Maggie
Huang
Dec. 13. 19

1. *Study the extract below and answer the questions that follow.*

Gas (petrol)* prices hardly affect demand

❶ American economists and politicians have been debating whether raising **indirect taxes** on gas would help cut demand, easing US dependence on oil and fighting global warming.

❷ A study at the University of California suggests that large increases in the price of gas have resulted in only a small reduction in the amount of miles driven by Americans. Further, drivers changed their ways less during the most recent price rises than they did during the period of rapidly rising gas prices of the 1970s. The study suggests that only a very large tax could have a significant effect.

❸ The study examined two periods of rising prices: 1975 to 1980, and 2001 to 2006. In each period, it examined the **price elasticity of demand** for gas.

❹ Researchers found that for every 10% increase in price between 1975 and 1980, quantity demanded fell by an average of 2.75%. However, between 2001 and 2006, every 10% price increase reduced quantity demanded by only 0.65%.

❺ Some energy economists predicted that as gas prices rose to record heights, drivers would eventually be forced to cut back on trips and use less gas. The prediction came true. But the change was not significant.

❻ Another study released at the same time, found that the amount of miles driven by the average American in 2005 dropped for the first time in 25 years, but by less than half of a percent. The study attributed the decline to higher prices as well as the aging of the US population, since elderly Americans drive less than those of working age.

❼ Why the difference in gas consumption patterns between the 1970s and the current period? It could be the result of more Americans buying homes a long way from their work. The difference also could be connected to the rising number of families with two cars.

❽ Environmentalists have proposed a number of recommendations to reduce the use of cars, such as improved public transportation, road charging (toll roads), and subsidies to encourage alternative transport.

[Adapted from David R Baker, "Gas prices hardly affect demand", San Francisco Chronicle (1 December 2006).

* Petrol: where many people around the world use the word "petrol" for the fuel that drives their cars, Americans use the word "gas".

(This question continues on the following page)

(Question 1 continued)

(a) Define the following terms indicated in bold in the text:

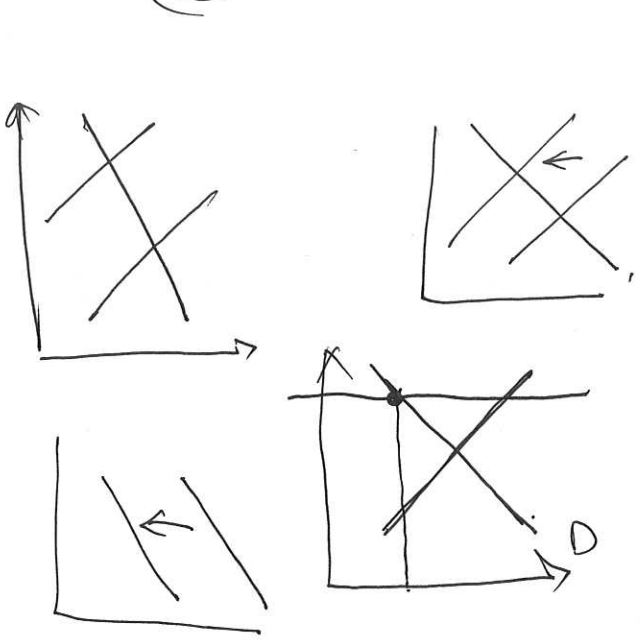
(i) indirect taxes *(paragraph ❶)* *[2 marks]*

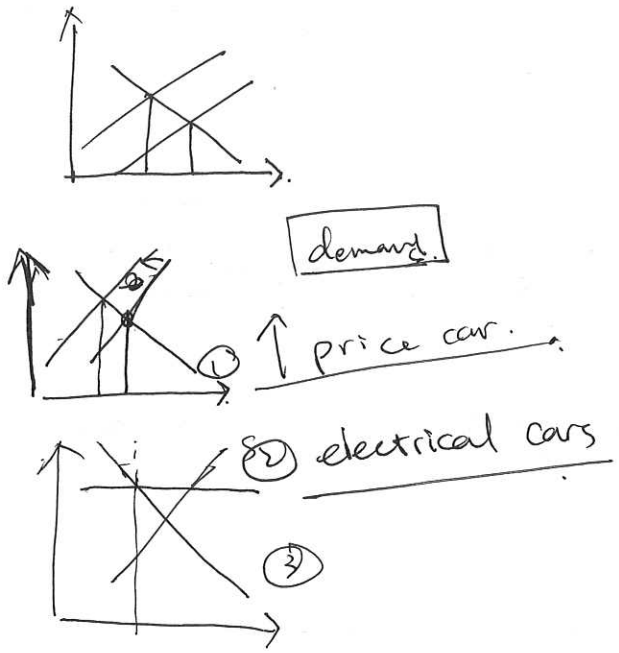
(ii) price elasticity of demand *(paragraph ❸)*. *[2 marks]*

(b) Using an appropriate diagram, explain how an indirect tax on gas is likely to affect the price and quantity of gas. *[4 marks]*

(c) Using information from the text, calculate the value of price elasticity of demand for gas from 1975 to 1980 and from 2001 to 2006 **and** explain what the values signify. *[4 marks]*

(d) Using information from the text/data and your knowledge of economics, evaluate possible ways, apart from increasing the indirect taxes on gas, of reducing the demand for gas. *[8 marks]*





1. *Study the extract below and answer the questions that follow.*

EU court rules minimum price for cigarettes illegal

❶ The European Court of Justice has ruled that Ireland cannot impose a **minimum price** on cigarettes. It said that member countries would have to find other ways to combat smoking. This could be achieved by increasing indirect tax on tobacco, but imposing a minimum price would distort fair competition in the market. The ruling is designed to maintain the freedom of manufacturers and importers to benefit from lower costs and greater efficiency.

❷ The judgment said the aim of ensuring that tobacco prices are high can be "adequately" achieved by increasing tax, since any indirect tax rises are, sooner or later, reflected in an increased retail price, without removing the freedom of manufacturers to set prices.

❸ The Irish government had claimed that it needed to fix a high minimum price to discourage smoking. This followed government legislation to ban tobacco advertising and promotion in July 2009. According to a spokesperson from the anti-smoking group ASH (Action on Smoking and Health), this measure helped to prevent retail outlets from making young people feel attracted to buying cigarettes. "Close to 30% of our population still smoke and 7000 die from tobacco-related disease each year," he said.

❹ It has been argued that increasing the price of cigarettes is one of the most effective ways of curbing harmful smoking and there is a need to make cigarettes less appealing, particularly to young people. The evidence is that banning advertising, introducing minimum pricing and increasing health warnings can all work.

❺ The head of a major retail organization has attacked the idea of minimum pricing for cigarettes. He argued that artificially fixing a minimum price would not be effective. Also, since the demand for tobacco is inelastic, raising the price would not work. Moreover, it was against the **free market** for a government to set prices for any product available to consumers, limiting their freedom to choose.

(This question continues on the following page)

Magsre 17/20

Data Response Rubric

A. Define the following terms

I. indirect taxes [2 marks]

0	1	2
The work does not reach a standard described by the descriptors	The idea that it is a tax on goods.	An explanation that it is an expenditure tax on a good or service that is imposed by the government.
Comments:		

II. Price elasticity of demand [2 marks]

0	1	2
The work does not reach a standard described by the descriptors	The idea that it is to do with the relationship between the price of a good and demand.	An explanation that it is a measure of the responsiveness of quantity demanded to a change in the price of the good. (Candidates may give only the equation and this may be rewarded with full marks.)
Comments:		

B. Using an appropriate diagram, explain how an indirect tax on gas is likely to affect the price and quantity of gas. [4 marks]

0	1	2	3	4
The work does not reach a standard described by the descriptors	For drawing a correctly labelled diagram, where the supply curve for gas is shifted upwards by the amount of the tax, raising the equilibrium price and lowering the equilibrium quantity or for providing an explanation of how the indirect tax increases the cost to firms, thus raising price and reducing quantity.		For drawing a correctly labelled diagram, where the supply curve for gas is shifted upwards by the amount of the tax, raising the equilibrium price and lowering the equilibrium quantity and for providing an explanation of how the indirect tax increases the cost to firms, thus raising price and reducing quantity. Candidates who incorrectly label diagrams cannot be rewarded with full marks. The use of P and Q on the axes is sufficient for a demand and supply diagram. A title is not necessary.	
Comments:				

C. Using information from the text, calculate the value of price elasticity of demand for gas from 1975 to 1980 and from 2001 to 2006 and explain what the values signify. [4 marks]

0	1	2	3	4
The work does not reach a standard described by the descriptors	For calculating the PED for 1975 to 1980 and for 2001 to 2006 as 0.275 and 0.065 respectively or for providing an explanation of how the demand for gas was price inelastic in the first period and became even more so in the second period.		For calculating the PED for 1975 to 1980 and for 2001 to 2006 as 0.275 and 0.065 respectively and for providing an explanation of how the demand for gas was price inelastic in the first period and became even more so in the second period.	
Comments:				

D. Using information from the text/data and your knowledge of economics, evaluate possible ways, apart from increasing the indirect taxes on gas, of reducing the demand for gas. [8 marks]

0	1	2	3	4	5	6	7	8
No valid discussion	Few relevant concepts recognized. Little discussion or only basic understanding		Relevant concepts recognized and developed in reasonable depth. Some attempt at application and analysis.			Relevant concepts developed in reasonable depth, demonstrating effective evaluation, supported by appropriate evidence or theory.		
Comments: Some errors in the theory, but overall great!								

Responses may include:

- ☐ implementing road charging (toll roads) (text)
- ☐ improved public transportation (text)
- ☐ subsidies to encourage alternative transport (text)
- ☐ grants to fund research into the development of alternative fuels legislation relating to engine size in cars.

- ☐ Candidates must evaluate at least two ways to reach level 3.

Examiners should be aware that candidates may take a different approach, which if appropriate, should be rewarded.

If there is no direct reference to the data, then candidates may not be rewarded beyond level 2.

- ☐ Effective evaluation may be to:
- ☐ consider short-term versus long-term consequences
- ☐ examine the impact on different stakeholders
- ☑ discuss advantages and disadvantages
- ☐ prioritize the arguments.

tax is an exception

It is different from the other

non-price determinants.

Maggie Huang

Question 1

(a) (i) indirect tax is the tax on spending to buy goods and services. The tax is thus collectly indirectly to the government. It is also known as incise tax. There are both specific tax and ad valorem tax.

(ii) PED is the responsiveness of quantity demanded of a good to its change in price. It is calculated by $\frac{\%\Delta Q}{\%\Delta P}$.

(b)

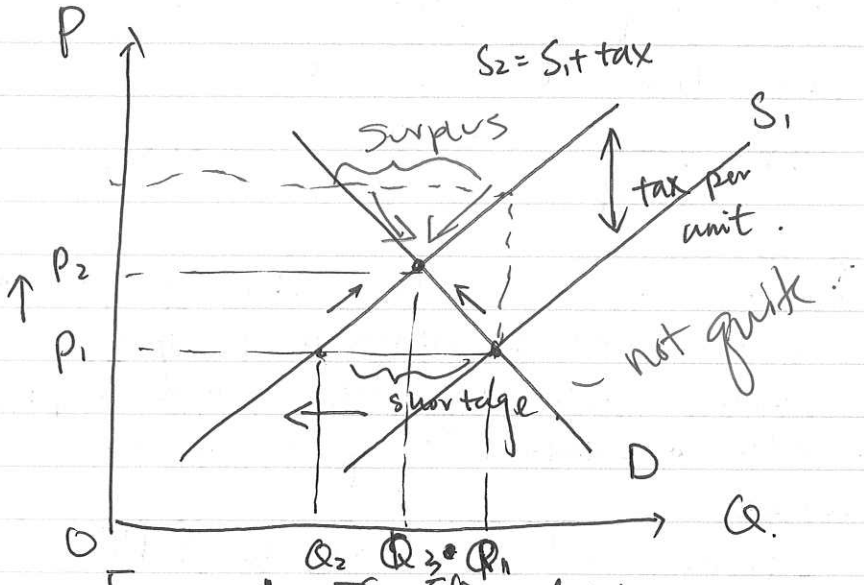


Figure 1. ~~Tax~~ Effect of indirect tax on gas.

As show in Figure 1. Initially, the market equilibrium is at P_1, with the equilibrium quantity of Q_1. When a tax is imposed by the government, the cost of production increases, so there is less willingness and ability to produce, and Supply carve shifts leftward. ~~or stop~~ in other words, it increase by the amount of tax at each quantity supplied. At the original price P_1, there is now a shortage of $Q_1 Q_2$. So the price rises. A the price increases, it ~~stop~~ motivates the supplier to ~~decrease~~ increase its supply and consumers.

to decrease their demand. As a result of price mechanism, the market reaches its equilibrium at P_2, with Q_3. So the indirect tax decreases the supply of gas, and thus increases its price from P_1 to P_2, and decreases its equilibrium quantity from Q_1 to Q_3.

(c) PED from 1975 to 1980:

$$PED = \frac{\%\Delta Q}{\%\Delta P} = \frac{2.75\%}{10\%} = 0.275$$

PED from 2001 to 2006:

$$PED = \frac{\%\Delta Q}{\%\Delta P} = \frac{0.65\%}{10\%} = 0.065.$$

From 1975 to 1980, PED of gas is 0.275 It is less than 1, which means gas is price inelastic. So with a relatively large change in price, there is a little variation in quantity demanded.

From 2001 to 2006. PED for gas is 0.065, which is even less that PED 1975-1980, which means gas is becoming even more inelastic.

This inelasticity is because gas is a necessity. It is necessary for driving cars, so drivers have to buy it regardless of huge increase in price. Also, because more and more people own cars today, gas, as a complement for cars, also increases in its demand. It is becoming more scarce and more necessary, leading to its decrease in PED.

Also, gas is a primary good. ~~It takes a long time and huge efforts to extract gas from~~

~~the ground, and the quantity~~ It has ~~for~~ ~~for~~ few alternatives and consumers have to buy it. Therefore, PED for gas is extremely low and is becoming even lower throughout the years.

(c) Substitutes refer to goods that serve a similar purpose.

(d) ~~A possible way to:~~

(i) Complements refer to goods that are jointly supplied.

(ii) Subsidies is the payment by government ~~for~~ to reduce costs of production and prices. and thus increase supply.

A possible way ~~to~~ reduce demand for gas is ~~for~~ for the government ~~to~~ provide subsidy on electrical cars.

Figure 2. Subsidy on electrical cars.

~~for~~ As it says in the text in paragraph 8, "Environmentalists have proposed ..... to reduce the use of cars,

Suchas .... subsidies to encourage alternative transport." As we can see in Figure 2, when subsidy is imposed on electrical cars, which is a substitute/alternative to traditional cars, the cost of propuding electrical cars decreases. As a result, supply curve shifts from S_1 to S_2. Now at initial price P_1, there is a surplus of Q_1Q_2, so the market forces the equilibrium to move. As a result, price decreases from P_1 to P_2, and quantity increases from Q_1 to Q_3. Now since people are buying more electrical cars, they will use traditional cars less often, resulting in a decrease in demand in traditional cars. And since gas is a complement to traditional cars, the demand for gas also decreases. ✓

Another alternative is that government campaign to call for each family to have only one car. As said in paragraph 7, "the difference also could be connected to the risry number of families with two cars." By appealing to citizens to have only one car per family, people's preference and taste for cars decreases, leading to a decrease in people's demand for cars. As a result, less gas will be needed because there are less cars! -this was attempted in Mexico- you could only drive your car on some days.

Both these two methods have pros and cons. First of all, when a subsidy is imposed, there will be welfare loss for the society.

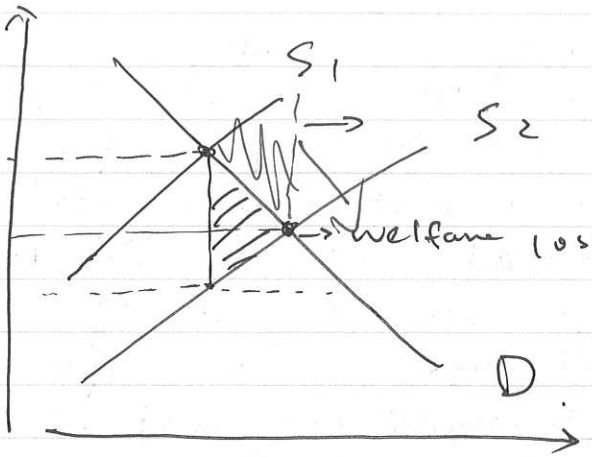


Figure 3. Welfare loss.

As we can see ~~in the shaded area~~ in Figure 3, when government imposes a subsidy, there is a welfare loss equal to the shaded area. ~~However~~ However, ~~Comp~~ In comparison, when goverment launch a campaign, the market for cars are still in a free market. ~~So~~ Demand decreases as a result of non-price determinant, so there is no welfare loss to the whole society.

Secondly. When ~~a~~ a subsidy is imposed. government need ~~to~~ spend its revenue on it. which means either there is going to be more tax on other goods or services, or there will be a deficit for the government. And either case is undisirable. Moreover, spending on electronic cars ~~means~~ involves oppurtunity cost. government cannot spend the revenue on more important things like education and health care. ~~In comparison~~, On the other hand, government campaign ~~has~~ involves less cost. However, they still need to cover the cost of advertising and human labor, but it is better than a huge subsidy.

Thirdly, in the long run. Subsidying electrical cars have advantages also. Because US is "fighting global warming" (paragraph 1), electrical cars are a more environmental-friendly alternative to traditional cars. It will be a long-term benefit for the whole society if new technology is more developed. In comparison, government campaign might only work in the short-run. The demand for traditional cars and thus gas will still be high if there is no more alternatives available.

In conclusion, there are both pros and cons for both method. In consideration of that, I would recommend to do both to ensure the reduction of gas use in both short and long run..