

Chapter 16 The demand for labour

Answers to Knowledge checks

- 16.1** The demand for capital machinery is a derived demand because a firm demands the machine not for its own sake, but for the output that is produced using it.
- 16.2** The law of diminishing returns states that if a firm increases its inputs of one factor of production while holding inputs of the other factor(s) fixed, it will eventually derive diminishing marginal returns from the variable factor.
- 16.3** The main factors that influence the position of the labour demand curve are the productivity of labour, the revenue that the firm receives from selling the output that it produces and the state of demand for the product.
- 16.4** Making designer jewellery involves a labour-intensive production, so it will not be straightforward to substitute capital for labour. The skills of the workforce are paramount.
- 16.5** In the short run, the firm will be constrained in its operation, being unable to vary its capital input very quickly. However, in the long run, capital can be varied, and the firm is able to adjust more fully to changing market conditions.
- 16.6** Training could be provided to upskill workers, capital could be added or updated, and the production process could be reorganised.

Answers to Exercises and Case studies

Exercise 16.1

- a** See column three in Table A16.1. The marginal physical product of labour is calculated as the change in output as labour input increases. Therefore the change between 1 and 2 units of labour is $15 - 7 = 8$ units of output. Notice that in the table this is located halfway between 1 and 2.

Table A16.1 Marginal physical and marginal revenue product of labour

Labour input per period	Output (goods per period)	Marginal physical product	Marginal revenue product
0	0	7	35
1	7	8	40
2	15	7	35
3	22	5	25
4	27	2	10
5	29		

- b** See column four in Table A16.1. The marginal revenue product of labour is the additional revenue that the firm receives from selling the additional output that is produced by hiring an additional unit of labour. In this case, the firm is operating in a perfectly competitive market, and receives the same price for each unit of output sold. Marginal revenue is therefore constant at £5, so column four is simply column three multiplied by 5.
- c** In Figure A16.1 the profit-maximising level of labour input is where the wage equals the MRP_L , which is at 3 units of labour.

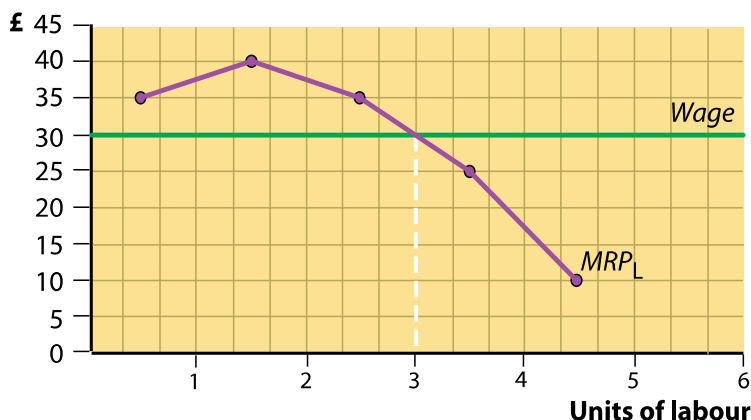


Figure A16.1 The marginal revenue product of labour

d See Table A16.2.

Table A16.2 Total revenue, total cost and profit

Labour input	Output	Total revenue	Total cost	Profit
1	7	35	40	–5
2	15	75	70	5
3	22	110	100	10
4	27	135	130	5
5	29	145	160	–15

Exercise 16.2

a A fall in the selling price of a firm's product reduces the marginal revenue product. Figure A16.2 shows that the MRP_L shifts from MRP_{L0} to MRP_{L1} , and with the wage (the marginal cost of labour) unchanged, the amount of labour employed falls from L_0 to L_1 .

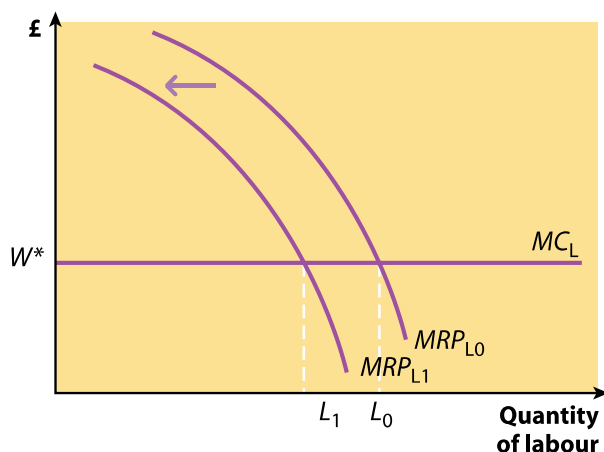


Figure A16.2 A fall in the selling price of a firm's product

b The adoption of improved work practices that improve labour productivity increases the marginal physical product, which in turn affects the marginal revenue product of labour. This time the MRP curve shifts to the right. In Figure A16.3, there is a move from MRP_{L0} to

MRP_{L1} , and with the wage (the marginal cost of labour unchanged), the amount of labour employed rises from L_0 to L_1 .

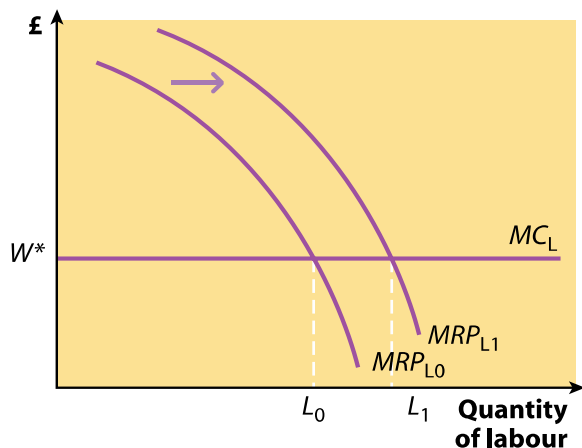


Figure A16.3 An increase in labour productivity

- c** An increase in the wage raises the marginal cost of labour to the firm, as shown in Figure A16.4, where the wage increases from W_0 to W_1 . The effect is that there is a move along the MRP_L , with the amount of labour employed falling from L_0 to L_1 .

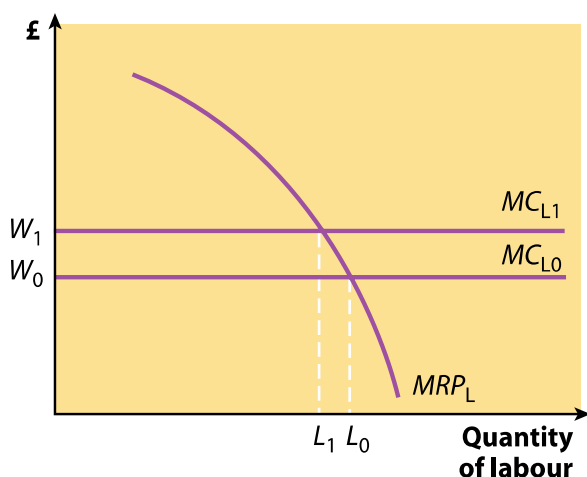


Figure A16.4 An increase in the wage rate

- d** To the extent that an increase in demand for the firm's product leads to a rise in the selling price of the product, there will be a rightward shift of the MRP_L , similar to the situation that was shown in part **b** of this question.

Answers to end-of-chapter questions

A Multiple-choice questions

- 1** c. When demand for a factor of production comes from the use of output produced by that factor, not for the factor itself
- 2** a. Costs of workers divided by output
- 3** c. An increase in the price of the product produced by labour

B Knowledge and understanding questions

- 4 The additional revenue received by a firm as it increases output by using an additional unit of labour input, i.e. the marginal physical product of labour multiplied by the marginal revenue received by the firm.

An explanation of marginal revenue product theory	up to 2 marks
A diagram showing marginal revenue product theory	up to 2 marks

- 5 Factors may include:

- Price of the product
- Demand for the product
- Productivity of labour

Two factors explained	4 marks
One factor explained AND one factor identified	3 marks
One factor explained OR two factors identified	2 marks
One factor identified	1 mark

C Stimulus response question

- 6 a The demand for sports therapy workers is a derived demand because the workers themselves are only demanded for the service that they can produce.

A full explanation of why the demand for sports therapy is a derived demand	2 marks
A vague or partial explanation of why the demand for sports therapy is a derived demand	1 mark

b

AO1 Knowledge	1 mark
AO2 Application	1 mark
AO3 Analysis	2 marks

Knowledge (1 mark) is likely to include:

- Marginal product theory

Application (1 mark) is likely to include:

- Application to the demand for sports therapy workers

Analysis (2 marks) is likely to include:

Analysis of how marginal revenue product theory can explain the demand for sports therapy workers, for example:

- Impact of a change in the demand for sports therapy
- Impact of a change in price of sports therapy
- Impact of a change in the productivity of sports therapy workers