

effect". This effect explains why AD is negatively sloped. Note: the "Keynes effect" does not work if we are in the Liquidity Trap that is the closest case to Keynes's ideas about a macroeconomic system. In the liquidity trap even if prices decrease, the interest rate is too low to decrease more.

Aggregate Demand and Wealth Effect

However, there is another possible explanation for the negative relationship between Income and P implied by the AD curve.² This explanation is based on the idea of "**Wealth Effect**" or "**Pigou Effect**".

Pigou effect: *if money is part of households' wealth, then a decrease in P makes the households wealthier in real terms, this will increase consumption and therefore aggregate income:*

$$P \downarrow \Rightarrow \frac{M}{P} \uparrow \Rightarrow C \uparrow \Rightarrow \text{IS shifts to the right } Y \uparrow$$

The Keynesian and the Pigou effects (and in general the fact that the AD is negatively sloped) imply that a **deflation** (a decrease in the general level of prices) can have stabilising effects on output. Consider a recession, where aggregate demand is particularly low. Given a low demand, the aggregate price level should fall and this will increase output, helping the economy to recover from the recession without any external intervention. Is the Pigou effect relevant? Well data seem to say that cash is a small proportion of household wealth, therefore we may say that this effect should not be particularly large. The idea that deflation can be good in terms of stabilising the equilibrium income level has been challenged by some economists. To see this, we need to remove the assumption that nominal and real interest rates are the same. In particular, we assume that the demand for money depends on the nominal interest rate while the investment depends on the real interest rate. Given that $i = r + \pi^e$, we can write the demand for money as $L(Y, i)$ and the investment function as $I(i - \pi^e)$.

1) The destabilizing effects of expected deflation:

The idea is: suppose you start with no inflation expectations, meaning $\pi^e = 0$, and so $i = r$. Now suppose that people start to expect a deflation and therefore $\pi^e \downarrow$. Given the level of i , this decrease in expected inflation will increase the real interest rate.³

² There is a third explanation for the negative relationship between Y and P implied by the AD. This third explanation is called the Mundell Effect and it works through the link between P and the exchange rate.

³ Suppose you start with $i = r = 5\%$. Suppose people expect a deflation of 2%, meaning $\pi^e = -2\%$. Now the real interest rate becomes: $r = i - \pi^e = 5\% - (-2\%) = 7\%$.

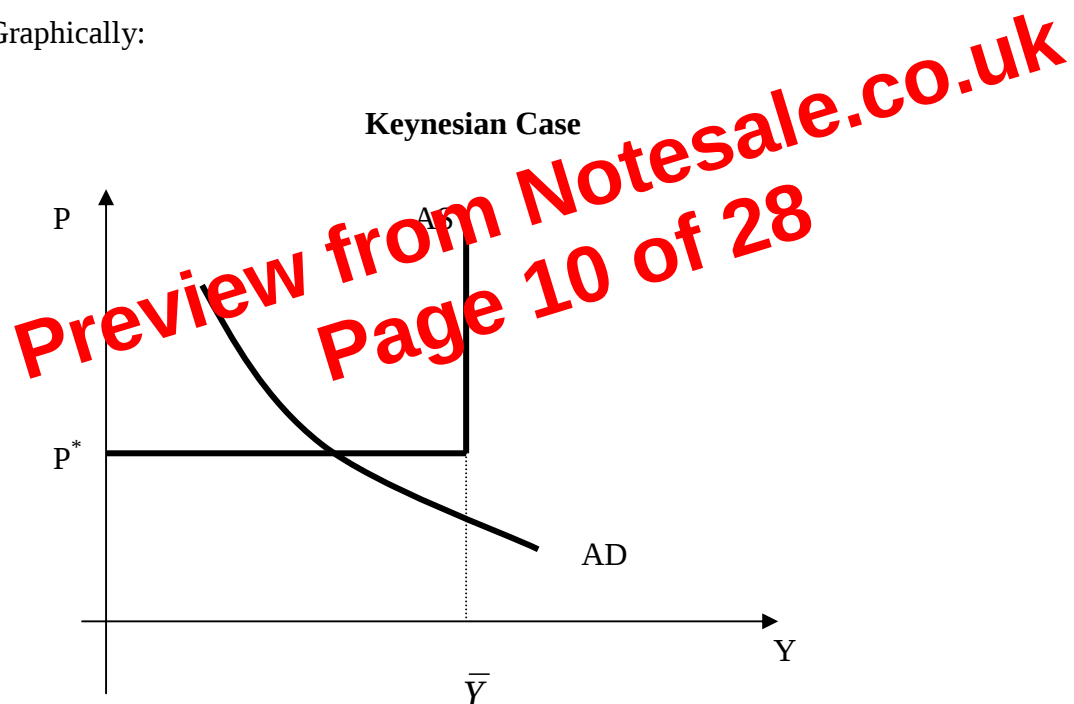
increases), output does not change while prices increase. This is consistent with the quantity theory of money, but here this is true also in the short run and not only in the long run. As I said now economists believe that the classical case is not the right one to describe the short-run but it is a good representation of the economy in the long run. Therefore, for a **classical** economist:

- 1) *Output is determined by the supply side:*
 - amounts of capital, labor
 - technology
- 2) *Changes in demand for goods and services (C, I, G) only affect prices, not quantities.*
- 3) *Assumes complete price flexibility.*
- 4) *Applies to the long run.*

The Keynesian Case

In the short run prices are completely fixed.

Graphically:



The aggregate supply is horizontal in the short run since prices are fixed. However as we reach the full employment, according to Keynes, any further increase in demand will be reflected in an increase in the prices only. Notice: prices here are fixed but they can increase if we go beyond the full employment level of output. However prices cannot decrease below P^* . Prices are sticky downwards. Notice also that in the

You may think at each firm located in a particular island. The firm know perfectly what happens in its island but it does not know what happens in different islands. The Lucas' imperfect information model is also known as the Lucas' island model.

Assumptions:

- All wages and prices are perfectly flexible, all markets are clear.
- Each supplier produces one good and consumes many goods (here we assume that the supplier is a producer and also a consumer. This is for simplicity).
- Each supplier knows the nominal price of the good she produces, but does not know the overall price level.

Suppose that a firm observes an increase in the demand for its own good. The firm does not know whether this increase in its demand reflects the fact that consumers started liking more the product it sells or if there was a general increase in the aggregate demand. An increase in the aggregate demand means that the demand for all products has increased.

In particular assume that the supply of firm z (or island z) is given by:

$$y(z) = \bar{y}(z) + \gamma(p(z) - P) \quad 11)$$

Where $y(z)$ means that amount produced by firm z , $p(z)$ is the price charged by firm z and P is the aggregate price level (the average of all prices charged by all firms in the economy, so $p(z)$ is part of P as well). The element $\bar{y}(z)$ is the amount produced by the firm when its price is the same as all the other prices. The parameter γ is just a positive constant. If there is an increase in the demand for firm z only, $p(z)$ increases relative to P (since only the demand for z has increased) and so firm z increases the supply (it produces more). If there is an increase in all prices, $p(z)$ and P increase by the same amount⁵ and so nothing changes and production remains unchanged.

The problem is that a firm does not know P and it must form an expectation of it.

Therefore we can write equation 11) like:

$$y(z) = \bar{y}(z) + \gamma(p(z) - P^e) \quad 12)$$

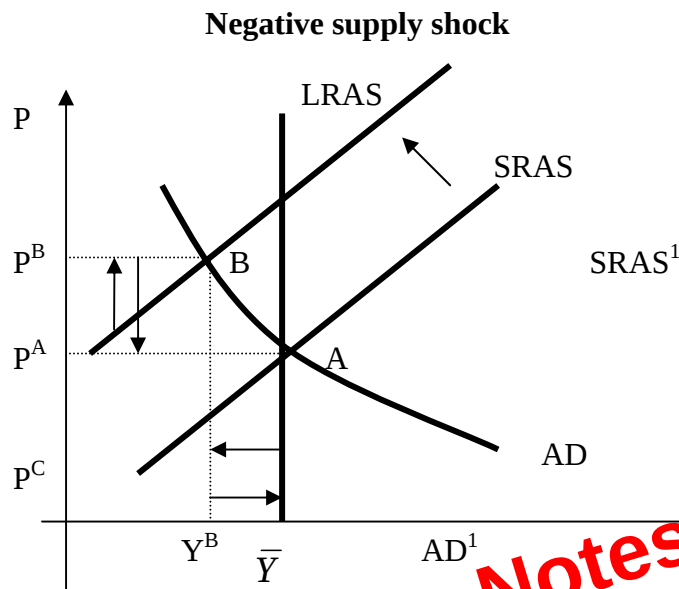
where P^e is the expectation of the aggregate price level.

Now suppose that firm z sees its demand going up so that $p(z)$ increases. Is that something specific to firm z so that $p(z)$ increases compared to P or it is due to a

⁵ Suppose only two prices, $p_1 = 10$ and $p_2 = 10$. The aggregate price is $P = (10+10)/2 = 10$. Now suppose that p_1 increases to 20 but p_2 remains at 10. The new aggregate price is $P = (20+10)/2 = 15$. The aggregate price level has increased by 5 but p_1 has increased by more than that (by 10). Now suppose that p_1 and p_2 both increase by 10, the new aggregate price is $P = (20+20)/2 = 20$. The aggregate price has increased by the same amount as p_1 and p_2 .

The economy over time self-corrects after a shock so that the effects of a shock are just temporary (short run effects). We will see later in this module the case in which shocks are permanent (those are shocks that shifts the LRAS).

Consider a negative supply shock. This is a shock that shifts the SRAS up and so P increases.



Short run: The economy moves from A to B. Now output is below the natural level (recession) and also prices increased. A situation of low output and high prices is known as *Stagflation*. This is exactly what happens in the 70s after the oil price shock.

Long run: since we are in a recession, low demand puts pressure on prices to decrease. Firms realise that and start revise their expectations and they expect prices to decrease, so P^e decreases. The SRAS shifts back to the original level and we move back to the full employment level of output. The economy moves back to point A.

Again, this shock has created a short-run fluctuation in output (first decreases and then it increases).

Economic Policy in AD-AS Model

The economy when hit by the shock self-corrects and return after time to the long run equilibrium where output is at the full employment level.

Does it mean that there is no need to use economic policies (fiscal and monetary) in the economy? Since we are going to end up at the full employment equilibrium why should we care to affect the economy using policies?