accumulated around \$170 billion

⁸⁷ Ibid

⁸⁸ Ibid

dollar in overseas reserve through 1981. This sum, if it was to earn real interest of 4% annually would be sufficient to “sustain indefinitely, a budget deficit of 10% of the country’s non oil GDP as of 1979-81”. But by 1997, the policy of the overseas fund was confirmed to have failed with reports that these reserves had completely drained and that Saudi Arabia had to borrow from UAE to sustain its cash position⁸⁹. The overseas funds were used as follows, Saudi Arabia gave \$25 billion as a help to Iraq in his war with Iran, paid more than \$55 billion for the Gulf War, and the rest was used in budget financing⁹⁰.

2.3 Domestic absorption and structural change

The worrisome thing about Saudi Arabia is that, contrary to Kuwait as an example, it rejected the rentier option and invested in economic diversification, but never the less failed to diversify. After the nationalization, Saudi Arabia identified development expenditure as a category separate from public expenditure, so cut backs can be made more easily than if no such distinction was made⁹¹. The first development plan (1976-1981) emphasized the expansion of domestic absorptive capacity through emphasizing the building of the country infrastructure, the Saudi government expecting that “the public sector provision of infrastructure would trigger private investment in directly productive activity”⁹². The second developing plan (1980- 1985), shifted to the concentration on the diversification of the non oil tradable sectors through a state led expansion of resource based industry, sensibly co-opting Multinational Corporations into

⁸⁹ Rayed Krimly. The political economy of adjusted priorities: Declining oil revenues and Saudi fiscal policies. Middle East Journal Volume 53, No 2 Spring 1999. P 261

⁹⁰ Ibid

⁹¹ Auty, Richard, The political state and the management of mineral rents in capital surplus country: Botswana and Saudi Arabia Saudi , Resources Policy 27 (2001) Page 77-86

⁹² Ibid

joint venture with the SOEs.⁹³ The Saudi measures were inadequate, however and the investment of the rents out-stripped domestic absorptive capacity.⁹⁴

The dramatic decline in oil revenues which Saudi Arabia experienced during 1998 and early 1999 showed the extent of failure of the sterilization and diversification effort, and proved the rentier attribute of Saudi Arabia. For the year 1998 when oil revenues fell by 35 percent, GDP fell by nearly 11 percent, and the budget deficit rose to US\$12.3 billion.⁹⁵

The sharp increase in oil prices from early 1999 through September 2001 significantly improved Saudi Arabia's economic situation, with real GDP growth of 4.1% growth in 2000⁹⁶, as well as a healthy current account surplus.

The EIA projected that for 2001, Saudi Arabia is forecast to earn about \$50 billion in net oil export revenues, down 15% from revenues earned in 2001, and 32% below 2000 net oil export revenues⁹⁷. This decline in revenues is a result both of a sharp decline in oil prices which went from over \$30 per barrel to under \$20 per barrel, as well as a reduction in Saudi net oil exports which was reduced from 7.8 million bbl/d in 2000 to a forecast 6.9 million bbl/d in 2002.⁹⁸

Despite attempts to diversify its economy, Saudi Arabia remains heavily dependent on oil revenues for around 90% of total export earnings, about 70%-75% of state revenues, and 40% of GDP.⁹⁹

⁹³ Ibid

⁹⁴ Ibid

⁹⁵ Country Watch Saudi Arabia, available at http://www.countrywatch.com/files/150/as_topic.asp?vCOUNTRY=150&TP=ECO, December 10, 2001

⁹⁶ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, December 10, 2001

⁹⁷ Ibid

⁹⁸ Ibid

⁹⁹ Ibid

The dramatic turnaround in Saudi oil revenues between early 1999 and September 2001 resulted in a significant pickup in real GDP growth, as well as greatly improved external trade and internal budgetary situations. With the recent sharp decline in oil prices, however, Saudi Arabia is facing a potential recession during 2002, with rising unemployment, around 15%-20%, one of the world's fastest population growth rates, and the consequent need for increased government spending, representing serious challenges¹⁰⁰.

The EIA concluded its report on Saudi Arabia by stating that “although Saudi Arabia continues to maintain relative fiscal discipline, movement towards economic reform remains uneven at best”¹⁰¹. Despite its goal of economic diversification, Saudi Arabia continues to rely heavily on the oil sector, and the only progress it had made in attracting large FDI was the signing of the Gas Initiative. For fiscal year 2002, The EIA is projecting a significant Saudi budget deficit possibly \$12 billion -- the largest since 1998, based on an oil price assumption of about \$15-\$17 per barrel¹⁰². This assumes government revenues of \$41.9 billion and expenditures of \$53.9 billion.¹⁰³ For the budget to break even would require according to an analysis by the Saudi American Bank, an oil price of \$22 per barrel with crude oil production of around 8 million bbl/d to balance its budget, a condition that is unlikely to be met in 2002.¹⁰⁴

Unfortunately, Saudi Arabia is facing the paradox of plenty. While the nationalization helped the creation of its state legitimacy, it also showed the failure of the state to manage the oil downfall. Saudi Arabia should realize that the oil has been a state creator

¹⁰⁰ Ibid

¹⁰¹ Ibid

¹⁰² Ibid

¹⁰³ Ibid

¹⁰⁴ Ibid

in the 20th century but might be the state eradicator in the 21st century. For this, drastic measures should be implemented to remove Saudi Arabia from the roller coaster economy that the oil has created.

III. Privatization an idea which time has come

A. The case for Privatization

“In every great monarchy in Europe the sale of the crown lands would produce a very large sum of money which, if applied to the payments of public debts, would deliver from mortgage a much greater revenue than any which those lands have ever afforded to the crown ... When the crown lands had become private property, they would, in the course of a few years, become well improved and well cultivated”

Adam Smith (1776, p.824)

Privatization in this paper is used in its broadest sense. E.S. Savas has defined privatization as “the act of reducing the role of the government, or increasing the role of the private sector, in an activity or in the ownership of assets”¹⁰⁵.

Since the introduction of privatization by Britain’s Thatcher government in the early 1980’s, privatization now appears to be accepted as a core tool of statecraft by governments of more than 100 countries¹⁰⁶. One reason behind the success of privatization is the lure revenues governments have received from sales of SOEs, with the cumulative value of proceeds raised by privatizing government exceeding \$1 trillion until late 1999¹⁰⁷

The privatization of the energy industries, oil, gas and power during the last decade was also in full swing around the world. Encouraged by success in privatization in Great Britain and New Zealand, many countries have decided to march toward privatizing their

¹⁰⁵ E.S. Savas, *Privatization: The Key to Better Government*, Chatham, NJ, Chatham House Publishers, 1987)

¹⁰⁶ Megginson, William, and Netter Jeffrey, “ From State to Market: A survey of empirical Studies on Privatization” . *Journal of Economic Literature* Vol. (June 2001), pp.321-389

¹⁰⁷ Ibid

once nationalized industries. Many have had great success in the transition from nationalized to market economies; one notable example is YPF in Argentina, while others had less success, namely Gazprom in Russia.

Privatization of the upstream sectors, namely the exploration oil and gas, is probably the most delicate components of any potential privatization, as it involves issues of resource nationalism and large scale income distribution.¹⁰⁸

While most of the literature that tried to answer the question “why privatize”, has focused on analyzing the outcome of the privatization for the firm in term of increasing or not its efficiency -defined usually in terms of” achieving higher productivity, lower cost production and higher profitability”-¹⁰⁹, resource rich countries, and specially in our case Saudi Arabia as a Petro-State may provide us with different answers. Privatizing in these rentier states that rely heavily on one product the oil, as the most important, if not the only source of revenue, may not imply only increase efficiency for the firm. Indeed, it may lead to economic growth, by getting ride of the channels of transmission that lead to the sluggish economic growth, making the privatization more a way to increase the efficiency of the government than the efficiency of the firm.

In the following sections, we are going to look first, at the effect of privatization; both on a microeconomic and macroeconomic level, than privatization in the energy sector, and in a final part analyze privatization of the Saudi energy sector

1. Privatization around the world

1.1 Microeconomic impact of Privatization

¹⁰⁸ Horsnell, Paul. Issues in Deregulation, Privatization, and Regulation of the Energy Industries, in Privatization and Deregulation in the Gulf energy Sector, The Emirates Center for Strategic Studies and Research, ECSSR, 1998.

¹⁰⁹ Martin, Stephen and Parker, David. “ The Impact of privatization, Ownership and Corporate performance in the UK”. Industrial Economic Strategies for Europe, Roulledge 1997.

Is the firm better off in the private hands than the public one? Is ownership structure important for efficiency?

Different authors and researchers have tried to answer this question by providing both a theoretical approach and empirical evidence

1.1.1 Theoretical approach

A vast theoretical literature shows that “in a world of complete information, complete contracts, and efficient commitment technology on the side of the government, public enterprise would result in socially efficient outcomes”¹¹⁰, however the problem with State ownership arises of the “existence of imperfections in those areas”¹¹¹

These imperfections have led the different literatures that have studied privatization to conclude that a private firm will operate more efficiently than a SOE. Why does ownership matter for efficiency?

The basic idea comes from the fact that SOE perform poorly, being units of the government, without any legal corporate status, budget accounts, auditors, board of directors, or much sense of managerial and performance accountability.¹¹²

But looking deeper we can explain the existence of these imperfections with three main concepts and theories that have emerged at the forefront of comparing SOE and Private Firms, and subsequently lead to mount a case against state ownership: The Agent-Principal theory, the study of property rights, and the public choice theory

Touching briefly on these points, we find that a good starting point for the economic analysis of privatization is the agent-principal theory.

¹¹⁰ Lopez-Calva Luis Felipe “ On Privatization Methods”, Development Discussion Papers No. 665, Harvard Institute for International Development, Harvard University 1998

¹¹¹ Ibid

¹¹² McLendon Michael’ Privatization and Capital Market Development, strategies to promote economic growth”. Praeger publisher 1996

The principal agent literature relates to the problem of inducing an agent to behave as to maximize the principal's welfare. An agency situation arises when one party such as the shareholder- the principal- , delegate to another party such as the managers- the agents- the use of their property or property rights. This agency situation may raise the prospects of divergent goals as the objectives of the principle and the agents may well not be the same "since agents can be expected to be self-interested"¹¹³. Martin and Parker argue that the manager's utility, which can be expressed as a function of profit and quantities of input, will be related to profit if he or she "owns shares, benefits from profit related pay, gains prestige from higher profit or where higher profit improves job security"¹¹⁴. In other words incentive is crucial for a better management performance. The question that arises is why the incentives are poorer in the public firm?

Within the agency view there are two perspectives for the causes of the existence of poor incentives within SOE. The first one, the managerial perspective, elaborated by Vickers and Yarrow blames the poor monitoring in the public firms, as opposed to the traded firms, for the low powered incentives for efficiency¹¹⁵. The second, the political perspective elaborated by Shapiro and Willig, than by Shleifer and Vishny , blames the political interference in distorting the objectives and constraints faced by public managers¹¹⁶. In the meaning those governments have other objectives than profit or shareholder wealth maximization

¹¹³ Martin, Stephen and Parker David "The impact of Privatization, Ownership and Corporate performance in the UK", Industrial Economic strategies for Europe, Routledge 1997

¹¹⁴ Ibid

¹¹⁵ Sheshinski, Eytan and Luis Felipe López-Calva Privatization and its Theory and Evidence Benefits CAER II Discussion Paper No. 35

¹¹⁶ Ibid

From an ownership and property rights view and According to Coase, the firm is perceived to be a “nexus of contacts” between management, labor, suppliers and other stakeholders¹¹⁷. The boundary of the firm is determined by the relative cost of transacting for inputs in the markets as against employment within the firm .In certain circumstances it will be more cost efficient in terms of transaction costs to employ inputs directly in other cases it will be more efficient to contract in the market. Follow the “transaction cost” theory. Megginson and Netter found that the “government’s transaction costs of intervening in production arrangement and other decisions of the firm are greater when firms are privately owned and to the extent that government intervention has greater costs than benefits, private ownership is preferred to public ownership”¹¹⁸

Another justification for privatization are based on the fundamental theorem in welfare economics that states that under strong assumptions a competitive equilibrium is pareto efficient since “when this exists no one can be made better off through a resource allocation without making someone else worse off”¹¹⁹

Finally, as Sheshinski and Lopez-Calva summarize the theoretical literature, “There should be important efficiency gains from change to private ownership in competitive structure”¹²⁰. While Megginsoon and Netter agree, that the impacts of privatization depends on the degree of market failure in competitive market, they emphasized the point

¹¹⁷ Ibid

¹¹⁸ Megginson, William and Netter, Jeffrey From State to Market: A Survey of Empirical Studies on Privatization, Journal of Economic Litterature June 2001pp 321-339

¹¹⁹ Martin, Stephen and Parker David “The impact of Privatization, Ownership and Corporate performance in the UK”, Industrial Economic strategies for Europe, Routledge 1997

¹²⁰ Sheshinski, Eytan and Luis Felipe López-Calva Privatization and its Theory and Evidence Benefits CAER II Discussion Paper No. 35

of Shleifer that even in natural monopolies market, that “ government-owned firms are rarely the appropriate solution”¹²¹, for the reasons already discussed.

1.1.2 Empirical evidence

Meggison and Netter, in their paper “From State to Market: A Survey of Empirical Studies on Privatization”¹²², summarized the major empirical evidence on why ownership matters. It is important here to note that these authors acknowledged the limitations of empirical studies, due mainly to a lack of proper data and other , but stressed that “researcher have compared SOE and private firm performance in several cases with some success”¹²³. Here are some interesting examples of recent empirical studies that they reported¹²⁴

- Boardman and Vining examined in 1989, the economic performance of 500 largest non US firms in 1983, classified by ownership structure as SOE, private or mixed (ME). They found that SOEs and MEs are significantly less profitable than private firms. MEs are no more profitable than pure SOE, and thus concluded that full ownership is required to gain efficiency.¹²⁵
- Vining and Boardman asked in 1992 whether ownership matters in determining efficiency of SOEs or if only the degree of competition is important. Using 500 largest non financial Canadian firms, including 12 SOEs and 93 MEs. They found that private firms are significantly more profitable and efficient than MEs and

¹²¹ Meggison, William and Netter, Jeffrey From State to Market: A Survey of Empirical Studies on Privatization, Journal of Economic Literature June 2001pp 321-339

¹²² Ibid

¹²³ Ibid

¹²⁴ You will find a list of all the examples at Meggison, William and Netter, Jeffrey From State to Market: A Survey of Empirical Studies on Privatization, Journal of Economic Literature June 2001pp 321-339

¹²⁵ Ibid

- SOEs, but found that MEs outperformed SOEs, thus giving evidence that ownership has an effect separable from competition alone¹²⁶
- Ehrlich, George, Gallais-Hamonno, Zhiqiang Liu, and Randall Lutter compared 23 International airline companies of different ownership during 1973-83. They found that state ownership can lower long-run annual rate of productivity by 1.6%-2.0% and rate of unit cost by 1.7%-1.9%. They concluded that ownership effect not affected by degree of competition.¹²⁷
 - Kole and Mulherin tested in 1997 whether postwar performance of 17 firms partly owned by US government due to seizure of “enemy” property during World War two differs significantly from performance of private US firms. They found that SOE performance is not significantly different
 - Frydman, Gray, Hessel and Rapaczynski in 1999 compare the performance of privatized firms to that of the firms when they were SOEs for 560 firms in Czech Republic, Hungary and Poland. They found that while privatization improves performance, the effect is limited to certain measures of performances and cases where the SOE is sold to outside owners¹²⁸
 - Tian in 2000, studied the relation between state shareholding and firm performance of 825 publicly traded Chinese firms in 1993. 413 had some government ownership, 312 had none. He found that the performance of private enterprise is superior to “mixed” enterprise. Corporate value generally declines with state ownership , then increases after state share passes 45%¹²⁹

¹²⁶ Ibid

¹²⁷ Ibid

¹²⁸ Ibid

¹²⁹ Ibid

1.2. Macroeconomic effect privatization

Besides having microeconomic effect, privatization of SOE is expected to have macroeconomic effects, especially on its effect on economic growth, monetary and fiscal outcomes, and capital market development

1.2.1 Economic growth

The current enthusiasm for privatization tends to show that government believe that reduction in government activity is synonymous with improvement in economic efficiency and growth, a view that is completely opposed to the belief that prevailed a couple decades ago about the positive effects of nationalization on growth¹³⁰ But still the debate over the effect of privatization on growth is not settled.

Gylfason argues that privatization is shown to increase national economic output by “enhancing efficiency as if relative price distortion were being removed through price reform, trade liberalization or stabilization”¹³¹. Shipke is more moderate on the effect of the growth, he found that the extent to which reduction in government economic activity has implication for output growth depends on “whether and to what degree privatization affects the national saving rates, the level of capital investment, the efficiency with which available resources are used, and the technological progress and on the accompanying economic reform than the mere reduction in government activity and the divestment of public assets”¹³². He concludes by saying that governments are often inclined to privatize

¹³⁰ Schipke, Alfred Why do Government divest? The Macroeconomics of Privatization, Springer ed. Cambridge 2001

¹³¹ Gylfason, Thorvaldur. Privatization, Efficiency, and Economic Growth . CEPR Discussion Paper No. 1844. Available at <http://www.hi.is/~gylfason/pdf/poland-c.pdf>

¹³² Schipke, Alfred Why do Government divest? The Macroeconomics of Privatization, Springer ed. Cambridge 2001

for politically motivated, short-term macroeconomic reasons that are potentially inconsistent with the objective of increasing economic efficiency and growth¹³³.

1.2.3 Monetary and fiscal activity

Sheshinsky and Lopez-Calva discussed that the first interaction between privatization and macroeconomics comes from the fact that macro instability, in the form of large budget deficit tend to accelerate privatization¹³⁴. They reported the evidence shown in Serven, et al. and Lopez-De-Salines, in which these authors found that a poor public sector financial health will trigger a faster public sector restructuring¹³⁵

Sheshinsky and al, expected that more aggressive privatization program will lead to lower budget deficit, by allowing the government to raise new revenues generated from the sale of the public firm, and eliminate subsidies to previously public firms. And if the newly privatized firm moves from deficit to surplus in their operation, the government will also be gaining by collecting taxes on them.

The attractiveness of privatization receipts as an additional source of financing becomes more apparent when examining the size of flow that government have received through privatization In some instances theses receipts exceeded 4% of GDP in a common year¹³⁶. These receipt as Shipke nicely puts it, “allow government to postpone potentially necessary adjustments to future years”.¹³⁷

1.2.4 Capital market development

¹³³ Ibid

¹³⁴ Sheshinski, Eytan and Luis Felipe López-Calva Privatization and its Theory and Evidence Benefits CAER II Discussion Paper No. 35

¹³⁵ Ibid

¹³⁶ Schipke, Alfred Why do Government divest? The Macroeconomics of Privatization, Springer ed. Cambridge 2001

¹³⁷ Ibid

Another important benefit of privatization is its impact on developing capital markets. As described before, privatization can reduce budget deficit and inflationary pressure which contributes to a stronger foundation for capital markets¹³⁸. Mc Lindon argues that privatization can also be a way to deepen domestic capital market. He explains that public share sales and mass privatization creates broad and diversified share ownership, new companies listed on the stock exchange and new investment fund, which “stimulate the creation and scope of operation of capital market agent, including back office operation”¹³⁹

The candidate companies for privatization are the one needed to add stability and liquidity to the stock market as “many SOE were created to give government control of the commanding heights of the economy”¹⁴⁰.

Mc Lindon found that privatization by sell of share can also help transfer the financial technology to the “fledgling local securities industry”¹⁴¹, and would eventually channel savings into productive investment by having a demonstration effect that would push private sector companies to undertake their own IPOs to raise equity financing.

A last effect of privatization on capital markets is its decisive role in developing local institutional investors, which “are critical to expanding capital markets and making them professionals”¹⁴²

After looking at the main microeconomic and macroeconomic incentives to privatization in general, we will now turn to look at the privatization trend in the energy sector

¹³⁸ McLindon Michael’ Privatization and Capital Market Development, strategies to promote economic growth”. Praeger publisher 1996

¹³⁹ Ibid

¹⁴⁰ Ibid

¹⁴¹ Ibid

¹⁴² Ibid

2 Privatization of the energy sector around the world

In the 1990s a substantial portion of the world's oil/gas industry was privatized. In Latin America, Central and Eastern Europe, Southern Europe and elsewhere companies that were previously considered so essential to national security and well-being that they had to be government-owned are being partly or wholly sold to private investors, local or foreign. But while the privatization had microeconomic reasons, in the context discussed above, its main driver in the energy sector was largely macroeconomic: to stop a drain on the national budget, and to develop capital markets to raise sufficient funds for the heavy capital expenditures that the industry requires to find, develop and process oil and gas reserves. This trend was related to the weak price of oil, which in recent years has tilted the bargaining advantage away from host governments and towards private investors and which has obliged companies to become very lean¹⁴³

Energy companies that have been privatized include some of world's largest petroleum companies, based in the industrialized nations. Global giants, such as British Petroleum, British Gas, Elf Aquitaine (France), ENI (Italy), Petro Canada, Repsol (Spain), and TOTAL (France) have all undergone transitions from "state ownership to at least a significant degree of private ownership"¹⁴⁴. Other large petroleum companies in the countries of the former Soviet Union, such as Lukoil and Gazprom and in Latin America such as YPF in Argentina have also been moving towards private ownership.

Regarding the Electric power sector, an International Labor Organization reports expect this sector to be the world's fastest-growing source of end-user energy supply over the

¹⁴³International Labor Office, Sectoral Activities Program: Oil & Gas production, Oil Refining.
www.ilo.org/public/english/dialogue/sector/sectors/oilgas.htm

¹⁴⁴International Labor Organization, National Framework for Globalization, available at
<http://www.itcilo.it/english/actrav/telearn/global/ilo/frame/national.htm#Relation%20of%20privatization%20revenues%20to%20FDI>

next two decades. “To meet global power projections, it is estimated that over \$1 trillion will have to be spent over the next ten years”¹⁴⁵.

The electric power industry during the last two decades has undergone a substantial degree of privatization in a number of countries. The ILO report expects the growth in power generation demand to be particularly high in Asia, with China leading the way.¹⁴⁶

Although varying in degree and method, the privatization of electric utilities continues in both developing and developed countries. Chile led the way with electric utility privatization in the late 1980s, followed by the United Kingdom. Currently, most Latin American countries are privatizing their electric power industries to some extent.

Prominent electric power privatization efforts also are currently underway in Australia, Canada, China, Scandinavia, India, Indonesia, Morocco, Pakistan, the Philippines, and Eastern Europe¹⁴⁷

Even the most sacred energy sector, the upstream oil and gas in exporting countries, which in most of those countries is considered crucial for the sustainability of government resource mobilization, is being considered for Privatization.

Venezuela an OPEC country and a Petro-state¹⁴⁸, is starting to liberalize its petroleum industry.

PDVSA is Venezuela's state oil company and the world's fifth-largest producer of crude oil and the fourth-largest refiner.

In July 1995 Venezuela approved a new profit-sharing concessionary program under which private domestic and foreign companies may bid for joint ventures with Petroleos

¹⁴⁵ Ibid

¹⁴⁶ Ibid

¹⁴⁷ Ibid

¹⁴⁸ For a discussion about Venezuela as a Petro-State, please refer to Terry Karl's

de Venezuela (PDVSA) and in 1996, Venezuela's congress passed a law allowing larger new projects with substantial exports and foreign investment to retain export earnings abroad. But the most important result of Venezuela's liberalizing its petroleum industry is its awarding of the first exploration license to foreigners since it nationalized the industry twenty years ago. Initial license was awarded to a consortium of Veba (Germany), Mobil, and Nippon Oil (Japan)¹⁴⁹.

Other significant projects opened to foreign companies include the \$5.6-billion Cristobal Colon LNG export project of a consortium including Exxon and Lagoven, a PDVSA affiliate. This venture is the first foreign ownership of Venezuelan hydrocarbon reserves since the 1975 oil law that nationalized the petroleum industry and created PDVSA was passed¹⁵⁰

Although the ILO report does not expect the privatization of PDVSA to be imminent, it quoted the company's president Luis Giusti as saying, "it would be very healthy to have 15 percent [of shares] in the capital market."¹⁵¹

While the widespread of Privatization in the energy sector during the 1990s can be considered as an important win for the privatization theory on a stronghold of nationalization, the Gulf region and specially Saudi Arabia are still immune of the entire privatization trend that was happening around the world.

3 Privatization of the Saudi Energy Sector

When looking at the Privatization of the Energy sector in general, we should take into consideration the division of the industry, between the upstream oil and gas industry, and

¹⁴⁹ International Labor Organization, National Framework for Globalization, available at <http://www.itcilo.it/english/actrav/telearn/global/ilo/frame/national.htm#Relation%20of%20privatization%20revenues%20to%20FDI>

¹⁵⁰ Ibid

¹⁵¹ Ibid

the downstream, the refineries, petrochemicals and electricity, with a special case for electricity. This distinction between the upstream sector and the downstream sector is important.

At either stage, there is economic rent involved. But while the downstream rents are likely to be relatively uniform, and if competition is present they are likely to be low, in the upstream sector the rents are returns to quality, so they are not necessarily uniform and do not disappear through competition.¹⁵²

This distinction is important as the reason for restructuring between the two may differ, while in the downstream sector, it is more a straightforward in the sense that what is at issue is a aggregate net-worth enhancement, rather than a reshuffling of rent, in the upstream sector, while net-worth enhancement is probably involved, reassignment of rent may already be present.¹⁵³ For this, the reasons as we shall see for privatizing the upstream sector in Saudi Arabia, go beyond the notion of efficiency, and in our case Saudi Aramco's efficiency and are related to the efficiency of the government. In the following we are going to look, to the extent of the information available, at the three SOE that have a large dominant position in their sub-sector. In the downstream sector, SABIC in the petrochemical industry, and SEC in the Electricity and power distribution industry, and in the upstream sector, the crown jewel of Saudi Arabia, Saudi Aramco.

3.1 Downstream Industry

3.1.1 SABIC and Petrochemical industry

Although a few private petrochemicals producers are now emerging in Saudi Arabia, the presence of Saudi Basic Industries Corporation (Sabic) shadows most of them. Sabic was

¹⁵² Kuczynski Michael, *Privatizing Energy: An overview*, in *Privatization and Deregulation in the Gulf energy Sector*, The Emirates Center for Strategic Studies and Research, ECSSR, 1998.

¹⁵³ Ibid

set up during the oil boom in 1976, and can be described as” the cornerstone of the Saudi’s government attempt to diversify its source of income”¹⁵⁴

Sabir is a joint-stock company with the government owning 70% of its stock. It consists now of some 20 subsidiaries and joint venture, accounts for around 5% of Saudi GDP and employs about 14, 500 people. The corporation controls 5-10 percent of the global petrochemicals market and as much as 20 percent of the markets for some individual products ¹⁵⁵.

Sabir’s profits reached \$1 billion a year, and approached \$2 billion in 1995¹⁵⁶. The oil crash of 1997 did adversely affect the petrochemical revenues as well as the oil revenues and Sabir’s profits dropped 56% in 1999¹⁵⁷.

The success of Sabir is substantially dependent on the access to cheap raw materials with which Saudi Aramco provides it¹⁵⁸.

Privatization of Sabir is important for microeconomic and macroeconomic reasons.

One can argue that the privatization of Sabir would increase its efficiency, by making it more competitive both on the local market and globally. But also privatization is important as it would stop the drain on the government budget because of the subsidies Sabir receives.

The government itself acknowledges the importance of privatizing Sabir, as it has in 1994 set a goal of reducing its ownership to 25% of Sabir’s stock¹⁵⁹. But until now, the government plans never materialized.

¹⁵⁴ Saudi Arabia, Transparency: Unrolling a new framework for investment, Fortune magazine, available at http://www.fortune.com/sitelets/sections/fortune/intl/2001_05saudi.html

¹⁵⁵ Ibid

¹⁵⁶ Anthony Cordesman, Saudi Arabia Enters the 21st century, Chapter 6, available at

¹⁵⁷ Ibid

¹⁵⁸ Saudi Arabia, Transparency: Unrolling a new framework for investment, Fortune magazine, available at http://www.fortune.com/sitelets/sections/fortune/intl/2001_05saudi.html

3.1.2 Saudi Electric Company

Until 1998, Saudi Arabia had 10 regional SOEs in charge of the electricity. This included the four critical "SCECO"s (West, East, South and Central) which together controlled about 85% of the Kingdom's power supplies¹⁶⁰.

For many years the four SCECO companies operated at a loss due to inefficiencies, non-payments by customers and requirements to sell power at below cost to Saudi consumers.

According to the EIA report, the government for years has subsidized the cost of electricity and has paid a dividend to the private shareholders of the companies¹⁶¹

The government in 1999 announced plans to begin privatizing the electricity,¹⁶² and In February 2000 a merger agreement was signed among Saudi Arabia's 10 existing power companies. Later in April 2000 this merger resulted in the Saudi Electric Company (SEC), a joint-stock company 50% owned by the Saudi government¹⁶³.

The reasons why Saudi Arabia is not pushing enough with the obvious need for the privatization of the electricity sector can be explained by looking at previous privatization of this sector.

In previous privatization of electricity, around the world, the privatization of the electricity sector is aimed at increasing effective competition and providing the customers with the full benefits, a better service with a better price. Robin Adams describes the importance of privatization of the electric utilities as it brings "the discipline of the

¹⁵⁹ Ibid

¹⁶⁰ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, December 20, 2001

¹⁶¹ Ibid

¹⁶² CIA World Factbook Saudi Arabia, available at <http://www.cia.gov/cia/publications/factbook/geos/sa.html><http://www.cia.gov/cia/publications/factbook/geos/sa.html> December 20, 2001

¹⁶³ EIA Country Report on Saudi Arabia, <http://www.eia.doe.gov/cabs/saudi.html>, December 20, 2001

market place to bear and should result in lower costs for essential inputs”¹⁶⁴. This idealistic idea of privatization in the electricity and power distribution sector faced two important problems.

On the side of the customers, privatization sometimes did not create significant players in the market. Adams provides us with two interesting examples¹⁶⁵. In the United Kingdom, privatization of electric utilities created two dominant players whose size greatly exceeded those of a limited number of smaller competitors. By contrast, in the Australian state of Victoria, a much smaller economy, the government created seven separate generating companies of approximately equal size. Victorian wholesale prices have fallen 30% since deregulation, a much more pronounced benefit to customers than has occurred in the UK.

On the side of the electric utility companies, they may face what is called “stranded costs”. While regulated electric rates are designed specifically to cover a utility’s cost of doing business, market-based prices are indifferent to the costs incurred by any individual market participant. Therefore, as electric markets are opened to competition the level of revenue earned by a utility may no longer closely match the level required to cover its costs. Some may earn more than their cost of doing business, others less. The “stranded costs” constitutes the difference between costs expected to be recovered under rate regulation and those recoverable in a competitive market. Electric utility companies with the expected lower prices in a deregulated market would face the problem of not being able to recover their historical cost of capital. While how these stranded costs can be recovered and how they can be estimated, may need a separate paper to discuss, it is safe

¹⁶⁴Robin G. Adams, DOMINANT STRATEGIC THEMES OF THE NATURAL RESOURCE INDUSTRY, Fordham International Law Journal, Volume 21 Number 2 December 1997

¹⁶⁵ Ibid

to say that generally it is the government that helps these companies bail out through different measures.

This was in a nutshell the benefits and problems with privatization of the utility sector, is it the same in Saudi Arabia?

Again Saudi Arabia provides an interesting exception of how public utilities are run. The privatization is expected to generate the complete opposite effects of the privatization of the utilities as we have seen it.

On the customer side two important notes. First in Saudi Arabia the electricity is subsidized by the government and there a widespread non payment of electricity bills in the Kingdom. Privatization would eventually, straighten this out, by eliminating subsidies and instituting a viable business which is expected to sell a utility and expect to receive the full price for this business. It goes without saying that in a privatized model, the Saudi customer will be paying more than he was under nationalized and regulated market.

Secondly the way Saudi Arabia is preparing for privatization goes against the past trends. While as we have seen, higher competition would lead to a decrease in the wholesale price, Saudi Arabia went the other way, and consolidated the regional players in one joint stock Company on the road of privatizing the sector.

On the company side, the Saudi Arabian utility sector faced under nationalization a kind of “nationalization stranded cost”. Indeed, with the subsidization of the sector, and the payment problems, Saudi utility sector under regulated markets were never allowed to recover their historical cost of capital. The “nationalized stranded costs” could be defined as the difference between costs expected to be recovered under market regulation and those recoverable in a subsidized economy.

In this context, one can understand the Saudi reason for consolidating the industry in a first phase; it might be an attempt to escape from transforming the nationalized stranded cost to stranded cost.

The establishment of SEC may also offer the potential for eventually splitting off separate companies for power generation, transmission and distribution and for private sector construction of plants under various BOT models. Time will tell.

3.2 Upstream oil industry

As once the marriage between Religion and State has brought mutual damages for both parties, the marriage between State and Company in Saudi Arabia, is also bringing mutual damage to both the Saudi Government and Saudi Aramco, the Saudi cash cow. Privatization of Saudi upstream energy sector presents big challenges, especially as it would “touch on issues of sustainability of government resource mobilization”¹⁶⁶, and in the special case of Saudi Arabia, would engender political and social opposition (*Supra, the Blessing of Nationalization: A SOE that created state legitimacy*)

But looking at both the government and Aramco, we can see that full nationalization cannot be anymore the answer. Like separating state and church was the answer in 18th century, separating state and company should be the answer for Saudi Arabia in the 21st century.

Adding to the problems that nationalization is generating, the other cornerstone of the Saudi oil policy, OPEC is facing a decrease in power, and thus affecting the ability of the Saudi Government to maintain the crucially important stability of the oil prices.

¹⁶⁶ Elwan Ibrahim et al, Privatization and Deregulation of the Energy Sector in the Gulf Co-Operation Concil Countries: Pros and Cons, in Privatization and Deregulation in the Gulf energy Sector, The Emirates Center for Strategic Studies and Research, ECSSR, 1998

3.2.1 Reasons why privatization of the upstream oil and gas sector is needed for both the government and Saudi Aramco

a) Government

“Ten years from now, twenty years from now, you will see. Oil will bring us ruin”

**Juan Pablo Perez Alfonzo¹⁶⁷
Founder of OPEC**

“The problem is not the existence of natural wealth as such... but rather the failure to avert the dangers that accompany the gift of nature”

Thorvaldur Gylfason

These two quotations resume what we have already discussed in the paradox of plenty part. Linking the state revenue to the oil revenue will bring ruin to Saudi Arabia. The kingdom tried to diversify but the numbers are not encouraging, which shows that Saudi Arabia has not adverted “the dangers that accompany the gift of nature”.

The government has failed in managing the downfalls of oil, but does this justify the privatization of a cash cow?

Privatization can be considered a drastic but ultimately a necessary option.

Indeed one of the advantage that privatization can bring to Saudi Arabia is dissociation between Aramco and the government revenue, hence finally changing the status of the company from just being an extension of the Saudi treasury department, and brake the infinite cycle of booms and busts.

The privatization would have very important macroeconomic effect on the Kingdom. On the economic growth side, the sale of any percentage of Saudi Aramco, would bring huge revenues that can be invested in diversification project and building new revenue

¹⁶⁷ Terry Lynn, Karl. *The Paradox of Plenty, Oil Booms and Petro-States*. University of California Press, Ltd, London 1997

resource away from the oil, which should lead to end the sluggish economic growth that the Kingdom has been facing.

On the fiscal and budgetary side, as we have seen one of the reasons for accelerating privatization is budget deficit. Saudi Arabia has been since 1983, with the exception of 2000, facing budget deficits. The fiscal side is another important macroeconomic reason; indeed what Saudi Arabia is not realizing is that “natural monopolies like oil don't need to be owned by the government in order to be controlled by the government. There needs to be either public ownership and the capture of economic rent, or private ownership and the appropriate taxation of the oil sector.”¹⁶⁸ Actually, a proper taxation system would bring a steady predictable stream of revenue.

In this context, the privatization of the Saudi upstream oil and gas sector, because of the nature of the cash cow involved, is more important for the efficiency of the government than the firm. But still with the few information we have, privatization can increase Saudi Aramco's efficiency

b) Saudi Aramco

Putting in a nutshell what we have seen about Saudi Arabian Oil Co (ARAMCO) in the industry part. It is the world's #1 oil producer, supplying 11% of the world's oil demand. The company controls proved oil reserves of about 259 billion barrels (about 25% of the world's total reserves). It extracts about 8 million barrels a day, operates refineries, markets oil internationally, and distributes it domestically.

¹⁶⁸ Robert R. Copaken, Senior Middle East Energy Analyst, U.S. Department of Energy in “Policy Implications for the Price of Oil”, Middle East Policy Council, Policy Forums, 30 March 1999.

It seems that Aramco as a state owned enterprise does not disclose any financial information about its operations .As far as my research have gone, I did not find Saudi Aramco following any known accounting procedures, and does not allow any external auditing. Although transparency is a good step toward greater efficiency we cannot rule by this alone that efficiency will be much greater under private ownership
What we know for sure is that the government as an owner is imposing certain rules that are hindering efficiency.

We have already seen the subsidies that Aramco is giving to Sabic through selling cheaper petroleum products.

Furthermore in evaluating Aramco, Nathaniel R. Kern found that the technical efficiencies of Saudi Aramco's exploration and production operations might be subject to improvements, but probably the areas of Aramco's operations that are liable to yield the greatest savings and efficiencies include “management philosophy, design and procurement, and employment practices and employee benefits”. In some of these areas the Saudi government imposes social and security mandates on the company. While he found that it is not unusual for governments to impose mandates on protected monopolies, over time such mandates can “represent highly significant costs which are imposed without rational and continuing economic justifications”¹⁶⁹.

One of the benefits of operating in a competitive environment is that competition continually forces re-evaluations of how every aspect of a business is run. The cost of not operating in a competitive environment is that forces of inertia set in: government

¹⁶⁹ Ibid

mandates accumulate like barnacles, supplier relationships become increasingly entrenched, and general economic discipline¹⁷⁰

3.2.2 The problem with full Privatization of Saudi Aramco

The privatization of large national oil companies such as the ones in the oil exporting countries, can pose considerable capital market absorption, “greater than 50% flotation can be logistically impossible even if politically acceptable”¹⁷¹. Elwan Ibrahim et al, reported that the estimated value of Petroleos de Venezuela (PDVSA) under conventional accounting is “some five times the size of the total valuation of capitalized Venezuelan companies”¹⁷². While market capitalization across the whole of Latin America is around 5 percent of world total, PDVSA would be around 15% of this region market capitalization¹⁷³. Aramco in absorption terms is “even larger in term of current national and regional capitalization”¹⁷⁴. Flotation would either be on an extremely small scale or involve international capital markets, or both¹⁷⁵.

For capital market reasons, disregarding all other consequences, “privatization is not yet a meaningful option”¹⁷⁶

A good step before the full privatization of Aramco would be its commercialization.

3.2.3 Full commercialization: A quick look at Statoil

The Norwegian state oil company, Statoil provides good example of an oil exporting country following this method.

¹⁷⁰ Ibid

¹⁷¹ Elwan Ibrahim et al, Privatization and Deregulation of the Energy Sector in the Gulf Co-Operation Concil Countries: Pros and Cons, in Privatization and Deregulation in the Gulf energy Sector, The Emirates Center for Strategic Studies and Research, ECSSR, 1998

¹⁷² Ibid

¹⁷³ Ibid

¹⁷⁴ Ibid

¹⁷⁵ Ibid

¹⁷⁶ Ibid

Norway's Statoil was until recently, the only major OECD-based European petroleum company to remain completely state-owned

The full commercialization of Statoil is based on, implementation of full transfer pricing within the company, the ability to seek funds on International capital market on the company's own name, full accounting within each subdivision , the end of cross subsidization between activities, and pricing structure that proxy world price or where relevant opportunity costs in the company's activities. Statoil even commissions external auditor to value the company on a yearly basis¹⁷⁷.

But the most important measure of full commercialization is in the relationship of the company with the government. This relation should be very well defined, and commercialization would not be possible when “the government sees the company and its investment funds as an extension of the Treasury”¹⁷⁸.

Commercialization would involve a prior agreement on the tax structure, so the relation with the government can be well defined. And the success of commercialization is dependent on the “imperative that the government does not seek to use the state company for objectives outside of the oil sector”¹⁷⁹

It is worth noting that for Statoil, full commercialization has lead recently in June 2001 to the decision to move forward with its privatization. Until now the company has sold 18.1% of its shares to private investors¹⁸⁰

In assessing this decision, Dr Alí Rodríguez Araque, OPEC Secretary General, found that the partial privatisation of Statoil and its listing on the New York and Oslo stock

¹⁷⁷ Ibid

¹⁷⁸ Ibid

¹⁷⁹ Ibid

¹⁸⁰ Shareholders in Statoil, www.statoil.com

exchanges will increase cash flow levels and will allow the company to expand its operations to compete more efficiently at a global level¹⁸¹.

The Statoil method of full commercialization seems necessary as a first step for Saudi Aramco, and should be followed by a small sale of Saudi Aramco's stock or at least the establishment of concession agreements in the upstream sector, or both.

The need for the reforms in the Saudi Arabian petroleum sector is accentuated more with the decrease in power of OPEC

3.2.4 Outside pressure to move with reforms: Decrease in the power of OPEC

As we have already seen, the cornerstone of Saudi Government revenue is oil. For the last 20 years, it has followed a policy of domestically nationalizing the oil industry, and internationally playing a key swinger in OPEC to maintain price stability. The model was simple as long as the price of barrel is maintained at a minimum price; Saudi Arabia would have the necessary revenues to maintain a positive budget to sustain its model. With its "quarter of the world reserves" dominant position, Saudi Arabia usually succeeded in pushing the OPEC countries to cut production to maintain stability, using mainly its huge amount of reserve as a stick by threatening to flood the market. Saudi Arabia as well as other OPEC countries each year plans their budget by setting an average price per barrel. For FY2001, the government apparently used an average oil price of about \$22 per barrel. At current production levels, every \$1 increase in the average price per barrel results in an additional \$3 billion in annual revenues¹⁸²

¹⁸¹ Dr Araque, Ali Rodríguez, OPEC Secretary General, Norway and OPEC: The Future of the Oil and Gas Industry . Keynote address to the Conference on The Transformation of Norway's Oil and Gas Industry, London, United Kingdom November 1, 2001, available at <http://www.opec.org/NewsInfo/Speeches/sp2001/spAraqueLondonNov1.htm>

¹⁸² American Embassy in Saudi Arabia, Saudi Arabia 2001 Economic Trends, <http://usembassy.state.gov/riyadh/wwwhet01.html>

But one wonder to what degree OPEC can be considered successful in maintaining price stability

a) Problems within the OPEC members

“An oligopoly is often plagued by lack of discipline as some members of the group are tempted to take a free ride at the expense of other members. This takes the form of price undercutting when the group administers prices, or producing more than the agreed quotas when the group decides on an output program. This puts the leaders in a difficult position when this behavior causes prices to fall to levels that adversely affect the revenue objective”

Robert Mabro, Director of the Oxford Institute for Energy Studies¹⁸³

The study of OPEC is beyond the scope of this study and would require at least another paper. But OPEC is one of the pillars of Saudi Arabia oil policy which combined with the nationalization is supposed to secure most of the state revenue. Aramco provides the revenue, and OPEC role is to ensure a proper price of oil that would maximize those revenues and the revenues of the other OPEC members.

From the oil chock in 1973 until 1985, OPEC succeeded in maintaining prices most of all because in the beginning of the 80s, Saudi Arabia disproportionately reduced its output in an attempt to achieve OPEC's price goals. Throughout that same time period other OPEC members continually cheated on their agreements¹⁸⁴. 1985 saw the collapse of OPEC's price administration, as a “result of stagnant, even declining global demand, and a very large increase in non-OPEC production”¹⁸⁵ And finally by 1986, the Saudis opened the valves. Prices crashed and market share began to increase for OPEC. By 1994 OPEC had

¹⁸³ Mabro, Robert, Saudi Arabia's oil policies, presentation at the conference on The Developing Role of Support Services for the Petroleum and Energy Industries in Saudi Arabia, held in Riyadh on 5-7 November 2001, available at www.zawya.com

¹⁸⁴ Energy Economic Newsletter, Oil Price History and Analysis, <http://www.wtrg.com/prices.htm>

¹⁸⁵ Mabro, Robert, Saudi Arabia's oil policies, presentation at the conference on The Developing Role of Support Services for the Petroleum and Energy Industries in Saudi Arabia, held in Riyadh on 5-7 November 2001, available at www.zawya.com

recovered half of its lost market share. Since that date, the cartel has maintained a market share of approximately 40 percent¹⁸⁶.

The battle for market share has caused problems within OPEC. The most notorious one was in 1998. The Saudis wanted to have high export levels to the United States for all of the obvious reasons and not forgetting cost in loss of market share it has incurred in the first half of the 1980s. Venezuela wanted to increase prices by reducing quotas again, while it was producing well above its current quota. Iran wanted to reduce production, but claimed that its base for reduction is its former quota rather than its production levels at the time of the agreement. The result of these fights was that price of oil had fallen to “\$10 per barrel in December 1998, the lowest since 1973, prior to the Arab Oil Embargo late that year”¹⁸⁷

The troublesome characteristic of oil price movements is “that it is very easy to induce a fall and much more difficult to restore prices to their previous levels after a significant decline”¹⁸⁸. After the 1986 episode prices were brought back from a dismal \$8/B to \$17-18/B, not to the previous \$26/B. And it took 15 months in 1998-99 to alter the course of falling prices¹⁸⁹.

b) The growing importance of the non-OPEC oil exporters: The Russian factor.

Since the 1973 oil shock, OPEC’s share of production has been on a long term downward trend and in the past year, it dropped from 36.5% to 35%.¹⁹⁰ While in 1973, OPEC

¹⁸⁶ Ibid

¹⁸⁷ Energy Information Administration, OPEC Revenues Fact Sheet, December 2001, available at <http://www.eia.doe.gov/emeu/cabs/opecrev.html>

¹⁸⁸ Mabro, Robert, Saudi Arabia’s oil policies, presentation at the conference on The Developing Role of Support Services for the Petroleum and Energy Industries in Saudi Arabia, held in Riyadh on 5-7 November 2001, available at www.zawya.com

¹⁸⁹ Ibid

¹⁹⁰ Alexanders’s Gas & Oil connection, Russian oil changes the OPEC game, News and trends Middle East, Volume 6, issue#23- December 6 2001

controlled half of the world production, discoveries in the North Sea, the Caucasus, Canada and Alaska have cut its share to a third.

But the main source of oil today, is Russia. Its production this year is expected to reach 8.5 mm bpd, a 30% over the past two years which places its production above Saudi Arabia's¹⁹¹.

While OPEC needs to cut production to stop a further decline in oil prices, its own members are running increasingly over quota production¹⁹²

The Alexander's report concluded that it appears that "OPEC have shot itself in the foot through its price rigging", the higher the oil price, the more production Russia will produce.

Besides having to manage inter-OPEC problems, OPEC now is faced increasingly by a threat from increasingly important independent producers.

Saudi Arabia has it seems understood the volatility of relying on OPEC. The Gas Initiative started in 1998, in the midst of the sharpest decline in oil. Since September 2001, until writing this paper, the prices have been again in decline. If the Saudis have learned the lessons from 1998, this should put more pressure on Saudi government to move forward with its privatization programs, to restructure its upstream oil sector, at least to commercialize Saudi Aramco, and to move forward with the separation of Sate and Company

A concluding remark about the privatization of Saudi Arabia's energy sector is the pressure that the Saudi Arabia's attempt to join the WTO is putting on moving forward with these plans. Saudi Arabia requested accession to the WTO in December 1995. A

¹⁹¹ Ibid

¹⁹² Ibid

working party was established in early 1996 and, since then, Saudi Arabia has been in talks and negotiations with the WTO and the other members. In preparation to access the WTO, the Saudi Government took some positive steps. As we have already seen, Saudi Arabia has issued a new Foreign Direct Investment law, and established SAGIA. But this accession should put more pressure on going on with privatization programs. The two energy sectors that would benefit from this added pressure are the one that the government has set up plans, in particular Sabic and the electric utilities sector¹⁹³.

After looking at the Saudi Energy what are the potential scenario privatization?

B. Potential scenario privatization

After looking at the growing need of both FDI and privatization, it would be interesting to know how these two important factors will interact in Saudi Arabia. The following are some potential scenarios.

1. Most optimistic: Commercialization of the Saudi Cash cow

The flow of FDI will lead to the Commercialization of Saudi Aramco. This would have a huge effect on the Saudi Economy. This would separate the state and the company, stop the subsidies and subsequently lead to an immediate wide spread of privatization, ranging from the power industry to the telecommunication, aviation, etc....

The effect of such a scenario, would mean that Saudi Arabia is serious about reform, and would eventually oblige the government to alter its development path away from oil, and invest in more sustainable source of revenues.

2. Possible scenarios

¹⁹³ Ali & Partners, Middle East Attorneys & Counselors at Law. The Middle East and WTO in a Nutshell. Available at http://www.mideastlaw.com/Middle_East_and_the_world_trade_.htm

The FDI will lead the government to move on with the guidance of its seventh development plan. This would mean that FDI will accelerate the "non upstream oil sector and ready to be privatized" sectors, such as the power industry, the telecommunication industry, the airline industry... The hope would be that the privatization of these less important assets would lead to the diversification of the Saudi Economy, and would constitute a sort of privatization learning curve for the government, to arrive in a later stage to the privatization or at least commercialization of the Saudi cash cow Aramco.

3. Pessimistic scenario

The inflow of FDI won't lead to the privatization the energy sector. The FDI in the Gas Initiative tends to be an exception and future FDI would be the result of the privatization, meaning that privatization will lead to the inflow of FDI. It would be more the pressure from the need to join the WTO and the realization that OPEC is not such a revenue stability moderator as the Saudi thought it would be. This scenario is not moving as fast as it should be, as Saudi Arabia was supposed to join the WTO in 2001, but the date passed without the Saudis making real efforts on the privatization front.

IV. FDI and Privatization, is there Granger causality between the two in developing countries?

Saudi Arabia is in need for both Foreign Direct Investment, and Privatization for the reasons explained above, and as we have seen foreign direct investment is starting to flow into the gas upstream sector. Privatization for its part is being considered as a serious option for the power industry and the petrochemical industry, while commercialization is needed as a first step for Saudi Aramco

To be able to answer which of the scenario we have projected is the most likely to happen, we inquire in this part empirically if there is any causality between Privatization and FDI, by applying a simple econometric tool the Granger-Causality to a decade of privatization and FDI in the developing countries in order to understand if privatization leads to the inflow FDI or the inflow of FDI leads to privatization

A. Econometric procedure and database

1 Explaining the Granger Causality model

As Holland (1988) notes, since Aristotle, philosophers of science have been trying to define what it means for A to cause B¹⁹⁴. Although certainly there is not a widely accepted definition of causation, the Granger causality test has” gained considerable usage¹⁹⁵ for dealing in causality issues in data analysis.

The basic principle of Granger causality analysis using *F*-tests to answer the question of whether *x* causes *y*, is to see how much of the current *y* can be explained by past values of *y* and then to see whether adding lagged value of *x* can improve the explanation.

So, if in the presence of lagged *y*'s, lagged *x*'s makes no statistically significant contribution to explaining Y_t , than it is said that “*x* does not Granger cause *y*”. Similarly, if lagged *y*'s makes no statistical significance in explaining x_t in the presence of lagged *x*'s, then it is said that “*y* does not Granger causes *x*”

It is here important to note that “*x* Granger causes *y*” does not imply that *y* is the effect of the result of *x*. It simply imply that “ Granger causality measures precedence and

¹⁹⁴ Berndt, Ernest. *The Practice of Econometrics, Classic and Contemporary* Addison-Wesley Publishing Company, 1991

¹⁹⁵ Ibid

information content but does not by itself indicate causality in the more common use of the term”¹⁹⁶

Granger causality might be investigated as follows: (the ε_t is assumed to be a” white noise” error term)

The x equation would be:

$$x_t = \alpha + \sum_{i=1}^I \beta_i x_{t-1} + \sum_{j=1}^J \gamma_j y_{t-j} + \varepsilon_t$$

If the calculated F-statistic of x is greater than the critical value, than it is said that x Granger causes y , otherwise nothing is inferred concerning this Granger causality.

The y equation would be:

$$y_t = \alpha + \sum_{i=1}^I \beta_i y_{t-1} + \sum_{j=1}^J \gamma_j x_{t-j} + \varepsilon_t$$

If the F-statistic of y is greater than the critical value, than it is said that y Granger causes x . Otherwise nothing is inferred concerning this Granger causality.

The null hypothesis is that x does not granger y in the first regression and that y does not Granger x in the second regression.

If it is found that both x granger causes y and y Granger causes x , than it feedback is said to exist.¹⁹⁷

4 Database

This simple Granger causality model will be tested using a data base consisting of 108 developing countries, with yearly observations from 1990 to mid 1999, compiled by the

¹⁹⁶ Eviews help menu, www.eviews.com

¹⁹⁷ Berndt, Ernst: The practice of econometrics, classic and contemporary, Addison-Wesley Publishing company 1991

author with data collected from the World Bank Privatization Transaction Data (1990-1999)¹⁹⁸, and the World Bank World Development Indicators (“WDI”) (World Bank, 2001) (

The following variables are being used in this study (all numbers in natural Log)

- FDI in US dollars (FDI)
- Number of Privatization (PRINUM)
- Revenues from privatization sales in US dollars (PRIDOL)

In analyzing this data, I have used the Eviews software, including the data in a pooled time series of cross sections, which is appropriate to the kind of data that I have: A relatively large number of observations, 338, over a ten year period, on a relatively large number of countries, 108 countries.

Three different tests were run on this software, a general test including all the 108 countries, a specific test to the resource rich countries and a last one including the Middle East and North Africa or MENA countries. Obviously, these different test are meant to give us, first a general look for the causality if any between privatization and FDI , and secondly analyzing if this causality exist within countries sharing certain similarities with Saudi Arabia, namely the resource rich countries and the MENA region.

Each of these tests was performed under the common intercept and the fixed effect.

Controlling for the fixed effects tends to reduce simultaneity bias in the regression.

The result would be labeled as commonly accepted levels, if both the ϵ_t and the standard error do not exceed 10% at the most.

¹⁹⁸ The World Bank Privatization Transactions Data includes 8353 privatization transactions. It reports all sales of public assets to private entities through public offers, direct sale, contracting out of government services through concessions or licensing agreements, and joint venture arrangements. It excludes voucher sales and divestitures and mothballing of state-owned enterprises. Small-scale privatizations with a sales value of less than US\$50,000 are also not included nor are voucher based mass privatization. Available at <http://www.privatizationlink.com/praccorner.cfm>

A final note, because the fixed effects tables tend to be large, we will report here the essential data, and include the complete tables as an appendix at the end of the paper.

B. Testing the Hypothesis using data for 108 countries

1 Testing Granger causality between number of privatization and FDI

a) Analyzing the assumption: Privatization number Granger causes FDI

$$FDI_t = \alpha + \sum_{i=1}^I \beta_i FDI_{t-1} + \sum_{j=1}^J \gamma_j PRINUM_{t-j} + \varepsilon_t$$

Table 1.1: Common intercept

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 12:53
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 74
 Total panel (unbalanced) observations: 348
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.542552 | 0.153764 | 3.528469 | 0.0005 |
| LOG(PRINUM?(-1)) | -0.007635 | 0.032330 | -0.236144 | 0.8135 |
| LOG(FDI?(-1)) | 0.944933 | 0.022491 | 42.01346 | 0.0000 |
| R-squared | 0.876859 | Mean dependent var | | 6.034286 |
| Adjusted R-squared | 0.876146 | S.D. dependent var | | 2.077174 |
| S.E. of regression | 0.731019 | Sum squared resid | | 184.3641 |
| F-statistic | 1228.338 | Durbin-Watson stat | | 2.156616 |
| Prob(F-statistic) | 0.000000 | | | |

Table 1.2: Fixed effects

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 12:58
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 74
 Total panel (unbalanced) observations: 348
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(PRINUM?(-1)) | -0.044054 | 0.033540 | -1.313450 | 0.1901 |
| LOG(FDI?(-1)) | 0.567776 | 0.047898 | 11.85393 | 0.0000 |

| | | | |
|--------------------|----------|--------------------|----------|
| R-squared | 0.922824 | Mean dependent var | 6.034286 |
| Adjusted R-squared | 0.901544 | S.D. dependent var | 2.077174 |
| S.E. of regression | 0.651769 | Sum squared resid | 115.5464 |
| F-statistic | 3252.420 | Durbin-Watson stat | 2.350871 |
| Prob(F-statistic) | 0.000000 | | |

These results lead to the following conclusions. The F- statistic is greater than zero with the probability of ε_t being at least the least negligible, and the adjusted R-squared is high. First we find that PRINUM does not Granger causes FDI. But the coefficient estimate of PRINUM? (-1) is negative and is not significant at any commonly accepted levels. Looking at FDI we find that FDI for a previous year will Granger causes FDI for the next year. The coefficient estimates of FDI?(-1) is positive, and is significant at any commonly accepted levels. Taken together, both the decrease in Privatization number and the increase in FDI, can be interpreted as countries starting their privatization program by selling smaller entities and keeping fewer asset in number but much bigger in size, for the end. This would be the normal privatization learning curve of a country. But as we can see these results are inconclusive for the privatization number, and constitute white noise. The FDI result on the other side seems to be conclusive .The fixed effect confirms the same result, with the probability of privatization number Granger causes FDI decreasing more.

b) Analyzing the assumption: FDI Granger causes PRINUM

$$PRINUM_t = \alpha + \sum_{i=1}^I \beta_i PRINUM_{t-1} + \sum_{j=1}^J \gamma_j FDI_{t-j} + \varepsilon_t$$

Table 2.1: Common intercept

Dependent Variable: LOG(PRINUM?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 12:59
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 74
 Total panel (unbalanced) observations: 352

White Heteroskedasticity-Consistent Standard Errors & Covariance
Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.827364 | 0.191967 | 4.309922 | 0.0000 |
| LOG(PRINUM?(-1)) | 0.481646 | 0.062635 | 7.689721 | 0.0000 |
| LOG(FDI?(-1)) | 0.031190 | 0.028577 | 1.091449 | 0.2758 |
| R-squared | 0.250421 | Mean dependent var | | 1.968955 |
| Adjusted R-squared | 0.246126 | S.D. dependent var | | 1.320602 |
| S.E. of regression | 1.146625 | Sum squared resid | | 458.8475 |
| F-statistic | 58.29742 | Durbin-Watson stat | | 2.060249 |
| Prob(F-statistic) | 0.000000 | | | |

Table 2.2: Fixed effects

Dependent Variable: LOG(PRINUM?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 12:44
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 74
Total panel (unbalanced) observations: 352
White Heteroskedasticity-Consistent Standard Errors & Covariance
Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(PRINUM?(-1)) | 0.029981 | 0.063655 | 0.470994 | 0.6380 |
| LOG(FDI?(-1)) | -0.092476 | 0.062828 | -1.471896 | 0.1422 |
| R-squared | 0.525441 | Mean dependent var | | 1.968955 |
| Adjusted R-squared | 0.396485 | S.D. dependent var | | 1.320602 |
| S.E. of regression | 1.025926 | Sum squared resid | | 290.4965 |
| F-statistic | 305.5932 | Durbin-Watson stat | | 2.151355 |
| Prob(F-statistic) | 0.000000 | | | |

Looking again at Table 2.1, and by taking the adjustments of the fixed effects in Table 2.2, we find that The F- statistic is greater than zero, and the probability of ϵ_t is at the least negligible. FDI will Granger causes PRINUM. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. PRINUM does not seem to Granger causes FDI, but the coefficient estimate of PRINUM? (-1) is negative and is not significant at any commonly accepted levels.

This can be explained that while the number of privatization is decreasing, the FDI is still growing and causing the big assets yet not sold to be privatized. In another meaning it

seems from here that the FDI is putting pressure for the “big cash cows “to be privatized. But again, because of the existence of a relevant ε_t these results should be considered as white noise and thus inconclusive

Finally we should conclude that while testing for Granger causality between privatization number and FDI, seems to gives us interesting results, the result are inconclusive, and all what we can conclude at a commonly accepted level is from this part is that FDI will Granger causes FDI

2 Testing Granger causality between FDI and privatization sales

a) Analyzing the assumption Privatization in sales amount Granger causes FDI

$$FDI_t = \alpha + \sum_{i=1}^I \beta_i FDI_{t-1} + \sum_{j=1}^J \gamma_j PRIDOL_{t-j} + \varepsilon_t$$

Table 3.1: Common intercept

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:10
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 72
 Total panel (unbalanced) observations: 332
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| C | 0.522513 | 0.151873 | 3.440461 | 0.0007 |
| LOG(PRIDOL?(-1)) | 0.016070 | 0.023590 | 0.681224 | 0.4962 |
| LOG(FDI?(-1)) | 0.931436 | 0.032945 | 28.27207 | 0.0000 |
| R-squared | 0.879556 | Mean dependent var | 6.057436 | |
| Adjusted R-squared | 0.878824 | S.D. dependent var | 2.092080 | |
| E. of regression | 0.728261 | Sum squared resid | 174.4899 | |
| F-statistic | 1201.278 | Durbin-Watson stat | 1.986059 | |
| Prob(F-statistic) | 0.000000 | | | |

Table 3.2: Fixed effects

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:11
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints

Number of cross-sections used: 72
 Total panel (unbalanced) observations: 332
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(PRIDOL?(-1)) | -0.019839 | 0.029703 | -0.667891 | 0.5048 |
| LOG(FDI?(-1)) | 0.572590 | 0.049797 | 11.49839 | 0.0000 |
| R-squared | 0.926955 | Mean dependent var | | 6.057436 |
| Adjusted R-squared | 0.906287 | S.D. dependent var | | 2.092080 |
| S.E. of regression | 0.640438 | Sum squared resid | | 105.8215 |
| F-statistic | 3274.076 | Durbin-Watson stat | | 2.211629 |
| Prob(F-statistic) | 0.000000 | | | |

Looking at table 3.1 and 3.2 we find that The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square. With the fixed effect, eliminating certain error, we find that that PRIDOL seems not Granger causes FDI. But the coefficient estimate of PRINUM? (-1) is negative and is not significant at any commonly accepted levels .On the FDI side, as our previous test have shown, FDI of this year will Granger causes FDI of next year. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. This means that in the developing countries, Privatization Sales doest not seem to Granger causes FDI. While interesting, this result is inconclusive and should be considered as white noise. What we have here at a commonly accepted level is that FDI will Granger causes FDI.

b) Analyzing the assumption FDI Granger causes Privatization in sales amount

$$PRIDOL_t = \alpha + \sum_{i=1}^I \beta_i PRIDOL_{t-1} + \sum_{j=1}^J \gamma_j FDI_{t-j} + \epsilon_t$$

Tale 4.1 common intercept

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:00
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 70
 Total panel (unbalanced) observations: 324
 White Heteroskedasticity-Consistent Standard Errors & Covariance

Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.394536 | 0.256041 | 1.540910 | 0.1243 |
| LOG(PRIDOL?(-1)) | 0.316419 | 0.059382 | 5.328529 | 0.0000 |
| LOG(FDI?(-1)) | 0.494365 | 0.061541 | 8.033127 | 0.0000 |
| R-squared | 0.532213 | Mean dependent var | | 4.777412 |
| Adjusted R-squared | 0.529299 | S.D. dependent var | | 2.269787 |
| S.E. of regression | 1.557248 | Sum squared resid | | 778.4319 |
| F-statistic | 182.6050 | Durbin-Watson stat | | 1.956110 |
| Prob(F-statistic) | 0.000000 | | | |

Table 4.2 Fixed effects

Dependent Variable: LOG(PRIDOL?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:02
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 70
Total panel (unbalanced) observations: 324
White Heteroskedasticity-Consistent Standard Errors & Covariance
Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(PRIDOL?(-1)) | 0.008657 | 0.063775 | 0.135735 | 0.8921 |
| LOG(FDI?(-1)) | 0.297072 | 0.097891 | 3.034713 | 0.0027 |
| R-squared | 0.687458 | Mean dependent var | | 4.777412 |
| Adjusted R-squared | 0.599401 | S.D. dependent var | | 2.269787 |
| S.E. of regression | 1.436614 | Sum squared resid | | 520.0927 |
| F-statistic | 554.2921 | Durbin-Watson stat | | 2.110783 |
| Prob(F-statistic) | 0.000000 | | | |

Looking at table 4.1 and 4.2 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square Both with the common intercept and more clearly with the fixed effect, we can come to the conclusion that FDI Granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes PRIDOL. Although the coefficient estimate of PRINUM? (-1) is positive, it is not significant at any commonly accepted levels.

What we can deduct from here is at commonly accepted levels, in the developing countries the FDI will Granger causes Privatization Sales.

This result is important and it shows that the FDI will lead to privatization or at least would put pressure on privatization to happen.

In conclusion from studying the causality between FDI and Privatization in developing countries we can summarize the “conclusive and significant at any commonly accepted levels” results as

- FDI will Granger Causes FDI
- FDI will Granger Causes Privatization Sales

As the test between Privatization number and FDI did not yield concrete results, we are going only to use in the following sections Privatization sales and FDI as variables

C. Clustering countries according to the Granger causality test

In this part we are going to isolate particular group of countries displaying a very similar behavior with respects to the variable of interests. As our main interest is trying to predict Granger-Causality between privatization and FDI, we will in this part run the test on countries displaying similar behaviors, the resource rich countries and the Middle East and North Africa (MENA) countries

1- Testing the Hypothesis in resource rich countries

To identify resource rich countries, we once again relied on Gylfason. In his paper “Natural Resources and Economic Growth: The Role of Investment”¹⁹⁹, Thorvaldur Gylfason reported a recent study with Sachs and Warner covering 85 countries, and

¹⁹⁹ Gylfason, Thorvaldur and Zoega Gylfi, “ Natural Resources and economic Growth : the Role of Investment”, CEPR Discussion Paper No. 2743, March 2001. Available also at <http://www.hi.is/~gylfason/pdf/natinvest31.pdf>

shows a scatterplot of economic growth from 1965 to 1998, and natural resource dependence as measured by the share of natural capital in national wealth in 1994, the share of natural capital in total capital, which comprises physical, human and natural capital. This percentage of natural capital in national wealth in 1994 will be our map to include countries in the resource rich country test.

1.1 Countries whose share of natural resources is greater than 15% of total GDP

The countries included and for which we have the data are: Cote D'Ivoire, Senegal, Togo, Venezuela, Burkina Faso, Burundi, Nepal, Papua New Guinea, Ecuador, India, Mauritania, Rwanda, Cameroon, Sierra Leon, Guinea Bissau, Madagascar, Nigeria, and Zambia

a) *Analyzing the assumption Privatization in sales amount Granger causes FDI*

$$FDI_t = \alpha + \sum_{i=1}^I \beta_i FDI_{t-1} + \sum_{j=1}^J \gamma_j PRIDOL_{t-j} + \varepsilon_t$$

Table 5.1: Common intercept

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:21
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 14
 Total panel (unbalanced) observations: 56
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.485254 | 0.276140 | 1.757275 | 0.0846 |
| LOG(FDI?(-1)) | 0.890800 | 0.077437 | 11.50358 | 0.0000 |
| LOG(PRIDOL?(-1)) | 0.051503 | 0.077268 | 0.666553 | 0.5079 |
| R-squared | 0.870256 | Mean dependent var | | 6.004807 |
| Adjusted R-squared | 0.865360 | S.D. dependent var | | 2.167869 |
| S.E. of regression | 0.795465 | Sum squared resid | | 33.53648 |
| F-statistic | 177.7477 | Durbin-Watson stat | | 1.905721 |
| Prob(F-statistic) | 0.000000 | | | |

Table 5.2: Fixed effects

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:25
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 14
 Total panel (unbalanced) observations: 56
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | 0.180518 | 0.227923 | 0.792012 | 0.4330 |
| LOG(PRIDOL?(-1)) | 0.035280 | 0.093046 | 0.379166 | 0.7066 |
| R-squared | 0.923792 | Mean dependent var | | 6.004807 |
| Adjusted R-squared | 0.895214 | S.D. dependent var | | 2.167869 |
| S.E. of regression | 0.701755 | Sum squared resid | | 19.69839 |
| F-statistic | 484.8776 | Durbin-Watson stat | | 1.983073 |
| Prob(F-statistic) | 0.000000 | | | |

Looking at table 5.1 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square Both with the common intercept and more clearly with the fixed effect, we can come to the conclusion that FDI Granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes FDI. But, although the coefficient estimate of PRIDOL? (-1) is positive, it is not significant at any commonly accepted levels.

Looking at table 5.2 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI Granger causes PRIDOL. But although the coefficient estimates of FDI? (-1) is positive, it is not significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes FDI. But, although the coefficient estimate of PRIDOL? (-1) is positive, it is not significant at any commonly accepted levels.

Looking at both the common intercept (Table 5.1) and the fixed ones (Table 5.2), we can find that both result are inconclusive regarding the probability of Privatization sales Granger causes FDI. But we have mixed message regarding FDI will Granger causes FDI. While in the common intercept, we have a significant result at any commonly accepted levels; in the fixed effects we don't have such a highly probable result. We must conclude here by saying that the results regarding FDI Granger causes FDI and PRIDOL Granger Causes FDI are inconclusive in the countries in which the natural share constitutes more than 15 % of their GDP.

b) Analyzing the assumption FDI Granger causes Privatization in sales amount

$$PRIDOL_t = \alpha + \sum_{i=1}^I \beta_i PRIDOL_{t-1} + \sum_{j=1}^J \gamma_j FDI_{t-j} + \varepsilon_t$$

Table 6.1: Common intercept

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:29
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 14
 Total panel (unbalanced) observations: 56
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| C | -0.944792 | 0.598736 | -1.577978 | 0.1205 |
| LOG(FDI?(-1)) | 0.808232 | 0.146920 | 5.501188 | 0.0000 |
| LOG(PRIDOL?(-1)) | 0.137407 | 0.111069 | 1.237137 | 0.2215 |
| R-squared | 0.674148 | Mean dependent var | 4.444358 | |
| Adjusted R-squared | 0.661852 | S.D. dependent var | 2.488170 | |
| S.E. of regression | 1.446884 | Sum squared resid | 110.9540 | |
| F-statistic | 54.82530 | Durbin-Watson stat | 1.790285 | |
| Prob(F-statistic) | 0.000000 | | | |

Table 6.2: Fixed effects

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:31
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 14
 Total panel (unbalanced) observations: 56
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | 1.226507 | 0.245387 | 4.998257 | 0.0000 |
| LOG(PRIDOL?(-1)) | -0.128275 | 0.105660 | -1.214041 | 0.2319 |
| R-squared | 0.767498 | Mean dependent var | | 4.444358 |
| Adjusted R-squared | 0.680310 | S.D. dependent var | | 2.488170 |
| S.E. of regression | 1.406839 | Sum squared resid | | 79.16782 |
| F-statistic | 132.0419 | Durbin-Watson stat | | 1.841930 |
| Prob(F-statistic) | 0.000000 | | | |

Looking at table 6.1 and 6.2 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square Both with the common intercept and more clearly with the fixed effect, we can come to the conclusion that FDI granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes PRIDOL. With the fixed effect adjustment we find that the coefficient estimates of PRINUM? (-1) is negative, and is not significant at any commonly accepted levels.

The interesting here is while the number of observation available is a lot smaller than in the general model, we still find the following conclusion still standing

- FDI will Granger causes PRIDOL

Let's try to look to more particular groups, the ones with 20% or more, and testing later the countries with 25% to see if we can get clearer cut results.

1.2 Countries whose share of natural resources is greater than 20% of total GDP

The countries included are Mauritania, Rwanda, Cameroon, Sierra Leon, Guinea Bissau, Madagascar, Nigeria, and Zambia²⁰⁰

a) Analyzing the assumption Privatization in sales amount Granger causes FDI

$$FDI_t = \alpha + \sum_{i=1}^I \beta_i FDI_{t-1} + \sum_{j=1}^J \gamma_j PRIDOL_{t-j} + \varepsilon_t$$

Table 7.1: Common intercept

Dependent Variable: LOG(FDI?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:40
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 6
Total panel (unbalanced) observations: 19
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.538640 | 0.559625 | 0.962502 | 0.3501 |
| LOG(FDI?(-1)) | 0.763004 | 0.115312 | 6.616853 | 0.0000 |
| LOG(PRIDOL?(-1)) | 0.201328 | 0.069965 | 2.877560 | 0.0109 |
| R-squared | 0.919679 | Mean dependent var | | 6.509894 |
| Adjusted R-squared | 0.909639 | S.D. dependent var | | 2.240241 |
| S.E. of regression | 0.673418 | Sum squared resid | | 7.255860 |
| Log likelihood | -17.81485 | F-statistic | | 91.60084 |
| Durbin-Watson stat | 1.806285 | Prob(F-statistic) | | 0.000000 |

Table 7.2: Fixed effects

Dependent Variable: LOG(FDI?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:41
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 6
Total panel (unbalanced) observations: 19
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | -0.129678 | 0.119043 | -1.089336 | 0.2993 |
| LOG(PRIDOL?(-1)) | 0.139881 | 0.037364 | 3.743693 | 0.0032 |
| R-squared | 0.988159 | Mean dependent var | | 6.509894 |
| Adjusted R-squared | 0.980624 | S.D. dependent var | | 2.240241 |
| S.E. of regression | 0.311835 | Sum squared resid | | 1.069652 |
| Log likelihood | 0.372668 | F-statistic | | 917.9920 |
| Durbin-Watson stat | 3.342797 | Prob(F-statistic) | | 0.000000 |

²⁰⁰ Ibid

Looking at table 7.1, the common intercept, the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI Granger causes FDI. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes FDI. Here, the coefficient estimates of PRINUM? (-1) is positive and is significant at any commonly accepted levels.

The common intercept provides us here with a conclusion that in the “20% or more countries”, Both FDI and PRIDOL will Granger causes FDI. This result is interesting as it is showing us that both the FDI and the Privatization sales contribute together in the causality of FDI.

Looking at the table 7.2, the fixed effects, we find that the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI does not Granger causes PRIDOL. The coefficient estimates of FDI? (-1) is negative, and is not significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes FDI. Here, the coefficient estimates of PRINUM? (-1) is positive and is significant at any commonly accepted levels.

The common intercept and the fixed effects gave us contradictory result concerning FDI Granger Causes FDI, and for this we must reject them as inconclusive. But we have confirmation from both results that PRIDOL Granger Causes FDI.

b) Analyzing the assumption FDI Granger causes Privatization in sales amount

$$PRIDOL_t = \alpha + \sum_{i=1}^I \beta_i PRIDOL_{t-1} + \sum_{j=1}^J \gamma_j FDI_{t-j} + \epsilon_t$$

Table 8.1: Common intercept

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 12/12/01 Time: 22:21
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 6
 Total panel (unbalanced) observations: 19
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | -0.932565 | 1.569841 | -0.594051 | 0.5608 |
| LOG(FDI?(-1)) | 0.961355 | 0.322213 | 2.983598 | 0.0088 |
| LOG(PRIDOL?(-1)) | -0.023927 | 0.179797 | -0.133077 | 0.8958 |
| R-squared | 0.670035 | Mean dependent var | | 5.083291 |
| Adjusted R-squared | 0.628789 | S.D. dependent var | | 2.643139 |
| S.E. of regression | 1.610387 | Sum squared resid | | 41.49356 |
| Log likelihood | -34.38028 | F-statistic | | 16.24497 |
| Durbin-Watson stat | 1.090652 | Prob(F-statistic) | | 0.000141 |

Table 8.2: Fixed effects

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 12/12/01 Time: 22:20
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 6
 Total panel (unbalanced) observations: 19
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | 0.765225 | 0.449732 | 1.701512 | 0.1169 |
| LOG(PRIDOL?(-1)) | -0.496569 | 0.138679 | -3.580718 | 0.0043 |
| R-squared | 0.853857 | Mean dependent var | | 5.083291 |
| Adjusted R-squared | 0.760857 | S.D. dependent var | | 2.643139 |
| S.E. of regression | 1.292553 | Sum squared resid | | 18.37763 |
| Log likelihood | -26.64344 | F-statistic | | 64.26890 |
| Durbin-Watson stat | 1.623918 | Prob(F-statistic) | | 0.000006 |

Looking at table 8.1 and 8.2 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_{it} is at the least negligible, and a high Adjusted R-Square Both with the common intercept and more clearly with the fixed effect, we can come to the conclusion that FDI Granger causes PRIDOL. The coefficient

estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL does not Granger causes PRIDOL. In both the common intercept and the fixed effects adjustment we find that the coefficient estimates of PRIDOL? (-1) is negative, and is not significant at any commonly accepted levels. The countries with greater than 20% give us interesting results. For the first time we can say that feedback exists between privatization sales and FDI at commonly accepted level. In these countries the occurrence of either one will Granger causes the other one, in conclusion the results are as follow

- PRIDOL Granger Causes FDI
- FDI Granger Causes PRIDOL

1.3 Countries whose share of natural resources is greater than 25% of total GDP

The countries included are: Sierra Leone, Guinea Bissau, Madagascar, Mali, Nigeria and Zambia²⁰¹

a) Analyzing the assumption Privatization in sales amount Granger causes FDI

$$FDI_t = \alpha + \sum_{i=1}^I \beta_i FDI_{t-1} + \sum_{j=1}^J \gamma_j PRIDOL_{t-j} + \varepsilon_t$$

Table 9.1: Common intercept

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:49
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 4
 Total panel (unbalanced) observations: 14
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---------------|-------------|------------|-------------|--------|
| C | 0.658981 | 0.573450 | 1.149152 | 0.2749 |
| LOG(FDI?(-1)) | 0.732031 | 0.119858 | 6.107503 | 0.0001 |

²⁰¹ Ibid

| | | | | |
|--------------------|-----------|--------------------|----------|--------|
| LOG(PRIDOL?(-1)) | 0.224527 | 0.066252 | 3.388980 | 0.0060 |
| R-squared | 0.929584 | Mean dependent var | 6.239607 | |
| Adjusted R-squared | 0.916781 | S.D. dependent var | 2.318171 | |
| S.E. of regression | 0.668738 | Sum squared resid | 4.919318 | |
| Log likelihood | -12.54393 | F-statistic | 72.60739 | |
| Durbin-Watson stat | 1.116902 | Prob(F-statistic) | 0.000000 | |

Table 9.2: Fixed effects

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:53
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 4
 Total panel (unbalanced) observations: 14
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| LOG(FDI?(-1)) | -0.056476 | 0.116722 | -0.483849 | 0.6415 |
| LOG(PRIDOL?(-1)) | 0.151070 | 0.042137 | 3.585252 | 0.0071 |
| R-squared | 0.992321 | Mean dependent var | 6.239607 | |
| Adjusted R-squared | 0.987521 | S.D. dependent var | 2.318171 | |
| S.E. of regression | 0.258963 | Sum squared resid | 0.536495 | |
| Log likelihood | 2.967147 | F-statistic | 1033.738 | |
| Durbin-Watson stat | 2.523913 | Prob(F-statistic) | 0.000000 | |

Looking at table 9.1, the common intercept, the regression analysis shows the following.

The F- statistic is greater than zero with the probability of ϵ is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI granger causes FDI.

The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes FDI. Here, the coefficient estimates of PRINUM? (-1) is positive and is significant at any commonly accepted levels.

The common intercept provides us here with a conclusion that in the “25% or more countries”, Both FDI will Granger causes FDI and PRIDOL will Granger causes FDI.

Looking at the table 9.2, the fixed effects, we find that the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI does

not Granger causes PRIDOL. The coefficient estimates of FDI? (-1) is negative, and is not significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes FDI. Here, the coefficient estimates of PRINUM? (-1) is positive and is significant at any commonly accepted levels.

The common intercept and the fixed effects gave us contradictory result concerning FDI Granger Causes FDI, and for this we must reject them as inconclusive. But we have confirmation from both results that PRIDOL Granger Causes FDI.

b) Analyzing the assumption FDI Granger causes Privatization in sales amount 25% or more

$$PRIDOL_t = \alpha + \sum^I \beta_i PRIDOL_{t-1} + \sum^J \gamma_j FDI_{t-j} + \varepsilon_t$$

Table 10.1: Common intercept

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:43
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 4
 Total panel (unbalanced) observations: 14
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | -1.024354 | 1.855107 | -0.552180 | 0.5919 |
| LOG(FDI?(-1)) | 0.983833 | 0.378190 | 2.601423 | 0.0246 |
| LOG(PRIDOL?(-1)) | -0.044939 | 0.209689 | -0.214311 | 0.8342 |
| R-squared | 0.671573 | Mean dependent var | | 4.754078 |
| Adjusted R-squared | 0.611859 | S.D. dependent var | | 2.799135 |
| S.E. of regression | 1.743888 | Sum squared resid | | 33.45261 |
| Log likelihood | -25.96265 | F-statistic | | 11.24649 |
| Durbin-Watson stat | 0.949295 | Prob(F-statistic) | | 0.002190 |

Table 10.2: Fixed effects

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:42
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 4
 Total panel (unbalanced) observations: 14
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | 0.846310 | 0.651775 | 1.298469 | 0.2303 |
| LOG(PRIDOL?(-1)) | -0.495712 | 0.189306 | -2.618576 | 0.0307 |
| R-squared | 0.893909 | Mean dependent var | | 4.754078 |
| Adjusted R-squared | 0.827602 | S.D. dependent var | | 2.799135 |
| S.E. of regression | 1.162223 | Sum squared resid | | 10.80610 |
| Log likelihood | -18.05251 | F-statistic | | 67.40711 |
| Durbin-Watson stat | 1.585488 | Prob(F-statistic) | | 0.000036 |

Looking at table 10.1 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square. We can come to the conclusion that FDI Granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL does not Granger causes PRIDOL. In both the common intercept and the fixed effects adjustment we find that the coefficient estimates of PRIDOL? (-1) is negative, and is not significant at any commonly accepted levels.

Looking at the fixed effects in table 10.2, the regression shows us the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI Granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, but is slightly short of being significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL does not Granger causes PRIDOL. In both the common intercept and the fixed effects adjustment we find that the coefficient estimates of PRIDOL? (-1) is negative, and is not significant at any commonly accepted levels

The countries with greater than 25% seems to give us the same results as previous, although we should mention that FDI Granger causes PRIDOL, falls short of being accepted at any commonly accepted levels. Thus we can only conclude that

- PRIDOL Granger Causes FDI

2 Testing the Hypothesis in the MENA region

As Saudi Arabia is part of the Middle East and North Africa (MENA) region, my following test would be to look for Granger causality between FDI and privatization sales. Although this sample includes Mauritania, Morocco, Algeria, Tunisia, Egypt, Yemen, Oman, United Arab Emirates, Bahrain, Iran, Jordan and Lebanon it has two pitfalls. First it is missing certain MENA countries, Libya, Sudan, Djibouti, Somalia Saudi Arabia, Qatar, Kuwait, Iraq, Syria, Israel and the Gaza/West Bank territories, secondly for the countries for which data is available, the data is not complete.

Nevertheless, it should give us an important feeling on how Privatization and FDI interact within Saudi Arabia environment

a) Analyzing the assumption Privatization in sales amount Granger causes FDI in the MENA region

$$FDI_t = \alpha + \sum_{i=1}^I \beta_i FDI_{t-1} + \sum_{j=1}^J \gamma_j PRIDOL_{t-j} + \varepsilon_t$$

Table 11.1: Common intercept

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:56
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 6
 Total panel (unbalanced) observations: 26
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.062524 | 0.439483 | 0.142267 | 0.8881 |
| LOG(FDI?(-1)) | 1.022376 | 0.062643 | 16.32081 | 0.0000 |
| LOG(PRIDOL?(-1)) | -0.017904 | 0.029088 | -0.615498 | 0.5443 |
| R-squared | 0.897754 | Mean dependent var | | 6.515986 |
| Adjusted R-squared | 0.888863 | S.D. dependent var | | 1.200645 |
| S.E. of regression | 0.400261 | Sum squared resid | | 3.684808 |
| Log likelihood | -11.49199 | F-statistic | | 100.9740 |
| Durbin-Watson stat | 2.669227 | Prob(F-statistic) | | 0.000000 |

Table 11.2: Fixed effects

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:58
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 6
 Total panel (unbalanced) observations: 26
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | 0.418590 | 0.232115 | 1.803374 | 0.0881 |
| LOG(PRIDOL?(-1)) | 0.025899 | 0.053042 | 0.488267 | 0.6313 |
| R-squared | 0.932241 | Mean dependent var | | 6.515986 |
| Adjusted R-squared | 0.905891 | S.D. dependent var | | 1.200645 |
| S.E. of regression | 0.368324 | Sum squared resid | | 2.441931 |
| Log likelihood | -6.143404 | F-statistic | | 247.6490 |
| Durbin-Watson stat | 2.102022 | Prob(F-statistic) | | 0.000000 |

Looking at table 11.1, the common intercept, we find that The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square.

We find that that PRIDOL does not Granger causes FDI. The coefficient estimate of PRINUM? (-1) is negative and is not significant at any commonly accepted levels .On the FDI side, as our previous test have shown, FDI of this year will granger cause FDI of next year, . The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels.

Looking at table 11.2, the fixed effects, we find that The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square. We find that that PRIDOL does not Granger causes FDI. The coefficient estimate of PRINUM? (-1) is negative and is not significant at any commonly accepted levels .On the FDI side, FDI seems to Granger cause FDI . The coefficient estimates of FDI? (-1) is positive, and it is significant at any commonly accepted levels.

We should conclude here that both regressions are inconclusive for both FDI Granger Causes FDI and PRIDOL does not Granger causes FDI.

Nut we can conclude that

- FDI will Granger causes FDI

b) Analyzing the assumption FDI granger causes Privatization in sales amount in the MENA region

$$PRIDOL_t = \alpha + \sum_{i=1}^I \beta_i PRIDOL_{t-1} + \sum_{j=1}^J \gamma_j FDI_{t-j} + \varepsilon_t$$

Table 12.1: Common intercept

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:54
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 6
 Total panel (unbalanced) observations: 28
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| C | 0.228935 | 1.707978 | 0.134038 | 0.8944 |
| LOG(FDI?(-1)) | 0.506389 | 0.280502 | 1.805298 | 0.0831 |
| LOG(PRIDOL?(-1)) | 0.314113 | 0.230440 | 1.363102 | 0.1850 |
| R-squared | 0.310908 | Mean dependent var | | 5.070711 |
| Adjusted R-squared | 0.255781 | S.D. dependent var | | 1.737472 |
| S.E. of regression | 1.498884 | Sum squared resid | | 56.16634 |
| Log likelihood | -49.47586 | F-statistic | | 5.639824 |
| Durbin-Watson stat | 1.271237 | Prob(F-statistic) | | 0.009516 |

Table 12.2: Fixed effects

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:55
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 6
 Total panel (unbalanced) observations: 28
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|----------|
| LOG(FDI?(-1)) | 0.795841 | 0.922448 | 0.862749 | 0.3985 |
| LOG(PRIDOL?(-1)) | 0.110709 | 0.270610 | 0.409110 | 0.6868 |
| R-squared | 0.488685 | Mean dependent var | | 5.070711 |
| Adjusted R-squared | 0.309724 | S.D. dependent var | | 1.737472 |
| S.E. of regression | 1.443541 | Sum squared resid | | 41.67619 |
| Log likelihood | -45.29844 | F-statistic | | 19.11480 |

Durbin-Watson stat 1.540406 Prob(F-statistic) 0.000295

Looking at table 12.1 the regression analysis shows the following. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square. We can come to the conclusion that FDI granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, and is significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes PRIDOL. But, although the coefficient estimates of PRIDOL? (-1) is positive, it is not significant at any commonly accepted levels.

Looking at the fixed effects in table 10.2, the regression shows us. The F- statistic is greater than zero with the probability of ϵ_t is at the least negligible, and a high Adjusted R-Square We can come to the conclusion that FDI granger causes PRIDOL. The coefficient estimates of FDI? (-1) is positive, but is not significant at any commonly accepted levels. On the PRIDOL side, we find that PRIDOL Granger causes PRIDOL. But, although the coefficient estimates of PRIDOL? (-1) is positive, it is not significant at any commonly accepted levels

Summary of Granger causality test between FDI and Privatization Sales.

| | General Model | Resource Rich > 15% | Resource Rich > 20% | Resource Rich > 25% | MENA Countries |
|------------------------------|---------------|---------------------|---------------------|---------------------|----------------|
| FDI Granger Causes FDI | Yes | Inconclusive | Inconclusive | Inconclusive | Yes |
| FDI Granger Causes PRIDOL | Yes | Yes | Yes | Inconclusive | Inconclusive |
| PRIDOL Granger Causes PRIDOL | Inconclusive | Inconclusive | Inconclusive | Inconclusive | Inconclusive |
| PRIDOL Granger Causes FDI | Inconclusive | Inconclusive | Yes | Yes | Inconclusive |

After looking at both FDI and Privatization in the Saudi Arabian energy sector, and performing the empirical studies between FDI and Privatization, what conclusion if any can we draw to our main question will the inflow of FDI lead to the Privatization of the Saudi energy Sector?

V. Conclusion, Policy Recommendations and Future outlook...

A. Conclusion regarding the initial hypothesis

In regards to our main question, “Will the inflow of FDI lead to the Privatization of the Energy sector?” and after analyzing FDI and Privatization in the Saudi Energy Sector, and the Granger causality between FDI and Privatization in developing countries, we can draw the following conclusions.

FDI is needed in Saudi Arabia in general and in our case in the Energy sector. The Kingdom has realized this and changed its prior policies and is making important efforts as we have seen to attract FDI. And while in the new foreign direct law enacted in 2000, the upstream sector was one of the areas not allowed for foreign investors, the Government has accelerated its FDI efforts and allowed FDI in the upstream sector through as we have seen the Gas Initiative, signaling a new era.

Privatization of the Energy sector as we have seen was in a swing around the world in the last decade. In the gulf region and in Saudi Arabia as far as we are concerned, the privatization of the energy sector is needed, and while the government is starting to acknowledge its importance it is moving very slowly. In the downstream sector, privatization plans for both petrochemical sector and the power utility sector have been announced but were put later on the shelves. In the upstream sector, while FDI was recently allowed, privatization is still considered as a taboo subject.

The empirical study that we have performed brings interesting result and a hope for privatization. The certain thing is that we couldn't reject any of the Granger causality test as null, the F-Statistic in all tests was greater than zero. But while we couldn't confirm at a commonly accepted levels all results, three out of the five tests that we have made, in

the general model, the resource rich countries with 15% or more and 20% or more of their natural resource as a percentage of GDP, have gave us clear results. The inflows of FDI in one year will Granger cause privatization for the next year. Although we had some result suggesting that privatization will lead to increase FDI they were less clear cut than FDI lead to increase in privatization. It seems that the causality running from FDI to privatization is the most common.

The tests that we have performed were concentrated on area similar to Saudi Arabia, developing countries, resource rich countries and the MENA region.

In transposing these results to Saudi Arabia we can conclude that the data shows us that yes the inflow of FDI will lead to privatization.

The question remains which of the privatization scenarios that we have projected is the most likely to happen?

Will it start by a Commercialization of Saudi Aramco, and thus ending all cross subsidies and pushing directly the other energy sectors, petrochemicals and the utilities toward privatization?

Or would the privatization start with the smaller energy sectors and lead eventually to the Commercialization or even in a later stage, privatization of Saudi Aramco?

Although the data is inconclusive, we had interesting results in testing the Granger Causality between privatization number and FDI. These results tend to show that a country will start by privatizing its smaller entity and leaving the most important assets for the last.

This appears also from our analysis of Saudi Arabia. It is more probable that we see in the case of the privatization of the energy sector, first a privatization of the power utilities industry, the petrochemical industry and in a later stage the upstream oil and gas sector.

B. Policy Recommendation

“One should remember that privatization is not a purely technical task but also a highly political process. It cannot succeed without active support from most stakeholders”

Nathaniel R. Kern²⁰²

With its still overly dependence on a depletable commodity for the government revenues, Saudi Arabia can be described as a country with an expiration date. If changes are not implemented, there would arrive a day when the government wouldn't have any revenue and any exports. With the position of Saudi Arabia as the world largest holder of oil, and with its current production, the expiration date of Saudi Arabia would be around 60-80 years from now. This far away date in the life of the rulers but no so far in a life of a country, is making the necessary adjustments move extremely slow.

Privatization in the Saudi energy sector, might face difficulties, mainly because of the role of the oil industry has played in reshaping Saudi Arabia. Although the motives of privatization are primarily economic, privatization may engender social and political opposition²⁰³

But Privatization is needed for Saudi Arabia, as it allows as we have seen breaking away the fate of the government from the fate of oil, and would help escape the paradox of plenty. But privatization for the sake of privatizing is not an answer. Privatization to

²⁰² Nathaniel R. Kern, President²⁰², Foreign Reports Inc in “Policy Implications for the Price of Oil”, Middle East Policy Council, Policy Forums, 30 March 1999

²⁰³ Ghadar, Friborz, : “Oil the Power of an Industry”, in Vernon, Raymond ed. “ The Promise of Privatization”, Council on Foreign Relations, Inc 1988

succeed should be done in a right way, and if it is not accompanied by proper government restructuring, it won't yield the needed reform

1 Privatization should be done the right way

The problem with the privatization of the energy sector is that rents in this sector tend to be higher than in other sectors. If privatization is not done in a transparent way, there a high probability to see rent seeking behavior from government officials or managers of the former State Owned Enterprise.

Argentine once State Oil Enterprise YPF, provides us with a good framework of how privatization can be done right

YPF was relatively small nationalized oil company, ranking 37th and 50th respectively, in terms of the world's crude oil producing companies and refining companies. It was privatized through different steps, and total privatization reached 60% in 1994, at a value of around \$ 4 billion

However, despite its size, “the privatization of YPF represents one of the most significant and successful of all Latin American state-oil company privatizations”²⁰⁴

Robert Gross and Juan Yanes, studied this privatization, and draw lessons from it that can be “followed sequentially to lead to successful privatization”²⁰⁵

The authors argue that for a privatization to be successful, three dimensions should be dealt with, the government, the society and the company.

At the government level, the key step is to recognize the need to move the SOE to the private sector, and implement a process that facilitate this result

²⁰⁴Energy Information Administration (EIA).Privatization and Globalization of Energy Markets, <http://www.itcilo.it/english/actrav/telearn/global/ilo/frame/energy1.htm>

²⁰⁵ Gross, R and J.Yanes, Carrying out a successful privatization: The YPF case”, The Academy of Management Executive, Vol. 12,1998 Page 51-63

At the level of the society, the important thing is to communicate the privatization decision and benefits to the public in a transparent way

At the company level, the key steps are the selection of talented leaders, and the transformation and restructuring of the company. The restructuring of the company is especially important before the sell off to the private sector. This should include a proper external independent valuation of the firm, identifying the proper focus of the company's business and restructuring the personal.

2 Privatization alone is not enough

Although the aim of this paper is to discuss solely the FDI inflow and its effect on Privatization, it is important to note that a privatization not accompanied by other proper reform will not be beneficial.

As former U.S. Secretary of Energy Bill Richardson, nicely explains it:

“Still, it is not enough just to open doors. To attract private investment to the sector, governments will need to put into place sound, transparent, and stable policies.

Investment must be transparent, rationally restricted, and taxed competitively. Private ownership . . . the sanctity of contracts . . . fair, non-discriminatory treatment of participants . . . and stable, transparent, legal, fiscal, regulatory and trade regimes are all essential to market creation and investment.”²⁰⁶

In this context it is important for Saudi Arabia not to put the carriage before the horse. Privatization should be preceded by a the necessary reforms that would insure that the privatization delivers what is expected from it, a dissociation between state and company, and increased efficiency for both the companies in the energy sector and the state.

²⁰⁶ Richardson, Bill, Prepared Remarks For Baltic Power Investment Conference Vilnius, Lithuania February 2, 2000, available at <http://www.energy.gov/HQDocs/speeches/2000/febss/bpic.htm>

C. Future Outlook

I would like to conclude this paper by stating a future outlook of how we hope to see Saudi Arabia in 2025. The following was stated in a series of Capitol Hill conferences on the Middle East:

“A brighter vision of Saudi Arabia in 2025 would be for its market share to approximate its share of the world's oil reserves, for five or ten or more of the world's largest oil companies to be operating in the kingdom and to bring with that presence full access to their own integrated downstream assets, for Saudi Arabia to become a hub, if not the headquarters, for a number of oil companies, oil-service companies and energy research, regardless of the original nationality of the firms. Today, the top cadres of the Saudi government, of the Saudi private sector, and of Saudi companies like Aramco and Sabic are highly internationalized Saudi citizens who are as able as the nationals of any country to interact successfully anywhere in the world.”

Nathaniel R. Kern, President, Foreign Reports Inc.²⁰⁷

But as Aristotle once said, isn't “hope” a waking dream”?

²⁰⁷ Nathaniel R. Kern, President, Foreign Reports Inc., in “Policy Implications for the Price of Oil”, Middle East Policy Council, Policy Forums, 30 March 1999.

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Appendixes

The Complete fixed effects tables

Table 1.2

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 12:58
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 74
 Total panel (unbalanced) observations: 348
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(PRINUM?(-1)) | -0.044054 | 0.033540 | -1.313450 | 0.1901 |
| LOG(FDI?(-1)) | 0.567776 | 0.047898 | 11.85393 | 0.0000 |
| Fixed Effects | | | | |
| _ALB--C | 1.639223 | | | |
| _ARG--C | 4.004425 | | | |
| _ARM--C | 2.466241 | | | |
| _AZR--C | 3.062891 | | | |
| _BAN--C | 1.147168 | | | |
| _BAR--C | 1.569307 | | | |
| _BEN--C | 1.443219 | | | |
| _BEZ--C | 0.975879 | | | |
| _BFA--C | 0.692037 | | | |
| _BOL--C | 2.939830 | | | |
| _BRA--C | 4.083619 | | | |
| _BUL--C | 2.659155 | | | |
| _BUR--C | -0.324179 | | | |
| _CAM--C | 1.528797 | | | |
| _CHL--C | 3.592499 | | | |
| _CHN--C | 4.747123 | | | |
| _CIV--C | 2.593206 | | | |
| _COL--C | 3.413549 | | | |
| _CRI--C | 2.592031 | | | |
| _CRO--C | 2.787868 | | | |
| _CZE--C | 3.820808 | | | |
| _ECU--C | 2.732138 | | | |
| _EGY--C | 3.116257 | | | |
| _EST--C | 2.632412 | | | |
| _ETH--C | 1.557717 | | | |
| _GHA--C | 1.884659 | | | |
| _GTM--C | 2.686390 | | | |
| _GUY--C | 1.656982 | | | |
| _HND--C | 1.632226 | | | |
| _IDN--C | 3.459412 | | | |
| _IND--C | 3.514230 | | | |
| _IRN--C | 3.631252 | | | |
| _JOR--C | 2.190156 | | | |
| _KAZ--C | 2.674649 | | | |
| _KEN--C | 3.357678 | | | |

| | | | |
|--------------------|----------|--------------------|----------|
| _KYR--C | 1.000484 | | |
| _LBN--C | 2.671046 | | |
| _LKA--C | 3.111774 | | |
| _LVA--C | 1.419285 | | |
| _MAC--C | 2.658311 | | |
| _MDG--C | 2.053811 | | |
| _MLD--C | 4.119643 | | |
| _MLI--C | 3.792867 | | |
| _MOZ--C | 1.077049 | | |
| _MYS--C | 1.872188 | | |
| _NGA--C | 2.122413 | | |
| _NIC--C | 1.015021 | | |
| _NPL--C | 2.011114 | | |
| _OMA--C | 3.302944 | | |
| _PAK--C | 1.963896 | | |
| _PAN--C | 2.816835 | | |
| _PER--C | 1.841281 | | |
| _PHL--C | 3.606627 | | |
| _PNG--C | 2.221184 | | |
| _POL--C | 3.174279 | | |
| _ROM--C | 3.794501 | | |
| _RUS--C | 3.009659 | | |
| _RWA--C | 3.741983 | | |
| _SER--C | 1.546353 | | |
| _SLV--C | 2.715838 | | |
| _SLV--C | 2.715838 | | |
| _TGO--C | 3.598133 | | |
| _THA--C | 2.298114 | | |
| _TTO--C | 1.351937 | | |
| _TUN--C | 2.597838 | | |
| _TUR--C | 2.769022 | | |
| _TZA--C | 2.319669 | | |
| _UAE--C | 2.709246 | | |
| _UGA--C | 3.019539 | | |
| _UKR--C | 2.528591 | | |
| _UZB--C | 2.353491 | | |
| _VNM--C | 3.369465 | | |
| _YEM--C | 3.693584 | | |
| _ZIM--C | 2.296852 | | |
| R-squared | 0.922824 | Mean dependent var | 6.034286 |
| Adjusted R-squared | 0.901544 | S.D. dependent var | 2.077174 |
| S.E. of regression | 0.651769 | Sum squared resid | 115.5464 |
| F-statistic | 3252.420 | Durbin-Watson stat | 2.350871 |
| Prob(F-statistic) | 0.000000 | | |

Table 2.2

Dependent Variable: LOG(PRINUM?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 12:44
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 74
 Total panel (unbalanced) observations: 352
 White Heteroskedasticity-Consistent Standard Errors & Covariance

Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(PRINUM?(-1)) | 0.029981 | 0.063655 | 0.470994 | 0.6380 |
| LOG(FDI?(-1)) | -0.092476 | 0.062828 | -1.471896 | 0.1422 |
| Fixed Effects | | | | |
| _ALB--C | 0.337210 | | | |
| _ARG--C | 3.181350 | | | |
| _ARM--C | 1.564577 | | | |
| _AZR--C | 3.660785 | | | |
| _BAN--C | 2.193728 | | | |
| _BAR--C | 1.278561 | | | |
| _BEN--C | 0.607765 | | | |
| _BEZ--C | 0.254149 | | | |
| _BFA--C | 0.246507 | | | |
| _BOL--C | 2.368621 | | | |
| _BRA--C | 3.302050 | | | |
| _BUL--C | 3.858411 | | | |
| _BUR--C | 0.592189 | | | |
| _CAM--C | 2.399645 | | | |
| _CHL--C | 1.728263 | | | |
| _CHN--C | 3.544021 | | | |
| _CIV--C | 2.241450 | | | |
| _COL--C | 1.543715 | | | |
| _CRI--C | 0.854284 | | | |
| _CRO--C | 1.122514 | | | |
| _CZE--C | 1.674410 | | | |
| _ECU--C | 1.929644 | | | |
| _EGY--C | 3.161294 | | | |
| _EST--C | 4.099403 | | | |
| _ETH--C | 0.479189 | | | |
| _GHA--C | 2.410310 | | | |
| _GTM--C | 0.842143 | | | |
| _GUY--C | 0.325592 | | | |
| _HND--C | 2.158939 | | | |
| _IDN--C | 2.301726 | | | |
| _IND--C | 4.679142 | | | |
| _IRN--C | 1.320255 | | | |
| _JOR--C | 1.683397 | | | |
| _KAZ--C | 0.346057 | | | |
| _KEN--C | 1.971707 | | | |
| _KYR--C | 2.174980 | | | |
| _LBN--C | 2.008953 | | | |
| _LKA--C | 1.365492 | | | |
| _LVA--C | 1.812365 | | | |
| _MAC--C | 2.705421 | | | |
| _MDG--C | 0.274388 | | | |
| _MLD--C | 3.345595 | | | |
| _MLI--C | 2.333168 | | | |
| _MOZ--C | 2.559005 | | | |
| _MYS--C | 2.586267 | | | |
| _NGA--C | 2.650955 | | | |
| _NIC--C | 1.009888 | | | |
| _NPL--C | 2.831602 | | | |
| _OMA--C | 2.692922 | | | |
| _PAK--C | 0.966340 | | | |

| | | | |
|--------------------|----------|--------------------|----------|
| _PAN--C | 2.855768 | | |
| _PER--C | 0.454978 | | |
| _PHL--C | 3.674568 | | |
| _PNG--C | 1.068708 | | |
| _POL--C | 2.766725 | | |
| _ROM--C | 4.256392 | | |
| _RUS--C | 2.713238 | | |
| _RWA--C | 2.512057 | | |
| _SER--C | 1.444717 | | |
| _SLV--C | 3.407532 | | |
| _SLV--C | 3.407532 | | |
| _TGO--C | 1.521656 | | |
| _THA--C | 2.671136 | | |
| _TTO--C | 0.841144 | | |
| _TUN--C | 2.052139 | | |
| _TUR--C | 2.140247 | | |
| _TZA--C | 2.439857 | | |
| _UAE--C | 0.468750 | | |
| _UGA--C | 3.320208 | | |
| _UKR--C | 2.168640 | | |
| _UZB--C | 0.963414 | | |
| _VNM--C | 2.343026 | | |
| _YEM--C | 0.606046 | | |
| _ZIM--C | 2.655473 | | |
| R-squared | 0.525441 | Mean dependent var | 1.968955 |
| Adjusted R-squared | 0.396485 | S.D. dependent var | 1.320602 |
| S.E. of regression | 1.025926 | Sum squared resid | 290.4965 |
| F-statistic | 305.5932 | Durbin-Watson stat | 2.151355 |
| Prob(F-statistic) | 0.000000 | | |

Table 3.2

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:11
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 72
 Total panel (unbalanced) observations: 332
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(PRIDOL?(-1)) | -0.019839 | 0.029703 | -0.667891 | 0.5048 |
| LOG(FDI?(-1)) | 0.572590 | 0.049797 | 11.49839 | 0.0000 |
| Fixed Effects | | | | |
| _ALB--C | 1.604240 | | | |
| _ARG--C | 4.000290 | | | |
| _ARM--C | 2.434731 | | | |
| _AZR--C | 2.955543 | | | |
| _BAN--C | 1.071611 | | | |
| _BAR--C | 1.491387 | | | |
| _BEN--C | 1.607771 | | | |
| _BEZ--C | 1.007507 | | | |
| _BFA--C | 0.643892 | | | |

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| | |
|---------|-----------|
| _BOL--C | 2.902433 |
| _BRA--C | 4.090678 |
| _BUL--C | 2.582594 |
| _BUR--C | -0.384536 |
| _CAM--C | 1.542689 |
| _CHL--C | 3.598459 |
| _CHN--C | 4.737301 |
| _CIV--C | 2.559246 |
| _COL--C | 3.452005 |
| _CRI--C | 2.596806 |
| _CRO--C | 2.774120 |
| _CZE--C | 3.834292 |
| _ECU--C | 2.749553 |
| _EGY--C | 3.097002 |
| _EST--C | 2.531981 |
| _GHA--C | 1.839282 |
| _GTM--C | 2.704266 |
| _GUY--C | 1.638547 |
| _HND--C | 1.587748 |
| _IDN--C | 3.470604 |
| _IND--C | 3.420232 |
| _IRN--C | 3.663084 |
| _JOR--C | 2.187009 |
| _KAZ--C | 3.383712 |
| _KEN--C | 3.459025 |
| _KYR--C | 0.955624 |
| _LBN--C | 2.656951 |
| _LKA--C | 2.697972 |
| _LVA--C | 1.371061 |
| _MAC--C | 2.605323 |
| _MDG--C | 1.945063 |
| _MLD--C | 4.091918 |
| _MLI--C | 3.813562 |
| _MOZ--C | 1.051591 |
| _MYS--C | 1.846377 |
| _NGA--C | 2.033254 |
| _NIC--C | 0.994173 |
| _NPL--C | 1.765800 |
| _OMA--C | 3.254188 |
| _PAK--C | 1.948236 |
| _PAN--C | 2.786303 |
| _PER--C | 1.924922 |
| _PHL--C | 3.570448 |
| _PNG--C | 2.240537 |
| _POL--C | 3.160309 |
| _ROM--C | 3.729295 |
| _RUS--C | 3.017637 |
| _RWA--C | 3.702621 |
| _SER--C | 1.573985 |
| _SLV--C | 2.467092 |
| _SLV--C | 2.467092 |
| _TGO--C | 3.634204 |
| _THA--C | 2.235632 |
| _TTO--C | 1.688195 |
| _TUN--C | 2.553557 |
| _TUR--C | 2.744604 |

| | | | |
|--------------------|----------|--------------------|----------|
| _TZA--C | 2.273934 | | |
| _UGA--C | 2.965148 | | |
| _UKR--C | 2.489484 | | |
| _UZB--C | 2.246434 | | |
| _VNM--C | 3.375435 | | |
| _YEM--C | 3.666957 | | |
| _ZIM--C | 2.267337 | | |
| R-squared | 0.926955 | Mean dependent var | 6.057436 |
| Adjusted R-squared | 0.906287 | S.D. dependent var | 2.092080 |
| S.E. of regression | 0.640438 | Sum squared resid | 105.8215 |
| F-statistic | 3274.076 | Durbin-Watson stat | 2.211629 |
| Prob(F-statistic) | 0.000000 | | |

Table 4.2

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:02
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 70
 Total panel (unbalanced) observations: 324
 White Heteroskedasticity-Consistent Standard Errors & Covariance
 Cross sections without valid observations dropped

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(PRIDOL?(-1)) | 0.008657 | 0.063775 | 0.135735 | 0.8921 |
| LOG(FDI?(-1)) | 0.297072 | 0.097891 | 3.034713 | 0.0027 |
| Fixed Effects | | | | |
| _ALB--C | 0.302400 | | | |
| _ARG--C | 4.864368 | | | |
| _ARM--C | 0.857853 | | | |
| _AZR--C | -0.123498 | | | |
| _BAN--C | 0.695262 | | | |
| _BAR--C | 1.705233 | | | |
| _BEN--C | 0.334110 | | | |
| _BEZ--C | 1.179864 | | | |
| _BFA--C | 0.789699 | | | |
| _BOL--C | 1.963277 | | | |
| _BRA--C | 5.728944 | | | |
| _BUL--C | 4.562316 | | | |
| _BUR--C | -0.993308 | | | |
| _CAM--C | 1.792654 | | | |
| _CHL--C | 1.980468 | | | |
| _CHN--C | 4.312188 | | | |
| _CIV--C | 2.222740 | | | |
| _COL--C | 3.441781 | | | |
| _CRI--C | 1.077764 | | | |
| _CRO--C | 3.338531 | | | |
| _CZE--C | 2.935373 | | | |
| _ECU--C | 2.275013 | | | |
| _EGY--C | 4.362975 | | | |
| _EST--C | 3.022832 | | | |
| _GHA--C | 2.147416 | | | |
| _GTM--C | 3.324821 | | | |

| | | | |
|--------------------|-----------|--------------------|----------|
| _GUY--C | 1.884637 | | |
| _HND--C | 1.552987 | | |
| _IDN--C | 4.406648 | | |
| _IND--C | 4.391782 | | |
| _IRN--C | 3.080806 | | |
| _JOR--C | 1.685772 | | |
| _KAZ--C | 1.647418 | | |
| _KEN--C | 4.268136 | | |
| _KYR--C | 1.735807 | | |
| _LBN--C | 3.958538 | | |
| _LKA--C | 1.802217 | | |
| _LVA--C | 0.843448 | | |
| _MAC--C | 3.526486 | | |
| _MDG--C | -0.846713 | | |
| _MLD--C | 4.618040 | | |
| _MLI--C | 4.233225 | | |
| _MOZ--C | 3.829758 | | |
| _MYS--C | 0.886275 | | |
| _NGA--C | 2.029426 | | |
| _NIC--C | 0.145847 | | |
| _NPL--C | 1.166928 | | |
| _OMA--C | 2.574397 | | |
| _PAK--C | 1.431130 | | |
| _PAN--C | 3.035545 | | |
| _PER--C | 1.582624 | | |
| _PHL--C | 4.423561 | | |
| _PNG--C | 1.712996 | | |
| _POL--C | 3.671488 | | |
| _ROM--C | 4.501797 | | |
| _RUS--C | 2.490772 | | |
| _RWA--C | 4.307152 | | |
| _SER--C | 3.278445 | | |
| _SLV--C | 5.530227 | | |
| _SLV--C | 5.530227 | | |
| _TGO--C | 2.953445 | | |
| _THA--C | 1.618750 | | |
| _TTO--C | 0.469459 | | |
| _TUN--C | 3.377107 | | |
| _TUR--C | 2.068529 | | |
| _TZA--C | 2.496688 | | |
| _UGA--C | 3.682133 | | |
| _UKR--C | 1.672271 | | |
| _VNM--C | 2.785051 | | |
| _ZIM--C | 2.702723 | | |
| R-squared | 0.687458 | Mean dependent var | 4.777412 |
| Adjusted R-squared | 0.599401 | S.D. dependent var | 2.269787 |
| S.E. of regression | 1.436614 | Sum squared resid | 520.0927 |
| F-statistic | 554.2921 | Durbin-Watson stat | 2.110783 |
| Prob(F-statistic) | 0.000000 | | |

Table 5.2

Dependent Variable: LOG(FDI?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:25
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 14
 Total panel (unbalanced) observations: 56
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| LOG(FDI?(-1)) | 0.180518 | 0.227923 | 0.792012 | 0.4330 |
| LOG(PRIDOL?(-1)) | 0.035280 | 0.093046 | 0.379166 | 0.7066 |
| Fixed Effects | | | | |
| _RWA--C | 6.455041 | | | |
| _CAM--C | 2.815892 | | | |
| _SER--C | 3.156117 | | | |
| _MDG--C | 3.371799 | | | |
| _MLI--C | 6.701946 | | | |
| _NGA--C | 3.171764 | | | |
| _CIV--C | 4.431287 | | | |
| _TGO--C | 6.498494 | | | |
| _BFA--C | 1.787395 | | | |
| _BUR--C | -0.629597 | | | |
| _NPL--C | 2.979535 | | | |
| _PNG--C | 4.298684 | | | |
| _ECU--C | 4.926641 | | | |
| _IND--C | 6.029639 | | | |
| R-squared | 0.923792 | Mean dependent var | 6.004807 | |
| Adjusted R-squared | 0.895214 | S.D. dependent var | 2.167869 | |
| S.E. of regression | 0.701755 | Sum squared resid | 19.69839 | |
| F-statistic | 484.8776 | Durbin-Watson stat | 1.983073 | |
| Prob(F-statistic) | 0.000000 | | | |

Table 6.2

Dependent Variable: LOG(PRIDOL?)
 Method: Pooled Least Squares
 Date: 01/04/02 Time: 13:31
 Sample(adjusted): 1991 1999
 Included observations: 9 after adjusting endpoints
 Number of cross-sections used: 14
 Total panel (unbalanced) observations: 56
 White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(FDI?(-1)) | 1.226507 | 0.245387 | 4.998257 | 0.0000 |
| LOG(PRIDOL?(-1)) | -0.128275 | 0.105660 | -1.214041 | 0.2319 |
| Fixed Effects | | | | |
| _RWA--C | -2.172299 | | | |
| _CAM--C | -1.195926 | | | |
| _SER--C | -0.441733 | | | |
| _MDG--C | -4.222978 | | | |
| _MLI--C | -2.570591 | | | |

| | | | |
|--------------------|-----------|--------------------|----------|
| _NGA--C | -0.649441 | | |
| _CIV--C | -1.884881 | | |
| _TGO--C | -3.804925 | | |
| _BFA--C | -1.922229 | | |
| _BUR--C | -0.407279 | | |
| _NPL--C | -1.593620 | | |
| _PNG--C | -3.145681 | | |
| _ECU--C | -2.856503 | | |
| _IND--C | -1.751675 | | |
| R-squared | 0.767498 | Mean dependent var | 4.444358 |
| Adjusted R-squared | 0.680310 | S.D. dependent var | 2.488170 |
| S.E. of regression | 1.406839 | Sum squared resid | 79.16782 |
| F-statistic | 132.0419 | Durbin-Watson stat | 1.841930 |
| Prob(F-statistic) | 0.000000 | | |

Table: 7.2

Dependent Variable: LOG(FDI?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:41
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 6
Total panel (unbalanced) observations: 19
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| LOG(FDI?(-1)) | -0.129678 | 0.119043 | -1.089336 | 0.2993 |
| LOG(PRIDOL?(-1)) | 0.139881 | 0.037364 | 3.743693 | 0.0032 |
| Fixed Effects | | | | |
| _RWA--C | 8.191400 | | | |
| _CAM--C | 3.534846 | | | |
| _SER--C | 4.112276 | | | |
| _MDG--C | 4.443027 | | | |
| _MLI--C | 8.565835 | | | |
| _NGA--C | 3.877426 | | | |
| R-squared | 0.988159 | Mean dependent var | 6.509894 | |
| Adjusted R-squared | 0.980624 | S.D. dependent var | 2.240241 | |
| S.E. of regression | 0.311835 | Sum squared resid | 1.069652 | |
| Log likelihood | 0.372668 | F-statistic | 917.9920 | |
| Durbin-Watson stat | 3.342797 | Prob(F-statistic) | 0.000000 | |

Table: 8.2

Dependent Variable: LOG(PRIDOL?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:37
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 6
Total panel (unbalanced) observations: 19
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
|----------|-------------|------------|-------------|-------|

| | | | | |
|--------------------|-----------|--------------------|-----------|--------|
| LOG(FDI?(-1)) | 0.765225 | 0.449732 | 1.701512 | 0.1169 |
| LOG(PRIDOL?(-1)) | -0.496569 | 0.138679 | -3.580718 | 0.0043 |
| Fixed Effects | | | | |
| _RWA--C | 4.199663 | | | |
| _CAM--C | 2.349853 | | | |
| _SER--C | 3.518711 | | | |
| _MDG--C | -2.135621 | | | |
| _MLI--C | 3.819593 | | | |
| _NGA--C | 2.075492 | | | |
| R-squared | 0.853857 | Mean dependent var | 5.083291 | |
| Adjusted R-squared | 0.760857 | S.D. dependent var | 2.643139 | |
| S.E. of regression | 1.292553 | Sum squared resid | 18.37763 | |
| Log likelihood | -26.64344 | F-statistic | 64.26890 | |
| Durbin-Watson stat | 1.623918 | Prob(F-statistic) | 0.000006 | |

Table: 9.2

Dependent Variable: LOG(FDI?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:53
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 4
Total panel (unbalanced) observations: 14
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| LOG(FDI?(-1)) | -0.056476 | 0.116722 | -0.483849 | 0.6415 |
| LOG(PRIDOL?(-1)) | 0.151070 | 0.042137 | 3.585252 | 0.0071 |
| Fixed Effects | | | | |
| _SER--C | 3.712791 | | | |
| _MDG--C | 4.156378 | | | |
| _MLI--C | 7.878186 | | | |
| _NGA--C | 3.596154 | | | |
| R-squared | 0.992321 | Mean dependent var | 6.239607 | |
| Adjusted R-squared | 0.987521 | S.D. dependent var | 2.318171 | |
| S.E. of regression | 0.258963 | Sum squared resid | 0.536495 | |
| Log likelihood | 2.967147 | F-statistic | 1033.738 | |
| Durbin-Watson stat | 2.523913 | Prob(F-statistic) | 0.000000 | |

Table: 10.2

Dependent Variable: LOG(PRIDOL?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:42
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 4
Total panel (unbalanced) observations: 14
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(FDI?(-1)) | 0.846310 | 0.651775 | 1.298469 | 0.2303 |
| LOG(PRIDOL?(-1)) | -0.495712 | 0.189306 | -2.618576 | 0.0307 |

| | | | |
|--------------------|-----------|--------------------|----------|
| Fixed Effects | | | |
| _SER--C | 3.132116 | | |
| _MDG--C | -2.442252 | | |
| _MLI--C | 3.137587 | | |
| _NGA--C | 1.800834 | | |
| R-squared | 0.893909 | Mean dependent var | 4.754078 |
| Adjusted R-squared | 0.827602 | S.D. dependent var | 2.799135 |
| S.E. of regression | 1.162223 | Sum squared resid | 10.80610 |
| Log likelihood | -18.05251 | F-statistic | 67.40711 |
| Durbin-Watson stat | 1.585488 | Prob(F-statistic) | 0.000036 |

Table 11.2

Dependent Variable: LOG(FDI?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:58
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 6
Total panel (unbalanced) observations: 26
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|--------------------|-------------|--------|
| LOG(FDI?(-1)) | 0.418590 | 0.232115 | 1.803374 | 0.0881 |
| LOG(PRIDOL?(-1)) | 0.025899 | 0.053042 | 0.488267 | 0.6313 |
| Fixed Effects | | | | |
| _IRN--C | 4.613012 | | | |
| _JOR--C | 2.760218 | | | |
| _LBN--C | 3.326050 | | | |
| _EGY--C | 3.831591 | | | |
| _OMA--C | 4.121408 | | | |
| _TUN--C | 3.334012 | | | |
| R-squared | 0.932241 | Mean dependent var | 6.515986 | |
| Adjusted R-squared | 0.905891 | S.D. dependent var | 1.200645 | |
| S.E. of regression | 0.368324 | Sum squared resid | 2.441931 | |
| Log likelihood | -6.143404 | F-statistic | 247.6490 | |
| Durbin-Watson stat | 2.102022 | Prob(F-statistic) | 0.000000 | |

Table: 12.2

Dependent Variable: LOG(PRIDOL?)
Method: Pooled Least Squares
Date: 01/04/02 Time: 13:55
Sample(adjusted): 1991 1999
Included observations: 9 after adjusting endpoints
Number of cross-sections used: 6
Total panel (unbalanced) observations: 28
White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------------|-------------|------------|-------------|--------|
| LOG(FDI?(-1)) | 0.795841 | 0.922448 | 0.862749 | 0.3985 |
| LOG(PRIDOL?(-1)) | 0.110709 | 0.270610 | 0.409110 | 0.6868 |
| Fixed Effects | | | | |
| _IRN--C | -1.472026 | | | |

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|--------------------|-----------|--------------------|----------|
| _JOR--C | -1.105104 | | |
| _LBN--C | 0.375008 | | |
| _EGY--C | 0.414583 | | |
| _OMA--C | -1.165754 | | |
| _TUN--C | -0.013147 | | |
| <hr/> | | | |
| R-squared | 0.488685 | Mean dependent var | 5.070711 |
| Adjusted R-squared | 0.309724 | S.D. dependent var | 1.737472 |
| S.E. of regression | 1.443541 | Sum squared resid | 41.67619 |
| Log likelihood | -45.29844 | F-statistic | 19.11480 |
| Durbin-Watson stat | 1.540406 | Prob(F-statistic) | 0.000295 |