
Costs of Production

Mr Traynor©

Economics
Pack 2



Short Questions

1.

State **three** reasons why multinational firms are re-locating to countries like Vietnam, Indonesia and Thailand in Southeast Asia.

(i) _____

(ii) _____

(iii) _____

(17 marks)

2.

The Irish Government is considering the introduction of water charges for households. Outline **three** possible economic arguments in favour of the introduction of water charges for households in Ireland.

(i) _____

(ii) _____

(iii) _____

(17 marks)

3.

Oil prices rose steadily during the last year. State **two** economic reasons for this development. State **one** social cost and **one** social benefit of the rising prices.

Reasons:

(i) _____

(ii) _____

Social Cost: _____

Social Benefit: _____

(17 marks)

4.

Define **Social Costs**. State **TWO** significant examples currently facing the Irish economy.

Definition: _____

Example 1: _____

Example 2: _____

(17 marks)

5.

Energy costs (e.g. electricity) increased significantly in Ireland during 2006.

Outline **TWO** economic reasons for the increase and **TWO** economic consequences of this specific development for the Irish economy.

Reasons:

(i) _____

(ii) _____

Consequences:

(i) _____

(ii) _____

(17 marks)

6.

Define **internal economies of scale**. State **TWO** examples.

Definition: _____

Example (i): _____

Example (ii): _____

(16 marks)

7.

Explain the concept **Opportunity Cost**. Why is the concept central to the study of Economics?

(16 marks)

8.

“When a firm produces at a level of output at which marginal cost is greater than marginal revenue the firm is maximising profit (or minimising losses)”. **True/False**
(Place a circle around your choice and write a one-sentence explanation of your answer).

(17 marks)

9.

“There is no opportunity cost to a firm in using an asset which it already owns”. **True / False.**
(Place a circle around your choice and give a one sentence explanation of your answer.)

(17 marks)

10.

(a) State the **Law of Diminishing Marginal Returns**.

The table below illustrates the Law of Diminishing Marginal Returns.

Number of persons employed	1	2	3	4	5
Total output (in units)	12	27	47	63	73
Marginal Output (in units)	12				

(b) Complete the table above and state the point after which diminishing returns set in.

(17 marks)

11.

Define **SOCIAL COSTS**. Give **TWO** examples.

.....

.....


Example (i)

Example (ii)

(16 marks)

12.

With the aid of a clearly labelled diagram, explain the relationship between the **average** and **marginal** costs.

Diagram	Explanation
	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
	(17 marks)

Long Questions

2011

The table below shows the short run production costs for a small firm producing and selling kitchen furniture.

Number of units of output	Fixed Costs	Variable Costs	Total Costs
	€	€	€
1	400	600	1,000
2	400	1,200	1,600
3	400	1,850	2,250
4	400	2,900	3,300
5	400	4,100	4,500

- (a) (i) Using the information in the table above calculate the following:
- The **marginal cost** of producing the 4th unit.
 - The **average cost** of producing 5 units.
 - The **profit** earned by the firm selling 5 units of output at €1,200 per unit. (Show your workings.)
- (ii) Using the information in the table above, draw the firm's short run average cost (AC) curve. Explain the reasons for its shape. (30)
- (b) 'The cost of doing business in Ireland is falling. However, some costs continue to increase or remain relatively high'. (National Competitiveness Council Report, 2010)
- (i) Discuss the economic advantages of falling costs of production for the Irish economy.
- (ii) Outline possible restrictions on the growth of businesses in the Irish economy at present. (30)
- (c) The British Petroleum (BP) oil spill in the Gulf of Mexico in 2010 is estimated to have cost a total of \$40 bn. Identify **two** costs for BP and **two** costs to society associated with this oil spill. (15)

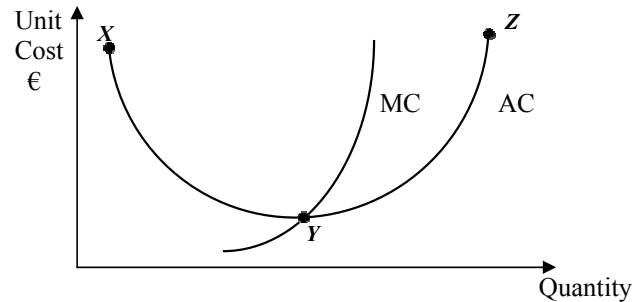
[75 marks]

2009

(a) The Short Run Average Cost (AC) of a firm is usually shown as a U-shaped curve.

(i) State and explain the reason(s) for the shape of the AC curve:

- From point X to Y;
- From point Y to Z.



(ii) Explain the relationship between the Marginal Cost (MC) and Average Cost (AC) curves as shown above.

(25 marks)

(b) ‘The shape of a Long Run Average Cost (LRAC) curve is determined by economies and diseconomies of scale’.

- (i) Explain this statement, with the aid of a clearly labelled diagram.
- (ii) Define **Internal Economies of Scale** and **External Economies of Scale**.
- (iii) State and explain **two** examples of **each** economy.

(30 marks)

(c) ‘The Irish government should encourage initiatives that will prevent further cost increases and in turn sustain employment in small firms’.

Suggest with reasons actions the government could take to improve the competitiveness of small firms.

(20 marks)

[75 marks]

2004

- (a) (i) State the **Law of Diminishing Marginal Returns**.
 (ii) Using the table below, state after which level of employment diminishing marginal returns set in. Explain your answer.

Number of persons employed	1	2	3	4	5
Total Output (in units)	14	30	50	64	76
Marginal Output (in units)	14				

(15 marks)

- (b) The **short-run average cost curve** of a firm initially slopes downwards and afterwards slopes upwards. Explain why this is the pattern of short-run average costs. *(15 marks)*
- (c) It is generally agreed that the long-run average cost curve initially slopes downwards due to **economies of scale** and then slopes upwards due to **diseconomies of scale**. These economies and diseconomies can be both internal and external.
- (i) Define the underlined terms.
 (ii) Distinguish between **internal** and **external** economies of scale, giving **TWO** examples in each case. *(30 marks)*
- (d) While there can be advantages from producing on a large scale, the majority of firms in Ireland are small. Explain **THREE** reasons why small firms survive in the Irish economy. *(15 marks)*

[75 marks]**Short Questions Answers**

1.

State **three** reasons why multinational firms are re-locating to countries like Vietnam, Indonesia and Thailand in Southeast Asia.

- 1. Lower wage costs:** wage rates outside Ireland are lower.
- 2. Lower costs of production:** firms may avail of more competitive energy prices; utility charges; insurance costs; professional fees etc.
- 3. Less restrictive regulatory framework:** regulations may be less strict making it easier to operate e.g. protection of the environment may face less regulation.
- 4. Emerging economies are in a growth phase:** access to growing international markets/new markets.
- 5. Development in communications technology:** access to speedier broadband.

17 marks (10+5+2)

2.

The Irish government is considering the introduction of water charges for households. Outline **three** possible economic arguments in favour of the introduction of water charges for households in Ireland.

1. Reduce consumption of water / discourage waste.

If people pay for water it may encourage people to use it more sparingly / use it more efficiently and so discourage waste.

2. Generate revenue for the service provider / broaden the tax base

The charges will help create revenue for the provider and this will help towards the cost of the provision of water.

3. Improve quality of water supply / distribution of water.

The revenue earned may be used to improve the quality of the water supply to householders and/or help build a better system of distribution e.g. pipes etc.

4. Encourage investment in alternative technologies.

Organisations which use a lot of water may be encouraged to invest in technologies which reduce water consumption.

5. Helps reduce need to raise direct taxation.

By generating revenue in this way it may help reduce the need of the government to increase direct taxation and/or reduce/eliminate other essential services.

6. Impossible to evade / helps government financial planning.

As the tax is in-built it is impossible to evade due to meters being installed. As the revenue from the tax is more certain than other forms of taxation it will aid the government in financial planning.

3 points: 6 marks + 6 marks + 5 marks.

3.

State **two** economic reasons for increased oil prices

1. **Greater demand for oil:** Newly industrialised countries such as China, India (BRIC).
2. **Affluence/Economic Growth:** with higher disposable incomes/greater purchasing power, as a result of economic growth there is a greater demand for bigger vehicles, more airline travel driving up oil prices.
3. **Reserves of oil declining/ high cost of extraction:** Oil is a non-renewable resource.
4. **Green taxes/excise duties:** In many countries a percentage of the price is a form of taxation.
5. **Lack of production in Middle East;** e.g. Iraq conflict, political uncertainty.
6. **Speculation:** investors are speculating on future prices of oil in world markets.

One Social Cost:

1. **Environmental damage:** Oil exploration increases as reserves run low (Irish coastline)/destroying rain forests in order to grow crops for bio fuels.
2. **Loss of excise duty:** If people cut back on use of oil, government loses tax revenue
3. **Increasing inflation;** The rising price of oil has added to inflationary pressures in some economies and a consequent fall in economic growth.
4. **Rising world food prices:** As countries switch production to crops for bio fuels, food process rise.
5. **Shortage of food** particularly in developing nations.

One Social Benefit:

1. **Environment:** there may be a reduction in pollution as people cut back on use thus helping environment/greater economy in the use of oil.
2. **Public transport:** If oil costs rise consumers may be more willing to use public transport.
3. **Less traffic congestion:** Consumers cut back on use of cars
4. **Incentive to source alternative sources of energy:** As oil becomes expensive other sources of energy may become a more viable solution.

17 marks graded.

4.

Define **Social Costs**. State **TWO** significant examples currently facing the Irish economy.

Definition: Cost/Price which society has to pay for the existence of a particular product.

9 marks graded.

TWO significant examples:

1. Pollution of air/water e.g. the current water pollution in Galway.
2. Disfigurement of the landscape e.g. construction of roads disfigures the landscape.
3. Possible loss of cultural heritage e.g. the construction of M3 through Hill of Tara.
4. Traffic congestion in cities and towns with resulting problems.
5. Reduction in public amenities / urban sprawl: communities have less public spaces.
6. Global warming: increased carbon emissions affects global weather patterns.

8 marks graded.

5.

Energy costs (e.g. electricity) increased significantly in Ireland during 2006.

Outline **TWO economic reasons** for the increase and **TWO economic consequences** of this specific development for the Irish economy.

TWO economic reasons for the increase:

1. **Increase in international oil prices:** caused by political instability and supply shortages.
2. **Increase in wage costs within the industry:**
workers wage increases are passed on in the form of higher prices.
3. **Further regulation by government:**
the addition of surcharges e.g. public service obligations levy by the ESB.
4. **Increased investment costs in the industry:**
Firms must invest for future production.
5. To **make the company a more profitable investment** opportunity for investors.

TWO economic consequences of this specific development for the Irish economy:

Positive consequences	Negative consequences
<ol style="list-style-type: none"> 1. Increased emphasis in efficiency in producing this resource. 2. Greater awareness by consumers of the scarcity of the resources / efficient consumption. 3. Greater investment in R&D into renewable / alternative resources. 4. Government policy maybe re-evaluated resulting in policies which strive for better energy use. 5. Increased government revenue through higher VAT revenues. 	<ol style="list-style-type: none"> 1. Inflationary pressures / decrease in the standard of living. 2. Loss of competitiveness of Irish industry. 3. Possible re-location of mobile industry to cheaper locations. 4. Job losses if industry closes or re-locates.

17 marks graded.

6.

Define **internal economies of scale**. State **TWO** examples.

These are forces within a firm which cause the average / unit costs of that firm to decline as the firm grows in size.

Examples

1. Increased use of specialised machinery/equipment resulting in lower unit costs.
2. Labour economies / specialisation of workers:
Dividing a job into distinct components may result in lower unit costs.
3. Construction economies: Larger plants cost less per cubic metre to construct than smaller ones.
4. Purchasing economies: Larger discounts are received from bulk purchasing.
5. Economies in distribution: Bulk deliveries result in a lower unit cost of transport.
6. Financial economies: Bigger firms may avail of more competitive rates of interest.
7. Managerial economies:
As a firm grows its management costs may not grow at the same rate as the firm grows.
8. Production Process economies:
A large firm may be able to run one process into the next without costly discontinuities.
9. Indivisibility problems reduced: Expansion may allow for continuous production.
10. Marketing economies: Firms may experience saving in the costs of advertising.
11. Reduction in Waste: Large firms, with more lines of production, may reduce waste costs / less wastage of materials.

16 marks graded.

7.

Explain the concept Opportunity Cost. Why is this concept central to the study of Economics?

Opportunity Cost is the cost of foregone alternatives.

This concept is central to the study of economics because:

**Economics studies the allocation of scarce resources, which have alternative uses.
The allocation of these resources involves making a choice.**

8.

7. “When a firm produces at a level of output at which marginal cost is greater than marginal revenue the firm is maximising profit (or minimising losses)”. True / **False**
(Place a circle around your choice and write a one-sentence explanation of your answer)

False. The extra cost of producing further units of output is greater than the extra revenue generated therefore the firm could increase its profits by producing less output. The increased output adds more to cost than to revenues earned. Profits are maximised where $MC=MR$.

17 marks graded.

9.

“There is no opportunity cost to a firm in using an asset which it already owns”. True / False
(Place a circle around your choice and give a one sentence explanation of your answer).

Correct Answer: **False: 1 mark**

Explanation: **16 marks graded.**

**The asset could be sold and the money invested *or*
The asset could be rented out and an income earned**

10.

7. (a) State the Diminishing Marginal Returns

10 marks

As more units of a variable factor of production are added to other (constant) factors of production the returns to the variable factor will eventually fall.

(b) The table below illustrates the Law of Diminishing Returns

Number of persons employed	1	2	3	4	5
Total Output, in units	12	27	47	63	73
Marginal Output, in units	12	15	20	16	10

4 correct figures x 1 marks each = 4 marks

State the point after which Diminishing Returns set in.

When the 4th person is employed/ After the 3rd person

3 marks

11.

Define SOCIAL COSTS. Give TWO examples.

16 marks

Price which society has to pay for the existence of a particular good / service.

Definition: 10 marks graded

Examples: 2 examples at 3 marks each = 6 marks

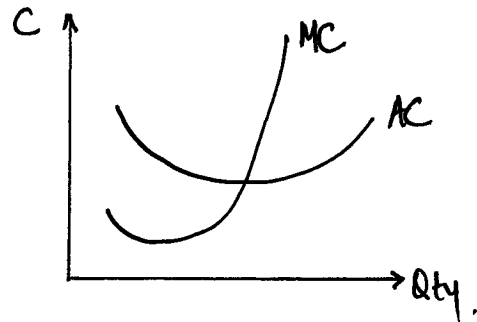
1. Pollution of air/water.
2. Noise nuisance
3. Disfigurement of the landscape.
4. Traffic congestion.
5. Reduction in public amenities / urban sprawl.

12.

- i. With the aid of a clearly labelled diagram, explain the relationship between the average and marginal costs. (17 marks)

Diagram : (8 marks)

Cost axis: 2 marks
 Quantity Axis: 2 marks
 AC : 2 marks
 MC : 2 marks [-2]



MC must cut AC at its lowest point.

Explanation : (9 marks)

- When $MC > AC$ then AC is rising : 3 marks
- When $MC < AC$ then AC is falling : 3 marks
- When $MC = AC$ then AC is at a minimum/ constant : 3 marks

Long Questions (Answers)**2011**

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- (a) (i) Using the information in the table above calculate the following:
- The **marginal cost** of producing the 4th unit.
 - The **average cost** of producing 5 units.
 - The **profit** earned by the firm selling 5 units of output at €1,200 per unit. (Show your workings.)
- (ii) Using the information in the table above, draw the firm's short run average cost (AC) curve. Explain the reasons for its shape. (30)

(i) 12 marks

- The **marginal cost** of producing the 4th unit

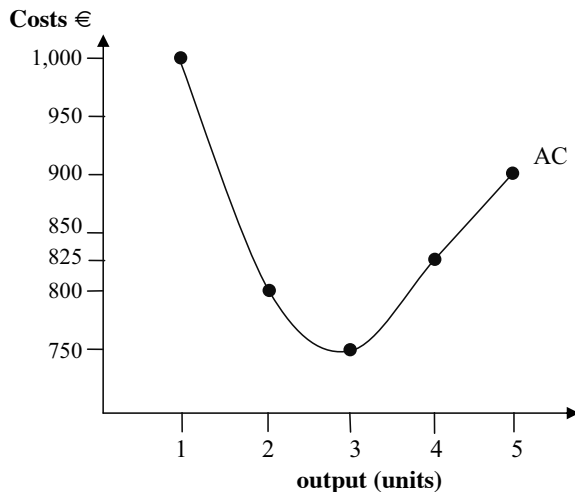
$$€3,300 - €2,250 = €1,050$$

- The **average cost** of producing 5 units

$$\frac{€4,500}{5} = €900$$

- The **profit** earned by the firm selling 5 units of output at €1,200 per unit

$$5 \times €1,200 (\text{€6,000}) - €4,500 = €1,500$$

(ii) Diagram: 12 marks. Explanation: 6 marksSlopes downward:

- Declining FC per unit / FC spread over a larger number of units of output
- or*
- Specialisation of labour: helps reduce cost per unit

Slopes upward:

- Increasing VC per unit because of the Law of Diminishing Marginal returns

- (b) *'The cost of doing business in Ireland is falling. However, some costs continue to increase or remain relatively high'.* (National Competitiveness Council Report, 2010)
- (i) Discuss the economic advantages of falling costs of production for the Irish economy.
- (ii) Outline possible restrictions on the growth of businesses in the Irish economy at present. (30)

(i) Discuss the economic advantages of falling costs of production **for the Irish economy**.

1. Increased competitiveness

With lower costs prices may fall for Irish goods and exports may become cheaper.

2. Lower prices

With lower prices inflation may fall and this may entice consumers to purchase more goods.

3. Increased demand

Businesses may have increased demand resulting in increased sales, profits and a more secure future. Tax revenue to the government may also increase.

4. Increased employment

With rising demand businesses may increase their demand for labour / maintain existing labour.

5. Attract investment / Improve international reputation

Lower costs for businesses will encourage expansion and attract foreign firms into Ireland.

6. Profits may increase

As a result of lower costs business profits may increase, leading to an increase in CPT revenues.

3 points x 5 marks each

(ii) Outline possible restrictions on the growth of businesses in the Irish economy at present.

1. Limited availability of credit

The banking crisis has resulted in a lack of credit, which is a major obstacle to the expansion of business.

2. Reduction in domestic demand

The continuing recession has resulted in a major drop in spending resulting in a drop in domestic demand and less opportunities for business.

3. Restrictive wage agreements

The existence of the minimum wage; the existence of JLC agreements limits the ability of firms to hire labour which restricts the ability of firm to expand/ grow.

4. Legislative requirements / framework

Permission may have to be obtained from the local authority; state body etc. For example if a person wants to extend a restaurant then certain requirements must be fulfilled.

5. Merger / takeover legislation

Some businesses wishing to expand may face an investigation under EU (Irish) merger and takeover legislation. The proposed takeover of Aer Lingus by Ryanair was prohibited under EU laws.

6. High costs of production.

Businesses find it difficult to expand due to high operating costs e.g. rates; utility costs; insurance costs; costs of raw materials; and high interest rates makes borrowing more expensive.

3 points x 5 marks each

- (c) The British Petroleum (BP) oil spill in the Gulf of Mexico in 2010 is estimated to have cost a total of \$40 bn. Identify **two** costs for BP and **two** costs to society associated with this oil spill. (15)

Costs for BP – Private costs	Costs to society – Social costs
Cost of repairing the defective oil rig BP must pay for the equipment, labour and other associated costs.	Environmental damage Society suffers due to the damage to the waters, wildlife and natural beauty of the area.
Clean-up costs They must pay for the clean-up of the affected waters and the shoreline.	Cost of investigation / clean-up Taxpayers must pay for the costs of the investigation into the disaster and clean-up costs to communities.
Compensation costs For those fishermen and businesses who lost business due to the oil spill.	Disruption to local communities / tourism The spill has resulted in a downturn in economic activity in the affected communities / leading to job losses.
Reduction in share price / asset value The market value of the company fell and shareholders must bear this cost.	Damage to food chain The oil spill may result in restricted supply of (fish) thereby forcing prices upwards.
Reduction in profits Lost production resulted in reduced sales and lower profits.	Higher oil prices The reduction in supply led to shortages and higher international oil prices.
Lost oil Until the well was capped BP lost tons of oil which cost the company.	
Reputational damage The company gained a lot of bad publicity which has adversely affected the image of the company.	
Fines by government The company faces major fines from the US government for breaches of safety and the resulting damage.	

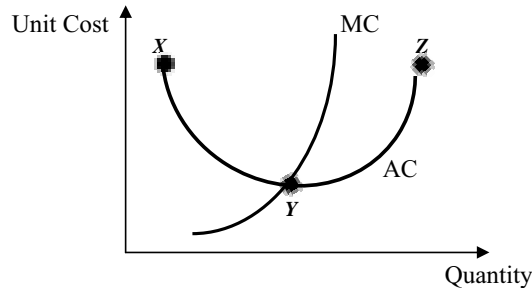
15 marks (4+4+4+3)

2009

(a) The Short Run Average Cost (AC) of a firm is usually shown as a U-shaped curve.

(i) State and explain the reason(s) for the shape of the AC curve below:

- From point X to Y;
- From point Y to Z.



Downward sloping from X to Y	Upward Sloping from Y to Z
<ul style="list-style-type: none"> • Specialisation: Specialists may be employed or existing workers become more efficient resulting in lower unit costs. • Fixed Costs spread over larger output: As the number of units produced increases the unit cost falls. 	<ul style="list-style-type: none"> • The Law of Diminishing Marginal Returns. This law will apply after a certain point resulting in an increase in the amount of variable factors used per unit produced, resulting in higher unit costs. <i>or</i> Example to illustrate why costs increase.
ONE point @ 7 marks graded	ONE point @ 6 marks graded

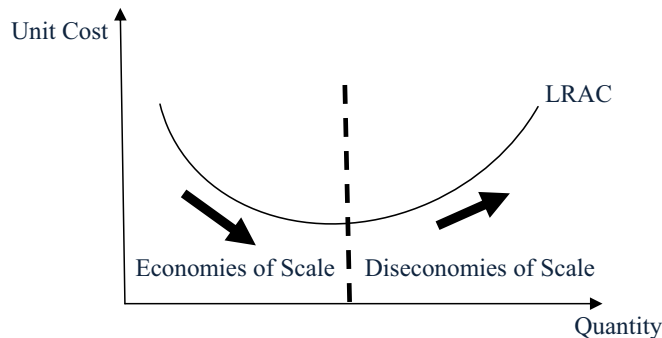
(ii) Explain the relationship between the Marginal Cost (MC) and Average Cost (AC) curves as shown above

- When MC is greater than AC then AC is rising.
- When MC is less than AC then AC is falling.
- When MC is equal to AC the AC is at its minimum point/constant.

3 points @ 4 marks each graded

- (b) 'The shape of a Long Run Average Cost (LRAC) curve is determined by economies and diseconomies of scale'.

- (i) Explain this statement, with the aid of a clearly labelled diagram.



- LRAC slopes downwards due to increasing returns to scale;
- LRAC slopes downwards because economies of scale are dominant over this range of output.
- LRAC slopes upwards due to decreasing returns to scale;
- LRAC slopes upwards because diseconomies of scale are dominant over this range of output.

6 marks graded

- (ii) Define **Internal Economies of Scale** and **External Economies of Scale**.

Internal Economies of scale:

These are forces **within** a firm which cause the average / unit costs of that firm to decline as the firm grows in size.

External Economies of scale:

These are forces **outside** a firm which cause the average / unit costs of that firm to decline as the industry grows in size.

2 @ 6 marks each graded

(iii) State and explain **two** examples of **each** economy.

INTERNAL	EXTERNAL
<p>1. Increased use of specialised machinery A firm may be able to buy/use more specialised equipment/machinery resulting in a reduction in unit costs/machinery fully utilised</p>	<p>1. Better infrastructure. As roads / communications etc. improve they will benefit all firms.</p>
<p>2. Labour economies / Greater specialisation of workers If a particular job can be separated into separate and distinct components it may result in a reduction in costs.</p>	<p>2. Bulk purchasing of raw materials by the industry. As an industry expands firms require more materials / components. These may become cheaper as suppliers expand to meet increased demand.</p>
<p>3. Construction economies Large plants cost less per cubic foot than smaller ones.</p>	<p>3. Development of specialist firms Some of the jobs, which a firm once performed may be contracted out to specialist firms at reduced costs e.g. the supply of linen to hotels.</p>
<p>4. Buying economies Larger quantities bought may result in bigger discounts.</p>	<p>4. Development of separate R & D units As industry becomes very large, R&D agencies may set up to provide facilities for individual firms / the costs of research may be shared between firms <i>or</i> with a public body like Teagasc.</p>
<p>5. Economies in distribution Lower unit cost of delivery.</p>	<p>5. Suppliers of Machinery Manufacturers of machinery will be encouraged to design, develop and produce machines for expanding industry. These advanced machines will help reduce costs.</p>
<p>6. Financial economies Larger firms may avail of lower interest rates/larger firms better chance of acquiring a loan</p>	<p>6. Development of Training Courses Workers in expanding industries may be provided with training courses by VECs, FÁS thereby helping them become more efficient.</p>
<p>7. Managerial economies As a firm grows, management costs may not grow in proportion to the growth in the firm.</p>	<p>7. Supports from Public Bodies. Some public bodies help particular industries e.g. Failte Ireland / FAS may help firms in the tourism industry.</p>
<p>8. Production Process economies. A large firm may be able to run one process into the next without costly discontinuities</p>	<p>8. Subsidiary Trades may develop As an industry grows subsidiary trades may develop to service the expanding industry e.g Hotels, B&B's located close to airports etc.</p>
<p>9. Indivisibility problem reduced. If the volume of production increases, the unit cost may be lower e.g. glass-making furnaces may operate around the clock to save costs of cooling and re-heating/ full capacity used</p>	<p style="text-align: center;">Internal 2 @ 3 marks each.</p> <p style="text-align: center;">External 2 @ 3 marks each.</p>
<p>10. Marketing economies Savings in the cost of advertising e.g. NIKE advertising globally/ bigger firms bigger advertising campaigns.</p>	

- (c) 'The Irish government should encourage initiatives that will prevent further cost increases and in turn sustain employment in small firms'.
Suggest with reasons **two** actions the government could take to improve the competitiveness of small firms.

- **Reduce the minimum wage / wage restraint.**
Employers would be able to get cheaper labour and therefore reduce costs.
By negotiations for example through lowering direct taxes, the government could reach agreement with the social partners to limit pay rises
- **Reduce utility charges.**
A reduction in costs for electricity, gas, postage, waste charges etc. or any state service provided for small businesses would help reduce costs of production.
- **Reduce taxation.**
A decrease in indirect taxes e.g. VAT or excise duty on fuel or raw materials would reduce costs to small business.
A decrease in direct taxes e.g. CPT would help firms reduce their costs.
A reduction in income tax may encourage wage moderation thus helping firms to lower their costs.
- **Reduce bureaucracy.**
Eliminate restrictions and excessive paperwork, thereby reducing administrative costs
- **Subsidies to firms.**
By reducing the rate of employer's PRSI it becomes cheaper to employ labour.
By subsidising training costs / export credit insurance a firm's costs may decrease making them more competitive.
- **Develop infrastructure.**
Traffic gridlock/lack of broadband and poor infrastructure generally increase costs for small business. By improving the infrastructure it should become more efficient and therefore less expensive to move goods and services around the country.

2 points @ 10 marks each graded

2004

- (a) (i) State the **Law of Diminishing Marginal Returns**.
 (ii) Using the table below, state after which level of employment diminishing marginal returns set in. Explain your answer.

Number of persons employed	1	2	3	4	5
Total Output (in units)	14	30	50	64	76
Marginal Output (in units)	14				

*(15 marks)***(i) Law of Diminishing Marginal Returns**

As more units of a variable factor of production are added to other (constant) factors of production the returns to the variable factor will eventually fall.

Correct definition: 9 marks graded**The point after which Diminishing Returns set in:****When the 4th person is employed / After the 3rd person****3 marks****Explanation:****Because marginal output has declined (from 20 units to 14 units)****3 marks**

- (b) **The short-run average cost curve of a firm initially slopes downwards and afterwards slopes upwards. Explain why this is the pattern of short-run average costs.** (15 marks)

<i>Downward sloping</i>	<i>Upward sloping</i>
<u>1. Specialisation reduces unit costs</u> - specialists may be employed or - existing workers become more efficient. <i>or</i> <u>2. Fixed Cost per unit falls</u> as the no. of units produced increases	<u>1. The Law of Diminishing Marginal Returns.</u> This law will apply after a certain point resulting in an increase in the amount of variable factors used per unit produced, resulting in higher unit costs <i>or</i> Example to illustrate why costs increase.
<u>7 marks graded</u>	<u>8 marks graded</u>

- (c) It is generally agreed that the long-run average cost curve initially slopes downward due to economies of scale and upwards due to diseconomies of scale.

These economies and diseconomies can be both internal and external.

(i) Define the underlined terms.

(ii) Distinguish between internal and external economies of scale, giving TWO examples in each case.

(30 marks)

(c) (i) : 2 definitions x 4 marks graded.

Economies of Scale	Diseconomies of Scale
<ul style="list-style-type: none"> • These result in a reduction in the LRAC of production • as the firm/ industry increases its size of operation 	<ul style="list-style-type: none"> • These result in an increase in the LRAC of production • as the firm /industry increases its size of operation

(c) (ii) : 2 definitions x 3 marks graded.

<i>Economies of Scale</i>	
INTERNAL	EXTERNAL
<ul style="list-style-type: none"> • Forces within a firm which decrease its costs • as the firm grows in size. 	<ul style="list-style-type: none"> • Forces outside a firm which decrease its costs • as the industry grows in size.