2018 PJC JC2 Prelim Exam H2 Econs Paper 1

Question 1: Disruption in the oil market and a new low price norm

(a) Referring to Figure 1, explain the relationship(s) between the trend in oil price and that of OPEC oil production from 2004 to 2016. [4]

Suggested answer:
Overall, there exist a positive relationship between oil price and OPEC oil production with the exception of from 2010 to early 2016 where there exist an inverse relationship between the two.
The positive relationship is due to the increase in demand which outweighs supply of oil from OPEC, resulting in an overall rise in both price and equilibrium quantity.

The negative relationship is due to OPEC increased supply of oil, holding demand unchanged, oil prices fall.

(b) Falling oil prices impacted countries differently.

(i) Explain the macroeconomic impact of falling oil prices on both oil importing and exporting countries. [4]

Suggested answer:
Many oil exporting countries such as Russia, a fall in oil prices reduces price of exports. Given that the price elasticity of oil is inelastic, it will lead to a less than proportionate rise in quantity demanded, leading to a fall in export revenue. Assuming import expenditure remaining unchanged, this reduces AD and through the multiplier effect will result in multiple fall in real GDP in the short run.

Oil importers such as India benefited from a falling oil price. As oil is a main source of energy, a fall in oil prices will reduce cost of production for most if not all industries. This shifts SRAS to the right, reducing GPL and increase real GDP.

(ii) Explain whether a complete removal of subsidy on petrol and diesel will affect total expenditure of motorists in India. [4]

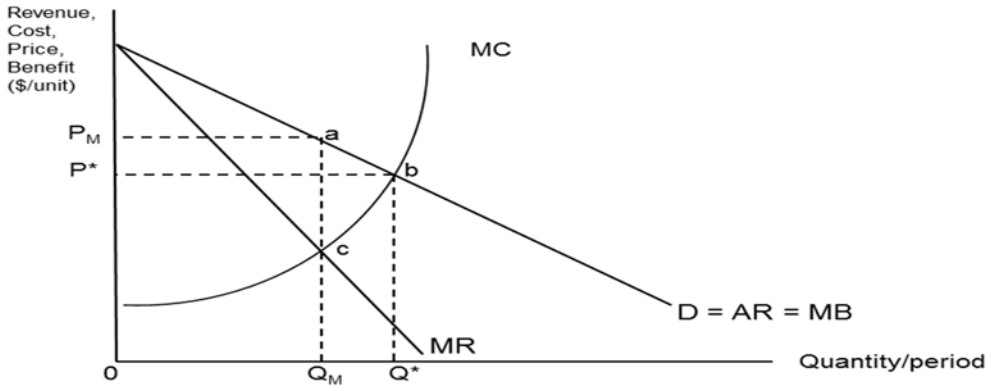
Suggested answer:
Total expenditure is obtained by taking price times quantity sold. Given that the price elasticity of demand for petrol and diesel is less than one, a complete removal of subsidy will result in a rise in cost of production, shifting supply curve to the left, resulting in an increase in price and a less than proportionate fall in quantity demanded, resulting in a rise in total expenditure.
However, given that price of oil has been falling (a raw material needed to produce petrol and diesel), a complete removal of subsidy may not necessary result in a rise in total expenditure if the amount of subsidy removed is less than the fall in price of petrol and diesel. Total expenditure of households may actually fall rather than rise.

(c) Discuss the extent to which OPEC is able to effectively cut production to raise price. [8]

Suggested answer:

Price of oil is determined by the demand and supply of oil in the world market. The extent to which OPEC is able to effectively cut production to raise price will depend on its ability to control supply and demand for oil.

As OPEC members controls more than half of the world oil supply, it has a large market share and hence possess significant market power to cut production to increase price.



In the absence of OPEC, socially optimum output is at Q* where MC = AR(P). Profit-maximising cartel to maximize profit would restrict output to produce at Q_M where MC = MR and charges the maximum possible price it can, P_M (indicated by DD curve).
Hence by restricting output to Q_M, OPEC is able to charge a higher price at Pm instead of P*

However, this require coordinated action by the Opec members and discipline in sticking to the agreed production quota. A history of Opec governments cheating to improve their revenues – by pumping more oil in contravention of production cuts – is likely to undermine efforts to cut output, Furthermore, OPEC must also be able to limit the production of oil due to the emergence of shale drilling through fracking in the US. Based on extract given, OPEC has not been able to do so. To effectively control supply, OPEC also needs the cooperation of Russia, which is not an Opec member but produces about as much oil as Saudi Arabia to cut production. However, this may not be forthcoming when oil revenues make up most of the Russian government's income.

Hence OPEC attempt to restrict output may be offset by an increase in production by OPEC members and non OPEC members. This may hence limit her ability to increase price.

On the demand side, continued low growth around the world, is holding back demand for oil. Hence despite a fall in production by OPEC, if the fall in demand exceeds that of fall in supply, equilibrium price will still fall.

Hence, as OPEC is unable to control world supply and demand for oil, it is to a small extent that it will be able to raise price through a cut of its own production.

(d) The increased use of renewable energy helps to reduce carbon emission and improve economic efficiency in resource allocation.

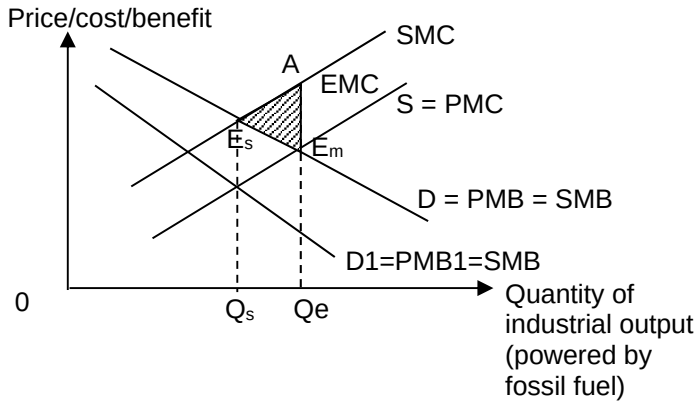
Discuss whether government should continue to promote the use of renewable energy. [10]

Suggested answer:

Government should promote the use of renewable energy as it can help the economy achieve the microeconomic aim of efficiency and macroeconomic aims of price stability and sustainable economic growth. However, whether it should continue to promote usage of renewable energy depends on the overall impact of renewable energy usage compared to the oil (fossil fuel) usage on the micro- and macro- economic aims in the new oil low price environment. It also depends on how long-lasting is the low oil price environment.

The market for industrial production can fail due to the existence of negative externalities. These negative externalities arise because of the usage of fossil fuel in industrial production. The negative costs can manifest in the form of reduced crop harvests due to global warming to the farmers (3rd party) who are not involved in the manufacturing process powered by fossil fuel. There is a divergence between PMC & SMC by the amount of EMC at Qe. Market equilibrium output is achieved at Qe (where PMC =PMB) while socially optimal output is at Qs (where SMC =SMB). Since Qe > Qs, there is overproduction of industrial output and deadweight loss is resulted. Market fails in the market of industrial output powered by fossil fuel.

With increased usage of renewable energy instead of fossil fuel to produce industrial goods, the amount of carbon emission will fall. Extent of EMC will fall, causing SMC to shift downwards towards PMC, reducing the problem of overproduction and deadweight loss.



There has been increased technological improvement in harvesting renewable energy and this has reduced cost, making renewable energy price more competitive to that of fossil fuel. This can enhance the competition in the market of energy on the whole, reducing price of all forms of energy. With lower energy prices, lower income households will be able to afford energy with less/ no government subsidies. This reduced the need for government to subsidize the use of energy, allowing the government resources to be better spent elsewhere. In addition, with lower energy cost, firms will find it more profitable to produce and AS curve will shift downwards, increasing real income, employment and reducing general price level. At the same time, with increased usage of renewable energy, the country can better cut CO2 emission level to meet the commitment made to COP21 summit in Paris. Economic growth in the country will be more sustainable as increased output produced will bring along with it less significant economic problems on the environment particularly for the future. This can increase the standard of living for the current and future citizens.

However, increased usage of renewable energy requires increased infrastructural for the transmission of this clean energy from its sources to the factories and homes. The building of

these infrastructural requires the massive clearing of land and destruction of wildlife habitats. The clearing of arable land could reduce the potential harvest for farmers (3rd parties). Economic growth will also be unsustainable as the output are made at the expense of natural habitat of the future generation. The use of the land for renewable energy could also be better used for residential or commercial purposes.

However, the damage made on the environment from continued release of CO2 gases into the atmosphere through the use of fossil fuel should be more significant than the damage caused from the making of initial infrastructural for transmission of renewable energy. Thus, the use of renewable energy should still be promoted as use of renewable energy is still at its infancy stage and the environmental cost of fossil fuel outweighs that from the use of renewable energy by a large margin currently.

Government should not continue to promote the use of renewable energy since the price of fossil fuel has reduced significantly with the reduced market power of OPEC cartel and the emergence of shale drilling. With the norm of fossil fuel prices being low, there is little incentive for profit-orientated firms to switch from fossil fuel to being powered by renewable energy. In addition, fossil fuel producers are also improving their fields productivity, making price of fossil fuel cheaper overtime. Thus, economy can enjoy non-inflationary growth in the future without the need to switch to renewable energy. Thus, government need not continue to encourage the use of renewable energy towards this macroeconomic aim in the short term.

However, it all depends on the how long the price of fossil fuel is likely to last. In event there are new developments in the current low oil price environment, fossil fuel (oil) price may increase and renewable energy may be in favour again. It may be too late to start encouraging the use of renewable energy as it takes a long time for the development and subsequently adoption of renewable energy for consumers and industries. Thus, in the long term, government should still encourage the use of renewable energy, albeit at a lower priority.

Government should encourage the use of renewable energy to a socially optimal level for the economy to bring about micro- and macro- economic aims. However, whether there is a need continue encouraging the use of renewable energy depends on the sustainability of low oil (fossil fuel) price environment as well as the overall net assessment of increased renewable usage on the overall aims of the government.