AE 503

IMPERFECT INFORMATION

AND PRODUCT QUALITY

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- **In the competitive model, goods have relatively simple characteristics about which consumers are *perfectly informed***

- **In reality, most products are relatively complex bundles of *characteristics* from which consumers get utility, e.g., for food these might be:**

  - **look and taste**
  - **packaging and processing**
  - **nutritional value**
  - **food safety**

- **Such "quality" characteristics might be regarded as having a demand and a supply that intersect at a market-clearing price**

  - **demand for quality is a function of consumers' willingness to pay for it**

  - **producers supply quality if it is profitable for them to do so**

- **This assumes both consumers and firms are *fully informed*, market prices transmitting all relevant information about products**

- **In reality, sellers tend to be better informed about quality than consumers, and, as a result, there may be a *market failure* that requires correction by the policymaker**

- **In order to understand such a market failure, goods can be divided into three types:**

  - ***search goods* - consumers can determine quality prior to purchase, little need for government regulation**

  - ***experience goods* - consumers cannot determine quality until after purchase – main issue here is whether firms have an incentive to supply quality or to cheat consumers**

  - ***credence goods* - consumers cannot determine quality even after purchase - food safety and nutritional aspects of food may require government intervention to assure quality**

- **Focus on experience goods first:**

  - **consider case where, in each time period, consumers purchase a product x at price p, and the good has quality level q**

  - **prior to consumption, consumers are uncertain about actual quality, but they are able to ascertain that it meets some minimum quality**

  - **many firms can supply the good with identical technology, the cost function being:**

$$C(x,q) = c + f$$

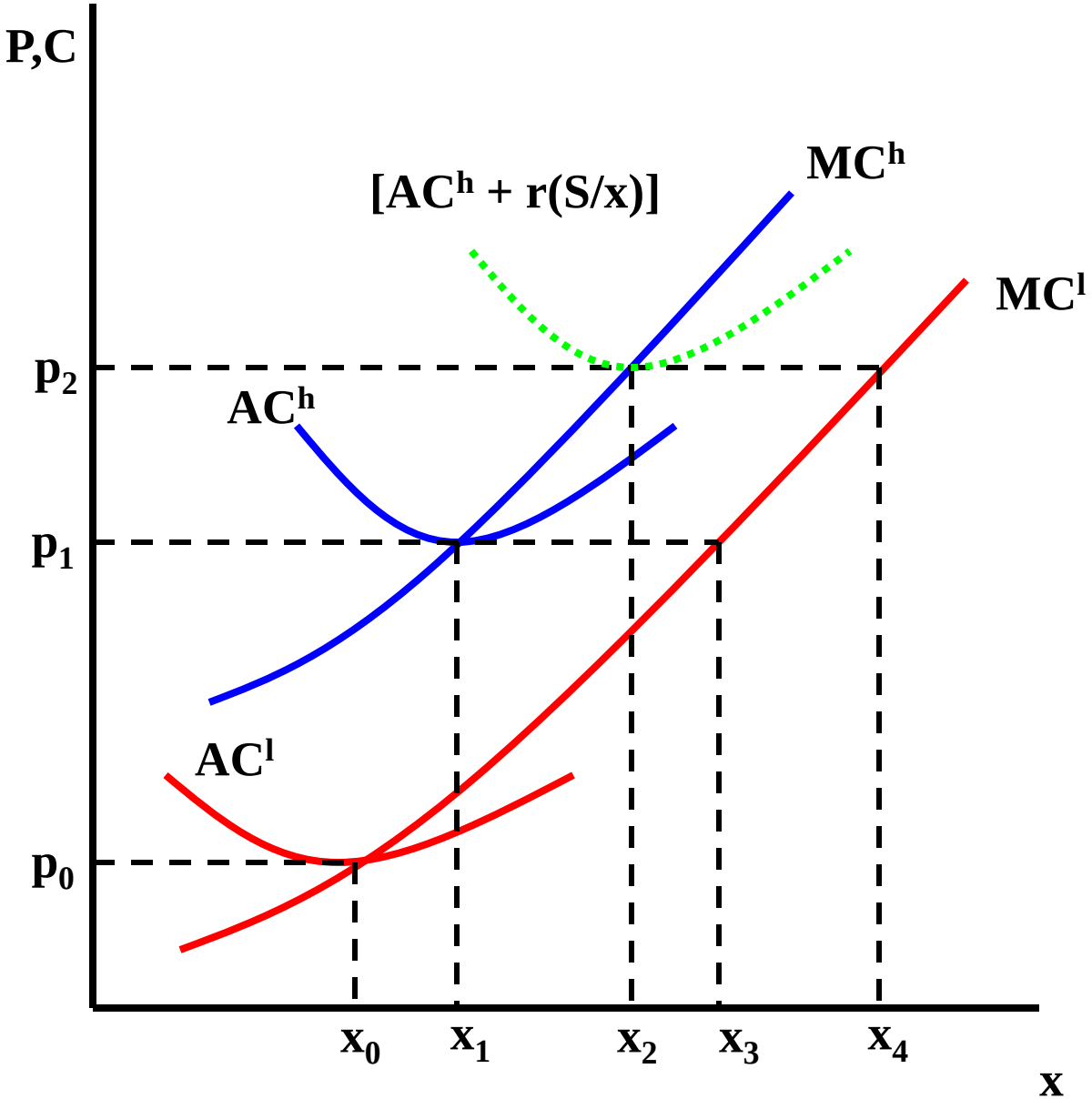
c = variable costs f = fixed cost

$f^h > f^l$, i.e., fixed cost of producing high quality exceeds that for low quality

$MC^h > MC^l$, i.e., marginal cost of producing high quality exceeds that for low quality

  - **quality is discovered post-purchase - if firm cheated, punished by consumer boycott**

PRODUCT QUALITY AND EQUILIBRIUM



- **What are possible equilibria in this market?**

  - **(p_0, x_0) and (p_1, x_1) are the competitive market prices/quantities for low and high-quality goods - no excess profits made by firms in either case, i.e., $p_0 = AC^l$, and $p_1 = AC^h$**

  - **as consumers cannot observe quality, firms could cheat by selling low-quality at a high quality price - i.e. sell x_3 at the high-quality price p_1 - this is known as *moral hazard***

  - **firms earn one-period profits from cheating, present value W_1 being:**

$$W_1 = 1/(1+r)\pi_1$$

    where r is discount rate, and π_1 are profits of cheating firms

  - **rational consumers will realize firms have an incentive to do this, and will only be willing to pay the low price p_0, so only low-quality goods are produced - i.e., a "lemons" market**

- **there may be a price p_2 above the competitive price p_1 where firms are willing to supply x_2 of high-quality, and consumers still get some surplus for buying high-quality**

- **firms earn perpetual stream of profits from supplying high-quality, the present value W_2 being:**

$$W_2 = (1/r)\pi_2$$

- **cheating firms can also expand low-quality output to x_4 at p_2, earning one-period profits with a present value of:**

$$W_3 = 1/(1+r)\pi_3$$

- **firms will not cheat as long as W_2-$W_3 > 0$, i.e., there exists a price premium motivating firms to not cheat consumers**

- **price premium stream can be thought of as "protection money" paid by consumers to induce firm to sell high-quality**

- **However, in a competitive market, existence of a price premium induces entry of new firms, putting downward pressure on price of high-quality good**

- **p_2 is minimum price constraint enforced by rational consumers, i.e., they will not purchase from any firm promising high-quality at price less than p_2**

- **How do firms supply high-quality without attracting entry?**

  - **if firms invest in specific-assets such as brand names and trademarks, they incur sunk costs S**

  - **investment shifts up average cost curve to $[AC^h + r(S/x)] = p_2$, where S/x are average sunk costs**

  - **firms will not cheat at high price p_2 as they stand to lose future sales and incur capital loss due to assets being non-salvageable – a form of *collateral* against non-performance**

- **Investment in firm-specific assets acts as a signal of quality assurance to consumers, but what if they cannot observe such investment?**

- **Firms use advertising: signals to consumers that there are non-salvageable costs generating a price premium - implies there should be a correlation between advertising intensity and extent of quality**

- **So in the case of experience goods, the problem of market failure can be resolved through the market - US and other firms certainly do invest in specific assets such as brand names and trademarks**

- **In food and agricultural sector, related concept to brand names and trademarks is that of *geographical indications* (GIs) – form of branding focusing on use of names associated with geographic origin of a product**

- **Unlike trademarks, GIs are common labels, typically accessible to many firms producing similar products**

- **Often observe concurrent use of GIs and trademarks for specific food products, e.g. European wines may be labeled with a specific GI, e.g., Champagne, and supplied by many firms, each with a distinctive trademark, e.g., *Veuve Clicquot***

- **GIs are places/regions used to brand goods – most commonly wines (Burgundy) and foods (Parmigiano-Reggiano)**

- **Distinctive feature of GIs is that quality is linked to geographic location where production occurs, e.g., climate, soil, local knowledge – i.e., *terroir***

- **Two key legal notions used to protect GIs:**

  (i) *Sui generis* schemes originally developed under Roman law; examples include: protected designations of origin (PDOs) e.g., Chianti, and protected geographical indications (PGIs) e.g., Tuscany olive oil

  Schemes not exclusionary, i.e., GI granted to all producers in region who meet product specification

(ii) *Common law* schemes, including US, where GIs protected by trademark system, registered as certification marks, origin of good being key attribute that is certified, e.g., Napa Valley wines – also non-exclusionary

- **Problem is that food products often contain elements of experience and credence goods**
  - **food safety and nutrition are experience attributes in some respects - if you experience a food-borne illness, the consumer gains some knowledge of product quality**
  - **most consumers, however, cannot make the link between food safety and health if there is a substantial time-lag between consumption and illness; the same is true of poor nutrition and health**
- **Market reputation models do not work well in the case of credence goods, and it is not practical for consumers to assess quality - i.e. there is a *market failure***

- **Due to the failure of the market's ability to supply high quality credence goods, government has to step in and play a role in aiding consumers to assess food quality**

- **Nutrition (FDA), food safety (USDA), and organic food (USDA) labeling all implemented and regulated at federal level – objective being to turn credence into experience goods**

- **Government (and industry) often has to take drastic action in the case of product safety, i.e., mandated/voluntary withdrawal of product from the market**

  - **"mad-cow" disease in the UK - all beef sold on the bone withdrawn from the market in 1996**

  - **"Perrier" water was withdrawn from the market at one point in 1990 when benzene was discovered in batches of the product**