



ΠΑΝΕΠΙΣΤΗΜΙΟ  
ΠΑΤΡΩΝ  
UNIVERSITY OF PATRAS

# LECTURE 9-10. *MARKET STRUCTURE, ENTRY AND EXIT*

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# I.O Perspective

In industrial economics we study the

- Policies of firms towards rivals and towards customers
- Firms in industries that are competitive or less competitive

*I.O Vs Microeconomics*

The focus of micro courses is usually on simple market structures competition and monopoly, whereas focus of I.O is on oligopoly market.

2. I.O is more concerned with policy questions than micro (these questions concern government policy towards business, regulation and public ownership of business, etc).

S-C-P vs Chicago School

“In concluding this paper, I am acutely conscious of the meagerness of reliable information presented. The paper is perhaps 5 per cent empirical information and 95 per cent speculation, some of it possibly tainted by wishful thinking. (Kuznets, 1955, p. 26)”-Data is important

# I.O Paradigms

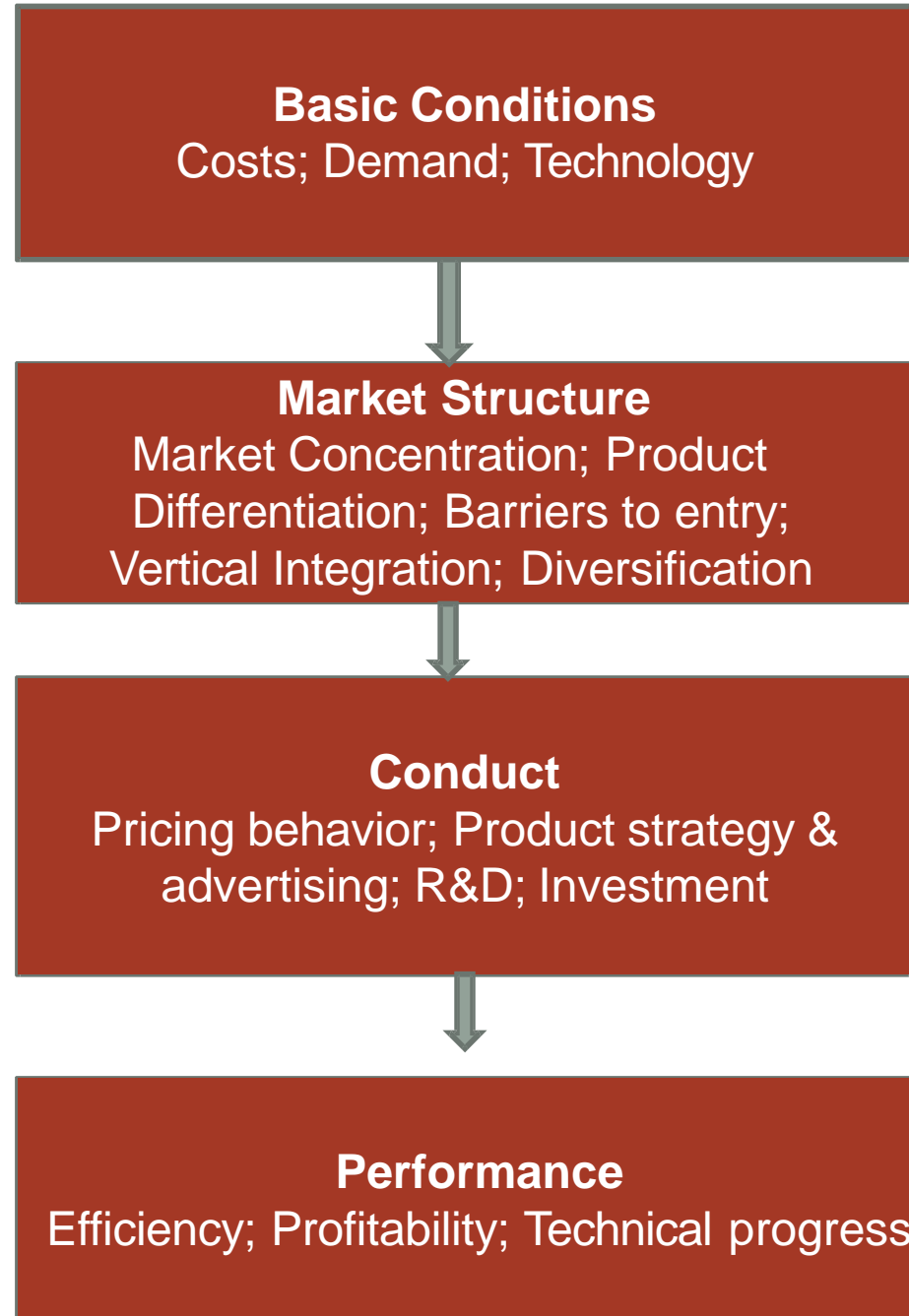
	S-C-P	“New” IO	Industry Dynamics
Technology	Cost Function	Cost Function +R&D	R&D & Trajectories
Nature of Tech	Black Box	Black Box + contracts	Knowledge Capabilities
Actors	Firms	Firms	Firms
Interactions	Competition (market)	Competition	Competition - Cooperation
Behaviors	Fixed Response	Strategic, game theory	Routines, adapt learning

# S-C-P paradigm (Mason, 1930; Chamberlin 1939; Bain, 1959)

1. Structure refers to market structure determined by technology and product nature. The variables that are used to describe market structure include seller concentration, degree of product differentiation and barriers of entry.
2. Conduct refers to a firm's behavior. The variables used to capture firm behavior include pricing strategies, collusion, advertising, research and development and capacity investment. Some have interpreted conduct as whether firms collude or compete.
3. Performance refers to outcome or equilibrium assessed in terms of allocative efficiency. The variables mostly used to measure performance are profitability and price cost margin.

**Structure → Conduct → Performance**

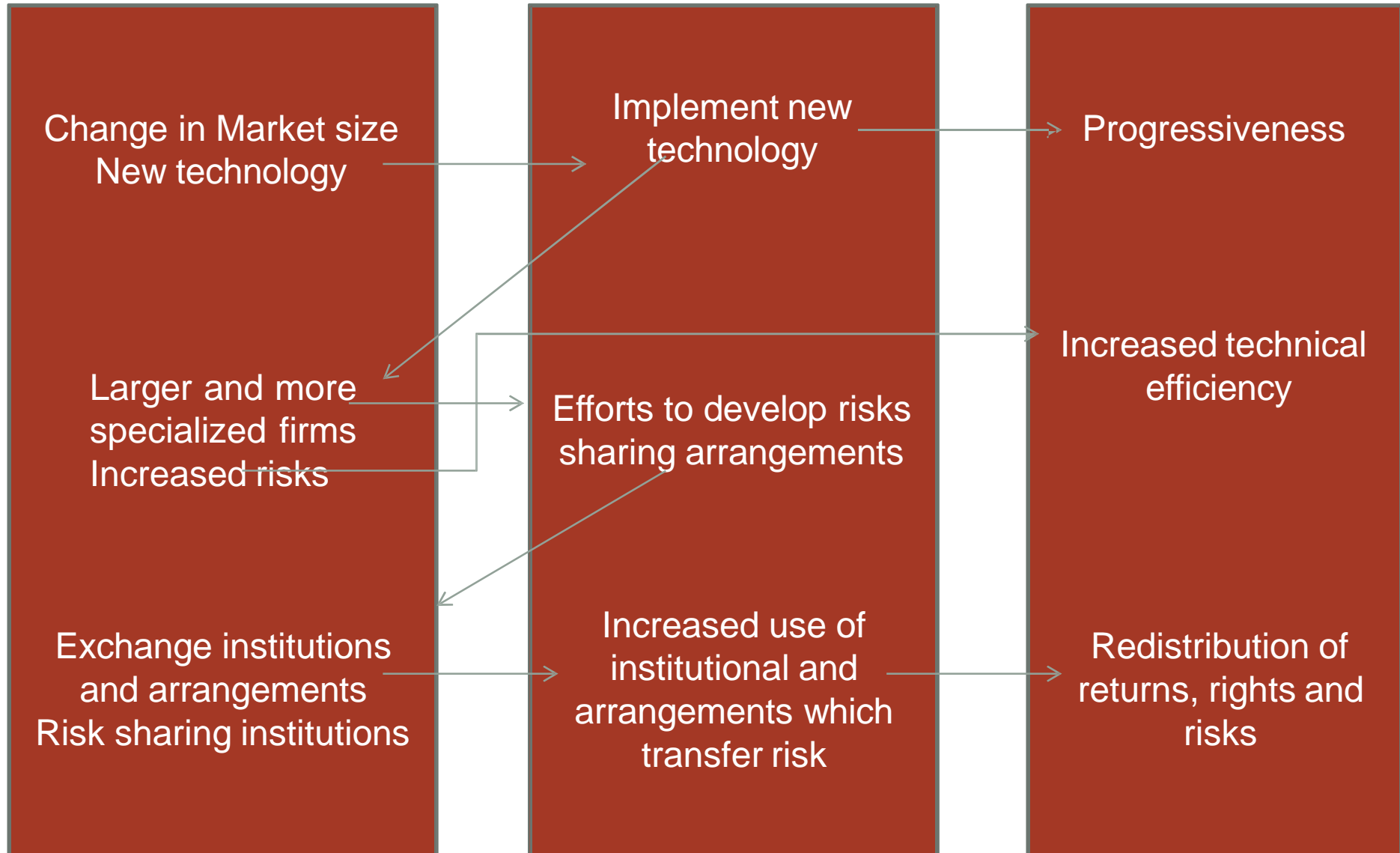
**S-C-P  
outline**



## Structure

## Conduct

## Performance



## Theoretical foundation

$$L_i = \frac{S_i}{\varepsilon} (1 + \lambda_i), \quad \lambda_i = \frac{d q_j}{d q_i}$$

$$\lambda_i = f(C_j, B_j, X_{ij})$$

$$L_i = g(S_i, \varepsilon, C_j, B_j, X_{ij})$$

$$\Pi_i = h(S_i, \varepsilon, C_j, B_j, X_{ij})$$

- 1) Product characteristic
- 2) Technology
- 3) Strategic behavior
- 4) Asymmetric information
- 5) Learning by doing
- 6) Scale economies and adjustment costs
- 7) Switching costs

# Market Concentration

Degree to which production in a particular market or industry is concentrated in the hands of a few large firms. Market (product, industry) Vs aggregate (nation, global) concentration.

Historical trends

- Share of largest 200 corporations in 1929 49% (Berle and Means, 1932)
- Aggregate concentration appears to have increased very little after 1929 (see data from Federal Trade Commission (FTC) and Census Bureau).
- Measures of MC. Please see previous lectures!

Remember factors as fixed costs, market size and scale economies as factors that, mainly, influence degree of concentration.



# Determinants of Market Structure-Product specific economies of scales

- Associated with the volume of output of any single product made and sold (from OECD <https://stats.oecd.org/glossary/detail.asp?ID=3527>).
- Such economies generally arise by avoiding the costs of interrupting production and re-tooling that is required in order to produce different products with the same machinery and equipment.
- An essentially product specific economy of scale stressed by Adam Smith comes from division of labor: with larger output workers can specialize.
- Stigler's "The division of labour is limited by the extent of the market"
- Fall in unit cost due to learning by doing.

# Determinants of Market Structure-Plant specific economies of scale

- Plant specific economies of scale are associated with the total output (frequently encompassing many products) of an entire plant or plant complex. Economies of scope may be embodied as part of plant economies as the costs of common overheads, e.g., head office administration and accounting costs, are spread across multiple products (from OECD).
- In chemical and metallurgical type industries the most important economies of scale at the plant-specific level come from expanding the size of the individual processing units.
- The output tends (whithin physical limits) to be roughly proportional to the volume of the unit, while the amount of material required for construction is more closely proportional to the surface area of the unit's reaction chambers
- So called two-third rule. Area of a sphere or cylinder varies as the two-thirds power of volume, the cost of constructing process industry plants can be expected to rise as the  $2/3$  power of their output capacity.
- Existence of economies of scope!!

# Vertical Integration and Firm's Boundaries

- What determines which operations are performed internally and which outside the firms?
- Coase (The nature of the firm, 1937) observed that the distinguished mark of a “firm” is the “suppression of the price mechanism”.
- Resource allocation in the market is normally guided through prices, but within the firm the job is done through decisions of managers.
- Activities are collected in “firms” when transaction costs incurred in using the price mechanism exceed the cost of organizing internally.
- Arora, Fosfuri and Gambardella’s “Markets for Technology”
  - IPR facilitates the emergence of markets for technology
  - i.e. Biotech firms that only do R&D to patent and license
  - i.e. The design of the chip is outsourced

# Technical change and Firm's boundaries

- Did technological revolutions had any relevant impact on the (horizontal and vertical) boundaries of the firm? (Dosi, Gambardella, Grazzi and Orsenigo)
- If the markets for technology paradigm applies extensively to most (beyond high tech only) sectors one should expect a shift (downsizing) of the firm size distribution. More exchanges in the market than within the firm.
- Apparently this is not the case, at least in US, Italy and other countries (percentages remain the same).
- **Stochastic determinants of market structure (Remember Gilbrat Law) each of these firms faces a given probability distribution of proportionate growth which is independent of firm size.**

## Some criticism on S-C-P

- However, recent work has shown that most of the correlation between profitability and concentration found by Bain (and followers) was almost surely spurious; being the result of aggregating a positive relationship between sellers' market shares and profitability to the industry level.
- Really hard to measure profitability and marginal cost.
- Structure (and also Conduct and Performance) might be endogenous (Yet in social sciences everything that is of some interest is endogenous).
- Hard to identify the causal nexus. The dominance of the estimated relationship between market share and profitability poses a theoretical challenge, since it is consistent with diverse alternative concerning the profitability of individual firms

# Empirical studies

- Bain's initial claims of statistically significant profit-concentration relation, became widely accepted, and replicated both in US and other countries (Dependent variable is Profitability as Price-Cost Margin (PCM).  $PCM=f(CR)$ )
- Weiss (1971, 1974). Data for 399 census industries, for 1963.
- Empirical work by Ravenscraft (1983) showing that PCM were positively associated to market share, but if anything, negatively with seller concentration.
- Dennis Mueller seminal work (Economica, 1977) examines if there must almost certainly be some tendency for relatively high profits to fall and low profits to rise.
- But can we expect high profits to fall to competitive levels, and how long must we wait?
- Evidence: Profitability differences among firms tend to persist over long periods for the US.
- Reveal the issue of risk, the choice of the sample or time period and firm's idiosyncracies-talent.

# Statistics from Empirical Results

Works of Dunne et al., (1988, 1989), Geroski (1995), Cable and Schwalbach (1991), Sutton (2007) and finally Jarmin et al., (2004) concludes in the following:

1. Although entry is free and accessible for all the firms the entry rate is rather disappointing
2. The new firms seems to have access in a very small rate of the total market share
3. Their rate of survival is rather low (strong incentive to leave the market- Birch, 1987). However, it is evident that sectors with rates of entry are responsible for high rates of market abandoning (cable and Schwalbach, 1991).

# Entry and entry barriers

1. Under what conditions can actual or potential entry discipline the industry to act competitively?
2. What are the causes of long-run deviations in price from the competitive level?
3. Do entry barriers result in lower social welfare than would be the outcome in their absence?
4. What barriers are empirically most significant and in which industries?

Bain (1956) tried to answer on Q1-Q2-Q4 and defines i) product differentiation, absolute cost advantages and scale economies (See later Modigliani, 1958 for limit-pricing model) as the three main sources.

What is actually entry and what a barrier to entry?



## Some definitions

- *“the advantage of established sellers in an industry over potential entrant sellers, these advantages being reflected in the extent to which established sellers can persistently raise their prices above a competition's level without attracting new firms to enter the industry. (Bain, 1956)”*
- *“... a barrier to entry is a cost of production (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry (Stigler, 1968)”*
- *“... they thus can be defined to be socially undesirable limitations of entry, which are attributable to the protection of resource owners already in the industry. Von Weizsäcker, 1980)*

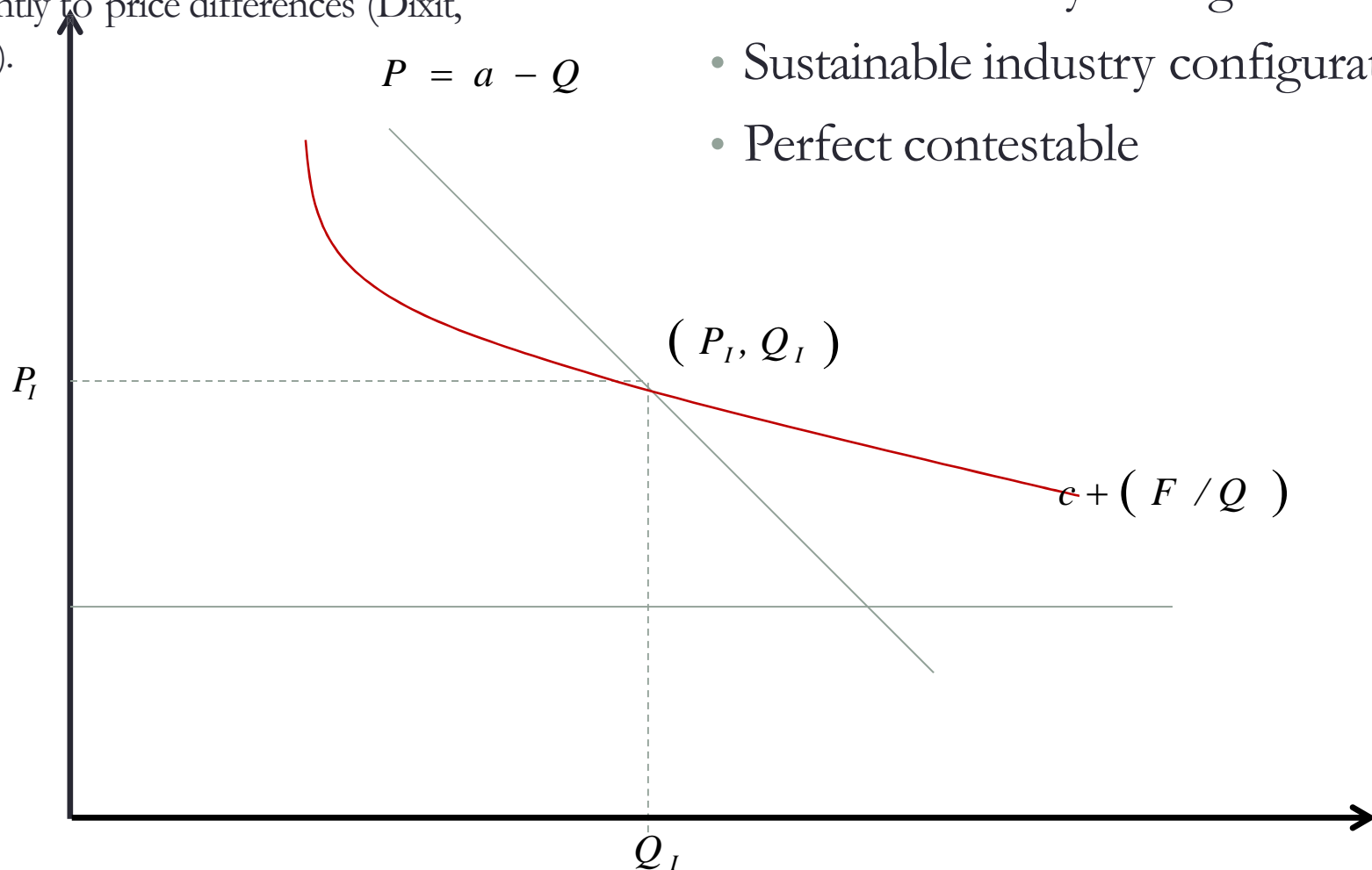
# Aspects that need further elaboration!

1. Entry barriers may or may not be reflected in current industry prices. Even if an incumbent firms are able to collude perfectly to exploit them, either entry barriers may be so high that monopoly pricing doesn't trigger entry or so low that it is better to take high profits now even if entry occurs and future profits are lower.
2. Bain lays considerable stress on the fact there is a considerable heterogeneous queue of potential entrants and both the barriers facing the least disadvantaged potential entrant (the immediate condition of entry) and those facing potential entrants further down the queue (the general condition of entry) may be significant in determining industrial behavior.
3. Bain has been criticized for failing to discuss the identity of potential entrants.
4. Caves and Porter (1977) suggest that the concept of entry barriers should not be restricted only to entry in an industry.

- All producers have access to the same technology
- The technology may have scale economies such as fixed costs but not sunk
- Incumbents can't change prices instantly, consumers respond instantly to price differences (Dixit, 1982).

# Contestable Market Theory

- Define Industry configuration  $(P_i, Q_i)$ .
- Feasible industry configuration.
- Sustainable industry configuration.
- Perfect contestable



# Innocent and strategic “entry deterrence”

Salop (1979) introduced two different kinds of barriers innocent and strategic.

- Innocent entry barriers arise simply as the side-effect of profit maximising decisions taken without regard to their implications for potential entrants. Dividing into post-entry (superior product design-lower cost); and pre-entry (capital resources to the industry).
  - The first mover advantage that results from pre-entry provide foundation for the theory of strategic entry barriers.
- Independence commitment
  - Crude threat
  - Joint cost sharing

# Barriers to entry

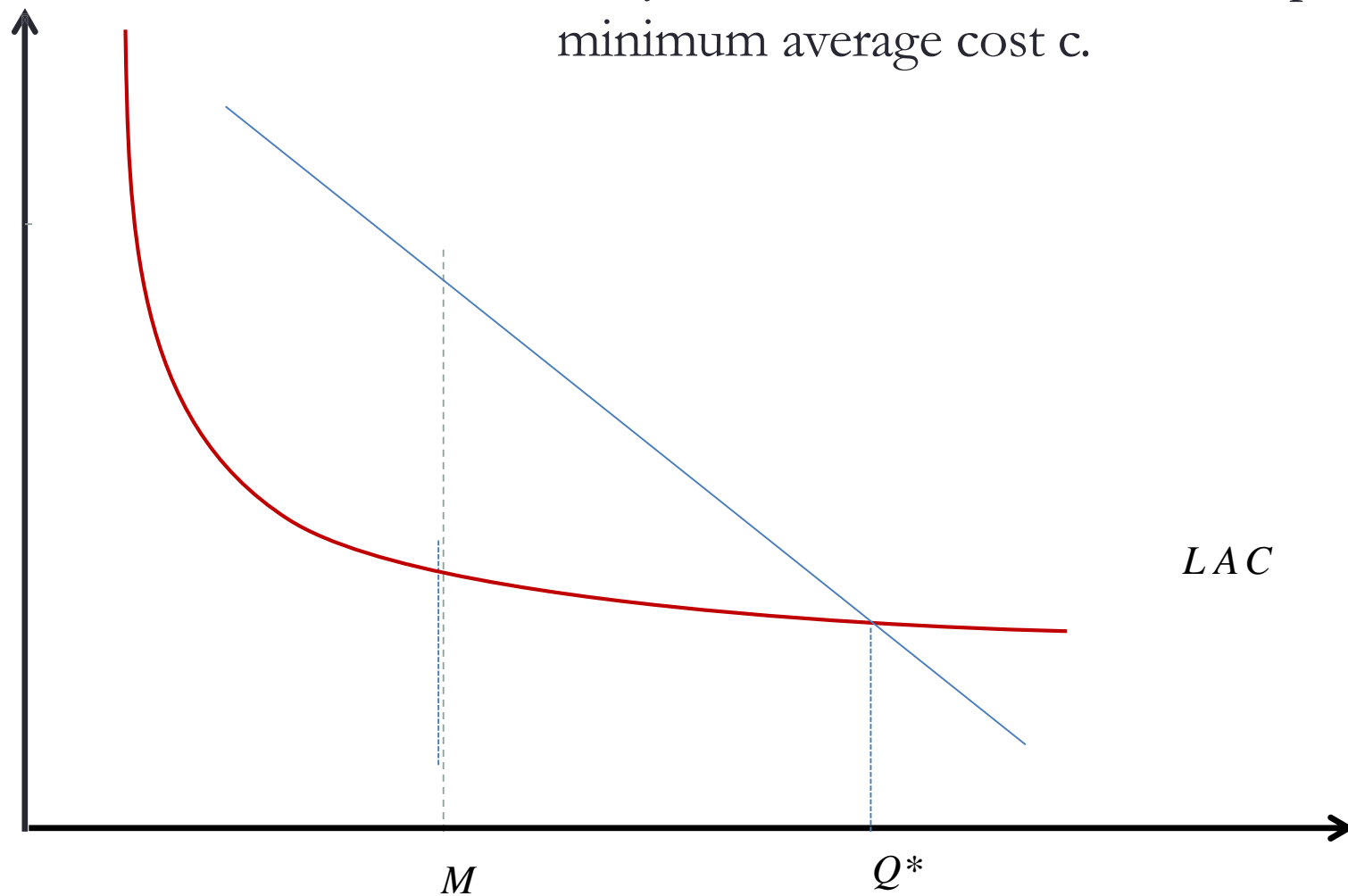
- Bain (1956) defined a barrier to entry by its effects on profitability, in particular in terms of the ability to earn above-normal profits without inducing entry. Economies of scale may or may not be regarded as entry barriers.
- Stigler (1968) later defines an entry barrier as a cost advantage of incumbents over entrants and von Weizsäcker (1980) argues that a cost differential is only an entry barrier if it reduces welfare.
- Baumol, Panzar and Willig (1982) argues that it is the nature of the cost structure which determines entry barriers.

# Causes of Barriers to entry

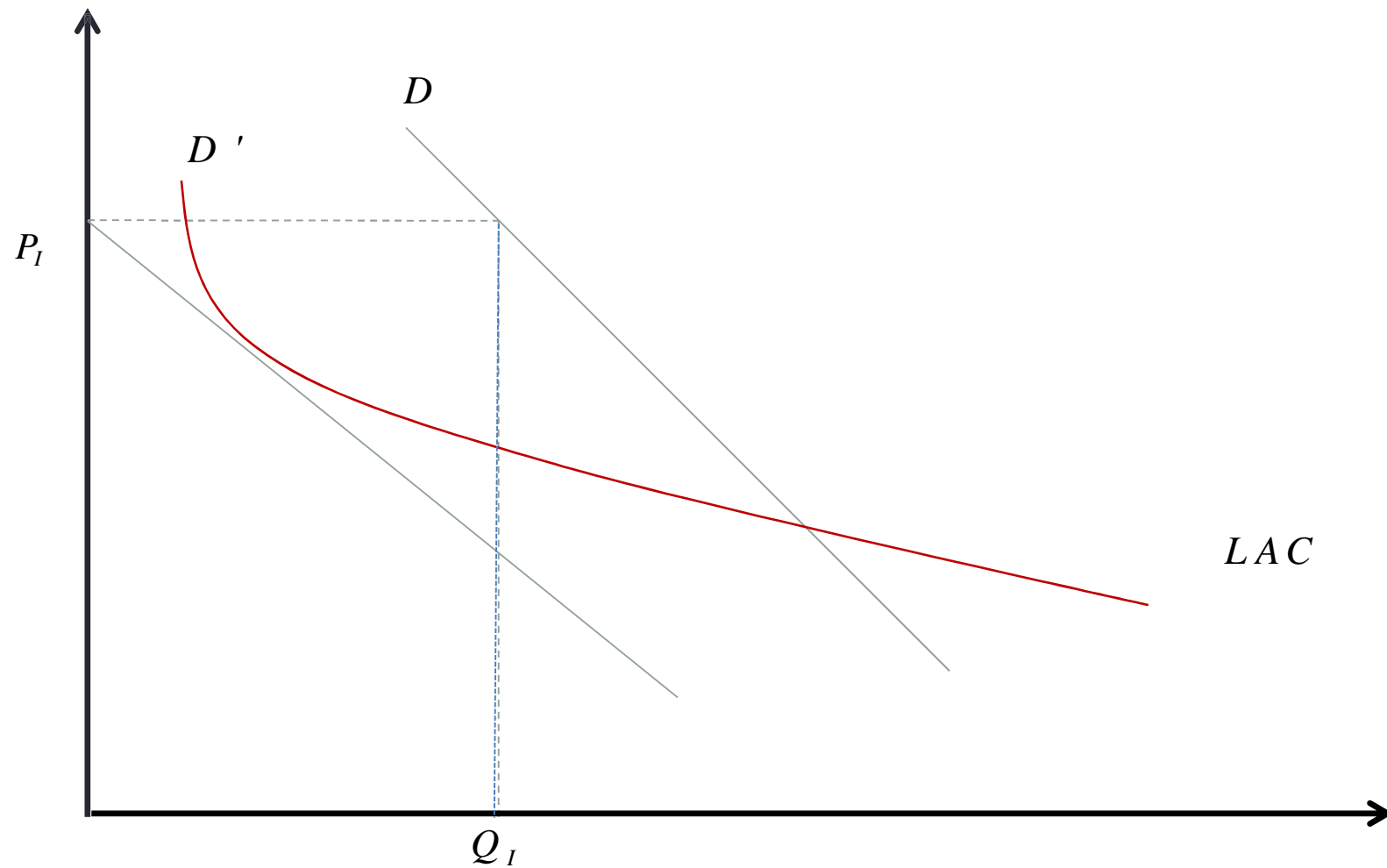
1. Economies of scale may or may not be regarded as entry barriers. Clearly, with large scale economies there is only place for a few producers in an industry, and thus entry might be difficult.
2. Excess capacity plays an important role in the theoretical discussion. Spence (1977), Dixit (1979, 1980), Bulow, Geanakoplos and Klemperer (1985) are among the first to point out the asymmetry of an incumbent and a potential entrant.
3. Product differentiation. Consumers view products as imperfect substitutes for a number of reasons, such as different varieties (horizontal product differentiation) or product quality (vertical product differentiation).
4. Absolute advantage (i.e Innovation). Bain (1956) already identifies absolute cost advantages as a major reason for entry barriers, and obviously, process innovation that aims at cost reductions.

# Economies of Scale – Natural Monopoly

A natural monopoly exists as long as  $M > Q^*/2$   
Only if  $M > Q^*/2$  two firms both produce at minimum average cost  $c$ .



# Economies of Scale -Limit-Pricing model





# Absolute cost advantages

1. Patents or secrecy may restrict access to the most efficiency production techniques
2. Incumbents may control the most efficient (cheapest or highest quality) sources of supply of an important factor of production
3. If a factor is in very limited supply, even a small increase in demand following entry may raise price to both entrant and incumbent.
4. Incumbents may have a lower costs funds that are available for potential entrants this advantage is magnified if production techniques are capital intensive and subject to large economies of scale.

Let no see four potential examples:

Vertical Integration

Full line forcing

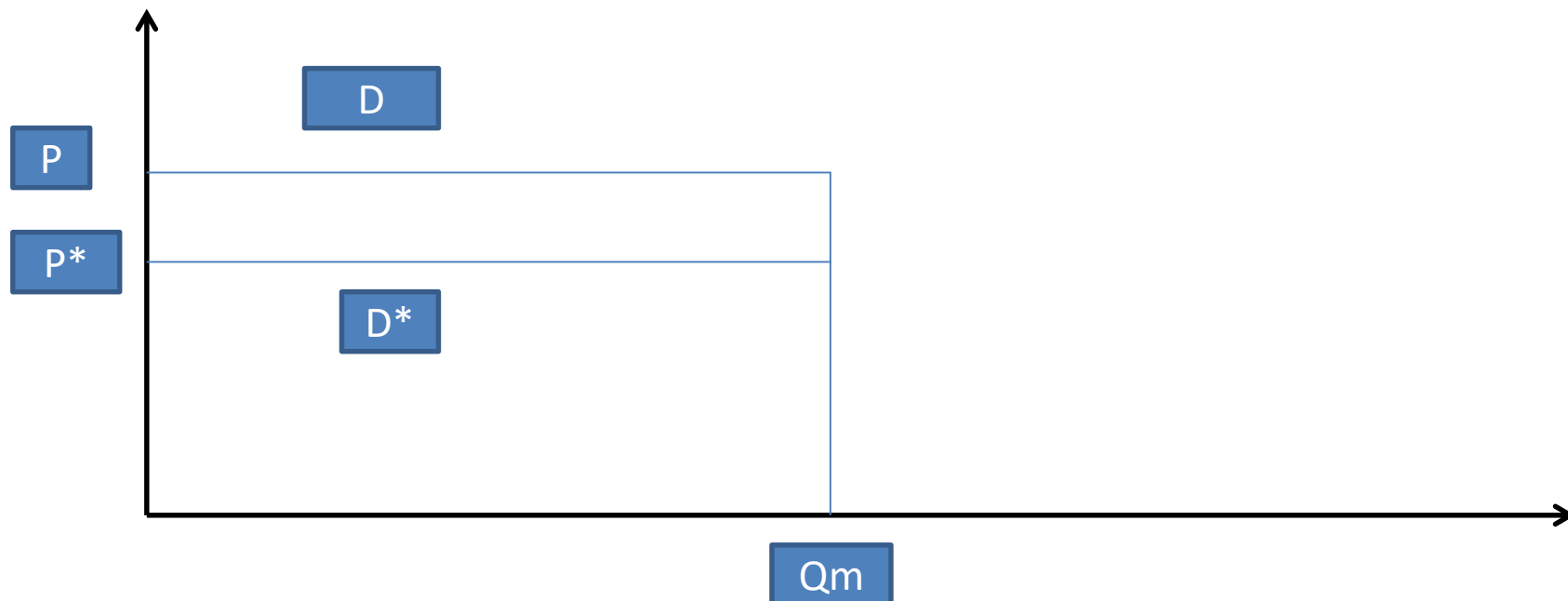
Advertising and R&D efforts.

Investments as a barrier and in experience, customer development, networking, brand proliferation, raising rivals costs.

# Product Differentiation

Two broad categories including:

1. Quality or vertical differentiation: product may be generally ranked according to quality such that if each is the same price everyone prefer the best.
2. Product can prefer different products or each customer a wider to a narrowest variety of products either way similarly priced products can each find their own niche in the market.



## Measuring Barriers to entry

- Barriers to entry can be defined in a variety of ways – any factors that increases the unit production cost of new entrants, or any impediments that imposes a cost on new entrants but not on the incumbents.
- In order to find out the factors that constrain the entry of new firms in the market, most studies have used data at industrial level (Bain, 1956; Orr, 1974; Mata, 1991; von der Fehr, 1991; Schwalbach, 1991; Christian, 2003; Balcerowicz, 2003; Xhillari, 2003).
- These studies mostly show that entry barriers can be economies of scale, sunk costs, industry concentration, capital requirements, advertising intensity, research and development intensity, and regulations and institutions.

## Is large capital and MES barrier to entry?

- One such barrier to entry is the minimum efficient scale (MES) of production in relation to the size of market demand. This has been measured by the ratio of sales of plants at the midpoint of industry plant size distribution to total industry sales.
- An alternative measure is the cost disadvantage ratio which is the ratio of value-added per worker in plants below MES to that in larger plants. Another type of barrier to entry that is widely used in empirical SCP studies is product differentiation which is proxied by the ratio of advertising expenditure to sales.
- Large capital needed maybe an another obstacle.

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