# EC1800 Economics

Lectures 7-9

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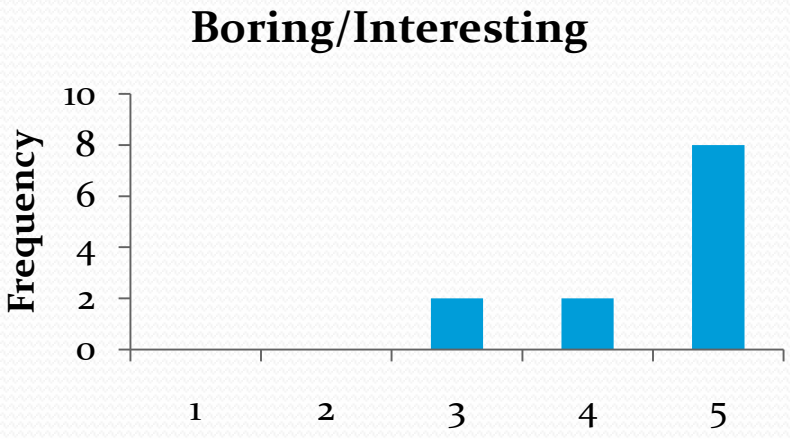
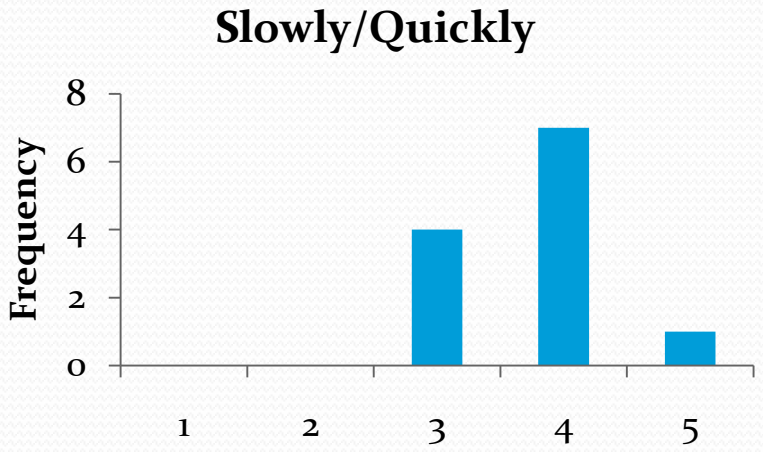
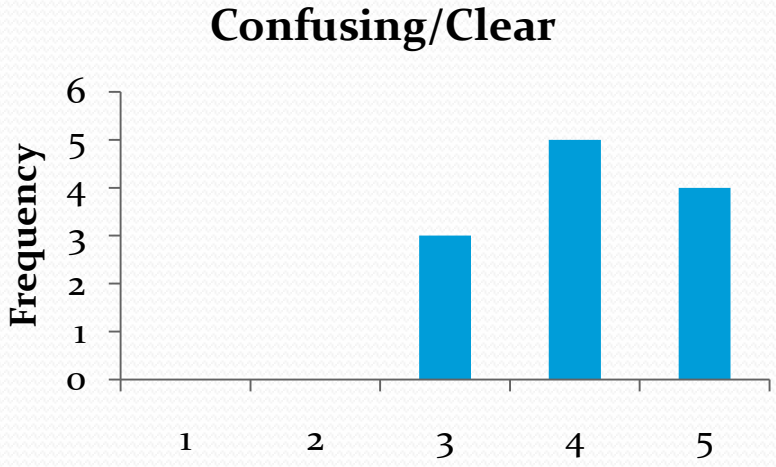
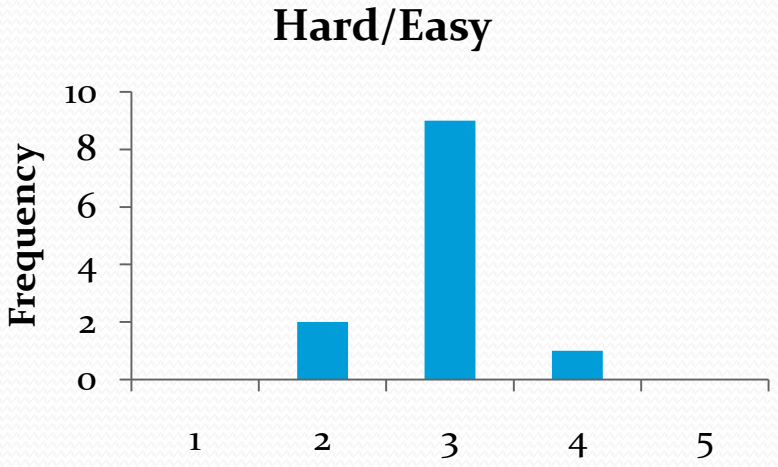
# Last Week's Feedback Form Results



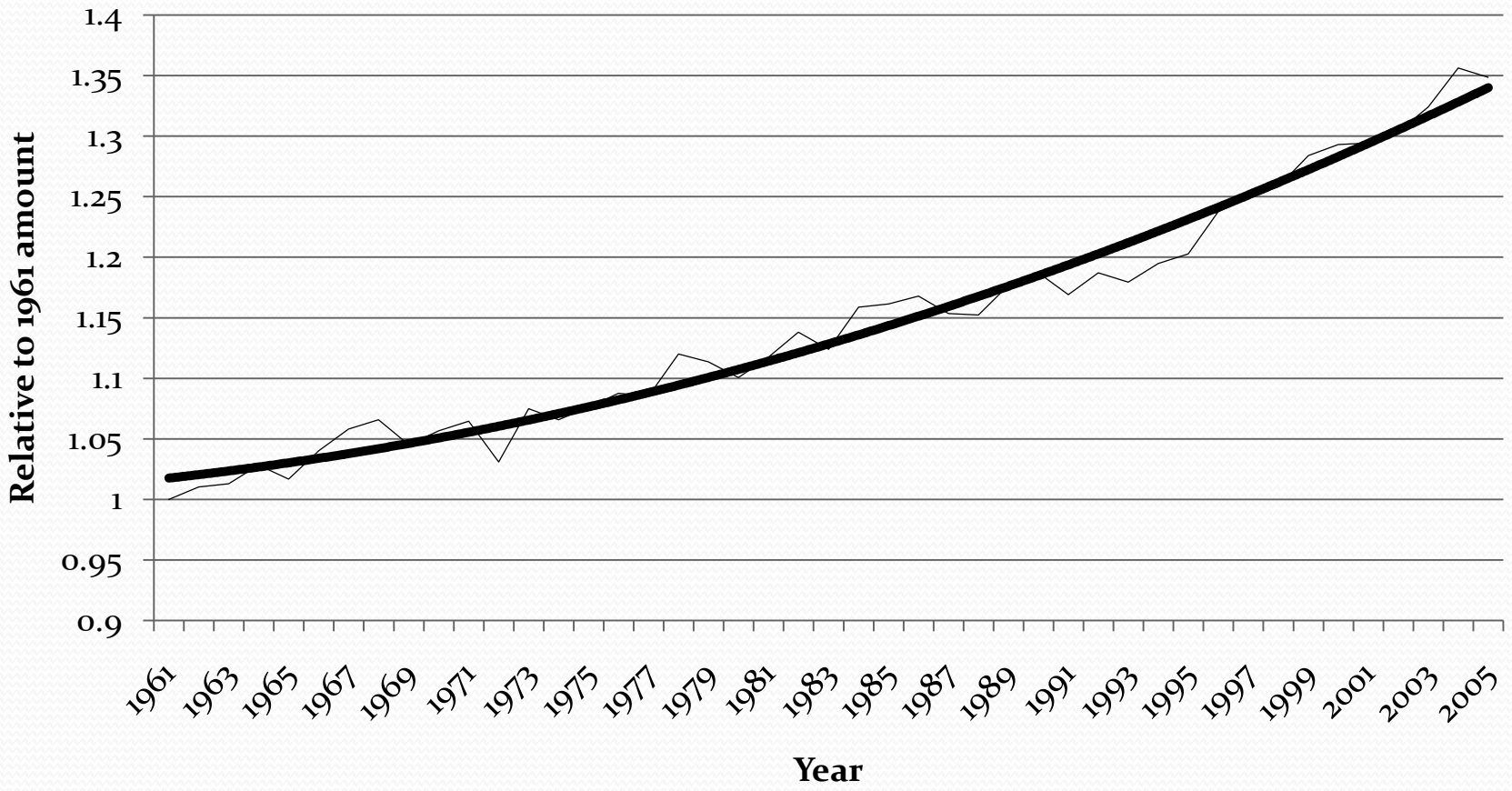
# Feedback So Far

| Date | Boring/ Interesting | Slowly/ Quickly | Confusing/ Clear | Hard/ Easy | Average Hours Studied | Average Section 1 Mark | Average Section 2 Mark |
|---|---|---|---|---|---|---|---|
| 11th Nov | 4.5 | 3.78 | 4.44 | 3.22 | 7.67 | 54.17% | 58.30% |
| 18th Nov | 4.5 | 3.75 | 4.08 | 2.92 | 4.1 | | |

# Jet Fuel & Heating Oil

- Last lecture on Sustainability I made the off-hand comment that one aircraft journey burned as much kerosene as the entire town of Ballincollig would to heat their homes in two years
  - An airplane uses about 4 litres per second or 12 litres per kilometre travelled (=1 gallon per second)
  - Therefore a transatlantic crossing (~7000km) will use around 84,000 litres of kerosene
  - This might heat ~100-160 houses for a year
- Therefore I was wrong – Sorry!

# World Food Production Per Capita 1961-2005



# So what did you think about the Reading?

# What we covered last week I

- Genuine Progress Indicator (GPI) = Activity (GDP) – "Bad" Activity
  - GPI has been flat since the late 1970s
  - We also exceeded one planet in human requirements
- The more active people are, the more satisfied with life they are according to surveys
  - But is it because they are too busy to think about the truth of their situation?
- The more money you control relative to someone else, the more POTENTIAL to direct economic activity relative to someone else

# What we covered last week II

- Sustainability means the capacity to keep performing an activity long into the future. It requires investment into the future
- The five revenue-producing capitals:
  1. Natural
  2. Social
  3. Human
  4. Manufactured
  5. Financial

# What we covered last week III

- Firms try to combine these capitals in various ways to produce *added value* (the revenue) which they try to sell to people for a profit
- The Happy Planet Index (HPI) is a measure of sustainable wealth

  = Happiness * Longevity / Ecological Footprint
- Enron is a very good example of the Credit Crunch in miniature

# Theme of the Lectures:

1. Types of Wealth
2. Sustainability of Wealth
3. Stability of Wealth <= THIS LECTURE!

- Only today did Barack Obama declare an “economic stabilisation taskforce” in order to stabilise the US economy
- It consists of the very best of the best in Economic experts – a dream team

# Why is *Stability* so strongly associated with Wealth?

# Explaining Stability of Wealth

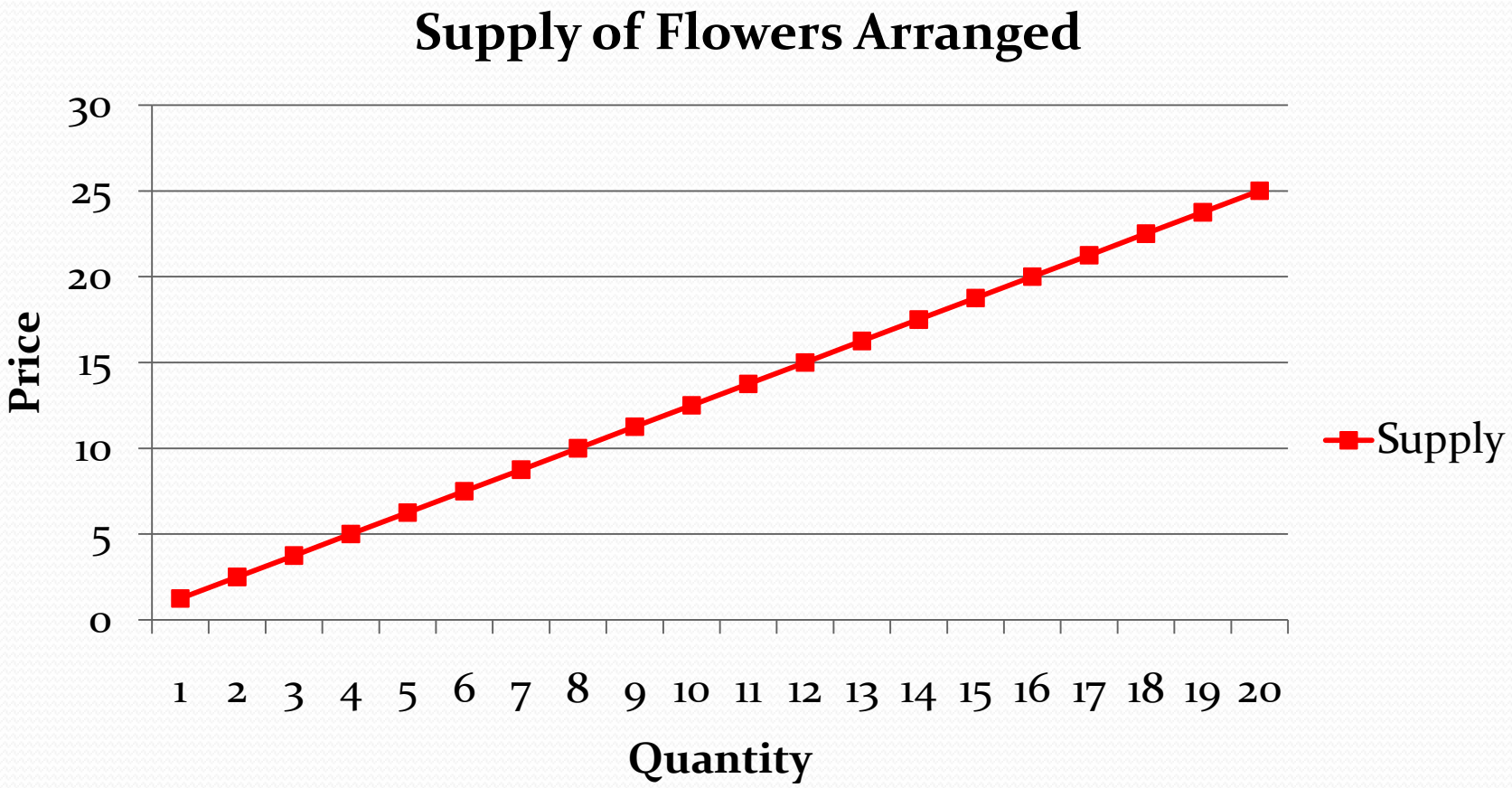
- If you can show you understand why Stability is considered so important to the Economy and Wealth, you will get top marks in your course assignment
  - It might even explain a few life mysteries to you: why we think like we do!

a. General Equilibrium Theory
b. Cartesian Mechanism
c. The “Normal” Gaussian Distribution
d. How the Gaussian Distribution works

# Demand & Supply I

- You will all surely have heard of Demand & Supply
- This is an Economics notion that Supply will always equal Demand
- For example, if you arrange flowers for a living, then if you were rational, you would charge extra for working more (e.g. Overtime):

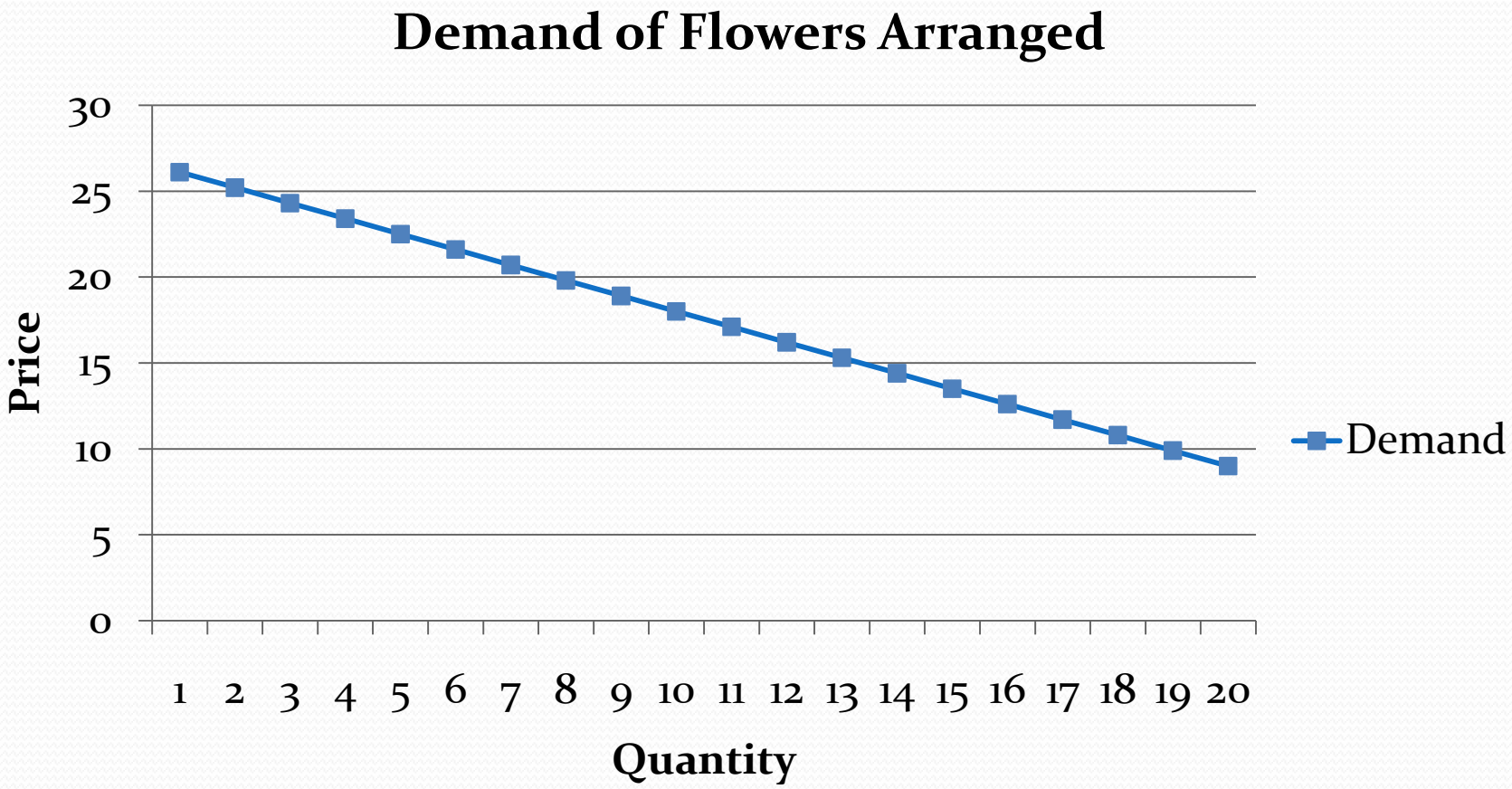
# Supply Curve



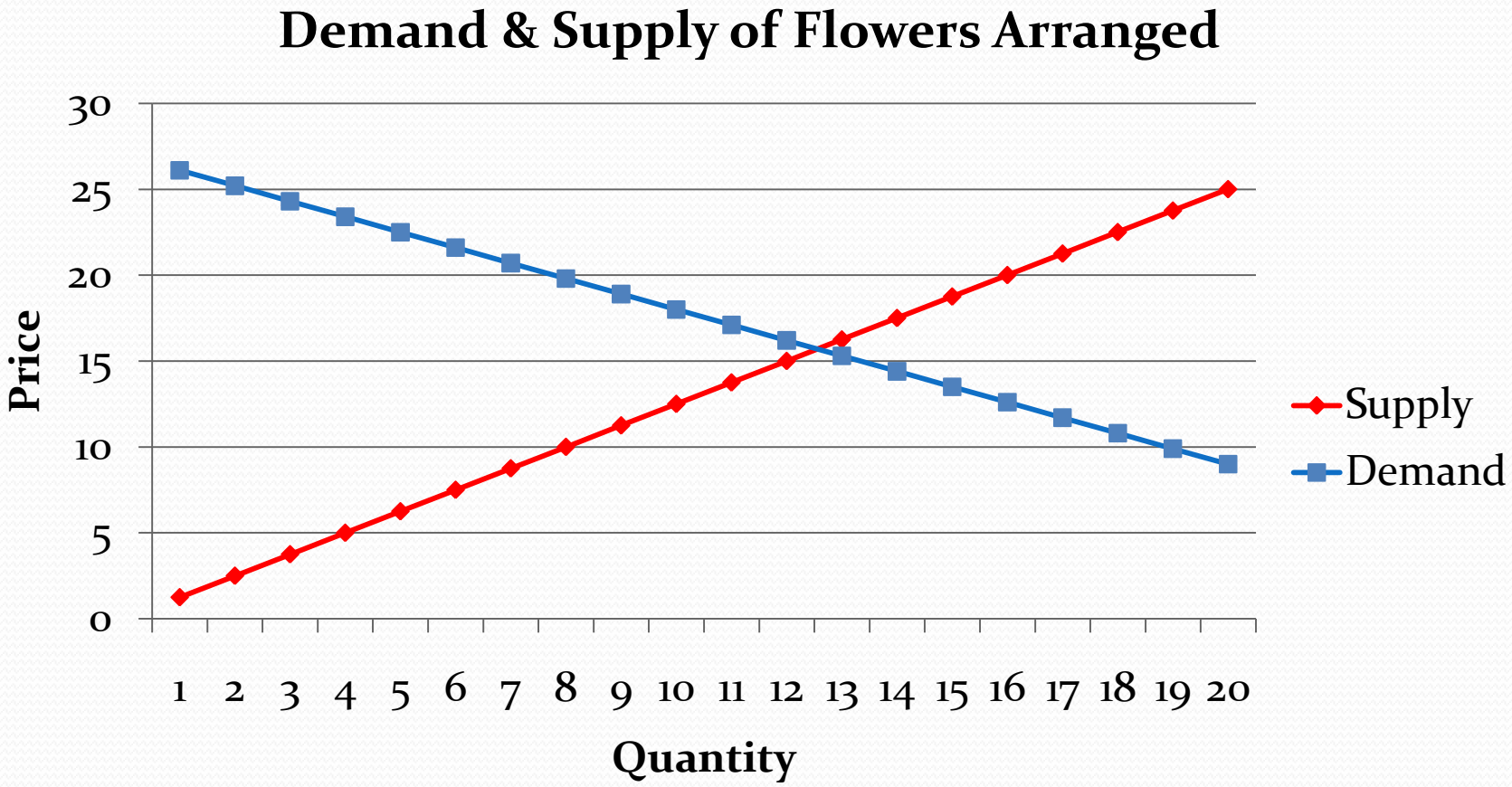
# Demand & Supply II

- So you the flower arranger would charge more to arrange more flowers per day
- Equally, purchasers, if rational, would buy “as many flowers as I can afford”
  - Which equals “however many arranged flowers for €20” or whatever
- If an arranged flower costs €2, then €20 will get you ten flowers
- If it cost €5, then €20 will get you just four flowers

# Demand Curve



# Combined Demand & Supply



# Equilibrium I

- Neo-Classical Economics holds that over the long run, demand **always** roughly equals supply
  - Therefore *equilibrium price & quantity* would be approx. €16 with 13 flowers arranged
- The technical term for this is *Walrasian General Equilibrium*
  - Invented by the 19th century Economist Leo Walras
- Everyone always talks about "economic growth", yet everything, absolutely EVERYTHING in our modern Economy assumes a static equilibrium between demand and supply i.e. NO GROWTH! (and no decline)

- Why?

# Can you think of other things which involve an Equilibrium?

# Equilibrium II

- The notion of Equilibrium comes from the 17th century philosopher & mathematician René Descartes who famously said *Cogito Ergo Sum* (I think, therefore I am)
- Descartes was the first person whose thoughts different to Scripture became popular all over Europe
- He was therefore the first person in Europe since the end of the Roman Empire to break from Roman Catholic philosophy (that anyone took seriously)
- Because he was Protestant, his philosophies were based in a Protestant worldview

# Equilibrium III

- More than ANY other person, Descartes has shaped most of the Western worldview for the last four centuries
  - That said, Descartes' philosophy would probably have died out without Isaac Newton's gravity equations which relied on a Cartesian worldview (analytic geometry, the key component of *differential calculus* i.e. The thing which is most of Honours Leaving Cert Maths)
- The technical term for anything based on his worldview is *Cartesianism*. In most books it is referred to as *Cartesian Mechanism*

# Cartesian Mechanism I

- Cartesian Mechanism is the worldview that the Universe is like a complicated machine
- If a machine is too complicated to understand, you simply need to break it into smaller parts (called *reductionism*)
- A machine is predictable, so if you observe how it behaves in the past, you can predict its future behaviour

# Cartesian Mechanism II

- Cartesian Mechanism is very, very useful
- It is also very, very successful
- It more than anything else makes our European civilisation different to other cultures
- It more than anything else led to our technological superiority over all others – and therefore our military prowess
- Every other culture in the world is now adopting Cartesian Mechanism as fast as it can (with the exception of most of Africa)

# Cartesian Mechanism II

- This worldview is at the CORE & CENTRE of the Western approach to everything in life since the 16th century
  - It determines our Maths, our Science, our Legal System, our Tax System, our Education System and indeed what we define as Wealth

- And this is why Economics, just like everything else, models the Economy as a static, unchanging equilibrium

# The Gaussian Distribution

- "Invented" by Carl Friedrich Gauss in 1794. Actually "rediscovered" is better as it was known since 1733.
- Also called the "normal" distribution because it is the single most important statistical distribution by far. Works using a technique called *least squares estimation* (which means drawing a line between dots as best you can)
- Lots & lots (and LOTS) of things in our world can be described by the normal distribution

# How does it work?

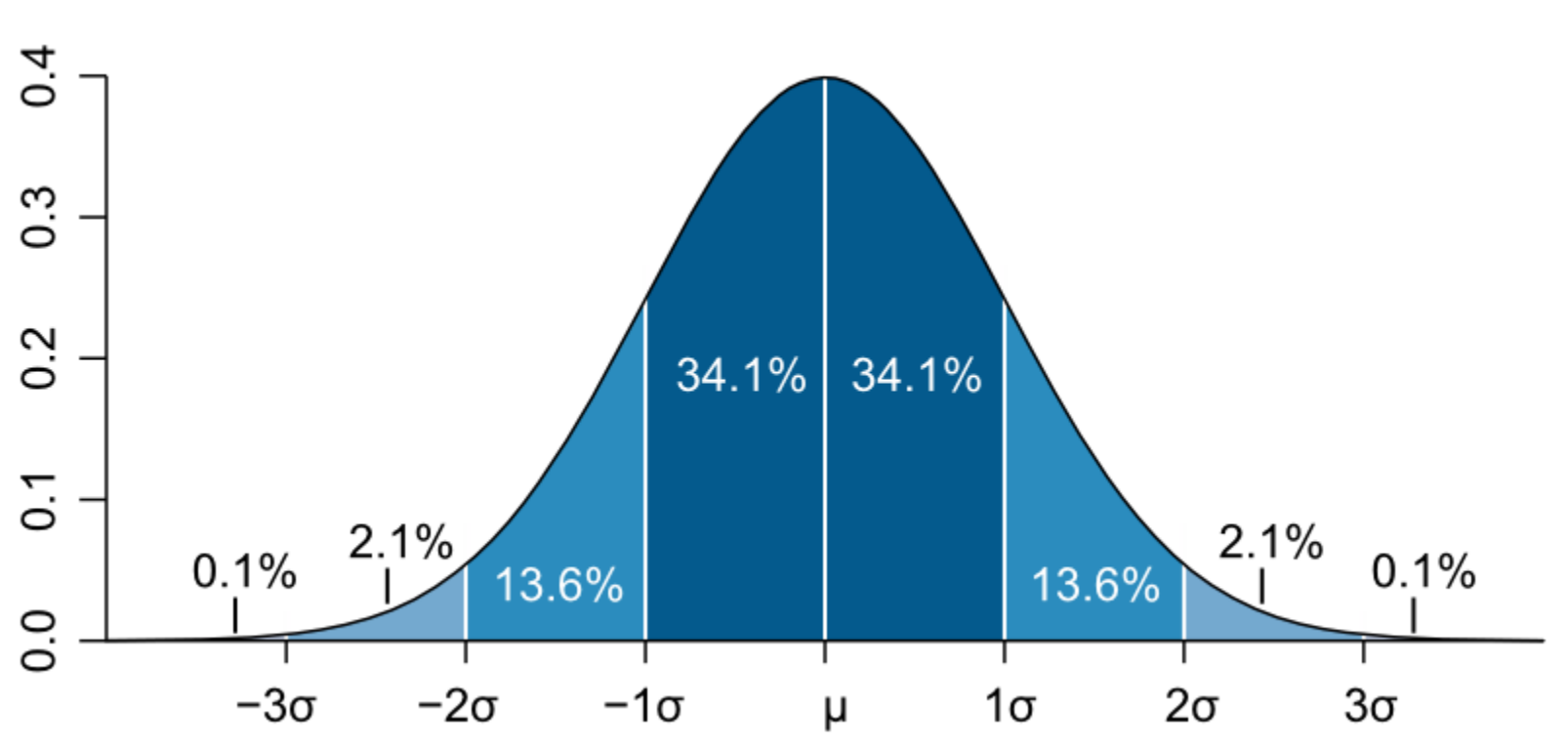
Imagine if you drove the same car at exactly 30mph along exactly the same piece of road. At exactly the same point, you hit the brakes. You now measure how far the car goes before it stops. Do this ten times

# The Basics of Statistics I

1. Take a series of numbers from your history
   e.g. Stopping Distances, House Prices, Orange Juice Prices
2. Find out by how much they deviate from their average (what is called *standard deviation* = σ)
3. Normalise historical numbers by dividing by their standard deviation (σ). The technical term for the average of a set of numbers is *the mean* (μ) but this is usually called *the average*

- You now have a set of *relative variances* from the mean (i.e. Proportions of σ). This is a measure of how *volatile* the numbers are.

# The Gaussian Distribution (also called *the Bell Curve*)



# The Basics of Statistics III

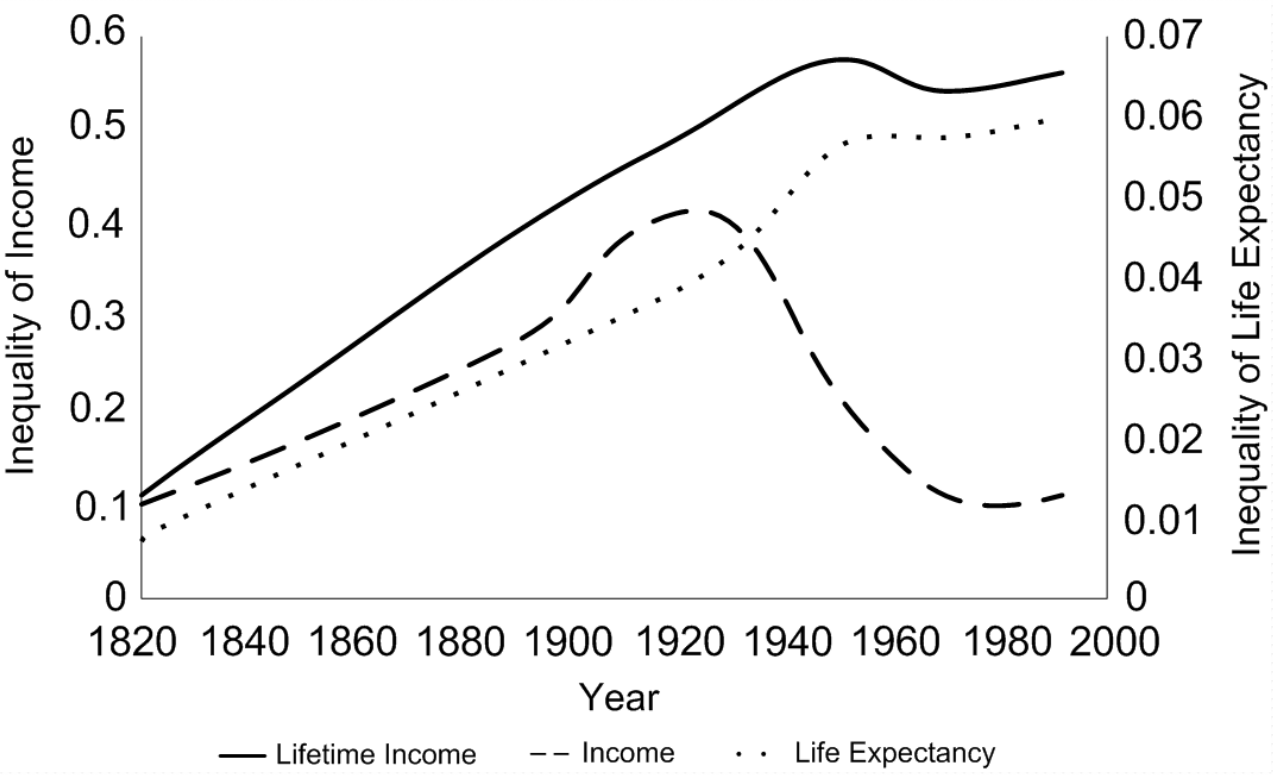
- Lots of things follow the "Normal" Gaussian Distribution:
  - Human Height (or any adult animal's size)
  - Human Blood Pressure
  - Human Intelligence
  - How fast a cup of tea cools down
  - Weight of Human Babies upon Birth
  - Leaving Certificate Results

# Consequences of General Equilibrium i.e. Demand = Supply

1. Unemployment & Poverty are always temporary
2. Poor people and rich people will eventually become equal in the long term (same goes for countries)
3. The market always knows better than any one person or group of people do
4. "Everything works out in the end"
5. We can predict the future through induction (induction means that by observing patterns of behaviour in the past, we can anticipate those same patterns appearing in the future)

# The Problems with General Equilibrium

- Obviously, we have poor people & rich people in the world as well as poor & rich countries, and the inequality gap is growing:



# See You Next Week!