Petroleum Economics and Management
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Module - 05
OPEC and its Role in Oil Price
Lecture - 25
Role of Saudi Arabia

Hi, everyone. Welcome to the NPTEL course, Petroleum Economics and Management. So, we are in module 5, where we are analysing the Role of OPEC in influencing the world Oil Price. So, today is the last lecture of module 5, where we are examining the influence of Saudi Arabia in controlling the world oil price.

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So, if you remember in module 4, we have discussed in depth the nature of oil price movement over time because this is one of the most important motivation of having a course which is wholly dedicated to petroleum products. The oil price movement has been phenomenal. So, we have related the oil price movement with the global events starting from 1970s to very recent time of the COVID pandemic and the Russia–Ukraine War.

So, we saw that after the formation of OPEC the oil price has been fluctuating very much and the oil price movement has been just unparalleled because before formation of

OPEC especially before 1970s oil price was more or less stable. We have seen, if you remember in module 4, we have graphically analysed the oil price movement from the development of oil industry post industrial revolution, and we have seen that the oil price was more or less in a stable range.

Only after the Second World War there was some increase in oil price because the economies were restructuring. Otherwise, it was more or less in a stable range, but the oil price movement after formation of OPEC has been just incomparable. So, that is why we are now trying to explain the oil price movement from the point of view of OPEC means how OPEC has influenced oil price.

So, in the previous lectures of module 5 we have discussed whether OPEC is a successful cartel or not we have also discussed the structure of OPEC and how OPEC is now expanded to include more non-OPEC countries and now it is called the OPEC plus. So, we have studied the structure and functionalities of OPEC and OPEC plus.

Then we have analysed the views from the existing studies on whether OPEC is a successful cartel or not. So, what we find is that the literature is not conclusive, but at the same time means the economist cannot also deny the fact that OPEC is there for a long time whereas, in other markets the cartels were really short lived. But in other markets like coffee, tea, tin, bauxite, rubber the price was very high compared to what OPEC increased the oil price.

And, also OPEC share in total oil market is also not very high compared to other cartel share, but the examples I gave of other commodities those cartels were very temporary. They increased the price abruptly, but they did not last for long. But whether OPEC is a very successful cartel or not, we cannot deny the fact that OPEC is controlling the World oil price since a very long time from 1970s to till date.

However, over time with other non-OPEC countries also becoming major exporter of oil the influence of OPEC is gradually now declining. So, we have also discussed that. Now, in today's class what we are going to discuss is whether Saudi Arabia how it influences the oil price because as we also analyse and we have seen with data that Saudi Arabia is the leader country is the most important supplier of oil inside OPEC.

So, often Saudi Arabia what we call acts as a swing producer. So, what do we mean by swing producer and we will also see the examples where the oil price moves due to the intervention of Saudi Arabia? But, at the same time it is not that OPEC and especially Saudi Arabia has always led to increase in oil price.

There are examples, there are instances where OPEC and Saudi Arabia actually they also reduce the oil price by increasing the oil supply. So, we will be discussing all these aspects in today's lecture.

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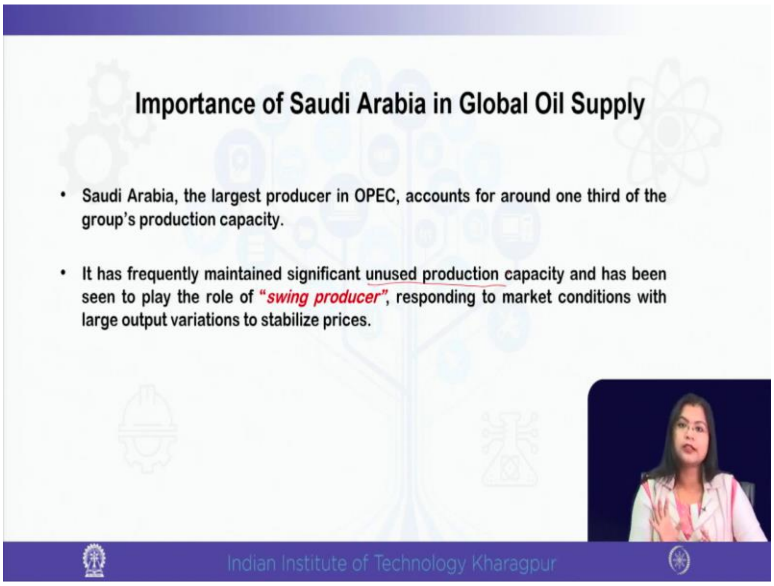

So, first let us see the importance of Saudi Arabia in global supply of oil. So, Saudi Arabia is the largest producer and supplier of oil inside the OPEC countries and it accounts for around one third of the OPEC's production capacity. So, alone Saudi Arabia is one third of OPEC's production capacity.

And, it has frequently maintained unused production capacity and is seen to play the role of swing producer. Now, you may think what do we mean by unused production capacity and why this is important, why you should focus on this unused production capacity. Now, if you remember in one of the classes of module 5, we are discussing about the characteristics of oligopoly.

We have also briefly discussed different types of market structure, right. And I also mentioned that in imperfect competition often we see that the firms do not produce up to their full capacity. Whereas, in perfect competition the firms utilize their full capacity because in perfect competition one of the restrictions we use in the production function is that the even if there is increasing return to scale it should be very quickly exhausted and decreasing return to scale should start very at a very low level of output.

Now, what is return to scale we will be discussing that in our next module to be specific in module 7, we will be discussing about some laws of production how when a firm wants to change production by changing the inputs or the factors of production how output will change. So, there are certain laws related to that. So, we will be discussing very basic of those laws in one of our modules.

So, what happens is that in perfect competition the firms in the long run produce at a level where the output selected corresponds to the minimum of the long run average cost. So, that means, the firms come down along its average long run average cost. So, price is equal to the average cost is equal to marginal cost. So, they do not have any excess capacity because as you already know we have discussed about market structure in perfectly competitive market.

The individual firms have no influence of market price. They are just price taker because they are individually very small compared to the entire market structure. So, in perfect competition there is no question of unused capacity, but what happens when the firms are not perfectly competitive when the firms have market power. So, we already mentioned that market power means the ability to influence market price.

So, often the firms influence market price by restricting the quantity. You remember in OPEC case also we discussed how OPEC uses the production quota system to control the price. But we have also seen that the often the individual members of OPEC they deviate from the agreed upon output of quota and they end up reducing more. But the thing is that to control the price the firms often restrict the output, right.

So, that means, what that means, they do not produce up to their full capacity level. That may be optimal from the society's point of view and that is why in any type of imperfectly competitive market we have some welfare laws. Since the quantity supplied is less compared to the perfectly competitive market price is also high in imperfect competition.

So, that means, the consumer surplus will fall in imperfectly competitive market because consumers are paying a high price and since output is less so, some consumers are not able to buy the good. So, consumers are not buying the good up to the level that they were buying under perfect competition and price is also high. So, therefore, consumer surplus falls.

Producers earn positive profit, super normal profit under imperfect competition, but output is less than the socially optimal level. So, these are the sources of dead weight loss or welfare loss in imperfect competition. So, what happens? In a nutshell in imperfect competition we have unused capacity. Often there are models in industrial organization where firms often use the excess capacity as an entry-dithering strategy.

So, there are existing theoretical models who show that the existing firms they create huge capacity, but they do not utilize that huge capacity. They supply very low level of output to maintain a very high price. So, that they can earn more profit. But these unused capacities often utilized as an entry-dithering strategy. Why? Because if new firms they see the existing firm is earning super normal profit, so, new firms will have incentive to enter the market.

Now, if new firms enter the market, then the existing firm may utilize its capacity by increasing the output rate. So, that is why that will be a threat for the new firms who try to enter the market. Because if the existing firm which has already created a huge capacity, if it uses its full capacity, output total output in the market will increase. If total output increases, we know from our basic understanding of demand and supply, supply will increase, price will fall, right.

So, if price falls and the new firms who are entering, they would not be able to make positive profit or they may also incur loss. Because in many types of industries, when the firms want to produce, suppose manufacturing unit, automobile. So, the initial cost is very high, the entry cost is high. So, for the new firms, it may not be profitable to enter the market if the existing firm has unused capacity.

So, this unused capacity is often utilized as an entry-dithering strategy. So, that is why I am focusing more on this unused capacity. So, in previous classes also, we have seen that only Saudi Arabia maintain some unused capacity and to some extent UAE, but most of the other OPEC countries, they almost utilize their full capacity.

That means what? That means, the non-Saudi OPEC countries more or less behave as perfectly competitive firm and Saudi Arabia acts as the leader or the swing producer inside OPEC. So, that is why this unused or unutilized production capacity or excess capacity is so important in the context of analysing the role of oil price, ok.

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So, until a brief period in the early 1980s, when Russia actually replaced Saudi Arabia as the largest crude oil supplier, Saudi Arabia was the largest exporting country, oil exporter. And, it has taken the lead within the OPEC countries since 1986 and it has controlled the production by using the production quota system.

And, as we know that the OPEC production quota system it came into place from 1983 onward, not since OPEC was formed. So, OPEC was formed much earlier. The production quota system was initiated much later. So, it tried to control the oil market by indicating the price it wants to maintain.

So, Saudi Arabia wanted to maintain a stable oil price to keep oil competitive over the long run, since it has a high reserve to output ratio. So, see since the Saudi Arabia's oil endowment is very high, which is even for the country right, when oil was invented in Saudi or discovered in Saudi Arabia not invention, it was a discovery.

So, often sudden discovery of oil made Saudi Arabia richer. It was a very poor province in the Ottoman region inhabited by the Normans. But, when oil was discovered, it became rich overnight because it exported the newly discovered resource to the outside world. Because Saudi Arabia itself was a poor country, there was no not much domestic use of oil, but oil was highly demanded globally, right.

So, since its reserve to production ratio is very high so, that is why it wanted to maintain the oil price in a stable range. Because it has a it had a long run view and that also explains why OPEC also last is lasting for such a long time whereas, in other markets the cartels do not prevail for such a long time.

The cartels are actually fragile entities who abruptly increase the price and enjoy positive profit, but that has not been the case with OPEC. So, we can see over here that it is mainly due to the stand or the opinion, it is because of the control that Saudi Arabia has on OPEC that the oil price should be maintained in a stable range and in a competitive range you see.

So, that you remember in the previous lectures where we analyse the views from the literature. Many economists concluded that after analysing the role of OPEC in influencing oil price, they concluded that OPEC behaves more or less as an entity who sets the price just above the competitive level. OPEC could have exerted more price power, because given its market power it could have influenced the price more, it could have raised the price even higher, but that they did not follow that strategy. Why?

So, here we can see that it is mainly because of Saudi Arabia's intervention that OPEC also believed in maintaining the oil price in a more or less competitive range in the long run. Because Saudi Arabia knew that it has huge amount of oil say it will be there in the oil market for a long time. It is not that it just wanted to make some quick profit out of oil, ok.

So, that is because of Saudi Arabia's strategy that OPEC maintained the oil price in a more or less competitive level just slightly above the competitive level. So, what do we mean by swing producer because we are using this swing producer term again and again? So, the term swing producer has traditionally been used to describe a provider who has the capacity to rapidly increase oil price oil sorry, oil production says 1 million barrel per day within 30 to 90 days.

So, by changing its oil supply it can influence the oil price. So, that is what we call it swing producer. So, by establishing an efficient transaction price and preventing the market process from modifying it a swing producer can exert price control. So, it can influence the market price. So, swing producer, means the price will swing by changing the output slightly increasing or decreasing the price will also change. So, that is why Saudi Arabia is called the swing producer.

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So, what we find here is that over 6.2 mbd of crude oil that was exported by Saudi Arabia in 2021, as compared to 4.5 mbd by Russia and 2.9 mbd by US. So, Saudi Arabia's relevance in the world oil market it was largely due to the position as the largest oil exporter with huge amount of endowment of means cheaper oil and its function as a swing producer.

So, the oil that Saudi Arabia had this is inexpensive because given its endowment of good quality oil. And, if you remember we have also when we compare WTI and Brent prices, we saw that Brent is the benchmark followed by OPEC countries and in the Brent oil crude oil is mostly for the Brent crude the transportation cost is less because the oil extract is extracted in a coastal region .

So, the cost of transportation and storage is also less. So, that means, the cost of extracting and refining oil, transporting oil all these are less. So, it has a cheaper endowment of oil as compared to WTI, where the cost of transportation refining storage is greater because for WTI we have seen that WTI is mainly extracted the WTI crude oil it is mainly extracted in the land lock areas.

So, the cost of transportation and storage is higher and that is the reason why during the COVID-19 pandemic and the pandemic induced lockdown when there was sudden halt of transportation. So, what happened if due to the demand side shock which was unexpected to a large extent the WTI future contract price became negative. The Brent crude price failed, but it did not become negative.

So, that is because this Saudi Arabia has this cheaper source of or endowment of oil. So, Saudi Arabia that is why it has taken a pricing leadership position within the OPEC countries to maintain or moderate the oil price due to the substantial proof reserve and huge proportion of global oil production and export.

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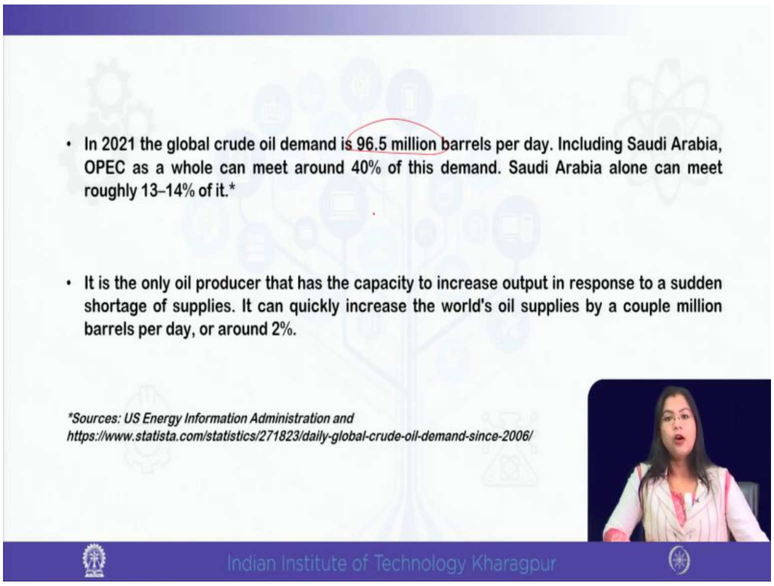

In 2021 the global crude oil demand is 96.5 million barrel per day. So, including Saudi Arabia, OPEC as a whole can meet around 40 percent of this demand, ok. So, you see OPEC as a whole can meet around 40 percent of this total oil demand in 2021. So, the source of this data is US Energy Information Administration and we have also provided the link.

So, those who are interested I as I earlier also requested that you should browse through the links yourself. So, you can get a lot of more data and you can gain more insight because of time constant it is not possible for us to discuss because it is a very vast domain, right. So, lot of interrelated things are there. So, that is why we are providing the sources and the links also.

Now, around of 13 to 14 percent of this global oil demand is made by Saudi Arabia and overall OPEC meets around 40 percent. So, we can see the importance of Saudi Arabia in controlling the world oil supply and hence the price. So, it is the only oil producer which has the capacity to increase output due to sudden shortage of supply. So, if there is a shortage of supply by any other supplier.

So, by changing the supply of oil Saudi Arabia can maintain the oil price. So, as we proceed, we will see there are examples of this; like in case of the 1990 and 1991 when the then Soviet Russia broke down, ok. And there was also Gulf War in 1991. But, at that time the oil price did not increase that much it is because of Saudi Arabia. Otherwise, without Saudi Arabia's intervention oil price could have increased much more, but Saudi Arabia increase its supply.

So, Saudi Arabia alone has this dominating position because of its endowment of good quality cheap oil that by changing the supply alone, it is able to influence the world oil price. So, if oil supply falls due to some shock or due to some other issues, some geopolitical events in others from the other suppliers, non-OPEC suppliers or even some of the OPEC countries, non-Saudi OPEC countries.

So, if oil supply falls Saudi Arabia by changing its own supply it has the capability of influencing the world oil price. So, we will be discussing about those examples in the subsequent slides.

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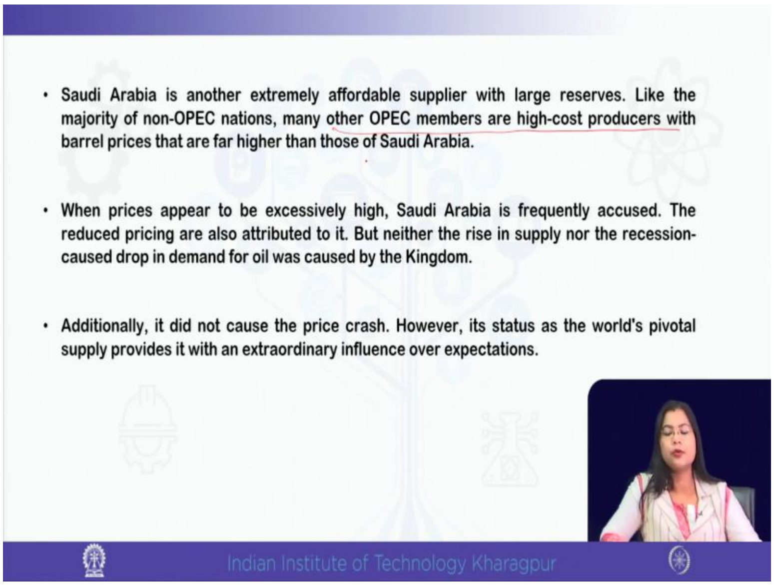

Now, Saudi Arabia is another extremely affordable supplier with large reserve. So, just like the majority of the non-OPEC countries, many other OPEC members are high cost producers. So, that means, their cost of production is higher, but as we just mentioned in the previous slide that Saudi Arabia has this source of inexpensive oil, cheaper oil reserve.

Whereas, compared to Saudi Arabia, now if even if we it is not that we have to go beyond OPEC. Even inside OPEC also some other non-Saudi OPEC countries they are also high cost performer high cost producers or suppliers of oil as well as obviously, the non-OPEC countries.

So, it is because of Saudi Arabia's endowment of cheap and good quality oil that it is enjoying this leadership position it can influence the oil price in both directions. Because we will be seeing with examples that there are instances where Saudi Arabia's cut in output of oil increase the oil price, but there are also the other instances where Saudi Arabia actually reduce the oil price by increasing its own oil supply, ok.

So, other this high cost producers have this higher barrel prices than Saudi Arabia. Obviously, if the cost of production and extraction and refining is higher the price will also be higher. So, as compared to Saudi Arabia many OPEC members and non-OPEC countries have higher prices. So, when the prices are very high, Saudi Arabia is frequently accused and the reduced pricing are also attributed to Saudi Arabia.

But, neither the rise in supply nor the recession cost drop in demand for oil was caused by the Saudi Arabia. Because we have seen that during the East Asian crisis or even during the global financial crisis, there were instances of reduction in oil price due to the demand side recession. Because when there is a recession there is an overall shrinkage of economic activity demand for oil falls.

So, these examples are not due to Saudi Arabia, these instances of fall in price is not due to Saudi Arabia. So, it is not that. So, that means, we should not conclude that whenever there is a change in oil price it is due to Saudi Arabia, no it is not the case. So, there are examples where Saudi Arabia has actually influenced the oil price in both direction both upward direction and downward direction.

But whenever we see a fluctuation in oil price we should not blame or we should not tell that it is because of Saudi Arabia. So, there are reasons also beyond the control of Saudi Arabia due to which oil price has changed abruptly. Also, it so, it is not that always the Saudi Arabia causes the crash in price. However, its status at the world pivotal supply provides it with an extraordinary influence over expectation.

So, yeah it we cannot deny that it has huge influence in the world oil price, but there may be reasons which are beyond control of Saudi Arabia for changing the oil price.

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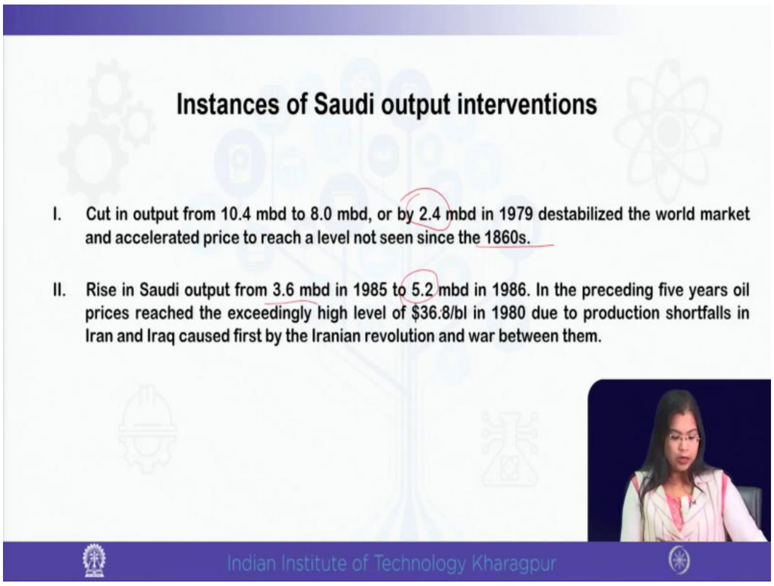

So, let us now see some examples of how Saudi Arabia actually influence the oil price. So, we start chronologically. So, if you remember we have already discussed about the oil price shocks from 1970 onwards. So, first oil price shock was in 1973–74 and then there was the oil price shock of 1979–80. So, in these cases Saudi Arabia actually controlled the supply of oil.

So, let us see if the example of 1979 where all Saudi Arabia reduced the output from 10.4 mbd to 8 mbd. That means by 2.4 mbd in 1979 and that actually destabilized the oil market and that was the first oil price shock you can see means very major oil price shock.

And, from this time onward actually the western countries also started thinking about how to replace oil, how to find good quality, substitute of oil and we saw that due to these reasons only from mid-1980 onward there was gradual replacement of oil at least in the electricity production. So, we will come to that.

So, the first instance of Saudi's oil price control was in 1979 where reduction in output by Saudi Arabia actually destabilized the world oil market and the price increased to a level which was not seen since the 1860s you see. So, almost more than 100 years. So, the oil price increased such a level.

The second situation was as I just now mentioned and I think we have discussed it earlier also when we analysed the oil price movement, we saw that the 1985 and 1986 is characterized or termed as the great price collapse you remember. So, just now I discussed that due to the oil price shock of the 1970s and early 1980s just now we took the example of 1979.

So, Saudi Arabia followed this policy of high price by controlling the supply of oil, but we have already studied from our basic knowledge of economics, we know that in the long run the elasticity values both in the demand side and the supply side are greater than the short run elasticities.

So, initially during the 1970s due to the oil price shock when abruptly oil price increased the countries could not do much right because in the consumption side you cannot suddenly change your consumption pattern. If you have a petrol driven automobile you cannot change that overnight right, but gradually over time we can change our consumption pattern.

In the supply side also new or means more closer substitutes of oil was invented like we just discussed that from mid-1980 onward most power stations replaced oil and they started using cheaper sources like coal and natural gas, and we also started using hydroelectric power plants, tidal power plants. So, from 1980s, mid-1980 onwards all the new power stations were mostly reliant on alternate sources of energy apart from fossil fuel and the existing oil-based power plants were also being converted to use coal.

So, in the electricity sector oil could be replaced to a large extent at least in the developed countries the advanced countries. So, that is why this high price policy was not becoming very fruitful or profitable. So, finally, in mid-1980 in 1985 to be specific Saudi Arabia and the OPEC countries had to abandon its price policy. So, Saudi what Saudi Arabia did is increased its supply of oil from 3.6 mbd in 1985 to 5.2 mbd 1986.

So, by increasing its supply Saudi Arabia actually made the oil price fall. So, this is known as the Great Price Collapse and from that period to almost 1999 we know that this phase is called as the low-price period, oil price was low in a band. So, but even then, during the low-price period we have compared the oil price was greater than other metal mineral prices other food products another major traded commodity.

But if we compare the oil price over time in a time series, we see that 1986 to 1998 and 99 marks the low-price period because in 1997 we had the East Asian crisis. But in 1991 there was some spike in oil price due to the Gulf War and the breaking down of USSR. But that was the oil price did not increase much due to Saudi Arabia's intervention once again. So, we will discuss that in our fourth point.

So, coming back to the Great Price Collapse period what we see is that in the past 5 years; that means, from 1980 to 1985 oil prices was very high. So, it reached it exceeded the high level of 36.8 billion dollar in 1980 due to the production shortfall in Iran and Iraq caused by the Iranian revolution and the Iran–Iraq War. But finally, Saudi Arabia saw that this high price policy was not very profitable. It could not be sustained because of the elasticities.

So, you see that is why the basic concepts of economics that we studied are so important in explaining the oil price movement.

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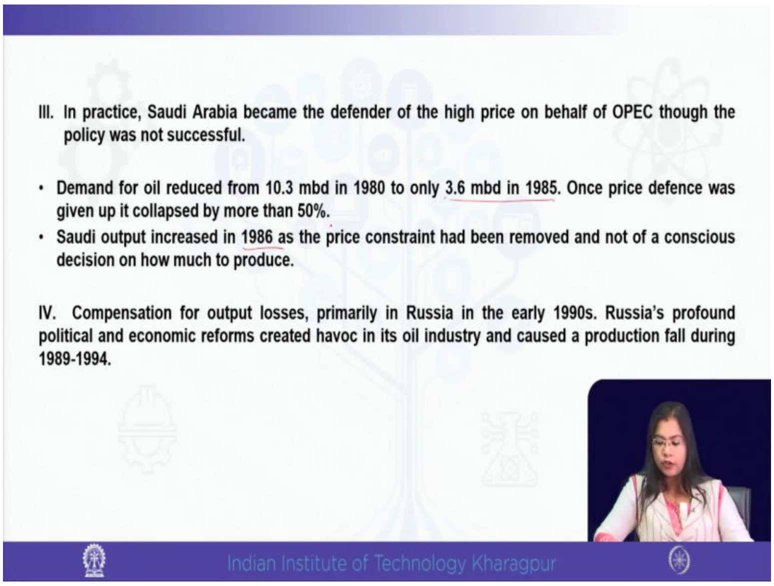

Third is, Saudi Arabia actually became the defender of high price on behalf of OPEC, but the policy was not successful. So, demand of oil reduced from 10.3 mbd in 1982, only 3.6 you see over the 5 years demand for oil reduced so much. And, we saw that in the 0.2 we saw that in this 5 year from 1980 to 1985 oil price increased very much, but corresponding to this we know that by law of demand price increases quantity demanded will fall.

And so, oil price increased, but demand for oil fell and because of the rising elasticity values were also there. We know that in the very short run elasticity is less, but over time elasticity is increased for the reasons we have already discussed. So, once the price defence was abandoned the price collapsed by more than 50 percent.

So, Saudi Arabia increased its output in 1986. So, we just took this example and the price constraint was removed and it was not basically that Saudi Arabia decided how much to produce, but Saudi Arabia wanted to lower the oil price so that it can sell oil it can earn more revenue because at that time also Saudi Arabia and most of the OPEC countries were very much dependent on oil rent.

If you remember in one of the lectures, we have discussed the share of oil rent in GDP of the oil supply country. So, we saw that the OPEC countries are very reliant on the share of oil rent in the GDP. However, we have seen that in the very recent years especially after 2010 onwards the share of oil rent in GDP of the OPEC countries are also declining, signifying that the countries are diversifying.

So, Saudi Arabia as we all know are all is also diversifying in other sectors like the service sector, so, in the IT sector. So, gradually over time the countries understand that it is not good to be reliant on only one resource. So, they are trying to diversify, but during the 1980s they were heavily dependent on oil. So, if there was fall in demand for Saudi's oil because of its high price Saudi Arabia had no option, but to lower the oil price by increasing the supply.

So, in the first example you see we saw how Saudi Arabia actually increased the oil price. In the second and third example, we see that how Saudi intervention reduced the oil price. Now, in the fourth also we see that how Saudi intervention has actually maintained the oil price in a more stable range. So, what happened we know already. So, Russia the then Soviet Russia broke down in 1990.

So, Saudi Arabia actually compensated for the loss in output due to the breaking down of Russia in 1990s. And, Russia's profound political and economic reforms it created havoc in the oil industry and it caused a production shortfall during the period of 1989 to 1994.

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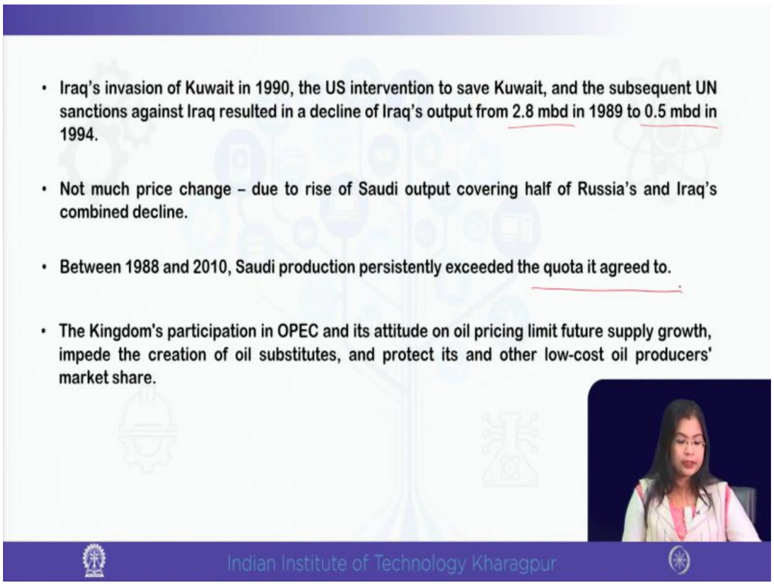

So, Iraq invaded Kuwait. So, that was one side of the story for the 1990 and 1991 crisis, the other side was Iraq invaded Kuwait in 1990 and the US intervention to save Kuwait and the subsequent UN–United Nations sanction against Iraq it led to a decline in Iraq’s output from 2.8 mbd in 1989 to 0.5 mbd. So, see Iraq's output decline from 2.8 to 0.5. So, 2.8 mbd 1989 after 5 years it declined to 0.5 mbd in 1994.

But, even after all these the price increased, but not to that extent. Why? Because of Saudi Arabia increased the output which actually covered almost half of Russia and Iraq's total output decline. So, without the intervention of Saudi Arabia now you can clearly understand that oil price could have increased much more.

See in the in last module of our course we will be discussing this issue if you remember when we discussed the course structure in detail, we have one module where we will be discussing the oil price shock under different types of exchange rate regime. That is very important because oil is a major traded commodity. So, we need to know that if there is an oil price shock how exchange rate will be affected and what will be the implication for the domestic economy under different types of exchange rate policies.

So, we will be studying this with respect to the Indian Economies Balance of Payment Crisis in 1991. There we will be seeing that how the major global events related to the oil market actually triggered the crisis, ok. So, the crisis might have happened after few years, but the events in the oil market actually triggered the prepone the crisis you can say.

So, there are two things we see – the breaking down of USSR and the Iraq and Kuwait political turmoil and the subsequent restrictions by the UN. So, due to these two reasons output declined, but price increased but to a lesser extent. Why? Because Saudi Arabia compensated for the output lost. So, Saudi output in actually covered Russia and Iraq's combined decline, at least half of Russia and Iraq's combined decline.

So, between 1988 and 2010, Saudi the production actually exceeded the quota level. So, if you remember we have seen with the data that they the OPEC members they said some production quota, but you see over this almost 22–23 years, Saudi Arabia actually increased or supplied more output than the quota level. Otherwise, oil price you can now easily understand that oil price would have increased much more.

So, Saudi Arabia's participation in OPEC and it is attitude on oil price limit the future supply growth and it can impact the creation of oil substitute and protect its other low-cost producers and itself also from in losing the market share. So, that it should not lose the market share and even the other non-OPEC suppliers other than Saudi Arabia should not lose the market share.

That is why OPEC and Saudi Arabia actually increased its supply of oil than the quota level, ok. So, that the price does not increase so much so that other non-OPEC countries like US they actually can supply more oil. So, that is why Saudi Arabia and it can do it can follow this strategy, it has the luxury of huge endowment of good quality cheaper oil.

That is why it maintained it is supply of oil, so that the oil price remains in a stable range and it can enjoy it is leadership position. Not only it, other low-cost oil producers of OPEC should be able to enjoy it their leadership position.

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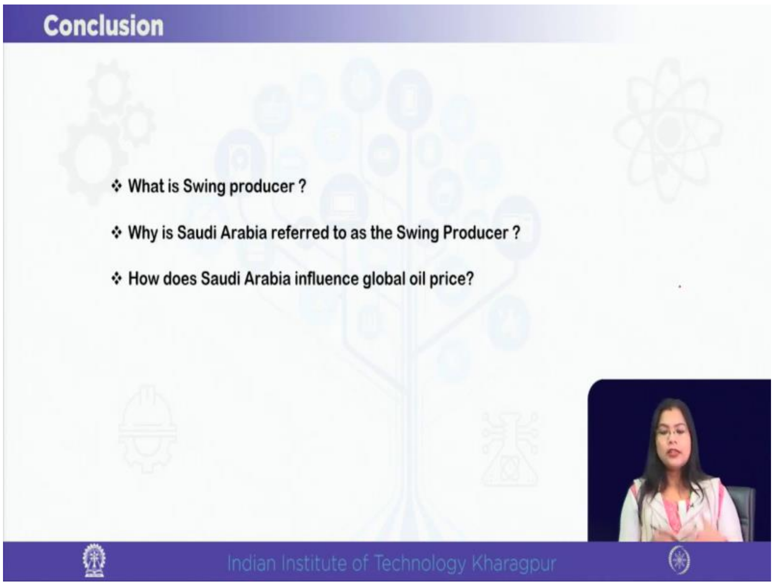

So, in today's lecture what we discussed it the role of Saudi Arabia in influencing the oil price from 1970 to the recent times and we have explained what do we mean by Saudi Arabia; why Saudi Arabia, what do we mean by a swing producer and why is Saudi Arabia mentioned as the swing producer. Then we explained the instances of Saudi’s, output intervention.

So, it is not that always Saudi Arabia decision led to increase in price, but there are instances where Saudi Arabia's decision led to reduction in oil price also Saudi Arabia's intervention maintained the oil price in a stable range. But at the same time whenever we see fluctuating oil price, we should not blame Saudi Arabia. So, overall, you see we have finished our module 5 where we have analysed the role of OPEC in explaining oil price.

So, OPEC has definitely OPEC and especially Saudi Arabia has definitely had the power of controlling the oil price they also lead to fluctuation in oil price. But we also find out that OPEC could have exerted it is price power more with the market share it could have increased the price more, but that they did not do. They have limited ambition and that is also one of the reasons for its a persistence over a very long period of time unlike other cartels.

So, there are also reasons apart from OPEC and Saudi Arabia which are also responsible for oil price movement in a phenomenal fashion which is just cannot be compared with any other major traded commodities or metal and mineral or food products which are very necessary products. And, we are why we are comparing with metal and mineral because metal and minerals they are also in limited stock, but the oil price movement is just phenomenal.

So, we have to also explain or we have to also investigate the nature of oil price movement, not only from the point of view of OPEC and Saudi Arabia, but from other perspective. So, those will be our subject matter in the upcoming module in the next module, ok.

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So, here are the references that we have followed apart from the petroleum books, two petroleum book petroleum economics related book we have also followed some other papers and reports which are mentioned over here.

So, thank you very much. See you in the next module.