

## SECTION A

**1 (a) Between 1995 and 2007 which country was**

**(i) the least successful and [1]**

UK or France

**(ii) the most successful in increasing the overall educational participation rate? [1]**

South Korea

**(b) Explain TWO possible economic reasons why the educational participation rate of 15–19 year-olds is higher than that of 20–29 year-olds as shown in Table 1. [4]**

e.g. legal requirement

direct costs

opportunity costs

age – family responsibilities etc. (2 × 2)

**(c) (i) What is the difference between production and productivity? [2]**

Production relates to output from all factors of production (1)

OR

Production is the process of providing goods and services

Productivity is output per unit of input (often labour) (1)

**(ii) Explain how education may affect labour productivity and the production possibility curve. [4]**

Education results in greater skills leading to higher productivity (1)

Higher productivity leads to higher output (1)

Understanding of ppc (1) – either written or accurate diagram

Outward shift of ppc (1)

**(d) Why is education considered to be an example of a merit good? [2]**

EITHER

Merit goods are under-consumed because of lack of information (1)

Individuals not aware of benefits (1). In terms of long term income/career opportunities/ personal development (1)

OR

Education has positive externalities (1). Benefits to society on top of individual benefits (1).

More educated labour force contributes to higher national welfare (1)

- (e) Discuss the extent to which the provision of education is different from the provision of national defence. [6]

Education is a private good but defence is a public good (1)  
Explanation of (Non) excludability/(Non) rivalry/(Non) rejectability (2)  
(1 mark if any 2 of the above are correctly identified but not explained)  
In market economy – education under-provided, defence not provided at all (1)  
Both can be totally provided by the public sector from taxation (1)  
Defence can **only** be provided by public sector (1) + reason (1)  
Education can be provided by public and private sectors (1)  
Reason for public sector provision of education (1)  
Reason for private sector provision of education (1)  
Comments on contrast of provision (1)

## SECTION B

- 2 (a) **Explain, with the help of a production possibility diagram, how the opportunity cost of producing different combinations of goods can be measured.** [8]

For knowledge and understanding of the ppc and opportunity cost (Up to 4 marks. Allow 3/1 or 1/3 split). For an analysis of how the ppc can be used to measure opportunity cost (Up to 4 marks).

- (b) **Discuss the ease with which a planned economy may be changed into a market economy.** [12]

For knowledge and understanding of planned and market economies (2).  
For an analysis of the nature of the changes required to transform a planned economy into a market economy. (Up to 2 marks for identified features with implications that they need to change). (Up to 6 marks) For evaluative comment on the ease of transformation.

- 3 (a) **Explain why the value of income elasticity of demand for a good can be positive, negative or zero, while the value of its price elasticity of demand is most likely to be negative.** [8]

For knowledge and understanding of price elasticity and income elasticity of demand. (Up to 4 marks)

What each measures. (1 mark for each)

Formula for each. (1 mark for each)

Candidates need to show understanding of both measures of elasticity for full marks.

For application to show the values of price and income elasticity outlined. (Up to 4 marks)

Explanation of positive income elasticity. Normal good. (1)

Explanation of negative income elasticity. Inferior good. (1)

Explanation of zero income elasticity. Necessary good. (1)

Explanation of price elasticity of demand. Negative. (1)

Marks will be awarded here for a clear explanation of the types of good and the related value of income elasticity and for an explanation of the reason that price elasticity usually has a negative value.



- (b) Discuss whether price elasticity of demand is a more useful concept than income elasticity of demand for a business that is trying to increase its sales revenue. [12]**

For analysis to explain how knowledge of each type of elasticity might be useful to a business that is trying to increase sales revenue. **(Up to 8 marks)**

The analysis should show the link between the types of good produced when there are changes in income in an economy. For example, businesses will enjoy an increase in sales revenue if they produce normal goods when incomes are rising and inferior goods when incomes are falling in an economy.

The link between price elasticity of demand and changes in sales revenue when prices are changed also needs to be clearly explained. For example, businesses will increase prices to increase sales revenue when the price elasticity of demand for their product is inelastic and cut prices when demand is elastic.

(Up to six marks for one side allows a 6/2 or 2/6 split).

(If only one side is explained then no marks can be awarded for evaluation.)

For evaluation on the 'more useful' aspect of the question. **(Up to 4 marks)**

Candidates will gain evaluation marks when they make a judgement on the more useful aspect of the question. For example, they might comment that price elasticity is more useful because prices are set by the business whereas changes in income are beyond the control of the business. Some might argue that the data might be inaccurate or out-of-date. Accept any feasible assertion as long as it is justified by a valid argument.

For full marks for evaluation, a conclusion must be reached.

## SECTION C

4. A study found that demand for tickets for exhibitions at a major art gallery had unitary price elasticity.

- (a) Explain how the concept of diminishing marginal utility may be used to construct a demand curve for the product and whether that analysis still applies in the case of demand for tickets for the exhibitions. [12]

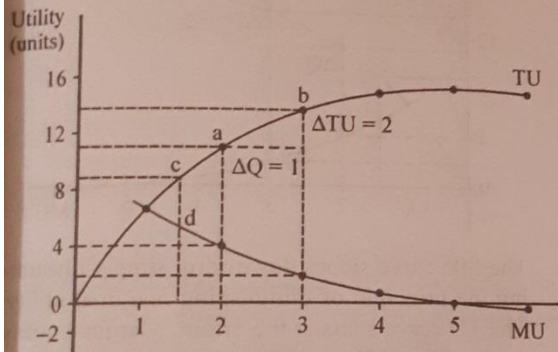
Explanation of diminishing marginal utility and its link to a demand curve. It can still apply in the case of unitary elasticity.

- L4 For a sound explanation of the analysis and a clear understanding with a conclusion [9–12]  
 L3 For a competent comment but with limited development of the analysis and a weaker conclusion. [7–8]  
 L2 For a brief explanation and with a weak comment on the possible problems and no correct conclusion [5–6]  
 L1 For an answer which has some basic correct facts but includes irrelevancies. Errors of theory or omissions of analysis will be substantial. [1–4]

### Essay

The theory of consumer behaviour explains consumer equilibrium with the help of utility analysis. Utility is the satisfaction that people derive from the consumption of goods and services. Total utility (TU) and Marginal utility (MU) are two important measures of utility. TU is the total satisfaction a consumer obtains from the consumption of all the units of a good consumed. While MU utility is the satisfaction gained from consuming one extra unit of a good within a given time period. It is measured by:  $TU_n - TU_{n-1} = MU$ .

According to the principle of diminishing marginal utility, as more units of a good are consumed successively, an extra unit will provide less additional satisfaction than previous unit. For example, the second cup of coffee in the morning gives us less additional satisfaction than the first cup. The third cup gives even less satisfaction. The relationship between TU and MU is shown below:



The MU curve slopes downward, simply illustrating the principle of diminishing marginal utility. The TU curve starts at the origin. When MU is positive and diminishing, TU increases at a decreasing rate. TU reaches a peak when marginal utility is zero. Marginal utility can be derived from the TU curve. It is the slope of the line joining two adjacent quantities on the curve. For example, the marginal utility of the third cup of coffee is the slope of the line joining points a and b. The slope of such a line is given by the formula:

$$MU = \frac{\Delta TU}{\Delta \text{units}}$$

We can extend our analysis of utility to explain how a rational consumer decides what combination of goods to buy from the given income. The underlying principle is called equimarginal utility. The law states that the individual consumer is in equilibrium when it is not possible to switch a single penny's worth of expenditure from one product to another and obtain an increase in total utility. This

occurs when:

$$\frac{MU_a}{P_a} = \frac{MU_b}{P_b} = \frac{MU_n}{P_n}$$

Where A, B, ..., n are the various goods consumed.

The above equation states that the consumer equilibrium is where the marginal utility from the last penny spent on product 'a' equals the utility from the last penny spent on product b equals the utility from the last penny spent on product n, thus taking into account all of the products the individual consumes. When this situation is reached it is not possible for the individual to increase his total utility by reallocating expenditure. So the consumer equilibrium is important for it is where the consumer has allocated his or her income in such a way that maximum utility has been achieved. The analysis assumes the following:

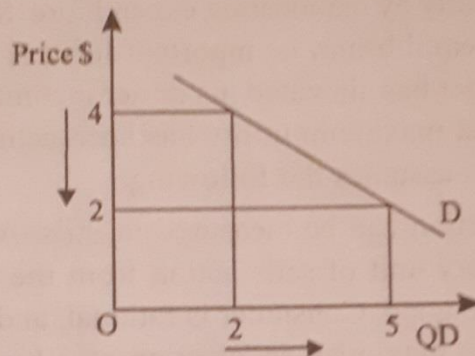
Satisfaction can be measured in utils. A util is an imaginary unit of satisfaction from the consumption of a good. Consumer is rational, and therefore wants to maximize satisfaction also his taste and preferences are constant. Consumer has a fixed income, and he will be spending on two normal goods a and b. Product a costing £2.00 each and product b costing £4.00 each, and that the individual has an income per time period of £16.00. The table below will help to explain consumer equilibrium.

Product A (price £2.00 each)			Quantity demanded of product A and B	Product y (price £4.00 each)		
TU <sub>a</sub>	MU <sub>a</sub>	$\frac{MU_a}{P_a}$		TU <sub>b</sub>	MU <sub>b</sub>	$\frac{MU_b}{P_b}$
80	80	40	1	68	68	17
132	52	26	2	100	32	8
152	20	10	3	128	28	7
168	16	8	4	152	24	6
176	8	4	5	172	20	5

Given this situation, it can be seen that the consumer is in equilibrium when he consumes four units of product 'a' and two of product 'b'. Here MU/P is the same, i.e. 8 for both products. Note that in equilibrium the consumer spends £8 (£2 × 4) on product 'a' and £8 (£4 × 2) on product 'b' and obtains total utility of 268 utils. It is impossible for the consumer with an income of £16.00 to obtain a higher level of total utility. If the consumer were not in equilibrium it would be possible for him to reallocate his spending and obtain a greater level of satisfaction.



It is also possible to use marginal utility as a means of deriving a demand curve. If, for instance, price of product 'b' were to fall to £2.00, then assuming everything else remained constant, there would be a new column for  $MU_b / P_b$  and a new equilibrium would result. In order to restore equilibrium the consumer would reduce consumption of product 'a' by 1 unit and increase the consumption of product 'b' by 3 units. Hence, he will consume 3 units of 'a' and 5 units of 'b' at the new equilibrium position. We can use this example to construct the consumer's demand curve for product 'b' as given below;



A decrease in  $P_b$  has resulted an increase in  $QD_b$  because with the given income and new price of product b consumers maximizes satisfaction at a higher quantity of product b. Thus it is possible to develop a theoretical link between utility, price and the demand for a product.

Unitary elastic demand implies that the demand curve is sloping downwards from left to right i.e. a rise in  $P$ , if nothing else changes, causes  $QD$  to fall with the same proportion and vice versa. Hence the demand curve reflects diminishing marginal utility. Thus the analysis of consumer equilibrium and derivation of demand curve will apply to the demand for tickets of exhibition as much as to any other product with the normal downward sloping demand curve.

**(b) Discuss whether the law of diminishing returns contradicts the concept of economies of scale. [13]**

Discussion of the law of diminishing returns and economies of scale and a recognition that the two can be used together, diminishing returns in the short run and economies of scale in the long run.

- L4 For a sound discussion with good explanation of the analysis and a clear understanding of the difference between short and long run [9–13]
- L3 For a competent comment but with more limited explanation of the link between the two and of the use of short and long run [7–8]
- L2 For a brief explanation and with a weak discussion of the links [5–6]
- L1 For an answer which has some basic correct facts but includes irrelevancies. Errors of theory or omissions of analysis will be substantial. [1–4]

Short run production function is subject the law of diminishing returns while a firm may benefits from economies of scale in the long run.

The short run is a time period where at least one factor of production is in fixed supply. In order to construct an example let's assume that it is not possible to change the quantity of capital i.e. fixed in supply however it is possible to employ extra labour and purchase raw material in the short run, hence they are called variable factors.

In the short run, the law of diminishing returns states that as we add more units of a variable input to fixed amounts of other inputs, the change in total output will at first rise and then fall. In other words diminishing returns to labour occurs when marginal product of labour starts to fall. This means that total output will be increasing at a decreasing rate. This can be illustrated from the table below;

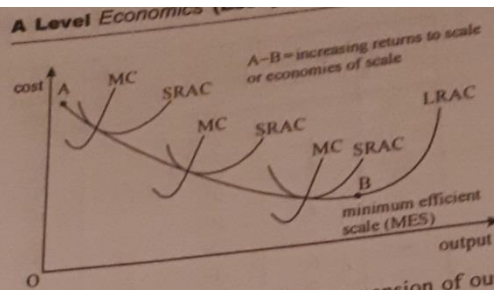


Capital	Number of workers	Total product (TP)	Marginal product (MP)	Average product (AP)
20	0	0	-	-
20	1	5	5	5
20	2	16	9	8
20	3	30	14	10
20	4	56	26	14
20	5	85	29	17
20	6	114	29	19
20	7	140	26	20
20	8	160	20	20

Average product measures output per-worker-employed and is obtained by dividing TP on workers. Marginal product is the change in TP resulting from employing one more worker. MP is calculated by dividing the change in TP on the change in workers. Alternatively we calculate MP by  $TP_n - TP_{n-1} = MP$ .

Initially, marginal product is rising – e.g. the 4<sup>th</sup> worker adds 26 to output and the 5<sup>th</sup> worker adds 28 and the 6<sup>th</sup> worker increases output by 29. Marginal product then starts to fall. The 7<sup>th</sup> worker adds 26 units and the 8<sup>th</sup> worker just 20 units. At the point of 7<sup>th</sup> worker production demonstrates diminishing returns. The reason why diminishing returns becomes operative is that beyond a certain point, new workers will not have as much capital equipment to work with so it becomes diluted among a larger workforce. However total output will continue to rise as long as marginal product is positive and average product will rise if marginal product > average product.

On the other hand economies of scale result in the long run when all factors of production are variable. As a result of becoming bigger the firm gains internal economies of scale and enjoys a situation where costs per unit of output fall as the scale of production increases. Thus internal economies arise from within the firm itself as a result of its decision to become large. Their impact on cost structure is analyzed on a firm's long run average cost curve. A long run average cost curve (LRAC) shows how per unit cost varies with scale of production on the assumption that the least cost method of production will be chosen for each level of output. If the firm experiences internal economies of scale its LRAC curve will fall as shown in the graph below:



In the figure above, initially an expansion of output over time leads to a reduction in the unit costs. As explained above these cost saving benefits are referred to as internal economies of scale. They occur because the firm's output is rising proportionately faster than the inputs; hence the firm is getting increasing returns to scale. There are a number of reasons why firms are likely to experience economies of scale.

Firstly, technical economies refer to the advantages gained directly in the production process. For instance, as a firm grows in size it may be able to take advantage of increased specialization and division of labour. If the firm produces only a small output it may not be possible to employ a worker solely on one process but as the level of production increases workers may be able to specialise, leading to division of labour and hence lowering of the firm's per unit costs.

Furthermore, the firm benefits from what is known as increased dimensions. For example, if the size of a container is doubled its surface area is increased 4 fold and its volume is increased 8 fold. It is possible, therefore, to obtain cost savings by making use of larger containers, say, for the storage or distribution of finished products. A large firm may also devote proportionately more resources to research and development which could lead to an improvement in the quality of the goods and services produced, and possibly to a lowering of the cost per unit. Moreover a large firm can afford to link certain processes which lower cost per unit of output. For instance, a large firm can afford to have a rolling mill next to a steel mill, thus the steel is immediately rolled flat while still hot thus avoiding the need to reheat the steel sheet.

Secondly, the firm also gains on marketing its products. For instance, when a firm buys its raw materials in bulk it may benefit from preferential terms in the form of a discount, thus reducing the cost of each unit. Also a large firm may employ specialist buyers whose sole responsibility is to purchase raw materials at the cheapest price. Administration,



advertising, and packaging costs may also be lower for larger companies since they can spread the cost over larger orders. For example, the packaging cost per item for 1 million units is likely to be substantially lower than if 100 items were packaged.

On the financial front larger firms may be able to obtain finance on favourable terms, obtaining loans from financial institutions at lower rates of interest. Banks will be more willing to give loan on preferential terms to a large, well-known company, which can offer more collateral as security for the loan, than it will to a smaller company.

From the above explanation, it follows that there is no contradiction between law of diminishing returns and the concept of economies of scale. The former is operative in the short run while the latter is applied in the long run. In fact the two concepts can be used together to explain the behavior of production and costs but in different time periods.

**5. In 2011, as a result of a recession, the governments of some countries reduced the wages that they paid to public sector workers. Trade unions organised mass demonstrations in protest.**

**Discuss how the economic theory of wage determination in perfect competition can be adapted to explain such a situation. [25]**

Candidates should recognise in their discussion of the theory of the determination of wages the role of demand and supply. Perfect competition theory (using mrp) can be adapted to include institutional factors, government, and trade unions.

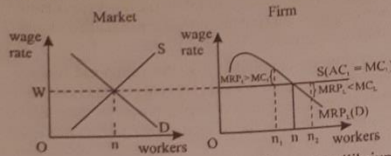
- L4** For a thorough analysis of theoretical wage determination with a clear focus on how the theory may be adapted to include unions and/or government policy together with a conclusion. (18–25)  
(14–17 for demand and supply only with institutional factors and government policy)
- L3** For a competent explanation but with a more limited focus of the significance of unions and/or government factors but still with some conclusion. (14–17)  
(10–13 for demand and supply)
- L2** For a correct but undeveloped theoretical analysis with little comment about government and/or trade unions. (10–13)  
(6–9 for demand and supply)
- L1** For an answer which contains inaccuracies and only a few correct points. (1–9)  
(1–5 for demand and supply only)



Wages are the price paid for labour. In a perfectly competitive labour market, so the economic theory goes, wage rate is determined by the market forces of demand and supply of labour. In such a market many firms compete with one another in hiring a specific type of labour. Moreover, there are numerous qualified workers with identical skills independently supply labour. There exist perfect knowledge, perfect mobility and freedom of entry and exit. Consequently, both firms and individual workers are wage takers.

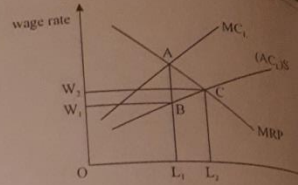
The market demand for labor curve is found by summing horizontally the labor demand curves ( $MRP_L$  curves) of the individual firms. The marginal revenue product ( $MRP_L$ ) is the increase in revenue that results from employing one more worker.  $MRP_L$  is obtained by multiplying marginal physical product of labour ( $MPP_L$ ) and the firm's marginal revenue ( $MR$ ). Thus  $MRP_L = MPP_L \times MR$ .  $MPP_L$  is the increase in total output when one more worker is employed and is subject to the law of diminishing returns while  $MR$  is determined by the price of the finished product.

On the supply side of labor market, we assume there is no union; workers compete individually for available jobs. The supply curve for each type of labour slopes upward, indicating that employers as a group must pay higher wage rates to obtain more workers. This is so because firms must bid these workers away from other industries.



The graph sums up wage determination and equilibrium for a profit maximising firm facing a perfectly competitive labour market. The left panel shows that the wage rate is determined in the market by demand and supply forces and the firm is a wage taker. On the right panel the downward sloping portion of the firm's  $MRP_L$  curve is its demand for labour. The firm faces a perfectly elastic supply curve of labour that also represents firm's  $MC_L$  &  $AC_L$ . It implies that additional labour can be hired at the same wage rate, therefore  $W = MC_L = AC_L$ . So, according to the  $MRP$  theory the firm will find it profitable to hire  $ON$  workers where its  $MRP_L$  equals  $MC_L$ . The firm would not employ more than  $ON$  workers because each additional worker would add less to the revenue than its costs thus leading to a fall in its profit. Similarly,  $ON_1$  workers employed indicates that the firm can increase its profit by employing more because each additional worker hired up to  $ON$  would add more to the firm's revenue than its costs.

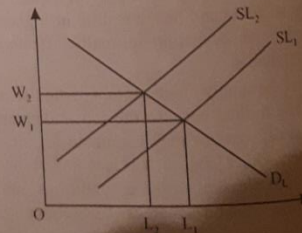
Although economic theory of wage determination assumes a perfectly competitive market, however, the theory could be extended to allow various real world market imperfections. There may be, for instance, a single buyer of labour — a 'monopsonist' — where a large factory is the main source of employment in a locality. If this is the case, then the wage rate,  $(AC_L)$  is no longer represented by a horizontal straight line. Instead the wage rate increases as more labour is employed. Hence, monopsonist will be facing upward sloping market supply curve and in order to recruit additional workers it has to offer a higher wage rate. In such a case, the size of an employer's demand for labour will affect the wage rate. This is illustrated in the figure below:



The higher  $MC_L$  than  $AC_L$  can be explained by the use of a simple example. At a wage rate of £100, 50 workers may be employed. If, however, the monopsonist wishes to employ one more worker he is forced to offer £101, the increase being paid to all workers. The average cost is now £101 but the marginal cost is £151, comprising of £101 paid to the 51st worker plus £1 paid to each of the 50 original workers.

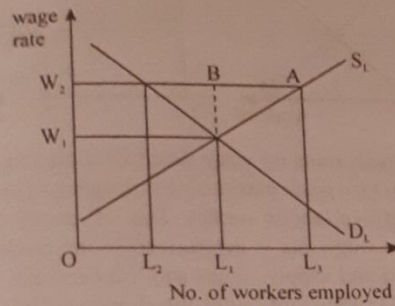
Similar to the perfect market a monopsonist, being a profit maximiser, will employ where its  $MC_L$  equals  $MRP_L$ , indicated by point A in the graph, hence  $L_1$  workers will be employed. The wage rate  $W_1$ , however, is given by the  $S$  curve ( $AC_L$ ). In a perfectly competitive non-monopsony market the wage and numbers being employed would have been  $W_2$  and  $L_2$  respectively. Thus monopsony power in a labour market will result in a lower level of employment and lower wages than would exist in a competitive labour market. However, this comparative lower wage rate and employment can be corrected by incorporating trade unions or government.

In the context of question statement if government enjoys monopsony power then trade unions could seek to resist the wage decrease of their members by either restricting the supply of labour or by direct negotiation. They can restrict the supply of labour through the use of a closed shop or by lengthening the time it takes to complete an apprenticeship. Over a period of time this could reduce the supply of labour to an industry, shifting the supply curve from  $SL_1$  to  $SL_2$  shown in the figure below.



The result would be an increase in the wage rate from  $W_1$  to  $W_2$ , but with a reduced number employed, i.e.  $L_2$  instead of  $L_1$ .

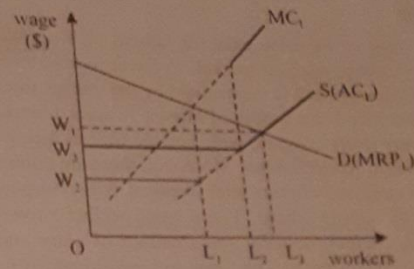
Alternatively, trade unions can influence the market through collective bargaining. It involves the direct negotiation between a trade union, bargaining collectively on behalf of its members, and the employer(s). If they are operating in a perfectly competitive labour market a successful collective bargaining could raise the wage rate from  $W_1$  to  $W_2$ , as illustrated in the figure below.



The trade union may be unwilling to supply labour below the wage rate of  $W_2$ ; therefore, the supply curve becomes  $W_2AS_1$ , being perfectly elastic over the section  $W_2A$ . At the equilibrium wage of  $W_1$ , with no trade union involvement,  $L_1$  workers would be employed. However, with a wage of  $W_2$ , only  $L_2$  are demanded and therefore  $L_1 - L_2$  are unable to find employment. There may be individuals who are willing to work for a wage below  $W_2$  but they would be prevented from doing so by the union agreement. So through collective bargaining a wage rate of  $W_2$  has been agreed, with  $L_2$  being employed. The same result is obtained when government fixes the minimum wage at  $W_2$ . The union, however, could attempt to maintain employment at the equilibrium level of  $L_1$  while obtaining a wage  $W_2$ . This would involve forcing the employer off the demand curve, thus obtaining position B. This will only be successful if the government is able to sustain employment at  $L_1$  while paying a wage rate of  $W_2$ .

In other case suppose that the workers in this industry organize themselves under a single union so that the government being a monopsonistic employer now faces a monopoly union—a bilateral monopoly. In this case the two sides will settle the wage through collective bargaining. The outcome of bargaining depends on the objective and strength of each side as shown in the following graph.

### Topic 2.3 page 20



The monopsonist facing a large number of employees in the industry will force the wage rates down to  $OW_2$  and restrict employment  $L_1$ . The successful resistance from the trade union sets a minimum wage of  $W_3$ , which will kink the supply curve of labour and produce a discontinuity in the marginal cost curve of labour.

The monopsonist has a profit incentive to hire extra workers so long as the marginal revenue product of labour is greater than the marginal cost of labour. Hence, it will employ  $L_2$  workers.

Following a union forced wage rise, not only do the workers get a higher wage, but the monopsonist employer actually employs more workers. It is only when the union forces the wage rate above  $W_C$  that employment starts to fall. This figure can also be used to illustrate the effect of the government imposing minimum wage of  $W_3$  on a monopsonistic labour market where the equilibrium wage was initially  $W_2$ .

Thus the theory of wage determination can be modified to analyse various labour market imperfections such as the government setting up the wage level, trade unions influencing the market through various measures.