Lecture 3(ii)

Announcements

Office hours today at usual time:

Wed 1:30-3:25

Office is 4-135 Hanson

Lecture

1. Review elasticity special cases:

perfectly inelastic

perfectly elastic

2. Reading 2: Apply to midpoint formula to estimate short-run elasticity for gasoline

3. Estimate of long-run: compare Europe with US

Perfectly Inelastic Demand

eD = 0

Perfectly Inelastic Supply

eS  = 0

Examples:

Perfectly Elastic Demand

eD = infinity

Examples:

In Between Cases

(1) When eD < 1 we say

Demand is Inelastic

Total Spending = P\*Q increases

as P increases.

(2) When eD > 1 we say

Demand is Elastic

Total Spending = P\*Q decreases as P increases.

(3) When eD = 1 we say

Demand is Unit Elastic

Apply midpoint formula to example

Gasoline Market in the US

June 2007 and June 2008

|  |  |  |
| --- | --- | --- |
| Time Period | Per Capita Daily Consumption of Motor Gasoline | Average Price Per Gallon in Dollars |
| June 2007 | 1.32 | 3.05 |
| June 2008 | 1.26 | 4.07 |
| Δ | –0.06 | 1.02 |
| Average of Both Years | 1.29 | 3.56 |
| %Δ | –0.05 | 0.28 |

So



Short-Run Demand is Inelastic

As price goes up,

Total Spending = P\*Q increases.

Let’s get back and talk about this back-of-the-envelope calculation.

When estimating demand elasticity, need to hold fixed other determinants of demand isolate impact of change in price.

Also need to take into account supply. Some of you might be thinking: “Why is what we calculated the elasticity of demand and not the elasticity of supply?”

Great Question!

$

3.05

4.07

1.32

1.26

Q

Make Case:

Supply curve for **US market** did shift

**US Demand** Curve Did Not Shift

(So movement along US Demand)

Have to argue that the determinants of demand (the things that make it shift) remained unchanged.

We can to more (with more work, more data, and more advanced econometric techniques).

But what we are doing here is sensible for a simple classroom example.

Let’s go through the determinants of demand

1) Tastes of consumers

2) Number of consumers

3) Income

4) Prices of substitutes and complements.

With the help of the shale oil in North Dakota (and other new unconventional sources of oil), we have a chance to see how things go the other direction.

Let’s look at a map of the wells in the Bakken

<https://www.dmr.nd.gov/ndgs/bakken/GI%20SERIES/GI%20_149_Apr2015_36.pdf>

Let’s compare 2014 and 2015

Gasoline Market in the US

June 2014 and June 2015

|  |  |  |
| --- | --- | --- |
| Time Period | Per Capita Daily Consumption of Motor Gasoline | Average Price Per Gallon in Dollars |
| June 2014 | 1.18 | 3.70 |
| June 2015 | 1.25 | 2.78 |
| Δ | 0.07 | –0.92 |
| Average of Both Years | 1.22 | 3.24 |
| %Δ | 0.06 | –0.28 |



Pretty good stuff for a back of the envelope calculation!

Elasticity we have estimated is a short-run elasticity

Consumers have not had much time to make a response.

Over a long period of time, is gas is significantly higher in price:

* Consumers will buy different cars
* Might live different places
* Society might change laws, like lower the speed limit.

For the long-run elasticity, need to compare cases where prices have been different a long time.

Enter Reading 2

“Fuel Consumption in Europe and the U.S.”

Europe has long taxed gasoline. What we pay here at the pump for the gas, wouldn’t pay the tax in the Europe.

The tax here is (per gallon):

Federal 18.4 cents

State (MN) 28.5

Total (MN) 46.9

(24 cents more in CA)

|  |  |  |
| --- | --- | --- |
| Country | Average Price  $US per Gallon | Consumption Per Capita  Gallons Per Day |
| United States | 2.80 | 1.29 |
|  |  |  |
| **Selected Countries in Europe** |  |  |
| Norway | 7.00\* | .30 |
| United Kingdom | 6.90 | .28 |
| Germany | 6.88 | .25 |
| France | 6.37 | .15 |
| Spain | 5.13 | .15 |
| Italy | 6.50 | .21 |
|  |  |  |
|  |  |  |
| **Some Other Countries** |  |  |
| Japan | 4.49 | .33 |
| Mexico | 2.45 | .29 |
| China | 2.29 | .04 |
| Country | Per Capita GDP  ($1,000) |
| United States | 45.5 |
|  |  |
| **Selected Countries in Europe** |  |
| Norway | 51.9 |
| United Kingdom | 35.7 |
| Germany | 34.3 |
| France | 32.7 |
| Spain | 31.6 |
| Italy | 30.4 |
|  |  |
|  |  |
| **Some Other Countries** |  |
| Japan | 33.6 |
| Mexico | 14.0 |
| China | 5.3 |

Table 3: Price and Per Capita Quantity Consumed of Gasoline

The United States and Norway in 2007

|  |  |  |
| --- | --- | --- |
| Time Period | Per Capita Daily Consumption of Motor Gasoline | Average Price Per Gallon in Dollars |
| United States | 1.29 | 2.80 |
| Norway | .30 | 7.00 |
| Δ | -.99 | 4.20 |
| Average of Both Years | .80 | 4.90 |
| %Δ | -1.24 | .86 |

So: Elasticity(long run) = %ΔQ/%ΔP = 1.24/.86= 1.44

Is this valid?

1) Is Supply Curve is shifting between these two countries?

2) Is Demand Curve staying fixed?

A) Income

B) Price of Substitutes

C) Other Factors