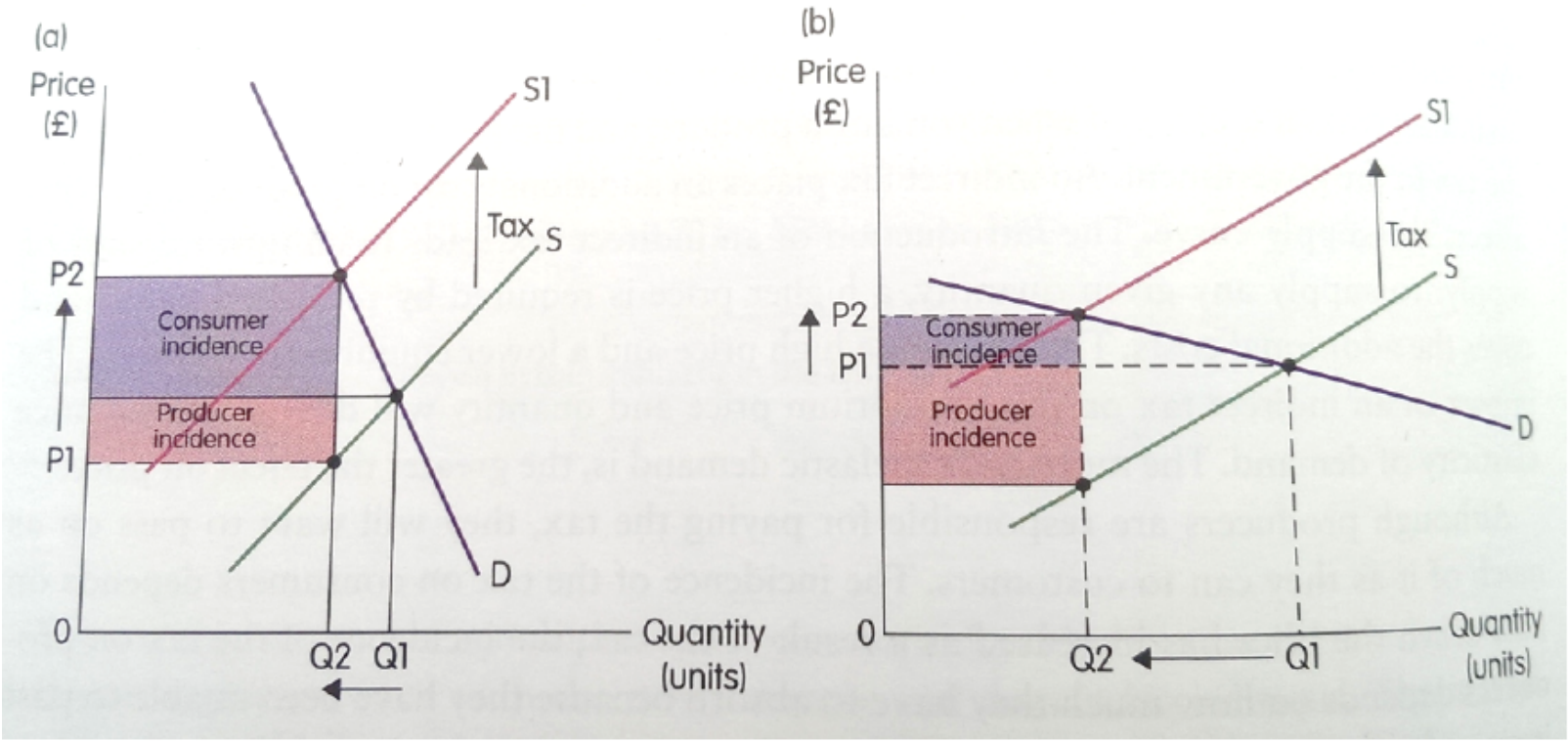


The 'incidence' or 'burden' of the indirect tax on consumers and producers is determined by the relative price elasticity of supply and demand:

- If demand is more price-elastic than supply, then the producer will bear the majority of the tax burden
- If supply is more price-elastic than demand, then the producer will pass on the majority of the burden.

Indirect taxes on the production of goods can be imposed in one of two ways:

- the tax may be a fixed amount per unit sold

'unit' or 'specific' tax : $p' = p + t$

- or it may be a percentage of the good's price

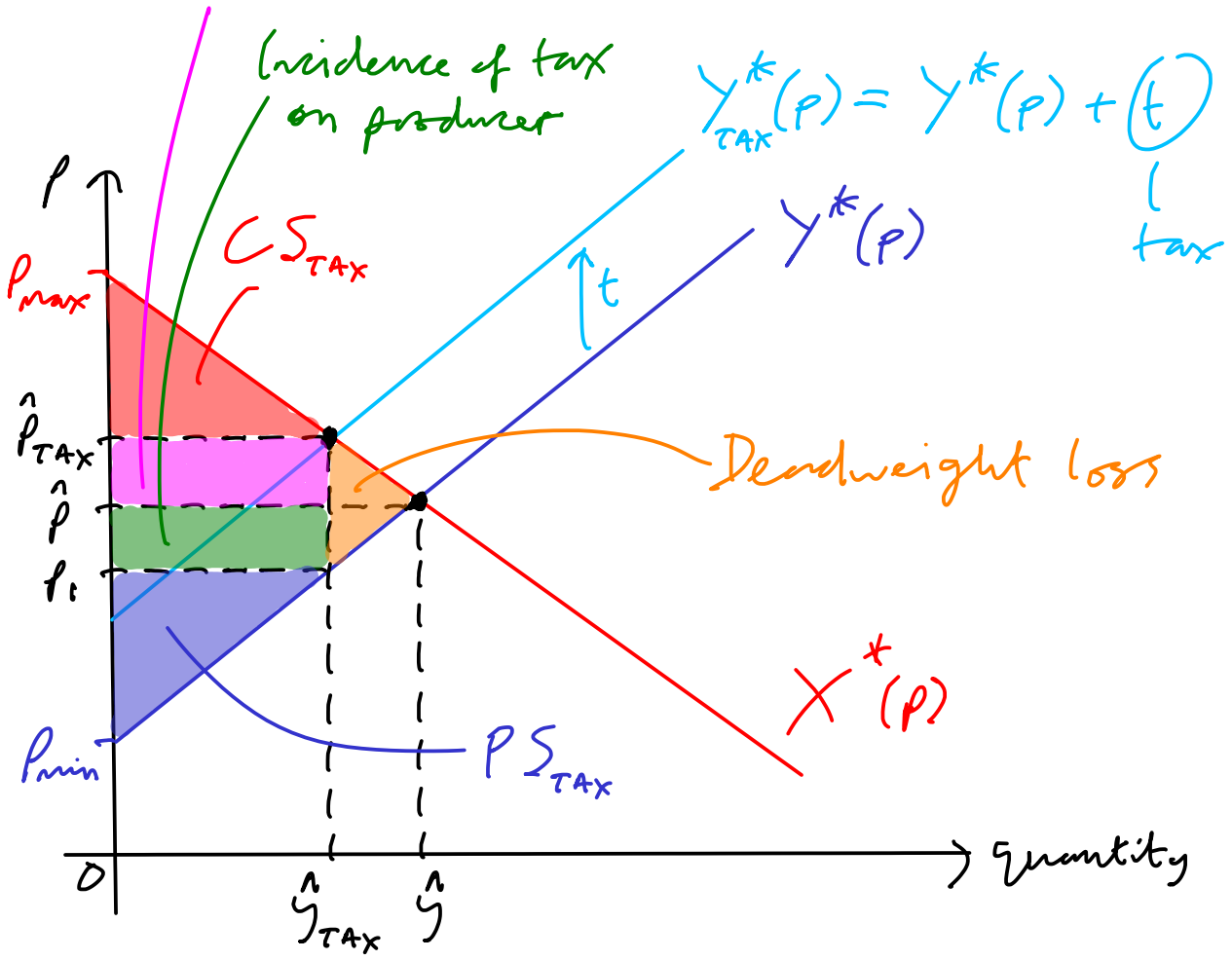
'ad-valorem' tax : $p' = (1+t)p$

In any case, imposing taxes reduces the community surplus. The difference between the original community surplus and the new community surplus plus the tax revenue is called ***deadweight loss***. However, if taxes are present, it is crucial that we include the government into the consideration and computation of the community surplus. That is, in the presence of taxes, the community surplus is the sum of the producers' surplus, the consumers' surplus and the tax revenue.

$= CI + PI$

$= (CS + PS) - (CS_{TAX} + PS_{TAX} + CI + PI)$

Note correction to earlier definition.



A deadweight loss occurs when the market price/quantity deviates from the equilibrium price/quantity. We have seen that taxes can cause a deadweight loss.

$(CS_{TAX} + PS_{TAX} + CI + PI)$ is the community surplus/ social welfare in the presence of taxes. We include the tax revenue in this as it can be used by the government, e.g.,

- To raise money for the government/pay for public services, such as NHS and as well as investment in public projects, such as roads, rail and housing.
- To account for (negative) externalities that are not accounted for by either of the parties (consumers and firms).
  Examples:
  - Harm to health (tobacco, alcohol)
  - Harm to the environment (CO_2)

On the other hand, some activities are deemed to have positive externalities (education, culture, …), which functions as justifications for subsidies.

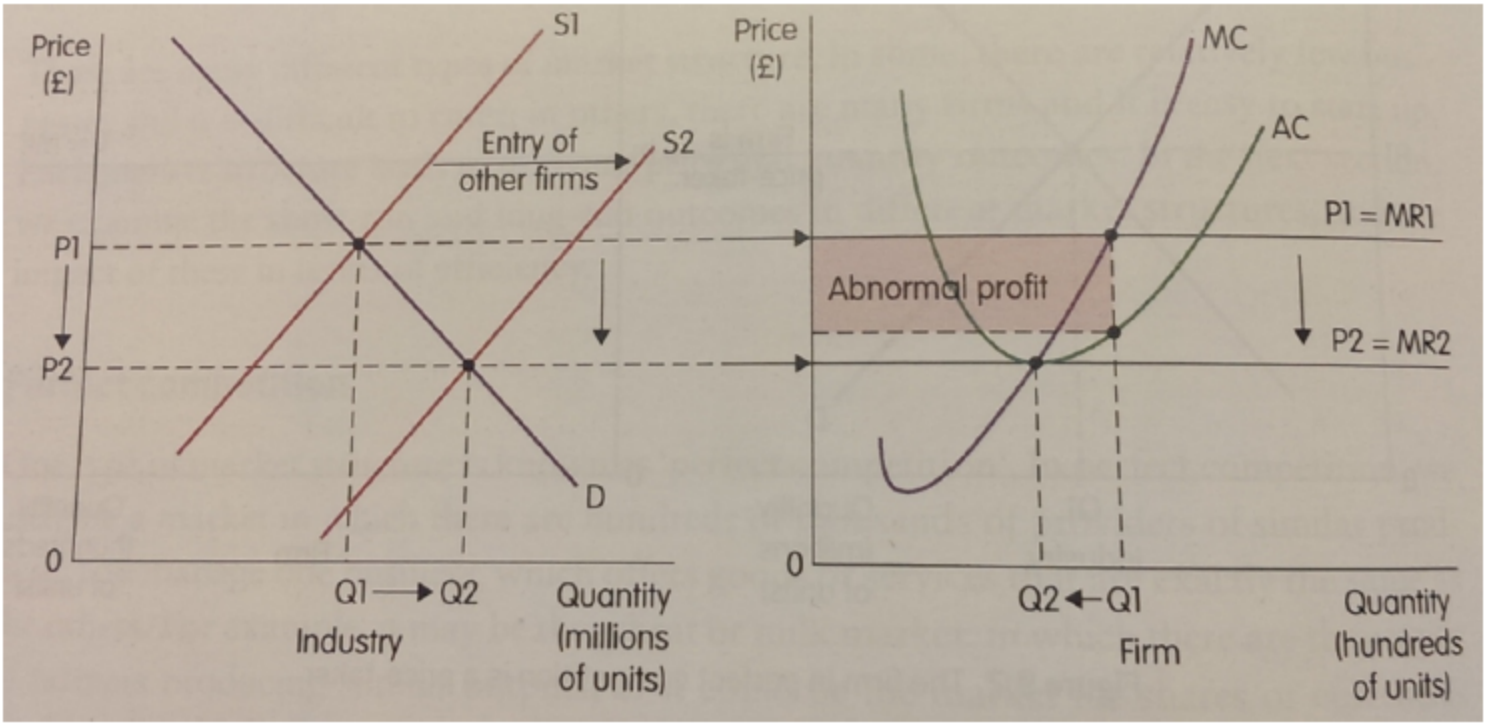
Subsidies can also cause a deadweight loss. Also in the presence of subsidies, one must include the government into the consideration and computation. That is, the community surplus is the sum of producers' surplus and consumers' surplus ***minus*** the total size of the subsidy.

Moreover, maximal or minimal prices as well as quantities can cause a deadweight loss.

Abnormal Profits, Long-run Equilibrium and Productive Efficiency

(ie. 'price-taking' - this includes p and $\underset{\sim}{w}$)

Consider a competitive firm and suppose it has costs given below, on the right, whilst operating in the market with industry supply and market demand as given on the left:



(Recall, profit $\pi(y) = py - c^*(\underset{\sim}{w}, y)$

marginal revenue $(MR) = \dfrac{py}{y} = p$

marginal costs $(MC) = \dfrac{\partial c^*(\underset{\sim}{w}, y)}{\partial y}$

average costs $(AC) = \dfrac{c^*(\underset{\sim}{w}, y)}{y}$

For maximum profit:

$$\partial\pi/\partial y = 0 \Rightarrow MR = MC = p$$

and $\partial^2\pi/\partial y^2 \leq 0 \Rightarrow$ MC is increasing in y

AND $AC \leq MC$ (← converse of shutdown condition) with $MR = MC = p$

(Recall shutdown condition:

$$0 > py - c^*(w, y) \quad \forall y > 0$$

$$\Rightarrow \quad AC > MR \quad \forall y > 0.)$$

(Also, $MC = AC \Rightarrow \frac{\partial c^*}{\partial y} = \frac{c^*}{y} \Rightarrow \frac{\partial}{\partial y}\left(\frac{c^*}{y}\right) = 0$, i.e., $AC = 0$)

The firm's individual supply curve is obtained under the assumption that the firm is profit-maximising: by construction, we have that at any point on the firm's (positive) supply curve, their marginal revenue will equal their marginal cost.

Suppose the industry supply is given by S_1 in the short run.

What will happen as we move into the long run?

- Other firms want to enter the market, as it is easy to make money!
- This will drive the supply up (increase the quantity for fixed price), until...
- ...marginal cost equals average cost.

Thus, the long-run equilibrium is the point at which no individual firm makes a profit.
In other words: The shutdown condition we have derived in the previous chapter is binding in the long run!

But surely companies make long-run profits all the time?!

How can this be explained?!

It comes down to how a firm defines its costs (and hence its cost function). These include accounting costs – this is money that the firm has actually paid out (e.g., for infrastructure, raw materials, staff, etc); this is what a

'non-business' person would think of as costs.

But in reality a firm will define its costs to include accounting costs as well as what are referred to as opportunity costs — these represent the value (i.e., profit resulting from) the 'best' alternative business strategy to the one that the firm actually adopts. This isn't an amount that the firm has actually spent.

Altogether,

accounting costs + opportunity costs

= 'Economic costs'

It is these economic costs that are covered by $c^*(\underset{\sim}{w}, y)$. So with $\Pi(y) = py - c^*(\underset{\sim}{w}, y) = 0$, the firm will still actually be making money:

$\Pi(y)$ = 'economic profit'

= 'accounting profit' − opportunity costs

(the firm's actual profit)

Firms that exactly cover their economic costs have zero economic profit, but their accounting profit is equal to their opportunity costs; they are said to be earning a **normal profit**.

zero economic profit $\Rightarrow$

accounting profit = opportunity costs

Firms which cover more than their economic costs are said to be making an abnormal profit. This will encourage entry into the market by other firms.

(As in sketch above,

abnormal profit = $(MR)_y - (AC)_y$

$= 0$ if $MR = AC$)

Firms that make normal profits are said to be ***productively efficient*** – they produce at the minimum of the average cost curve, when taking opportunity costs into account.