

Lecture 5: Resource Nationalism and Market Power

- Is OPEC a Cartel? Will it be in 15 years?
- This part of the world (Middle East) will become even more important than it is right now in the global energy balance
- Saudi Arabia (SA) has the largest oil reserves by far
- The world is going to become even more dependent on the Persian Gulf states for oil than it is now
 - Other areas of world will probably peak in the near future
- IEA world energy outlook
- Methodological issues
 - Look at three sets of risks
 - Resource Risk
 - Production Risk
 - Geostrategic Risk

Resource Risks

- Those factors that could variably effect the resource base of a producing company
- Uncertainty about reserves
 - Two components to reserve estimate
 - How much oil geologists estimate is there
 - Engineers will estimate based on current price and technology how much of the oil will be producible/recoverable
 - Statements can change
 - Sometimes people find more oil
 - Some people say that they have new technologies
 - SCC have lots of rules for US companies regarding these
 - Rules only cover around 40% of world reserves
 - 60% Of oil estimates have no 3rd party oversight
 - Saudi Arabia has no oversight
- Depletion Rate
 - How are you assessing that and how does that affect the resource picture
- Rate and size of new discoveries

- Iran
 - Has discovered sizable new oil fields in last 20 years
 - How does that factor in?

Production Risks

- Those factors that can variably affect a countries ability to exploit reserves
- How much can a given country produce over a given time period
- Depletion rates → productions levels
 - Can a country cope with depletion by maintaining current production levels or does the production level deplete as well
- Impact of price
 - If price of oil is really high, then alternative methods of oil production become viable
 - Saudi oil will always be producible
 - Other countries might not have the best conditions
 - Off shore drilling
 - Sketchy areas
- Investment
 - Size and sustainability of investment flows
 - CRITICAL
 - Production levels are a function of investment
- National decision-making
 - Policy

Geostrategic Risks

- Internal to the country
 - Basic political stability
 - Authority and power
 - Internal security
 - How secure are the facilities from terrorists/dissidents
- External to the country
 - Embargos
 - Military strikes
- Key Middle Eastern Oil Producing States → Saudi Arabia
 - Big kid on the block
 - Oil production

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- Could produce 11 million barrels a day
- Currently producing 10 million barrels a day
 - 8.7 million in December
- Worlds largest proven oil reserves
 - 262 billion barrels
- Considerable holdings of natural gas
 - Barrels of oil equivalent → added to other total
- 302 Billion barrels of oil → largest hydrocarbon holdings in the world
- Surplus capacity
 - What they could produce-what they are currently producing
- Only country in the world that has sustained a steady surplus capacity
 - Not beholden to shareholders
 - In past the Saudis have wanted to maintain 1.5-2.0 million bpd in surplus capacity
 - Extremely important strategic asset on several different levels
 - Let Saudis discipline the market when they wanted to do that
 - Flood the market to drop prices when they wanted to
 - Costs of production are so low that they can still make money where other energy producers are not able to make money
 - Population of Saudi Arabia is pretty low compared to other places
 - Easier to still provide social services and by off dissent within SA
 - Maintain OPEC discipline on production quotas
 - US might ask them to put more oil on the market for various reasons
 - US goes into Iraq, other oil reserves going offline
 - Net increase on crude oil prices due to Iraq war is about \$9 a barrel
 - Could have been a lot more
- Saudi's Capacity ability to expand given the three risks discussed earlier
 - Production risk is only concern for Leverett
 - Areas not that concerned about
 - Resource Risk
 - There is an ongoing debate about what the Saudi resource base is

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- Matt Simmons
 - Texas investment banker
 - Twilight in the Desert
 - Serious resource risks in Saudi Arabia
 - Saudis have systematically over estimated their reserves
 - Saudis are depleting their reserves at faster rates than they are acknowledged
 - Going to start to affect production in a serious way
 - Saudis have relied for decades on a small number of large oil fields for their production
 - Dawar field
 - Roughly half of the kingdoms oil production
 - Largest off-shore oil field in the world
 - 100 oil fields discovered
 - 30 in production
 - of those 30, 10 are giant fields that account for more than 90% of oil production
 - fields are old and getting older
 - production in these fields has peaked or about to peak, and we will see a serious decline in Saudi oil production in the near future

- Response
 - After nationalization, SA decided to no longer use SEC guidelines for oil reserve estimates
 - SA uses much larger fields than anyone else
 - Several points in last century SA has raised reserve statements several times
 - Increase in reserve statements comes at "strategic times" that would benefit SA
 - Parts of kingdom are underexplored, but nonetheless SA have not explored and still raise reserve statements

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- The Saudis have had significant technological gains in up stream production
- Other production companies believe statements about 50%+ recovery rates are plausible
- 1% increase in recovery rates = 1 years production in given production area
- Simmons talks about the water cut rate a great deal
 - As reserve ages, the water cut rate starts to rise
 - At some of the old large fields the water cut rate has been rising
 - At Dawar reached 37% in 2001
 - 31% in 2004
 - Saudis are actually managing the water cut rate better now
- Geostrategic Risk
 - Probably not going to be a big issue
 - Jihadists have said a lot about attacking oil
 - Saudi's have gone through a lot of trouble to add redundancy to all of their systems in case of an attack
 - If they were successful at taking out a key facility, the consequences would be big
- Productions risks → could be an issue
 - How is it organized? Who makes decisions?
 - Supreme Petroleum Council (King) → Oil Ministry → Saudi Aramco
 - Supreme petroleum council has lots of ministers along with crowned prince (son of king)
 - Oil Minister
 - Ali Naimi
 - Former CEO of Aramco
 - Worked for Aramco since he was 12
 - Aramco sent him to US for education
 - King made him oil minister in the '90s
 - Aramco is not just an instrument of the royal family, but has its own interests and agendas

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- Those preferences and interests did not always line up with royal family
 - In 90s the royal family wanted to open up some upstream production to investors
 - Originally envisioned oil and gas, but ended up just pushing for gas
 - Wanted to monetize gas productions
 - Needed to pay for infrastructure for public services
 - Abdullah wanted to exploit some of natural resources for economic diversification within country
 - Abdullah faced a great deal of opposition
 - From family and from Aramco/oil ministry
 - What was their agenda?
- Extremely proud of their nationalized oil production company in the world
 - Invested incredibly in technology and r&d
 - Pay really really well
 - Say they have more supercomputing capacity than NSA
 - Buy highest technology on the market at any given time
 - Aramco Patriotism – in their own world, and have own compounds and cultures separate from the rest of Saudi Arabia
 - Proud of what they do and don't want to do it with other international companies
 - Oil and gas initiative ran up against that
 - Abdullah lost completely on opening up oil sector
 - Gas initiative did try to open up gas, but Aramco really resisted, and the initiative fell by the wayside
 - In last couple of years, Saudis have opened up gas concessions to a handful of international companies
- Why Saudis won't produce more than 15 mbpd
 - Saudis are exemplar of prospective where you are trying to maximize the long term value
 - Alternative is publicly traded companies that want a return on capital for investors
 - Inherent conservatism in business model

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- Capability constraint
 - If they wanted to produce 15 mbpd+ they would have to do more tertiary recovery on some of their older fields that they are not really experienced in
 - Gas injection
 - Steam injection
 - They would have to bring in outside companies, which Aramco would not like
- Saudis are more likely to be less of a swing producer which is going to be changing the world oil dynamics