

With reference to Extract 1, identify a demand factor and explain how it has affected demand for coal in the US. [2]

The demand factor is a change in the price of a related good. There has been a fall in prices of gas in the US due to fracking and as gas and coal are substitutes in consumption for power generation, this leads to a fall in demand for coal in the US.

Likely marking scheme: 1 mark for factor, 1 mark for explanation.

Using the evidence in Extract 1, explain whether the cross elasticity of demand in China between coal and renewable energy is positive or negative. [3]

The cross elasticity of demand (XED) in China between coal and renewable energy is positive. In Extract 1, it states that coal consumption has been declining. At the same time, renewable energy prices have been falling. As the definition of cross elasticity of demand is the degree of responsiveness of demand for a good to a change in price of another good, thus, the fall in prices of renewable energy led to a decrease in demand and quantity demanded for coal means that the XED is positive.

Likely marking scheme: 1 mark for evidence, 1 mark for positive result, 1 mark for explanation.

Using a diagram and Extract 1, explain how the UK government's change in the minimum price of coal in 2016 is likely to have affected the UK market for coal. [3]

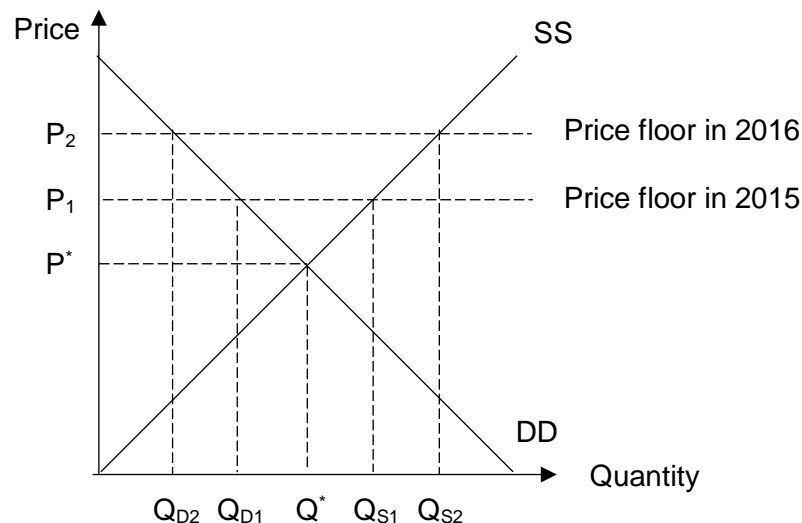


Figure 1: Market for coal in the UK

The increase in the minimum price of coal in 2016 would have created a greater surplus in the market for coal, ceteris paribus¹. With reference to Figure 1, a rise in the minimum price of coal from P_1 to P_2 increases quantity supplied from Q_{S1} to Q_{S2} , while quantity demanded

¹ As the minimum price was introduced in 2015 and increased in 2016, it is likely that supply and/or demand has changed in the meantime, so ceteris paribus would be helpful here.

decreases from Q_{D1} to Q_{D2} . The surplus of coal in the market increases from $Q_{S1}-Q_{D1}$ to $Q_{S2}-Q_{D2}$.

Likely marking scheme: 1 mark for diagram, 1 mark for explanation with reference to diagram, 1 mark for result

With the help of a diagram, explain how a rise in demand for coal in Vietnam is likely to affect its social welfare. [4]

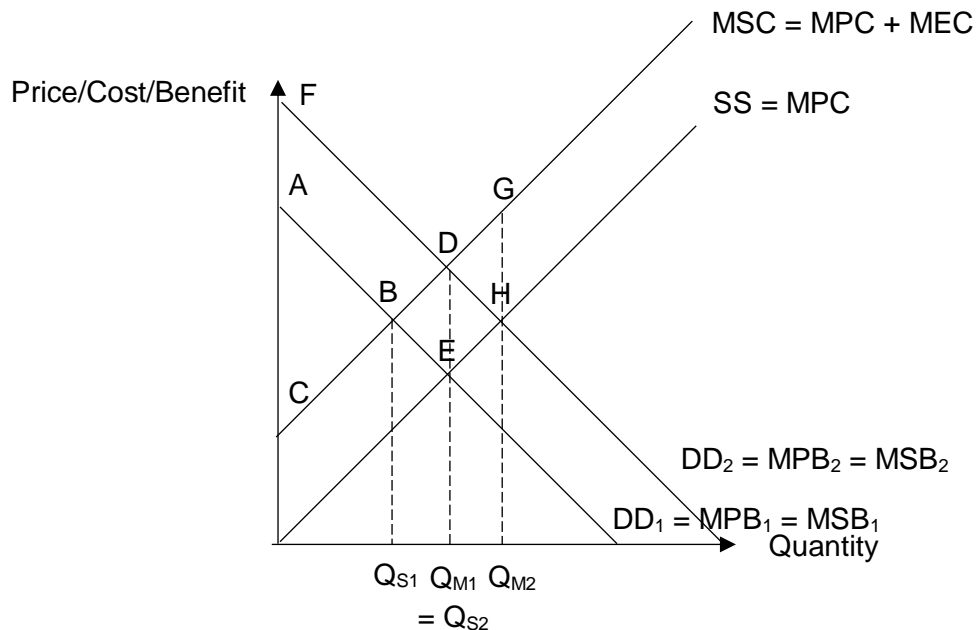


Figure 2: Market for coal in Vietnam

The rise in demand for coal is likely to increase societal welfare for Vietnam. As the market for coal suffers from the problem of negative externalities², with reference to Figure 2, the socially optimal output is at Q_{S1} while the market output is at Q_{M1} , leading to a problem of overconsumption even before the demand for coal increases. This leads to a net welfare benefit of area $ABC - BDE$. As the demand for coal increases from DD_1 to DD_2 , the socially optimal output increase from Q_{S1} to Q_{S2} while the market output increases from Q_{M1} to Q_{M2} . This increases the net welfare benefit to area $FDC - DGH$ ³.

However, this assumes that the marginal external cost (MEC) remains constant as output increases, which may not be true as seen with the controversial plan of dumping pollution into the sea with the use of more power plants.

Likely marking scheme: 1 mark for diagram, 1-2 marks for explanation, 1 mark for result, 1 mark for counter-argument.

² A mark may possibly be awarded for defining the negative externalities in the market for coal, however, seeing as this concept will be more thoroughly explained in the next question, it is left out of this answer.

³ An alternative answer is to ignore the shift in MPB and MSB, and thus concluding that the welfare loss is now greater. Although this would be conceptually wrong, it is a far simpler answer and given the complexity of the above answer, this may be accepted.

Discuss whether the Vietnamese government's plan to ban motorbikes and switch travel to public transport is likely to be better than a policy of road pricing in improving air quality in Hanoi. [8]

In the market for road transport in Vietnam, there is a negative externality of air pollution. The people of Vietnam incur an external cost from the consumption and production of road transport, namely health problems and premature deaths from the air pollution created. To reduce this external cost, the Vietnamese government has decided to ban motorbikes and switch travel to public transport. This is likely to be better than a policy of road pricing in improving air quality in Hanoi.

Benefits and costs of policy 1: banning motorbikes and switching to public transport

By banning motorbikes and switching travel to public transport, the external cost would be reduced as public transport such as buses produce less air pollution per passenger travelled than motorbikes. However, this would come at a cost to the government, as more buses would have to be purchased and a new underground system may have to be constructed. Currently, only 10% of the residents use buses and there is no underground system, so this cost may be significant.

There is also an unintended consequence of the unhappiness of the populace as stated in Extract 3, where the people are complaining that this is unfair to the majority who cannot afford to buy cars. There is a level of convenience afforded by private transport that public transport cannot offer, and this may result in unhappiness and thus political issues for the government.

Benefits and costs of policy 2: road pricing

Road pricing may reduce the usage of transport in Hanoi during certain times, reducing the amount of air pollution generated. During peak periods, the roads may be congested, resulting in the slowing down of traffic. As motorists take longer to complete their journey, air pollution may increase per unit of distance travelled as the vehicles produce air pollution even when idle in a traffic jam. By using road pricing, motorists will be incentivized to utilize the road more efficiently, avoiding travel during peak hours and travelling during times where the road is less congested. This would lead to lower air pollution.

Evaluation

Given that the economy is growing and that the productivity of Vietnam is expected to increase greatly in the future, it is likely that the demand for road transport in Vietnam will continue to increase. Thus, road pricing is a worse solution as it addresses only short-term problems, and in the long-run, the air pollution will continue to worsen. The banning of motorbikes and the expansion of the public transport system will help to alleviate issues in the supply of road transport, making it more efficient, and thus a better solution for improving air quality in Hanoi.

Discuss whether the Vietnamese government's plans to remove state monopolies and create more competitive markets in energy provision will, on balance, improve economic efficiency in Vietnam. [10]

State monopolies suffer from a problem of market dominance which reduces economic efficiency. By removing state monopolies, the Vietnamese government would likely improve economic efficiency in Vietnam, but there are also some possible costs to consider.

Thesis: It will improve economic efficiency

Monopolies have large market power due to their high barriers to entry. This allows them to set higher prices. This leads to a problem of allocative inefficiency.

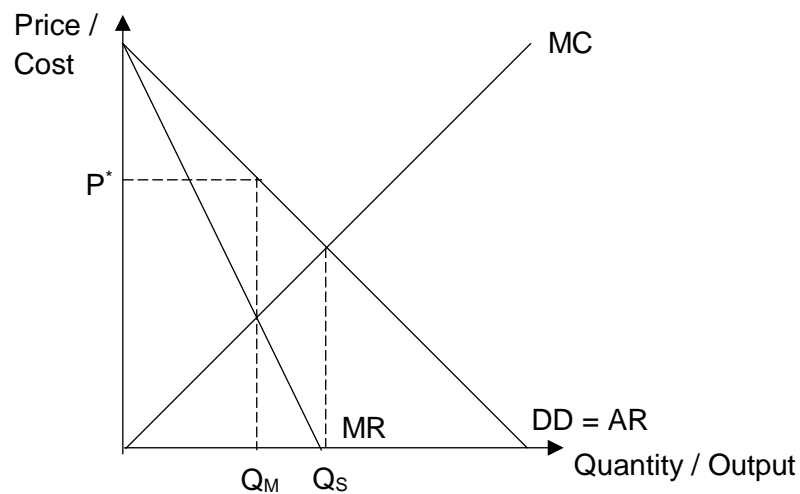


Figure 3: State monopoly in the market for energy in Vietnam

With reference to Figure 3, the monopoly sets prices where $MC=MR$ as this allows them to profit-maximise. However, allocative efficiency is only achieved at $P=MC$, as this is where the marginal benefit to society is equal to the marginal cost. Thus, the monopoly produces an output Q_M while the allocatively efficient output is at Q_S . This leads to under-production and thus allocative inefficiency. With the removal of state monopolies and the creation of more competitive markets, this would reduce the market power of the firms in the energy market, thus reducing prices, increasing output, and improves the economic efficiency in Vietnam.

At the same time, monopolies also suffer from a problem of dynamic inefficiency. With the lack of competition, monopolies do not need to innovate to maintain their monopoly power. This is worsened by the fact that it is a state monopoly, as the threat of competition is even lower as the main barrier to entry is government regulation. This is evidenced in Extract 3 where it is stated that the EVN is still reliant on old, inefficient technology. This increases long-term costs and reduces economic efficiency in Vietnam. By increasing competition, the firms in the energy market may innovate more and thus reduce long-term costs and improve economic efficiency.

Lastly, the monopolies suffer from a problem of productive inefficiency. Productive inefficiency occurs when inputs are not being utilized to produce maximum output for the minimum cost. As the state monopoly EVN is funded by the government, there is little incentive for the firm to minimize costs and maximize the use of inputs. This is shown in Extract 3 where the EVN is reported to be bloated, meaning that unnecessary additional inputs are being used to produce

the same amount of output in the short-run. By privatizing the industry, firms would be incentivized to reduce costs to profit-maximise, thus improving economic efficiency.

Anti-thesis: It may not improve economic efficiency

However, there are also possible problems with the removal of monopolies and the introduction of competition. The introduction of new firms may increase average costs in the market for energy as firms in this industry rely on internal economies of scale to reduce average costs. In the production and transportation of energy, there is significant internal economies of scale such as the use of a single electricity grid and efficient large machinery in power plants. By increasing the number of firms, the output produced by each firm would be reduced, increasing the average costs. This may lead to economic inefficiency.

At the same time, the profits of each firm will be reduced, and this may lead to an inability by the firms to innovate. Innovation is a large sunk cost as firms have to invest in research and development over a long period of time to produce new technology. If the state monopolies are removed and smaller firms enter the market, they may not have the ability to innovate, thus reducing economic efficiency as well.

Evaluation

It is likely that the drawbacks of increasing competition are overstated as the energy market is projected to expand as the demand for energy increases in Vietnam. With an increase in demand for energy as stated in Extract 3, firms will be better able to utilize economies of scale as well as innovate with the greater revenue available to them.

At the same time, the economic benefits of innovation may be understated as Vietnam is currently under-utilizing renewable energy. By increasing competition and therefore innovation, this may bring about great benefits to economic efficiency as more renewable technology is innovated and implemented in the market for energy.

Overall, on balance, it may be better for economic efficiency in Vietnam for the government to remove state monopolies and introduce competition. Many other countries have already done this to great success, from the removal of state monopolies in the UK rail transport market, to the opening up of the electricity market in Singapore.