Firms Cheat Sheet

Important Definitions

Short run = A time period where there is at least one fixed factor of production
Long run = A time period where all factors of production can be varied, except the level of technology
Fixed factor = An input that cannot be increased in supply in the short run (usually capital/land)
Variable factor = An input that can be increased in supply in the short run (usually labour and raw materials)
FC = Cost that does not vary with output level
VC = Cost that varies with output level
MC = Cost incurred in producing an additional unit of output
IEOS = Savings in costs that occur to a firm as a result of the firm's expansion which is the result of the firm's own policies and actions
IDOS = Increases in costs that occur to a firm as a result of the expansion of the firm which is the result of the firm's own policies and actions
EEOS = Savings in costs that occur to all firms in an industry as a result of the expansion of the industry or the concentration of firms in a certain location
EDOS = Increases in costs that occur to all firms in an industry as a result of the expansion of the industry or the concentration of firms in a certain location

Objectives of Firms

- Traditional objective of firms: Maximise profits
    - Shareholders goal is to maximise profits due to ↑ dividends
    - ↑ Profits ⇒ ↑ Ability to conduct non-price competition (e.g. R&D, advertising) ⇒ ↑DD + More price inelastic in the LR
    - ↑ Profits ⇒ ↑ Reserves which can be drawn upon to survive times of economic recession even with subnormal profits
- Profits = Economic Profit = Revenue - Economic Cost
- Deviation from profit maximisation objective
    - Prinicipal-agent problem
        - In larger firms, there is separation of ownership (shareholders) from control (directors, managers)
        - Objective of principal (shareholders) different from agents (directors, managers)
        - Shareholders —> Maximise profit
        - Managers —> Maximise sales revenue/growth
    - Satisficing Behaviour
        - Complex environment with many different parties
        - Different self-interests which can be conflicting in nature
    - Nationalised industries
        - Social and political objectives apart from profit maximisation
            - Seek to maximise social welfare and allocative efficiency

        - Produce at 0 economic profit to ensure long term sustainability
    - Imperfect information
        - May not have detailed information about demand and cost conditions, and hence unable to effectively use economic concepts
    - Social enterprise
        - Main objective to carry out social/environmental mission but using market based strategies

Short run

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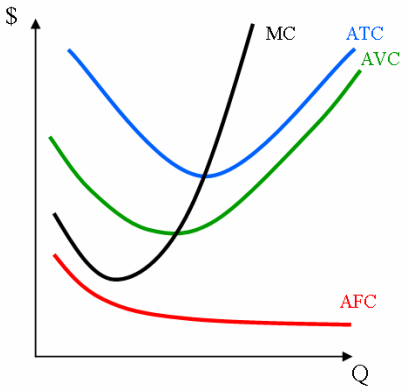
Fixed factor = An input that cannot be increased in supply in the short run (usually capital/land)
Variable factor = An input that can be increased in supply in the short run (usually labour and raw materials)

- Assumptions:
    - Only 2 factors of production:
        - Labour (Variable factor)
        - Capital (Fixed factor)
            - No. of plants/machinery fixed → Cannot increase to increase output
- Production
    - *Law of diminishing marginal returns
        - As more units of variable factor applied to given quantity of a fixed factor, there comes a point beyond which additional output from additional units of the variable factor will diminish
    - 3 stages

        1. Increasing marginal output
            - More efficient labour-capital combination due to division and specialisation of labour
                - Fixed capital used more effectively by adding more workers
        2. Decreasing marginal output
            - Inefficient labour-capital combination
                - Overcrowding arises
                - Fixed factor over-utilised
        3. Total output falls

            - Marginal output has decreased to the negative range

Costs



Fixed Cost = Cost that does not vary with output level
AFC curve

- Downward sloping
- TFC spread over larger quantities of output

Variable Cost = Cost that varies with output level
AVC curve

- U-shaped
- Decreases due to increasing marginal returns
    - Division and specialisation of labour
- Increases due to decreasing marginal returns
    - Overcrowding
    - Less efficient factors of production employed (e.g. less skilled/productive labour)

Total Cost = FC + VC
ATC curve

- U-shaped
- Min point lies to the right of min point of AVC
- Decreases sharply as AFC and AVC decreasing
- ATC continues to fall even when AVC increases as ↓AFC > ↑AVC
- ATC eventually increases as ↑AVC > ↓AFC
- ATC and AVC converge as AFC decreases

Marginal Cost = Cost incurred in producing an additional unit of output

- U-shaped
- Decreases due to increasing marginal returns
- Increases due to decreasing marginal returns
- Intersects AVC and ATC at min point as
    - AVC/ATC increases when MC>AVC/ATC

    - AVC/ATC decreases when MC<AVC/ATC
        - MC>ATC ⇒ Cost of producing additional unit > Average unit cost of production ⇒ ↑ ATC

Long Run

Long run = A time period where all factors of production can be varied, except the level of technology
⇒ Can increase all factors of production including no. of plants/capital goods

- Production
    - Increasing Returns to Scale
    - Constant Returns to Scale
    - Decreasing Returns to Scale
- Costs
    - LRAC curve
        - U-shaped
            - Decreases due to internal economies of scale
            - Increases due to internal diseconomies of scale
        - Envelopes all SRAC curves
            - Tangent to one point on SRAC curve
            - Each plant producing at optimal capacity does not translate into producing at minimum LRAC for that output → Can possibly increase no. of plants with each plant producing at less than optimal capacity to decrease LRAC
            - Flatter than SRAC curve
        - Minimum Efficient Scale
            - Min point of LRAC curve
            - Optimal output level beyond which no further significant economies of scale can be achieved
            - Tells us the maximum number of firms an industry can accommodate

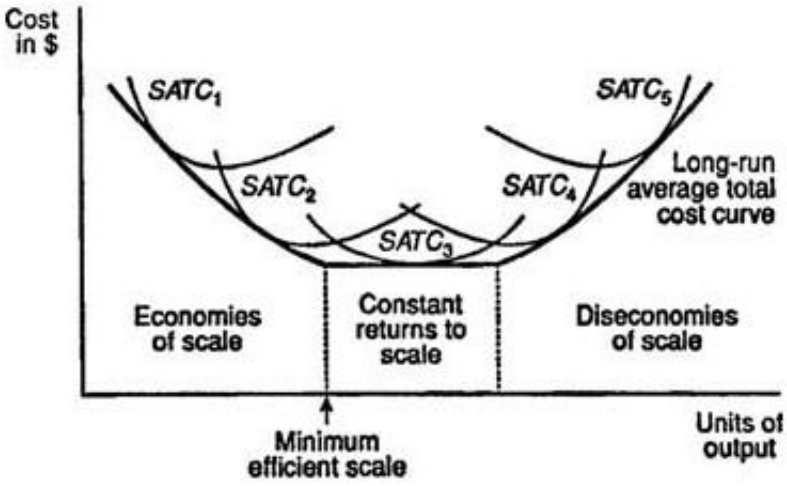
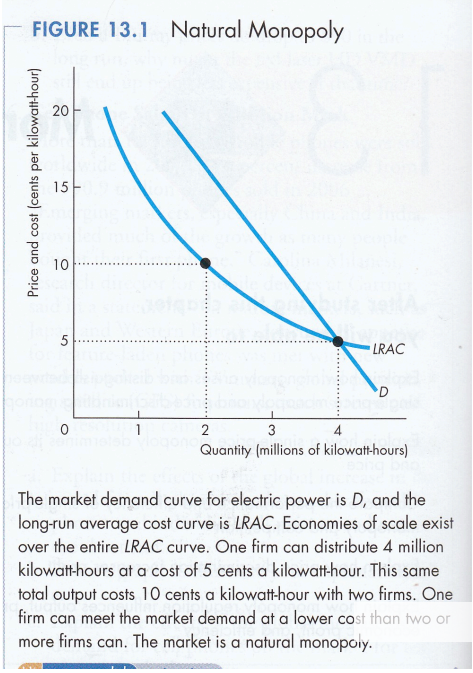


Figure 1 Short- and long-run average total cost curves



Economies of Scale

Internal Economies of Scale

- Technical EOS
  - Factor Indivisibility
    - Some inputs are of a minimum size and are large and costly but can

significantly increase output
        - These inputs can only be fully utilised in larger scale of production
    - Law of Increased Dimensions
        - Larger containers more efficient
        - Increase in surface area results in a more than proportionate increase in volume
        - e.g. Oil tankers
    - Specialisation and Division of Labour
        - Workers can do simpler and more repetitive jobs
        - Less training required
        - Workers become more efficient
        - e.g. Car manufacturing
    - Linked Process Economies
        - Larger firms can integrate a number of vertically linked processes (vertical integration), saving time, transport costs and energy, reducing per unit costs
    - By-product economies
        - More economical use of materials
        - Waste products could be used in the manufacture of by-products in larger plants
- Managerial EOS
    - Specialisation on a supervisory level
    - e.g. HR specialists raise productivity and reduce unit costs by creating efficient and cost effective hiring and human management processes
- Marketing EOS
    - Bargaining advantage and preferential treatment by suppliers when buying in bulk
    - Unit cost of supplies also lower as transportation cost increases at lower rate than quantity
    - Advertising costs spread over larger volume of sales
- Financial EOS
    - Easier and cheaper to raise funds
        - Banks offer lower interest rates and larger loans to larger firms due to better credit ratings
        - Larger firms that are public limited companies can raise capital through issuance of bonds to the public
- R&D EOS
    - High initial capital outlay of R&D spread over greater output
    - Improvements in technology can lead to further falls in average costs
- Welfare EOS
    - Improving of working conditions increases efficiency of workers (greater output per worker)
- Risk-bearing EOS
    - Spreads uncertainty in costs of production over larger level of output
    - Producing wider variety of products reduces impact of shifts in DD of specific products on the entire firm
    - Operating in many geographic locations reduces impact of spikes in costs of

raw materials in certain locations on the entire firm
    - Risk of R&D costs spread over wider range of activities
- Economies of Scope
    - Increase in types of products reduces AC of each product since overhead costs, managerial, marketing and financial EOS can be shared

Internal Diseconomies of Scale (Shift along LRAC curve)

- Complexity of Management
    - Principal-agent problem
        - In larger firms, there is separation of ownership (shareholders) from control (directors, managers)
        - Objective of shareholders different from directors and managers
            - Shareholders → Maximise profit
            - Managers → Maximise sales revenue/growth
    - Rigid organisational system resulting in loss of efficiency and higher costs
    - Extensive red tape slows down responses to changes in DD and SS conditions
- Strained Relationships
    - Relationships become impersonal
    - Workers have no personal loyalty to the firm, leading to sloppy work attitudes and apathy

External Economies of Scale (Shift of LRAC curve)

- Economies of Concentration
    - ↑ Availability of skilled labour as special educational institutions are set up to train people in the specific skills
    - Costs of well-developed infrastructure shared among all the firms in the area
        - e.g. Transport system, Public utilities system
        - e.g. Jurong Island
    - ↑ Reputation of the industry in the area, encouraging brand loyalty
- Economies of Disintegration
    - Subsidiary industries developed in the area to cater to the needs of the major industry
    - Subsidiary industries enjoy IEOS which translate to lower costs for the major industry
    - e.g. Seat belt industry to support main car industry
- Economies of Information
    - Research and expertise can be concentrated in a central research institution

External Diseconomies of Scale (Shift of LRAC curve)

- Increased strain on infrastructure when infrastructure is taxed to its limits
- Rising factor costs when there is a shortage

Large Firms

- **Advantages
  - Cost Advantages
    - Exploit available IEOS by expansion of output/expanding range of products and markets
  - Revenue Advantages
    - Increased monopoly power
      - Increased and more price inelastic demand for goods, increased price setting ability and able to restrict output to ↑TR and profits
    - Increase market valuation
    - Conduct price discrimination
  - Reduce risk of takeover
  - Risk bearing EOS
- Disadvantages
  - Cost factors
    - IDOS
    - Little to gain from increased output as IEOS quickly exhausted
  - Revenue factors:
    - Small DD ⇒ Little extra revenue to gain even if firm expands
      - Expanding may cause the firm to lose its uniqueness and lose its market
- Methods of Growth
  - Internal expansion
    - Increase size by producing greater output/extending range of its product
    - Plough back profits for financing of future expansion programmes
    - Borrowing
    - Initial Public Offering
      - Raise capital from the public
      - Position the company for eventual expansion into national/international markets
  - Merger or Acquisition
    - Vertical Integration
    - Horizontal Integration
      - For market domination
        - Reduce competition
        - Increase market power
    - Conglomeration
      - Combination of firms not directly related to each other
        - i.e. 1 large company split into smaller companies which deal in different industries
  - Franchising
    - Expansion by building chain stores to distribute goods
    - Supplier/franchisor alllows an operator/franchisee to use their trademark and distribute their goods in return for a fee
    - Operator has greater incentive than a direct employee

- Forcing out smaller firms through price wars and capturing their market share

Existence of small firms

- Revenue Factors
  - Small market size/demand (e.g. niche/specialised/luxury markets)
    - Limited by price
  - Nature of goods (e.g. Perishables)
  - Demand for variety (e.g. Fashion)
  - Demand for personalisation (e.g. Doctors)
  - Geographical limitations
    - Goods that are large in size relative to value have relatively high transport costs, thus firms would seek to operate in smaller local markets to reduce transport costs
- Cost factors
  - *Reach MES at low levels of output due to limited EOS (low overhead costs)
  - *Low BTE makes it easy for small firms to set up
  - Banding: Independent businesses work together to gain marketing EOS
  - Alternatives aims of the entrepreneur
  - Unwillingness to take greater risks due to higher TC if firm expands
  - Profit-cycles (Firms take time to grow)
  - Lack of/Difficulty in raising capital

Coexistence of Small and Large Firms

- Supply side
  - MES at low outputs and constant costs over wide range of output
    - Due to low fixed costs and IEOS quickly exhausted
    - L-shaped LRAC curve
  - Low BTE
    - e.g. Government regulations and policies
  - Banding between smaller firms
    - Independent businesses work together to gain marketing EOS
  - Economies of disintegration
    - Larger firms can outsource the production of certain items to smaller subsidiary firms
    - Smaller firm specialising in that good can reap IEOS
    - Small firms complement larger firms in same industry by specialising in a single process
  - Different sub-markets ⇒ BTE different for different sub-markets
  - Technological process
    - New technology embedded in small scale equipment (favours small firms) rather than capital intensive (favours large firms)
- Demand-side
  - Market can be segmented into diversified range of products and customers

(many sub-markets) ⇒ DD level different for different sub markets
    - Small firms cater to niche markets
    - Large firms cater to mass production
- Alternative objectives of firms