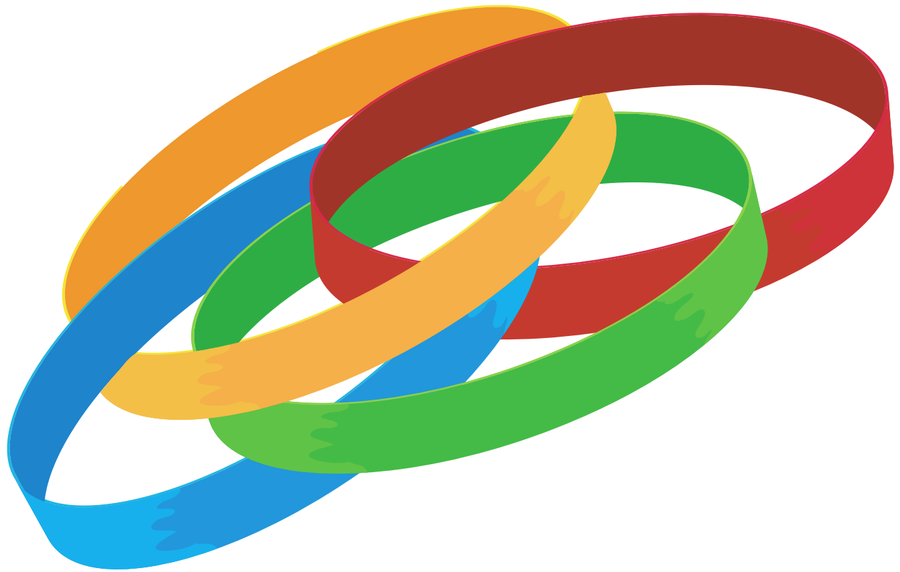
Elasticities of Demand

2.5



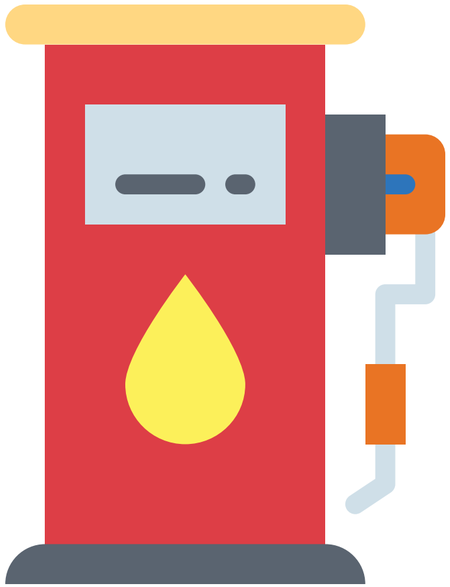
Copyright Bananaomics

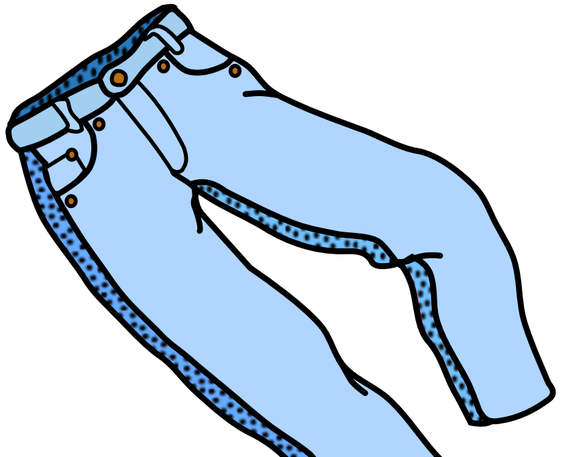
Discuss the law of demand with your partner.

What does it mean and is it true for all goods and services?

Copyright Bananaomics

If the price goes up significantly for these products, what will happen to their quantity demanded?



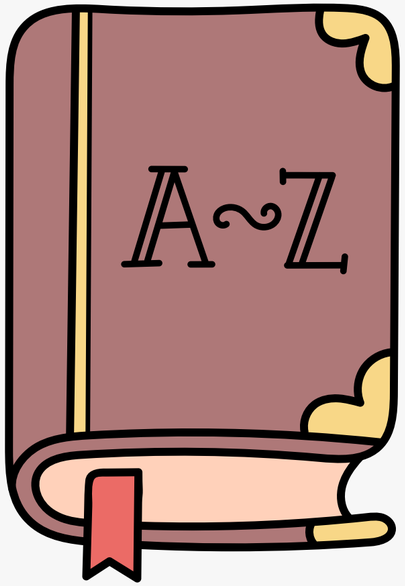


Copyright Bananaomics

Definitions

Goods and services are not all created equal. Some goods are very sensitive in price change while others seem to be unaffected.

Elasticity – The responsiveness of one variable to a change in another variable

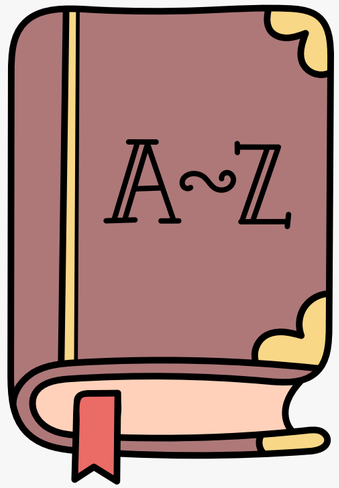


Copyright Bananaomics

Definitions

Elasticity of Demand – a measure of the responsiveness of the quantity demanded of a good or service to changes in one of the factors that determine it.

Price Elasticity of Demand (PED) – a measure of how much the quantity demanded of a good changes when there is a change in its own price.



Copyright Bananaomics

Formulas

The extent to which the quantity demanded changes depends on how 'elastic' its demand is with respect to its price.

$$PED = \frac{\%\ \text{change in quantity demanded of good x}}{\%\ \text{change in price of good x}}$$

ALSO WRITTEN AS

$$PED = \frac{\%\triangle Qd}{\%\triangle P}$$

Copyright Bananaomics

Formulas

$$\%\ \text{change} = \frac{\text{new} - \text{old}}{\text{old}} \times 100$$

Copyright Bananaomics

Try It Out - PED

The price of train tickets decline by 10 per cent and, as a result, the quantity demanded of train tickets increases by 15 per cent

What is the PED?

Copyright Bananaomics

Try It Out

PED = – 1.5

Due to inverse relationship of price and quantity demanded, PED will always be negative. However, economists typically write this in absolute value form as positive.

PED = 1.5

This means . . for every 1per cent decrease in the price of train tickets, the quantity demanded of train tickets increases 1.5per cent.

Copyright Bananaomics

Try It Out - % Change

1. Price increased from $40 to $50.
2. Quantity fell to 12 from 18
3. Price decreased from $600 to $540
4. Quantity increased from 300 to 360
5. Price increased from $80 to $140.

Copyright Bananaomics

Try It Out - % Change

1. +25%
2. -33%
3. -10%
4. +20%
5. +75%

Copyright Bananaomics

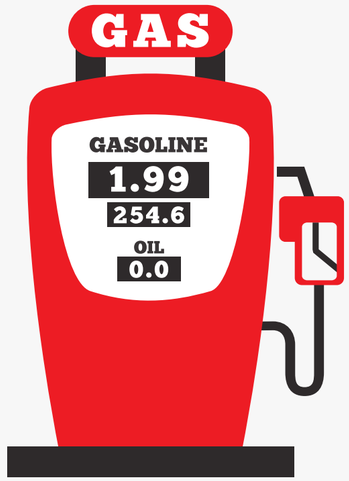
Inelastic vs Elastic

Inelastic Goods

INsensitive to changes in price

Price Inlastic Demand

A situation where the percentage change in the quantity of a good or service is less than the percentage change in its price.

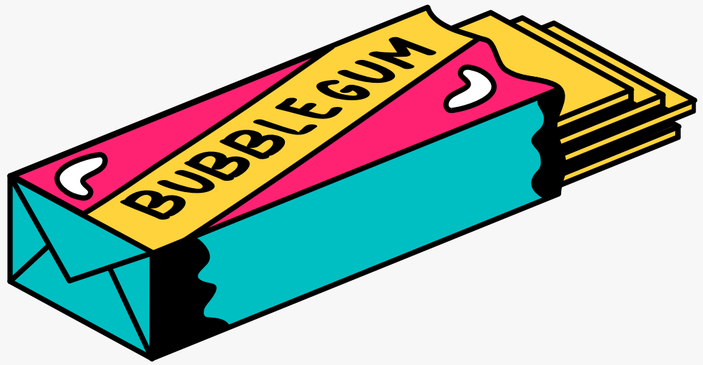


Elastic Goods

Sensitive to changes in price

Price Elastic Demand

A situation where the percentage change in the quantity of a good or service is greater than the percentage change in its price.

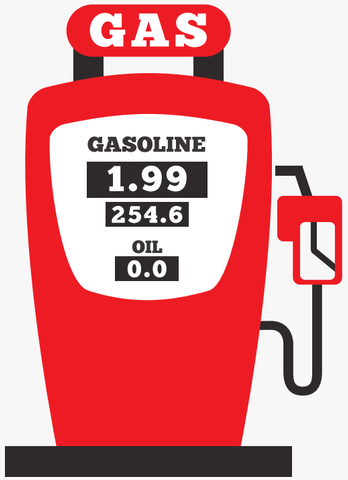


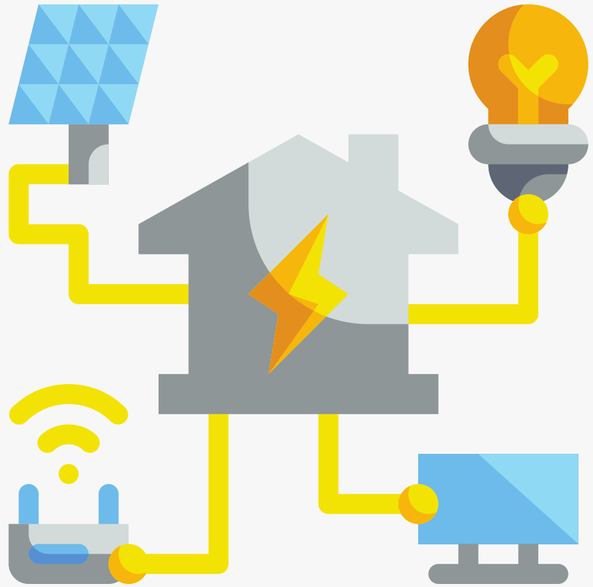
Copyright Bananaomics

Inelastic

General Characteristics of INelastic Goods:

1. Few Close Substitutes
2. High Degree of necessity
3. Small portion of income
4. Addictive
5. Required now, rather than later (Time)
6. Elasticity coefficient less than 1





Copyright Bananaomics

Elastic

General Characteristics of Elastic Goods:

1. Many Substitutes
2. Luxury Goods
3. Large portion of income
4. Non-Addictive
5. Plenty of time to decide, not urgent
6. Elasticity coefficient greater than 1

Copyright Bananaomics

PED

We use PED, to determine if demand for a good is elastic or inelastic.

PED > ∞	PED > 1	PED = 0	PED < 1	PED = 0
Perfectly Elastic Demand	Relatively Elastic Demand	Unitary Elastic Demand	Relatively Inelastic Demand	Perfectly Inelastic Demand
A change in price leads to ... **Infinite change in Qd**	A change in price leads to ... **A proportionally larger change in Qd**	A change in price leads to ... **A proportionally equal change in Qd**	A change in price leads to ... **proportionally smaller change in Qd**	A change in price leads to ... **No change in Qd**

Copyright Bananaomics

Drawing Inelastic and Elastic Demand

Copyright Bananaomics

What do you think a demand curve looks like for a product with:

elastic demand? inelastic demand?

Brainstorm with your partner with your knowledge of supply and demand

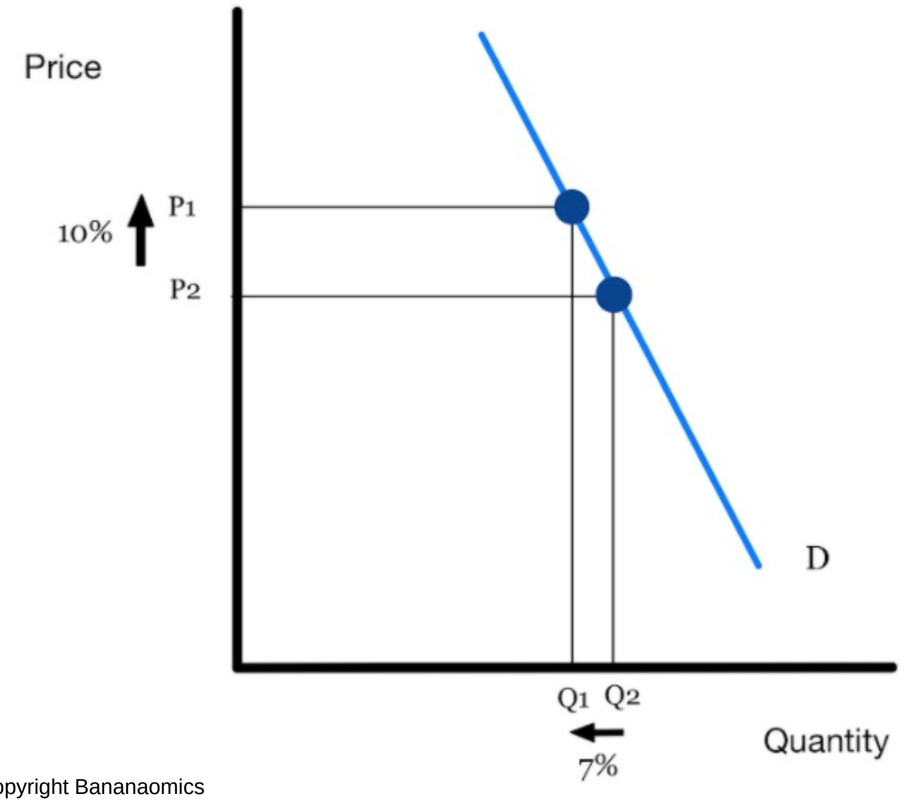
Copyright Bananaomics

Inelastic vs Elastic

Inelastic Goods

INsensitive to changes in price.

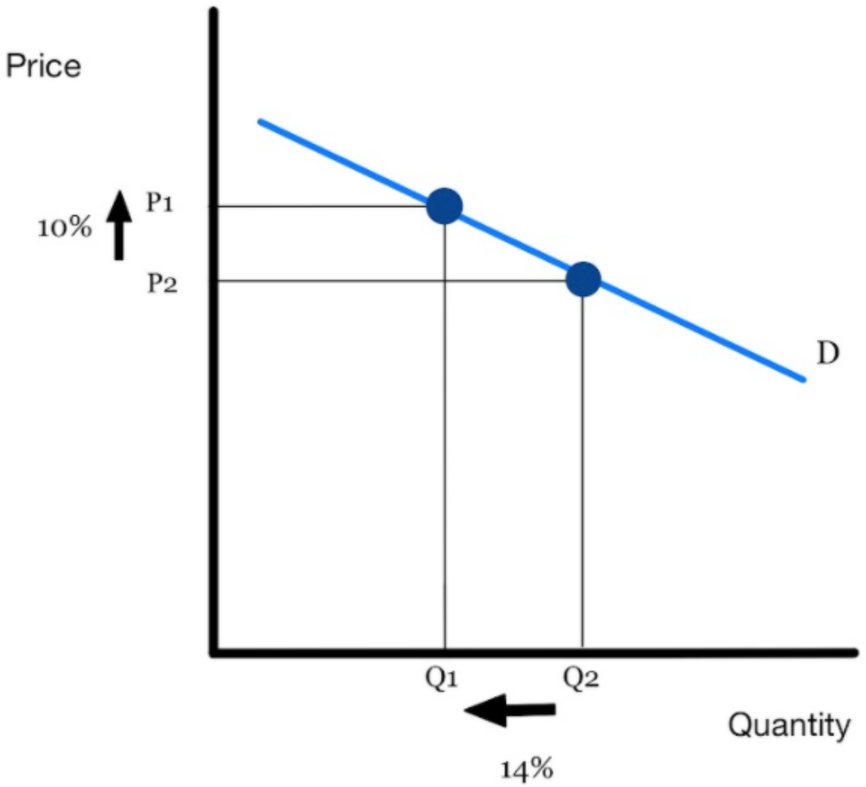
Looks like an "I" – vertical



Elastic Goods

Sensitive to changes in price

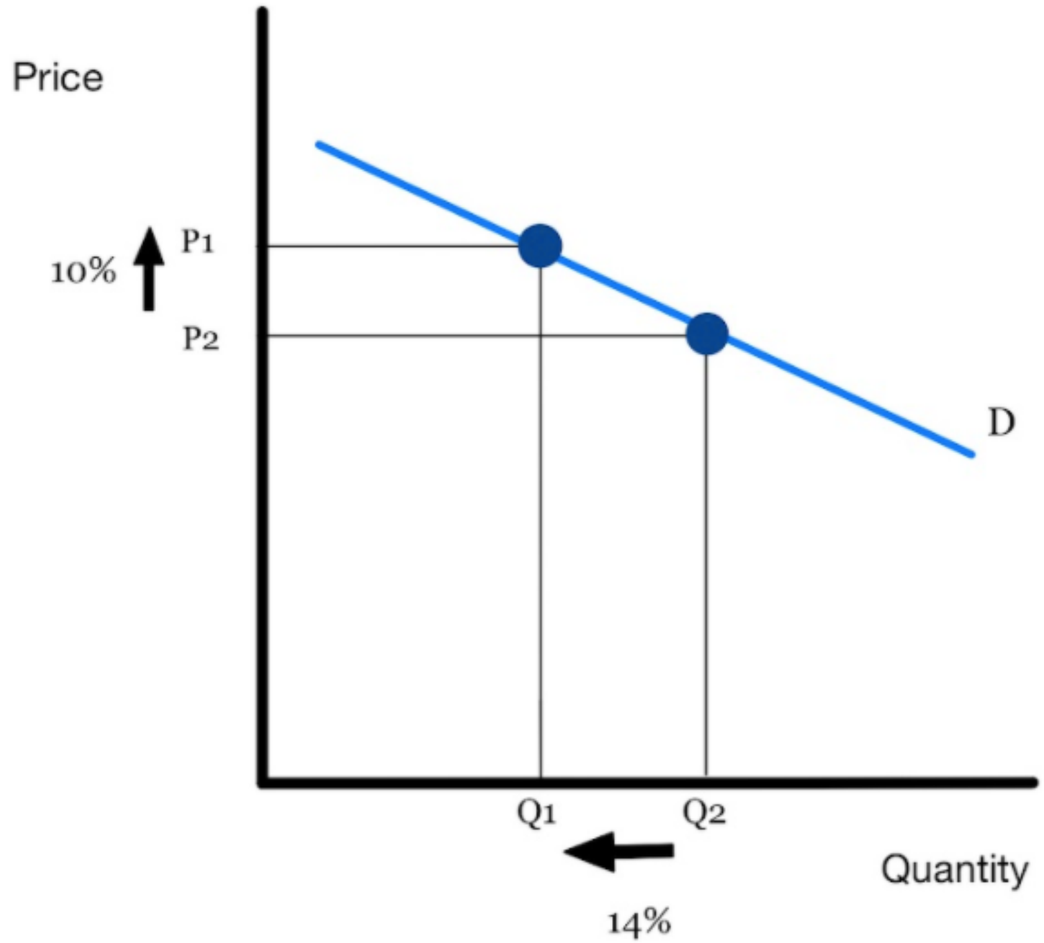
Looks flatter!



Copyright Bananaomics

PED > 1

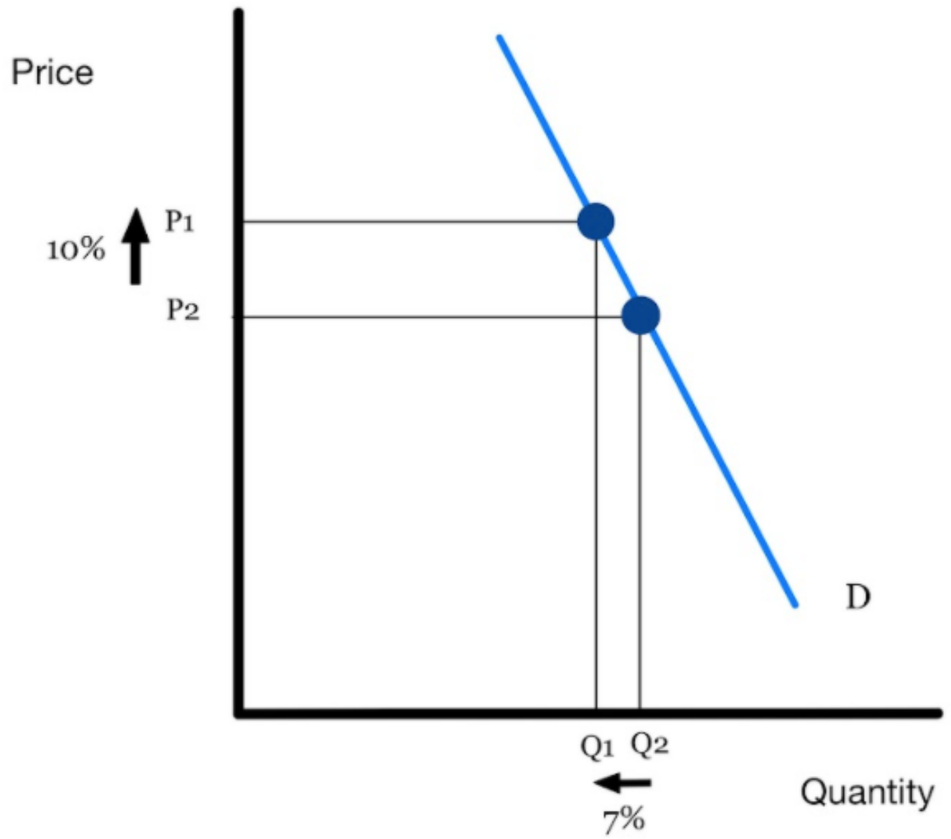
Relatively Elastic



Copyright Bananaomics

PED = 0-1

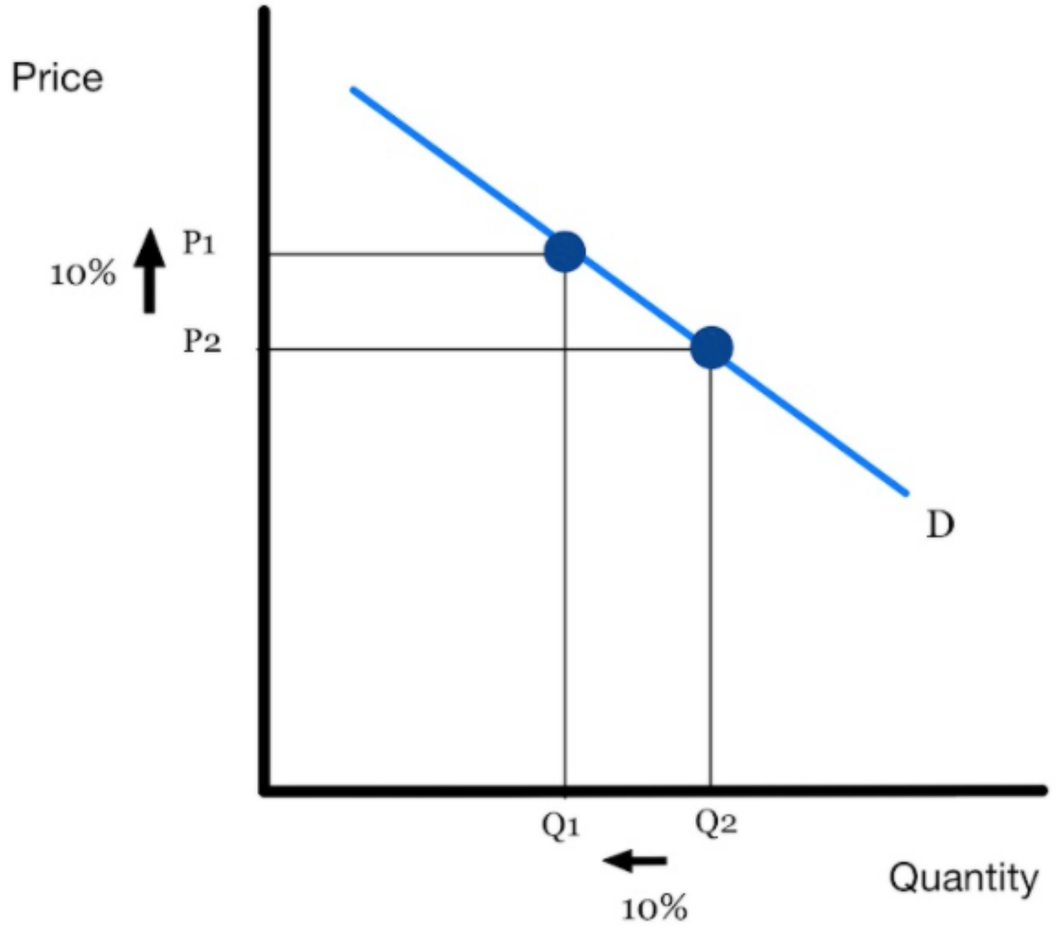
Relatively Inelastic



Copyright Bananaomics

PED = 1

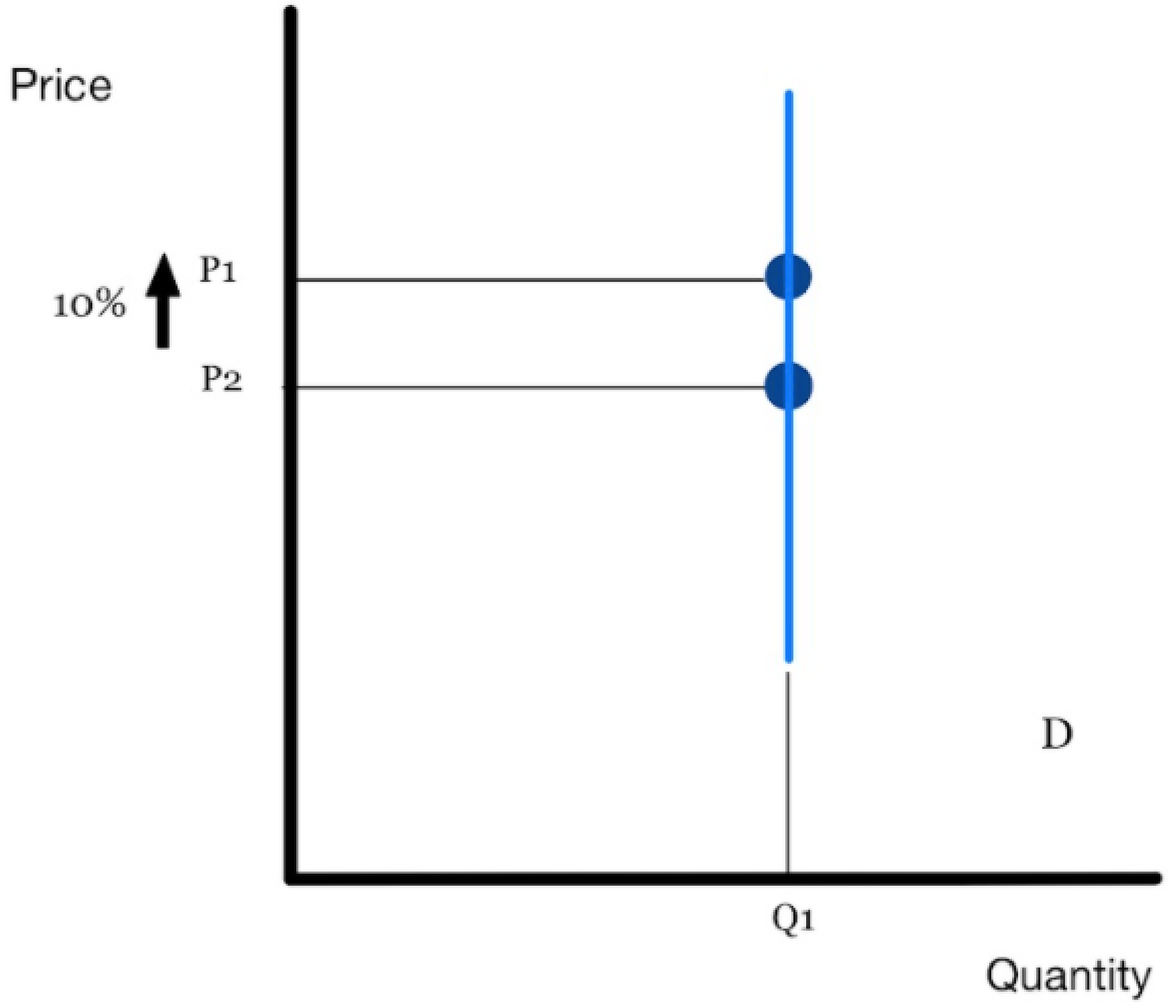
Unit or Unitary Elastic



Copyright Bananaomics

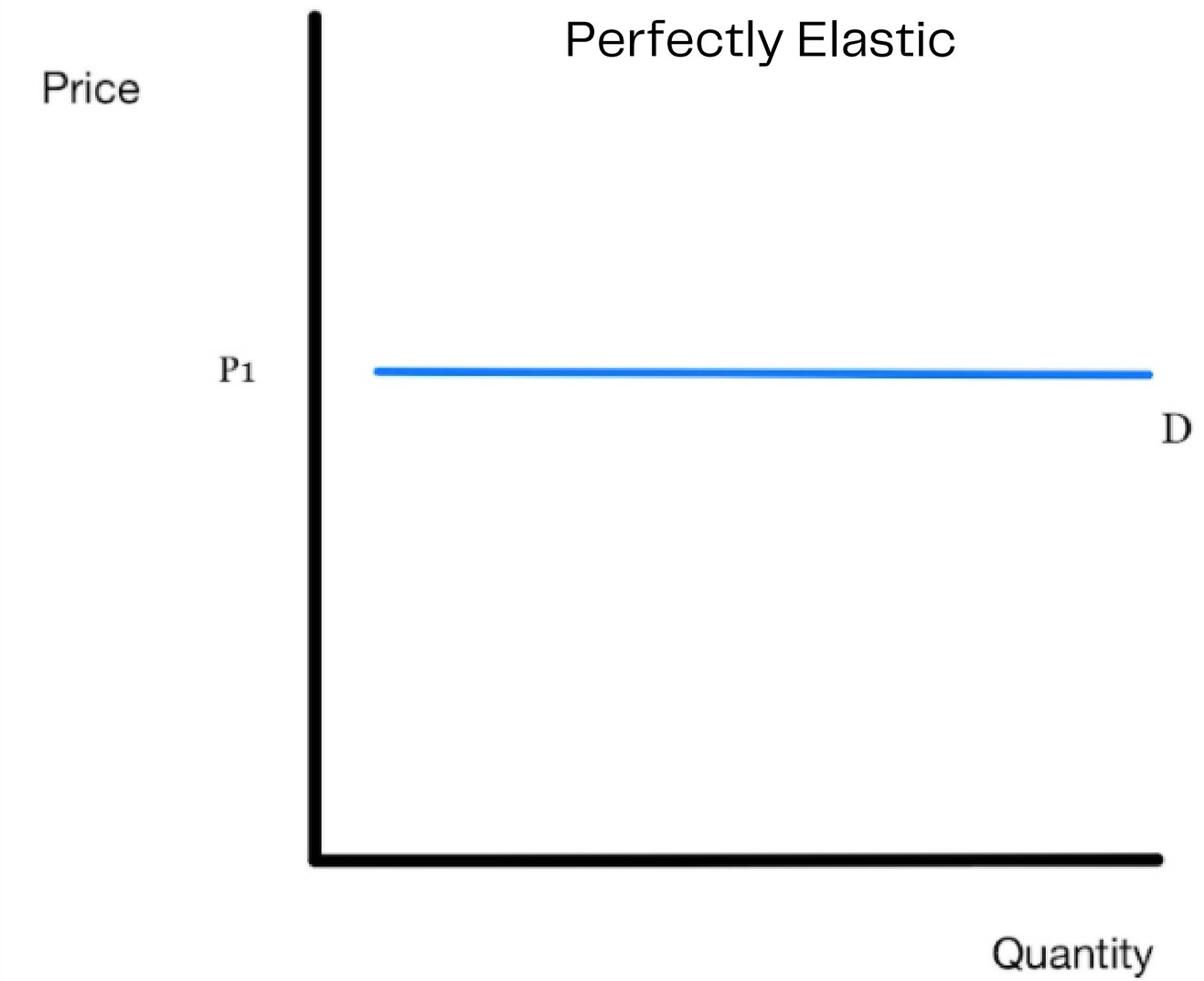
PED = 0

Perfectly Inelastic



Copyright Bananaomics

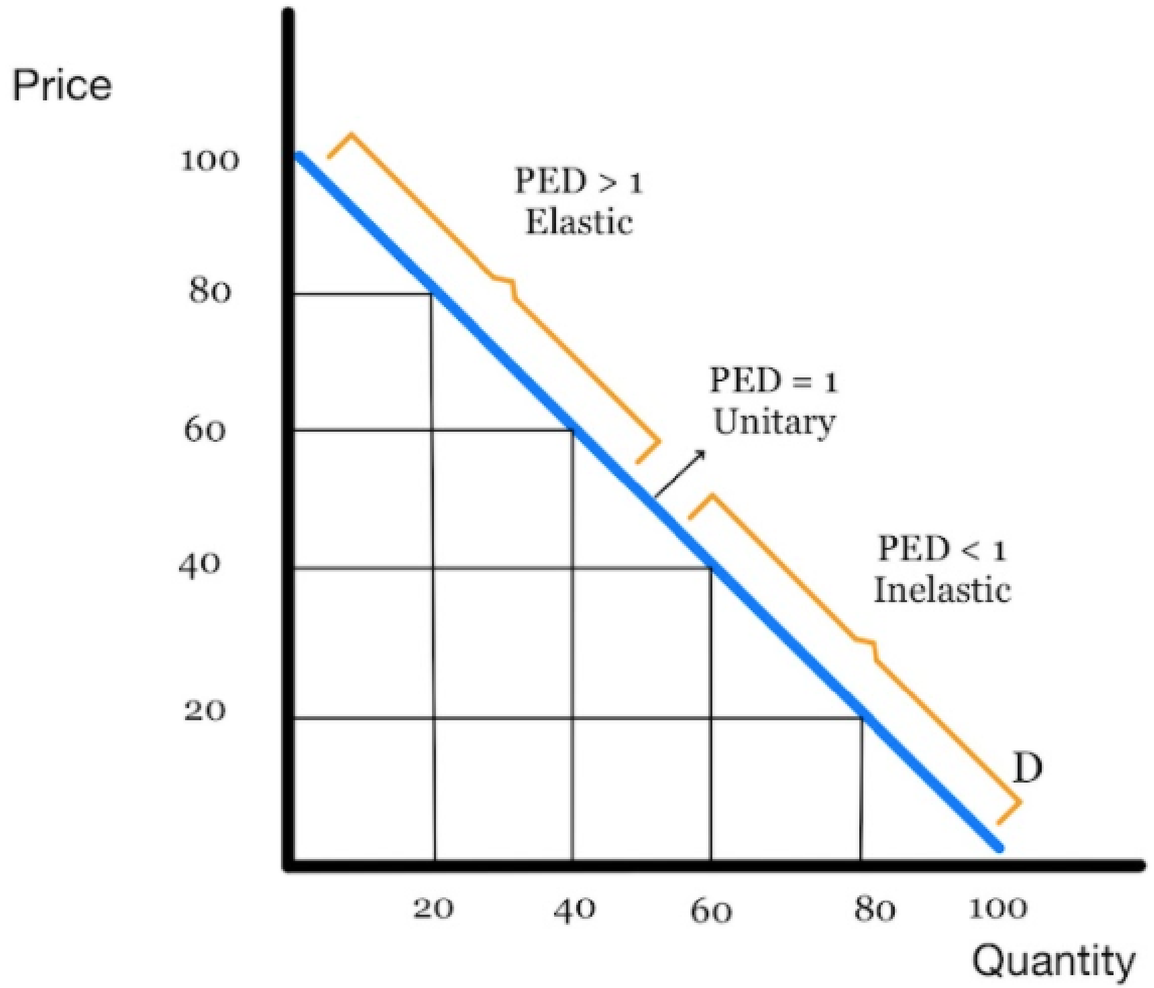
PED = ∞



Copyright Bananaomics

PED

PED changes from point to point along a demand curve



Copyright Chandler Bell

PED Examples

Lettuce- **Elastic -1.27**

Gasoline- **INelastic -.20**

Apartment- **Elastic -1.60**

Medical Care- **INelastic -.31**

Electricity- **INelastic -.13**

Diamond-**Elastic -2.6**

Copyright Chandler Bell

PED

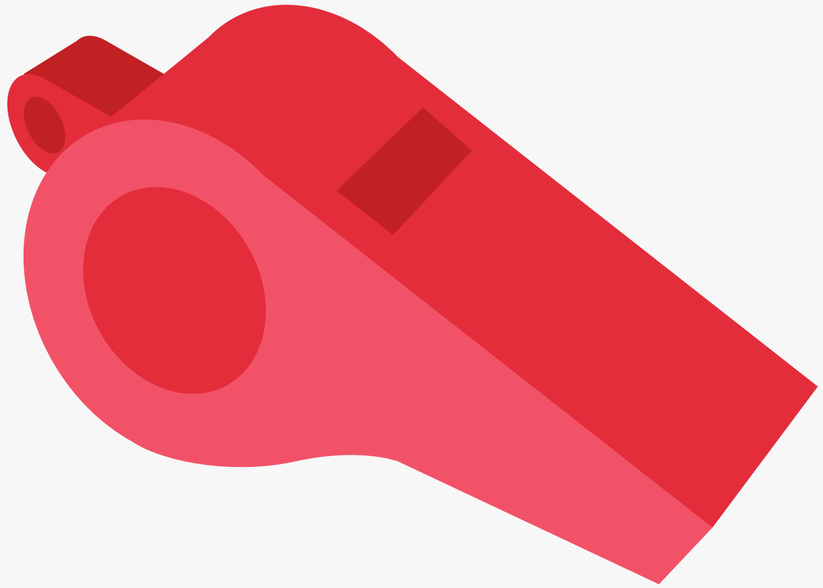
1. The price of phones increase by 10% and QD decreases by 50%.
2. The price of band-aids increases from $2 to $3 and QD decreases by 10%.
3. The price of gasoline increases from $2 to $4 and QD decreases by 1%.
4. The price of hamburgers increases from $1 to $1.25 and QD decreases by 25%.

Copyright Chandler Bell

PED

1. The price of hats increase by 10% and QD decreases by 50%.
2. The price of water increases from $2 to $3 and QD decreases by 10%.
3. The price of gasoline increases from $2 to $4 and QD decreases by 1%.
4. The price of gum increases from $1 to $1.25 and QD decreases by 25%.

1. **Elastic = 5**
2. **Inelastic = 0.2**
3. **Inelastic = 0.01**
4. **Unit-elastic = 1**



Copyright Chandler Bell

Another way to measure?
Total Revenue Test

How does elasticity affect Total Revenue?

If the demand for medicine is inelastic, what happens to TR for medicine stations if price increases?

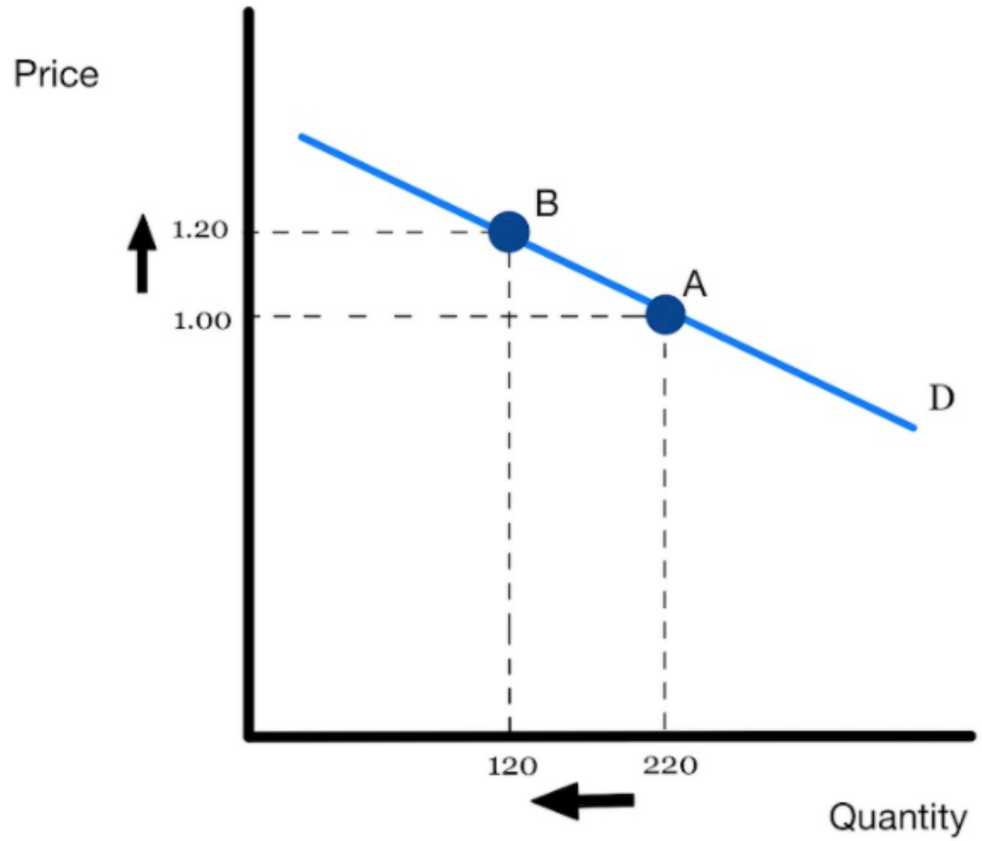
Inelastic	Elastic	Unit Elastic
Price – increase	Price – increase	Price – increase/decrease
TR – increase	TR – decrease	
Price – decrease	Price – decrease	TR – no change
TR – decrease	TR – increase	

Copyright Chandler Bell

Total Revenue Test

What happens to TR when the price of this good increases from 1.00 to 1.20?

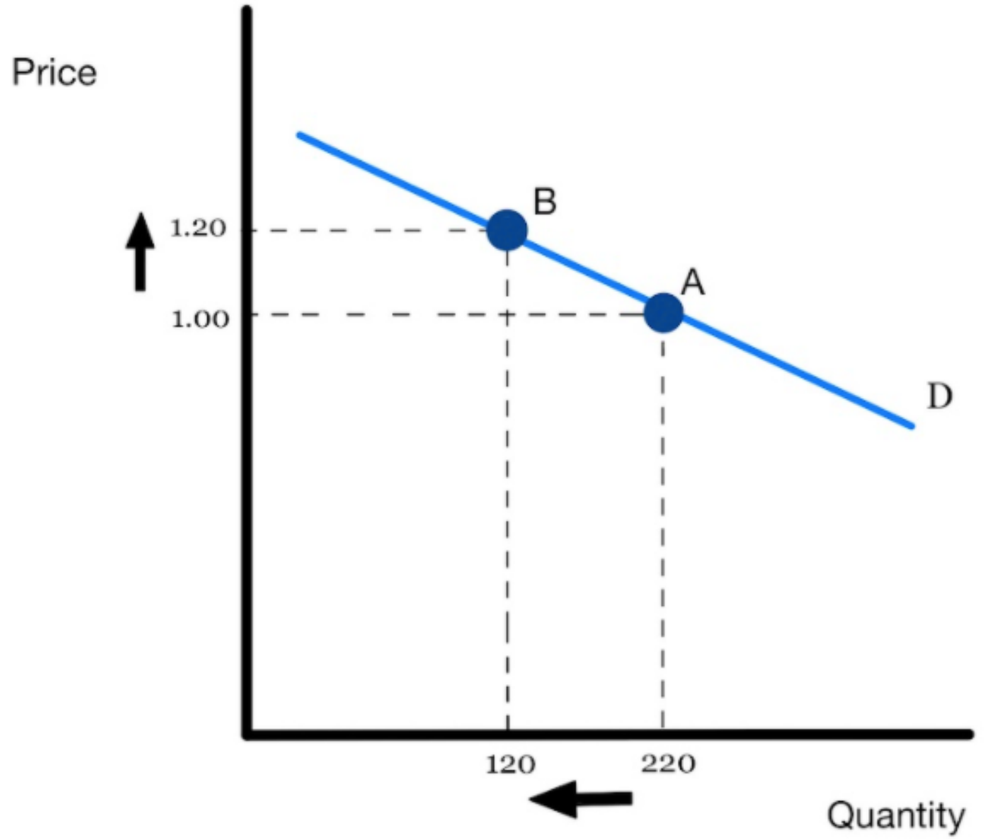
Is the demand for this good inelastic or elastic?



Copyright Chandler Bell

Total Revenue Test

The DEMAND FOR THIS GOOD is elastic. (Be sure to use correct wording) – Don't say "This good is elastic"

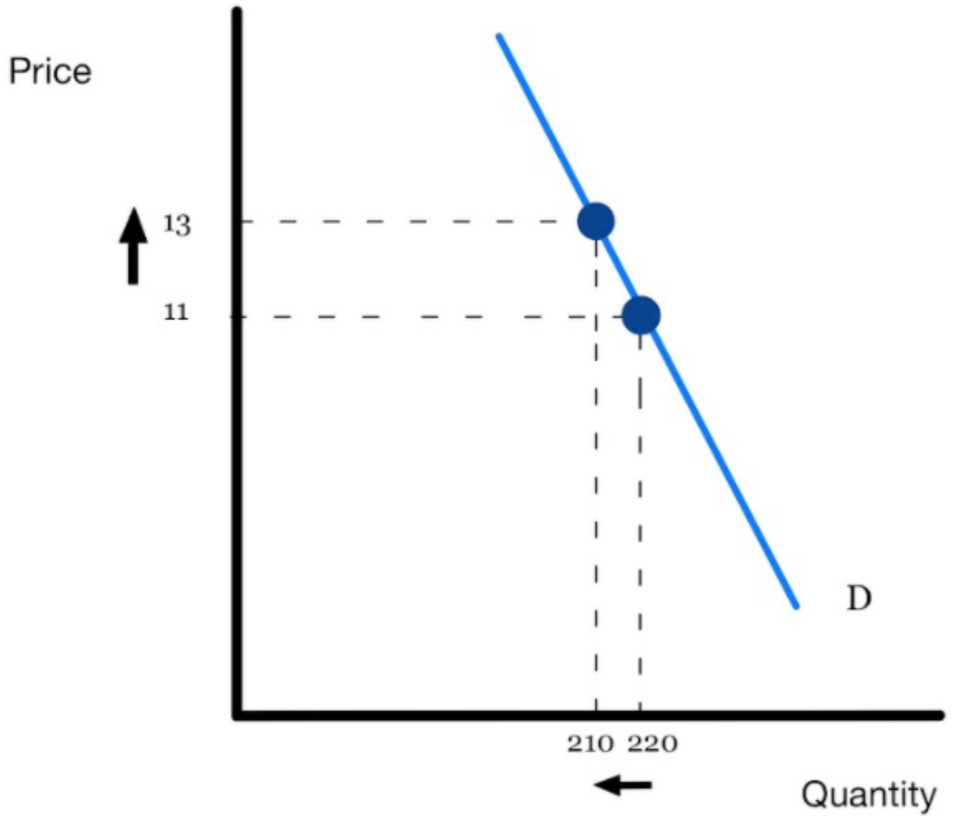


Copyright Chandler Bell

Total Revenue Test

What happens to TR when the price of this good increases from 11 to 13?

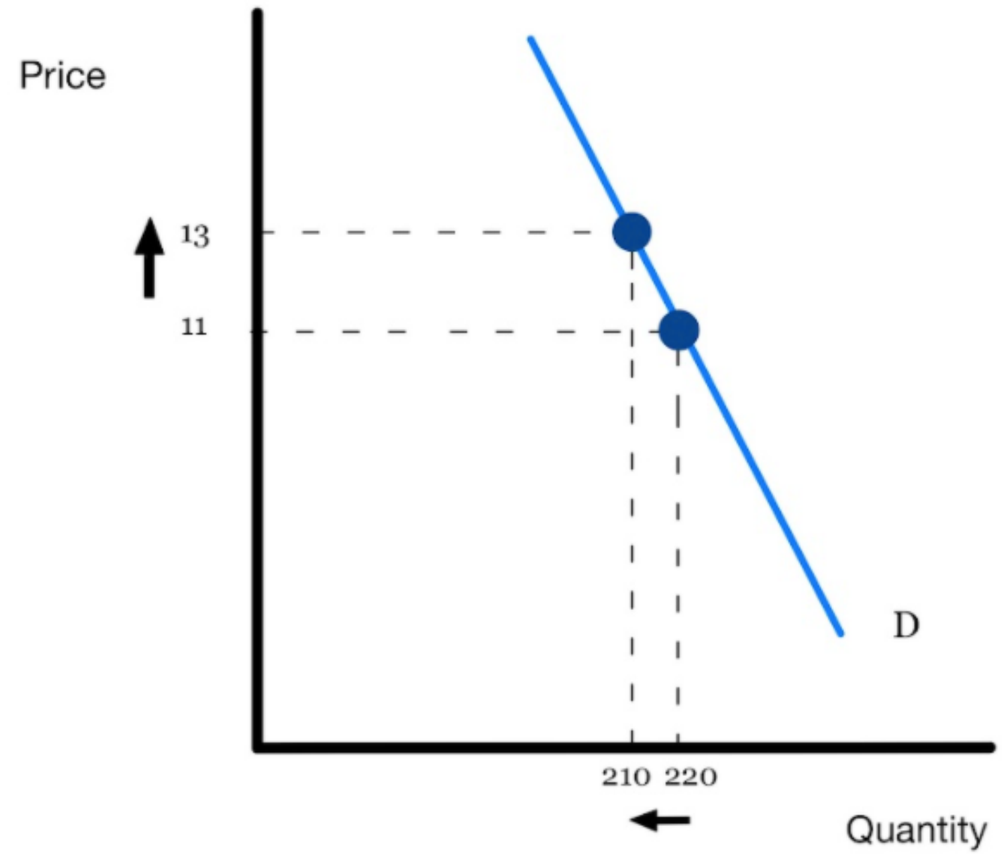
Is the demand for this good inelastic or elastic?



Copyright Chandler Bell

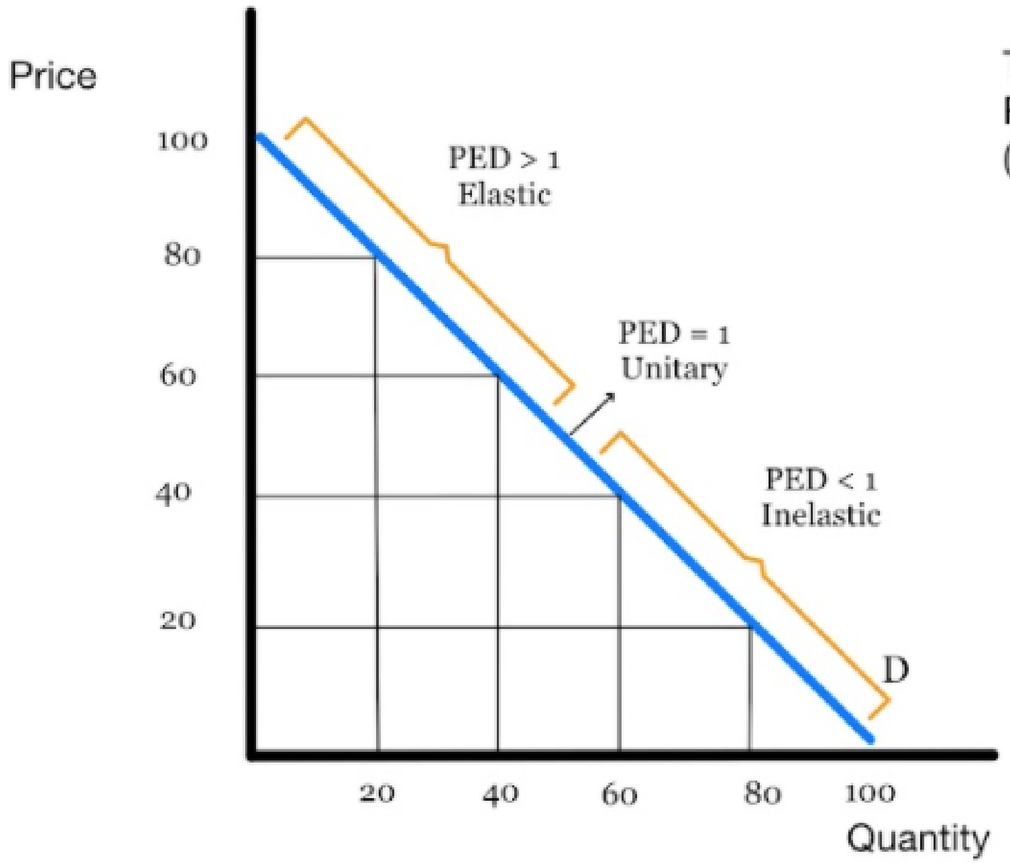
Total Revenue Test

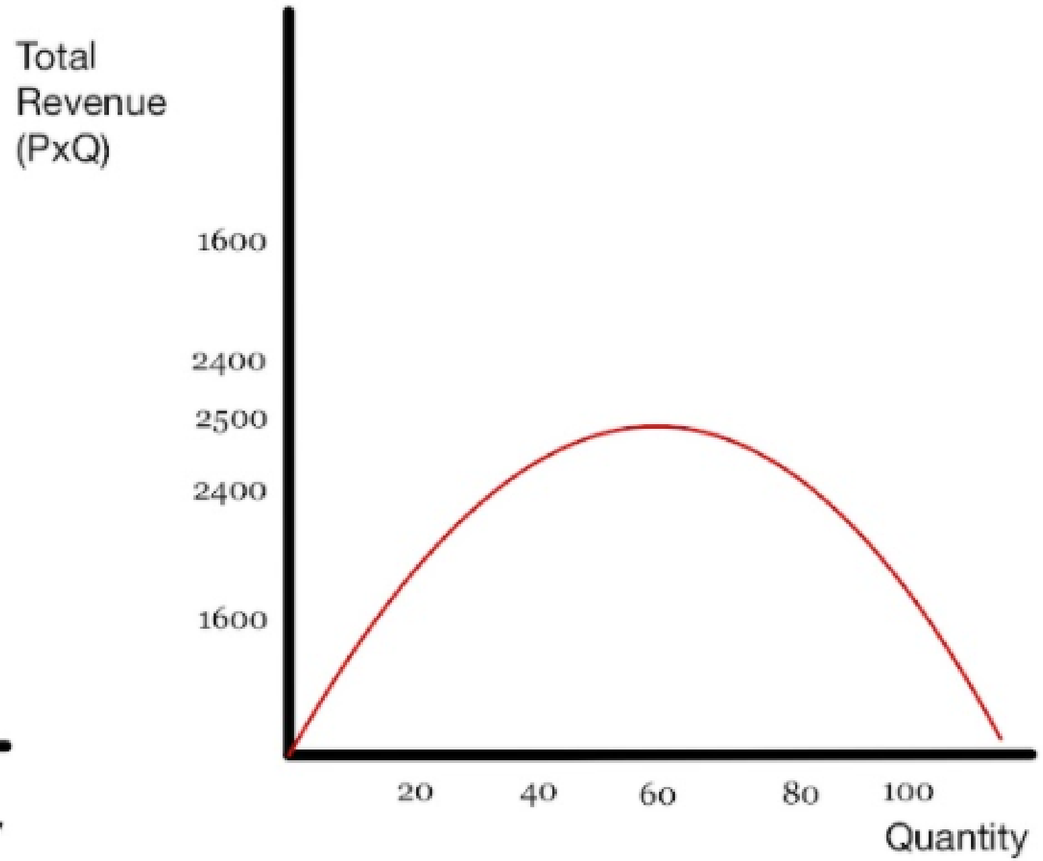
The DEMAND FOR THIS GOOD is inelastic. (Be sure to use correct wording) – Don't say "This good is inelastic"



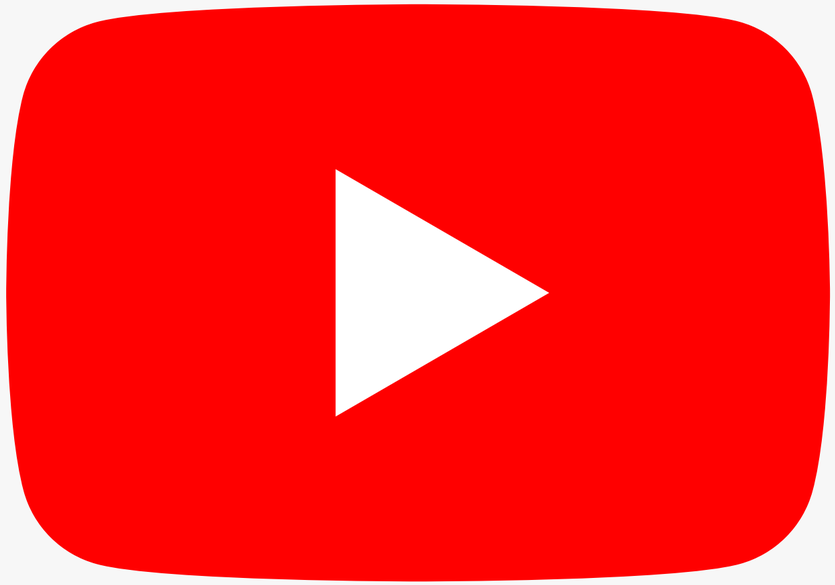
Copyright Chandler Bell

Total Revenue and PED





Copyright Chandler Bell



PED and Government Decisions

Taxes, Subsidies, and Surpluses

Copyright Chandler Bell

Before we can understand tax burdens, we must understand what a consumer and producer surplus is

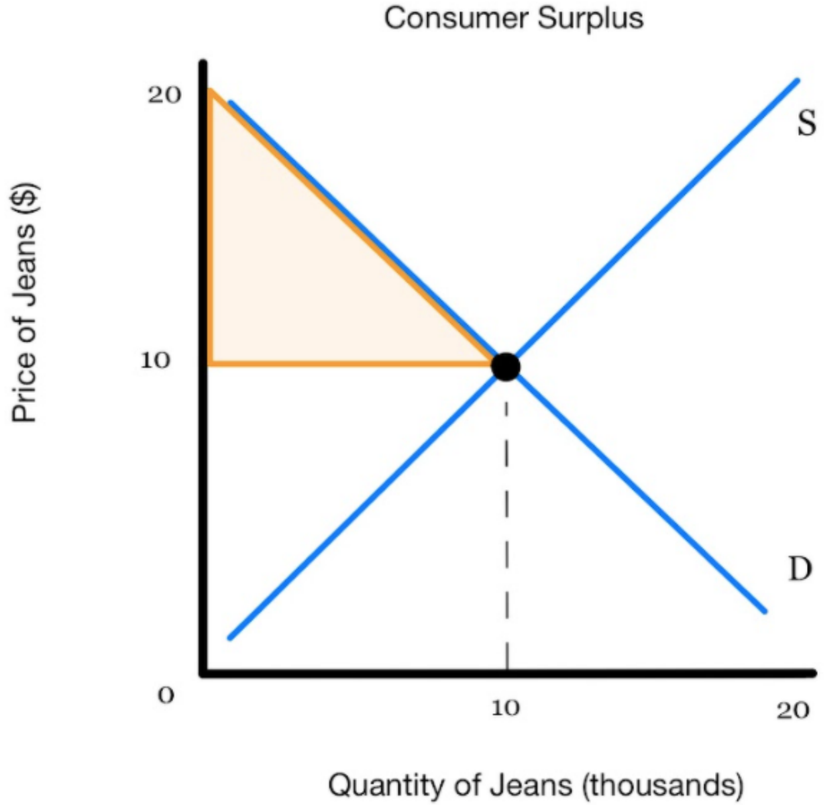
Copyright Chandler Bell

Consumer and Producer Surplus

Have you ever bought something for less than you were willing to pay?

For example, if you purchased a coffee at 1 Euro instead of the 2 Euro you were willing to spend.

The name for this is economics is **CONSUMER SURPLUS – the difference between the highest price consumers are willing and able to pay for a good and the actual price they pay.**

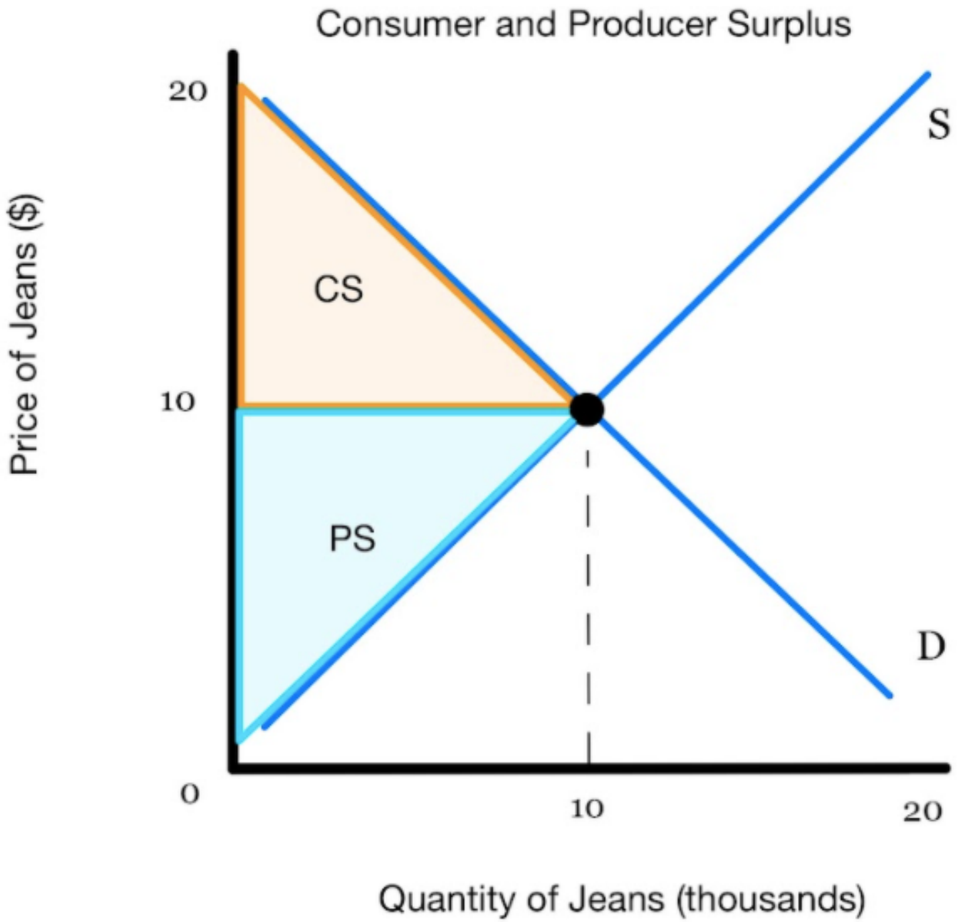


Copyright Chandler Bell

Consumer and Producer Surplus

This can also be true for producers.

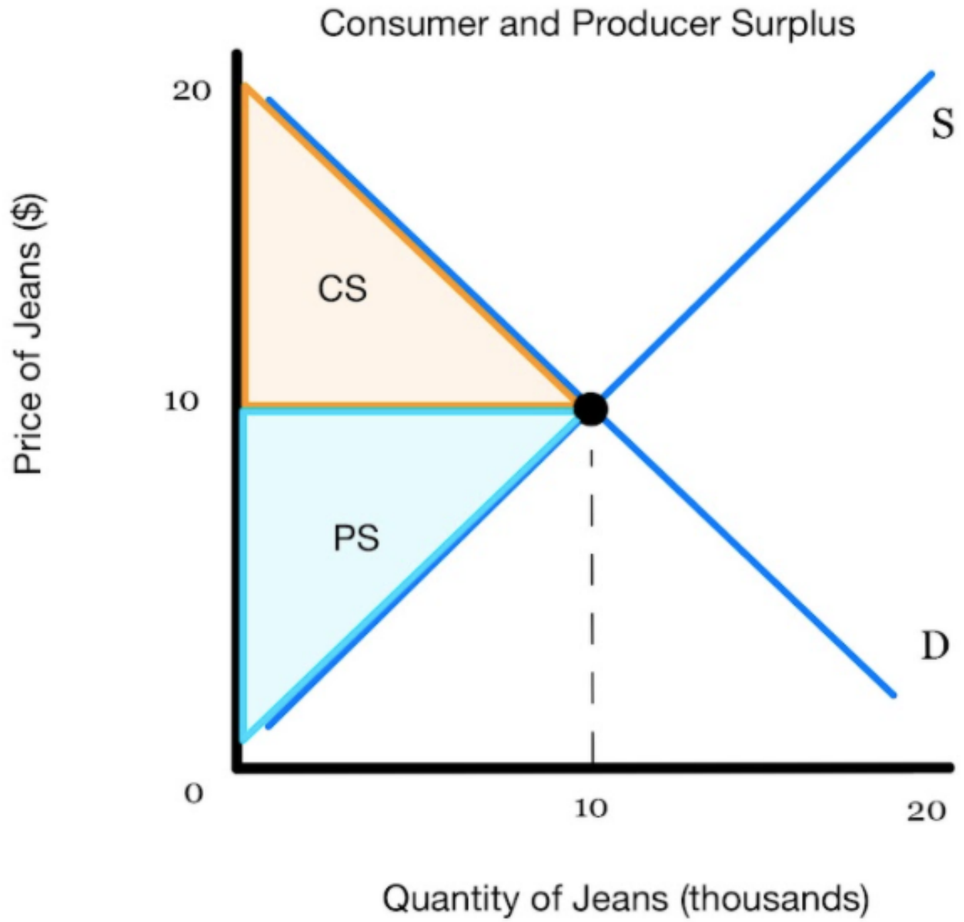
Producer SURPLUS – the difference between the lowest price producers are willing and able to offer the good and the actual price that they receive for it.



Copyright Chandler Bell

Social/Community surplus

The sum of the consumer surplus and producer surplus. It is the total benefit gained by society when the market is at equilibrium..

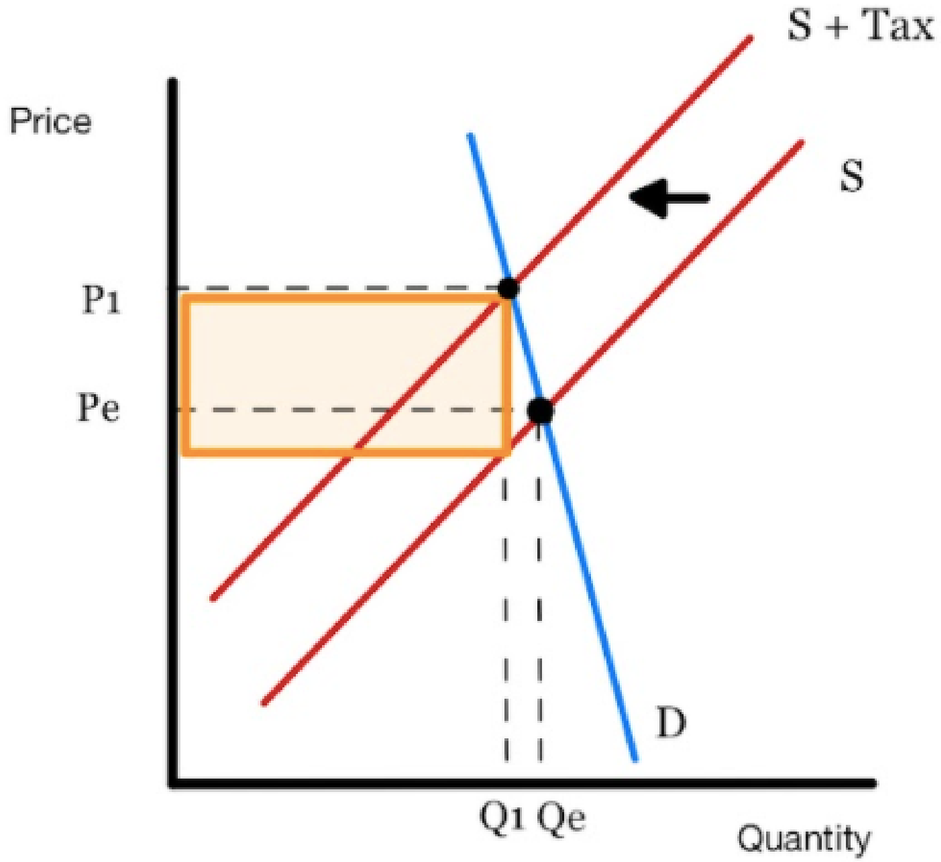


Copyright Chandler Bell

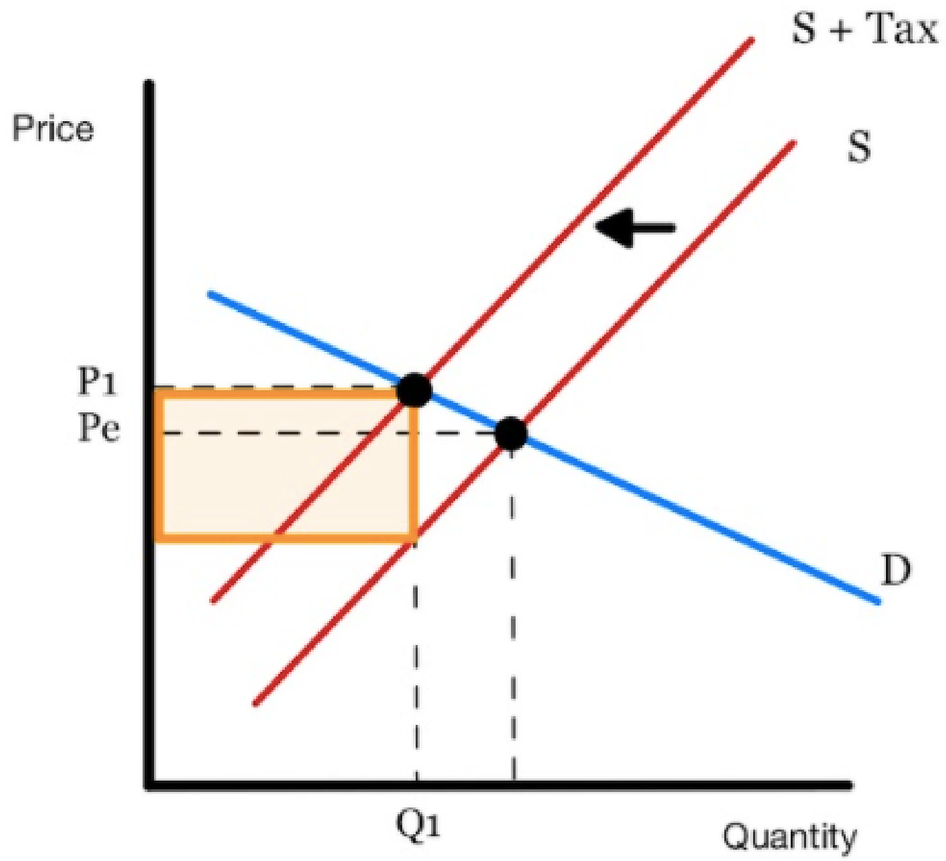
Taxes

Whose surplus do taxes take more of? Does it depend on the good?

Inelastic Demand (PED)



Elastic Demand (PED)



Copyright Chandler Bell

Taxes

Do you think governments tax goods with inelastic demand or elastic demand more? Why?

Copyright Chandler Bell

Taxes

Taxes on goods with INELASTIC demand, earn more revenue due to a change in price, changing Qd very little.

Copyright Chandler Bell

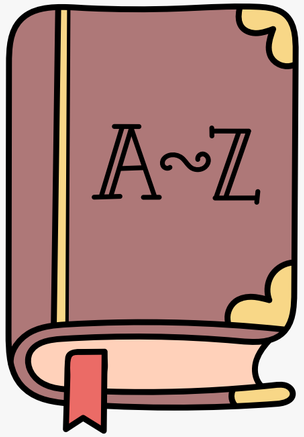
Income Elasticity of Demand(YED)

Copyright Chandler Bell

Definitions

A change in people's incomes causes an increase or decrease (a shift) in demand for a good. The extent to which the demand curve is shifted, and in which direction it will shift, is explained by the **income elasticity of demand (YED) .**

Income elasticity of demand (YED) – a measure of how much the quantity demanded of a good will change in response to a change in consumers' incomes.

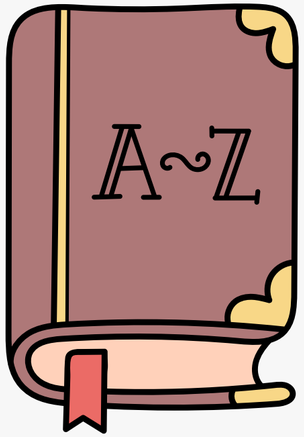


Copyright Chandler Bell

Definitions

If Income rises by 5%, we will likely see an increase in Qd for many goods. HOWEVER, we will also see a drop in some at the same time.

YED tells us information regarding whether the good is a **NORMAL** or **INFERIOR** good



Copyright Chandler Bell

Formulas

The extent to which the quantity demanded changes depends on how 'elastic' its demand is with respect to its price.

$$YED = \frac{\%\ \text{change in quantity demanded of good x}}{\%\ \text{change in income(Y)}}$$

ALSO WRITTEN AS

$$YED = \frac{\%\triangle Qd}{\%\triangle Y}$$

Copyright Chandler Bell

YED

Income increases 20%, and quantity decreases 15% then the good is a...

Copyright Chandler Bell

YED

Income increases 20%, and quantity decreases 15% then the good is a(n)...

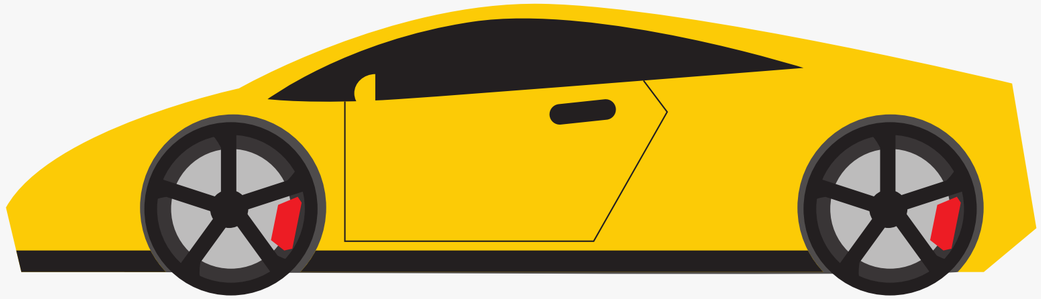
INFERIOR GOOD

Copyright Chandler Bell

YED

If coefficient is negative (inverse relationship) then the good is inferior

If coefficient is positive (direct relationship) then the good is normal

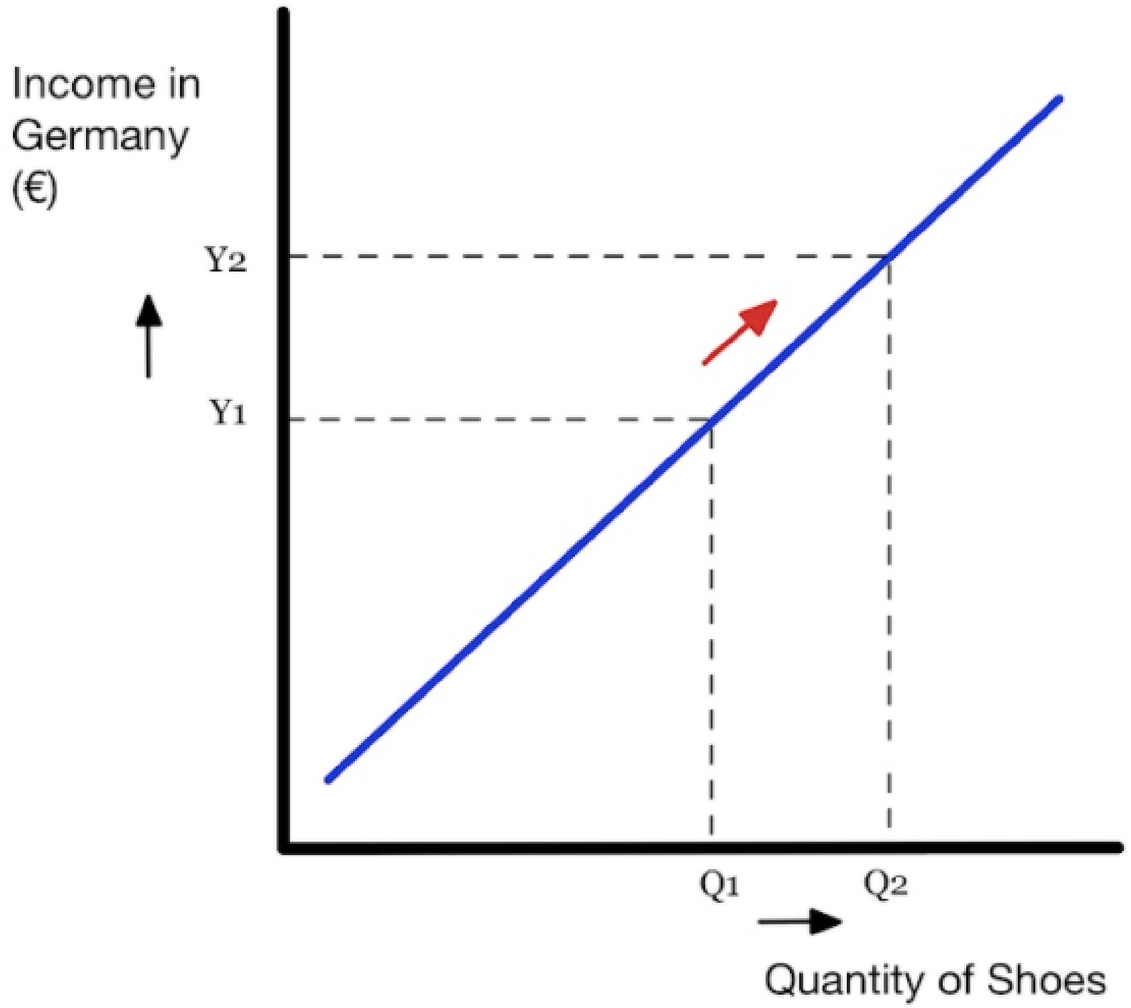


Copyright Chandler Bell

Engel Curve

To illustrate YED, we use an **Engel Curve**. An **Engel Curve** is used to show the relationship between income and quantity demanded.

Income is placed on the vertical axis
Quantity demanded on the horizontal axis.

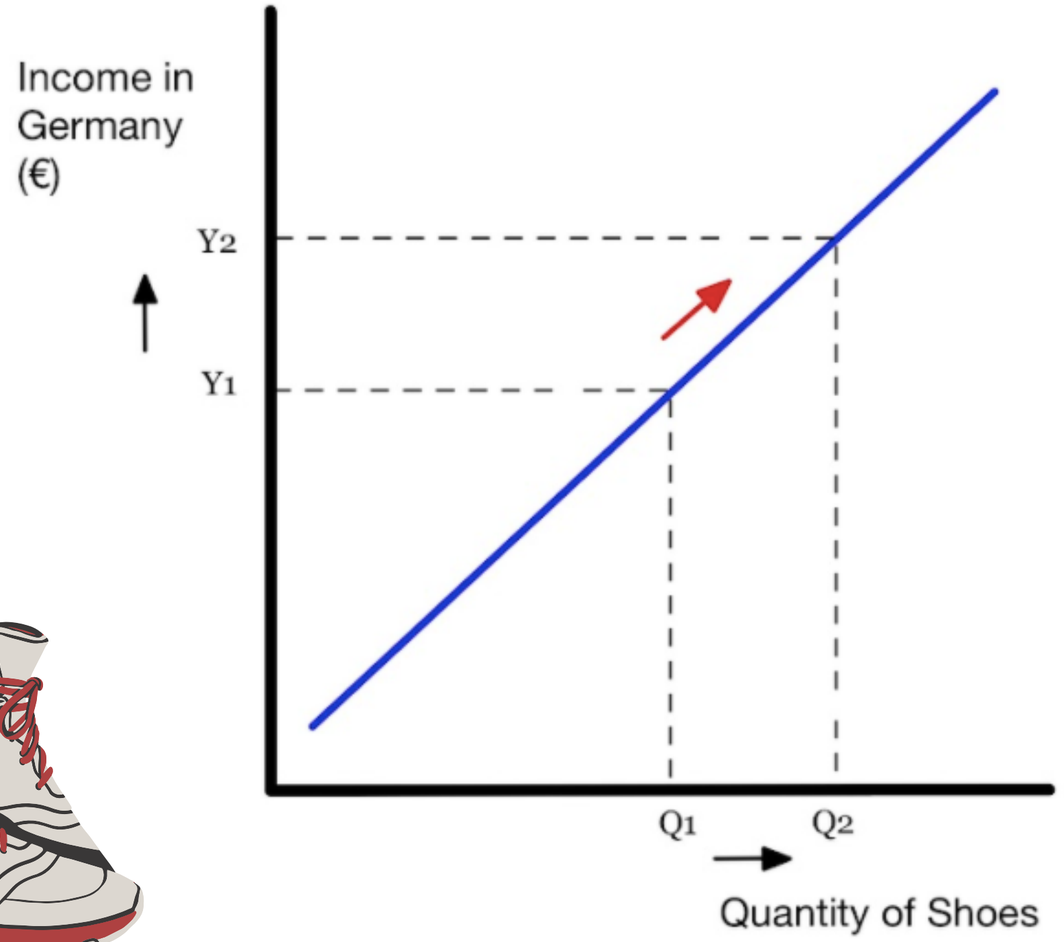


Copyright Chandler Bell

YED > 0

Normal Good

The Quantity Demanded of the good increases as consumer income increases. (Vice Versa)

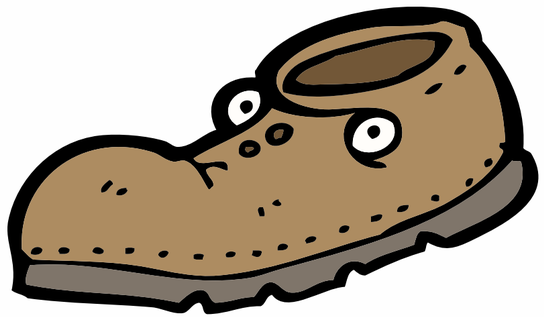


Copyright Bananaomics

YED < 0

Inferior Good

The quantity demanded increases as consumer income decreases. (Vice Versa)



Copyright Chandler Bell

Additional Uses of YED

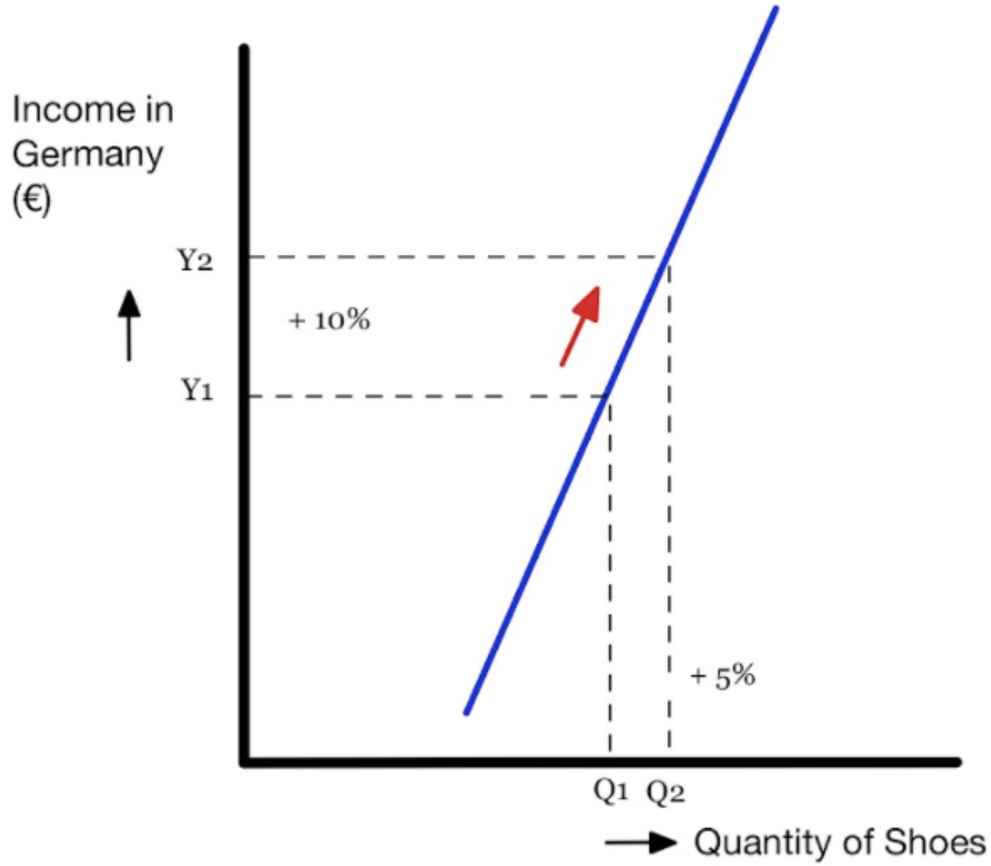
Copyright Chandler Bell

−1 < YED < 1

income inelastic demand (Necessity Good)

A change in income leads to . . .

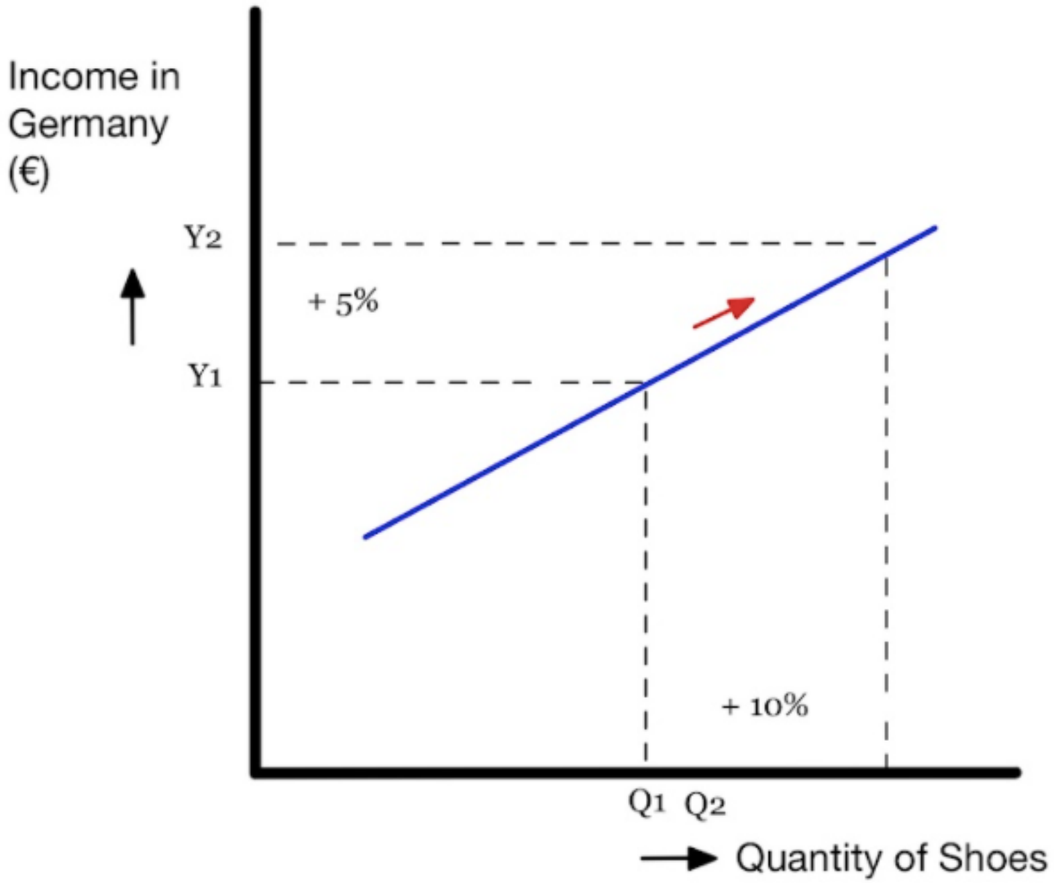
a <u>proportionally</u> smaller change in quantity demanded.



Copyright Chandler Bell

YED < –1, YED > 1

income elastic demand (Luxury Good)



A change in income leads to . . .

a <u>proportionally</u> greater change in quantity demanded.

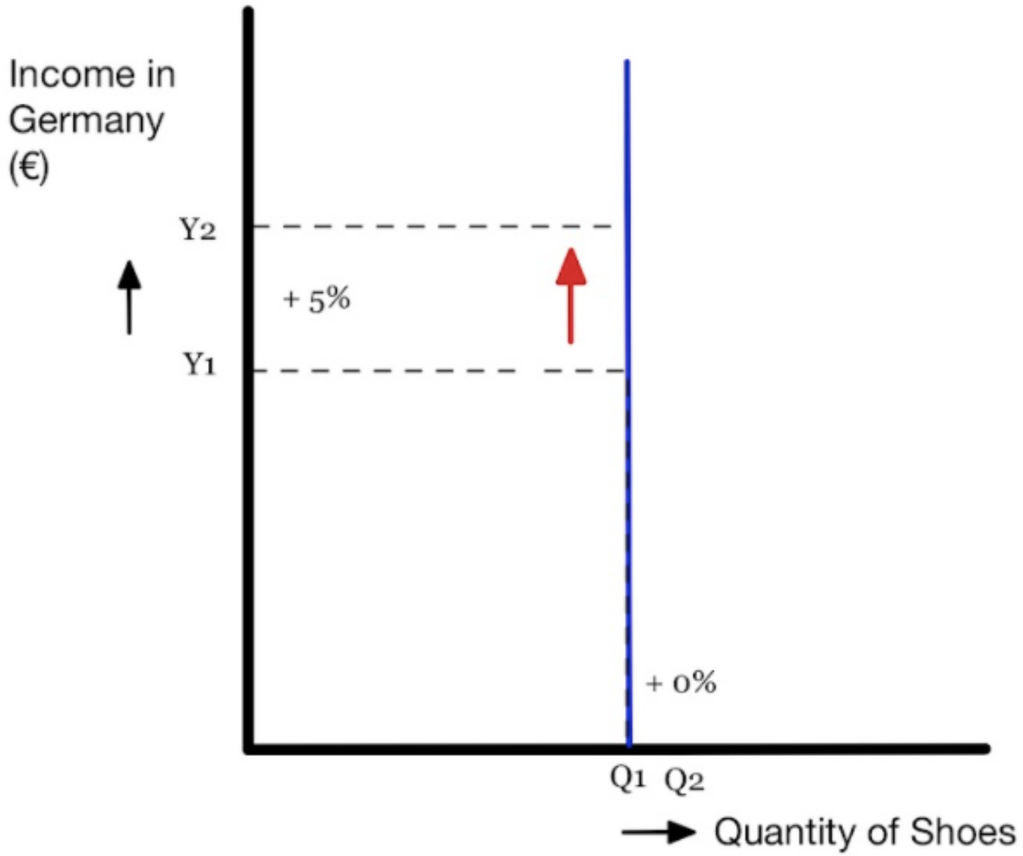
Copyright Chandler Bell

YED = 0

perfectly income inelastic demand (Necessity Good)

A change in income leads to . . .

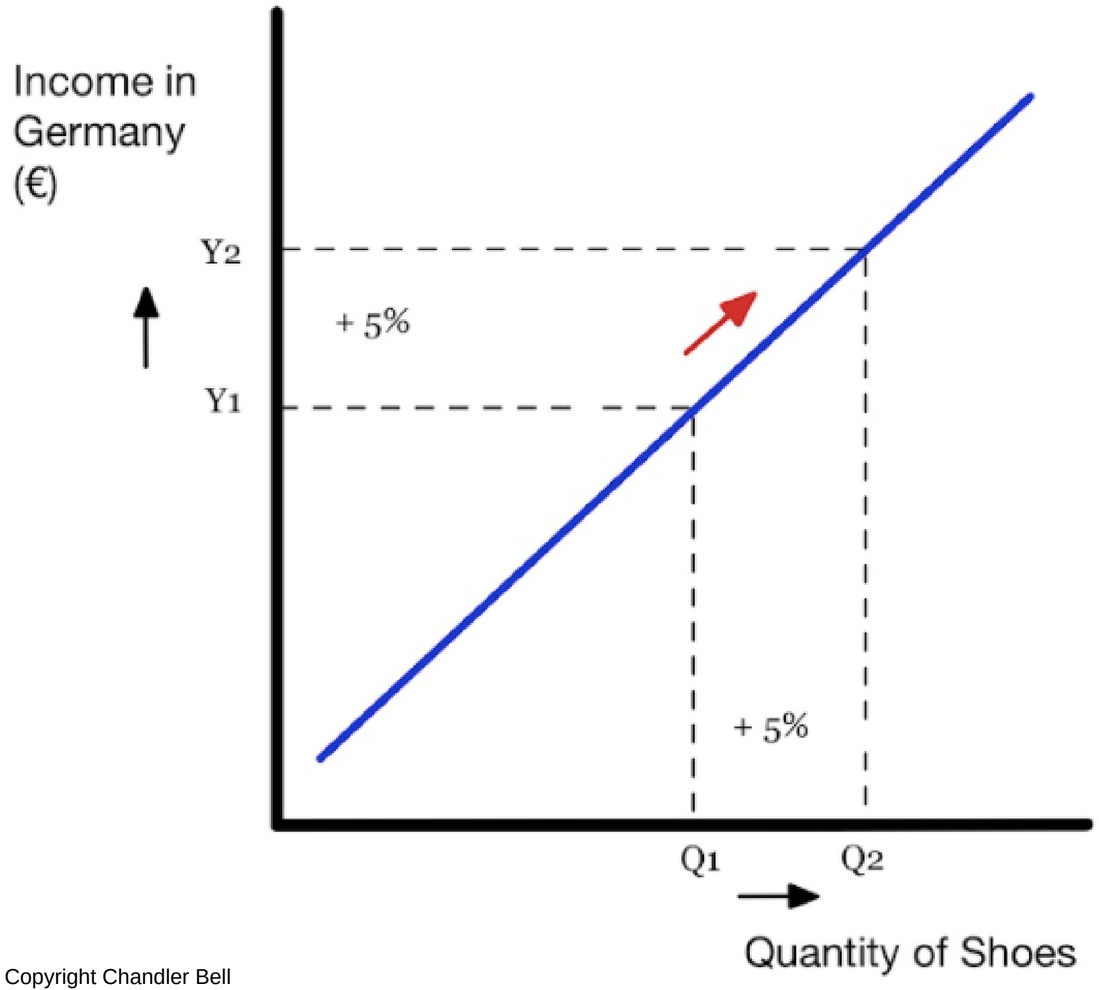
<u>no change</u> in quantity demanded. The closer the YED is to zero, the greater the necessity.



Copyright Chandler Bell

YED = 1

No Classification Term – Proportional Change



A change in income leads to . . .

a <u>proportionally</u> equal change in quantity demanded.

Copyright Chandler Bell

Global Citizenship

Not all countries experience Income Elasticity the same. Many areas of the world have different cultures, urbanization percentages, political factors, and income levels.

Example

Lower-income countries eat less meat due to its high general costs. Therefore, a change in income will likely greatly affect the quantity demanded of meat in a low-income country.

In contrast, high-income countries typically consume more meat and therefore, a change in income will likely have little/no affect on quantity demanded of meat.

Copyright Chandler Bell

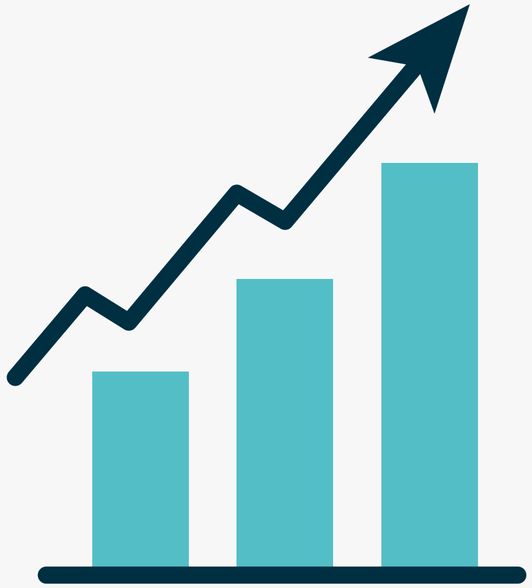
How would firms use YED in the real world?

Copyright Chandler Bell

Economic Growth and YED

In times of economic growth, incomes typically rise. During an economic decline, incomes typically fall.

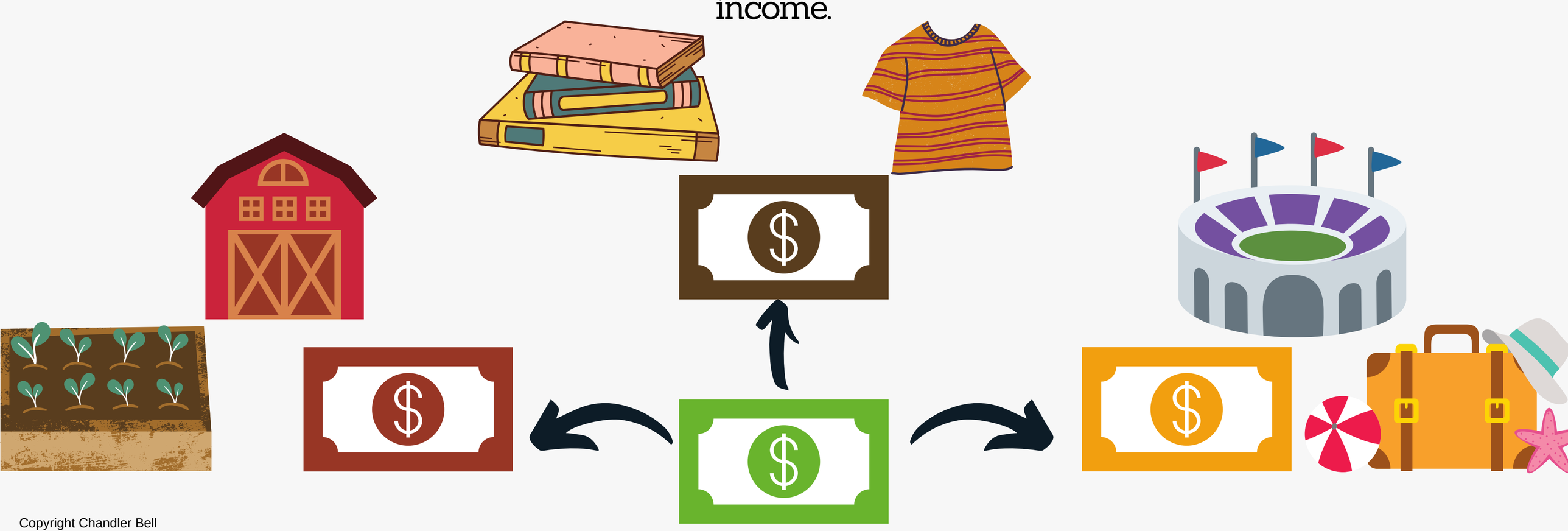
Given the state of the economy, businesses who know their YED can determine if their product is an inferior or normal good and forecast sales and earnings.



Copyright Chandler Bell

Income and Spending

As income-level changes over time, this can cause the entire output of an economy to shift to different sectors.. Consumers will change the way they spend larger portions of their income.



Copyright Chandler Bell

Sectors of an Economy

1. Primary - primary commodities such as agriculture, mining, forestry.
2. Secondary - goods produced from primary commodities such as clothes, cars, houses, books, paper.
3. Tertiary - goods that are not yet tangible but improve quality of life such as entertainment, travel, healthcare, insurance, education.

Copyright Chandler Bell

Sectors of an Economy

As an economy grows over time, the relative size of these sectors, as a percentage of total output in the economy, changes.. This process is defined as Sectoral Change. Economists use YED to understand what an increase in income will do to each sector.

Copyright Chandler Bell

Practice Question

Copyright Bananaomics

Paper 1 Part A

M14/3/ECONO/SP1/ENG/TZ2/XX

(a) Distinguish between the concepts of income elasticity of demand (YED) and cross price elasticity of demand (XED). *[10 marks]*

(b) To what extent might the concepts of YED and XED be of significance for business organizations? *[15 marks]*

Copyright Bananaomics

Check Answers

Distinguish between the concepts of income elasticity of demand (YED) and cross price elasticity of demand (XED). ***[10 marks]***

Answers **may** include:

- definitions of YED and XED
- diagrams to illustrate YED and XED
- an explanation of the features of YED and XED and how they differ in terms of calculation and interpretation
- examples of goods with different YED and XED.

Copyright Bananaomics

Check Answers

To what extent might the concepts of YED and XED be of significance for business organizations? ***[15 marks]***

N.B. It should be noted that definitions, theory, and examples that have already been given in part (a), and then referred to in part (b) should be rewarded.

Answers **may** include:

- diagrams which may be relevant to the discussion
- an explanation of the relevance of YED for business organizations in terms of normal goods/inferior goods and primary goods/manufactured goods/services; explanation of the relevance of XED for business organizations in terms of changes in prices of substitute and complements
- examples of use of the concepts in practice
- synthesis or evaluation (to what extent).

Command term
"To what extent" requires candidates to consider the merits or otherwise of an argument or concept.

Consideration of the merits of the concepts **may** include: the relative importance of the two concepts and the difficulties of obtaining an accurate measure of each in reality.

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

Opinions or conclusions should be presented clearly and should be supported by appropriate examples.

Copyright Bananaomics

Enjoying The Content?

Visit bananaomics.com to purchase package deals with discount prices!

BANANA OMICS