

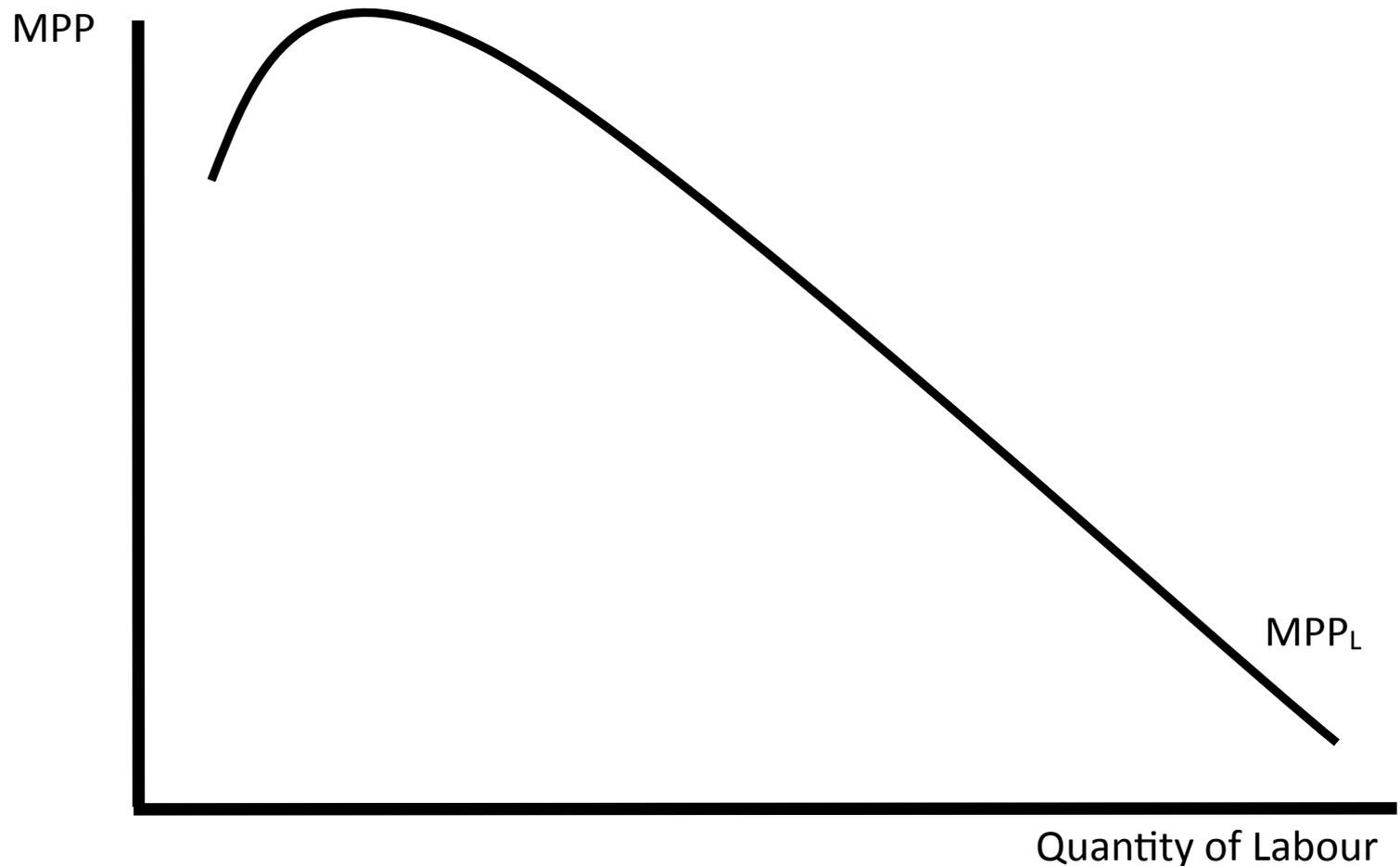
## Labour

**Labour:** is all human effort, other than enterprise, which is used in the production of goods and services.

The reward to Labour as a factor of production is the wage.

### Marginal Physical Product (MPP) of Labour

**The Marginal Physical Product of Labour (MPP<sub>L</sub>):** is the extra output generated when an additional unit of Labour is employed.



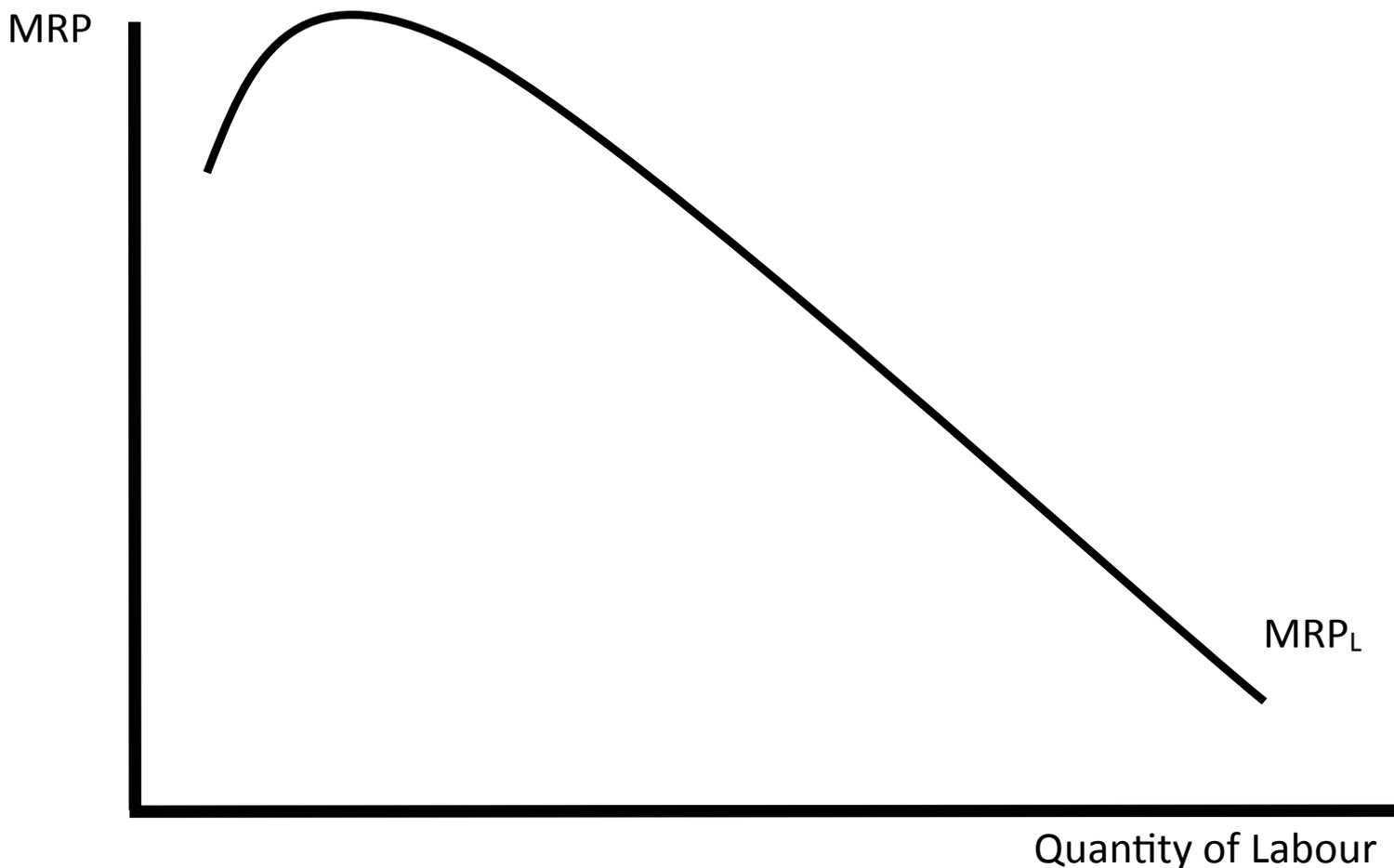
As we can see from the graph above, the MPP curve slopes upwards at low levels of output and then starts to slope downwards.

- 1) The MPP curve slopes upwards initially due to the benefits from increased specialisation of labour. As more workers are hired, each worker concentrates on performing one specific task only and as such, increases his ability to perform that task. Therefore, as extra workers are hired, the MPP rises.
- 2) The MPP curve slopes downwards due to the Law of Diminishing Marginal Returns. As more staff is employed, each staff member has

less access to capital or they simply get in each other's way and as such additional workers would be less productive. A fall in MPP.

### Marginal Revenue Product (MRP) of Labour

**The Marginal Revenue Product of Labour (MRP<sub>L</sub>):** the extra revenue earned when an additional unit of labour is employed

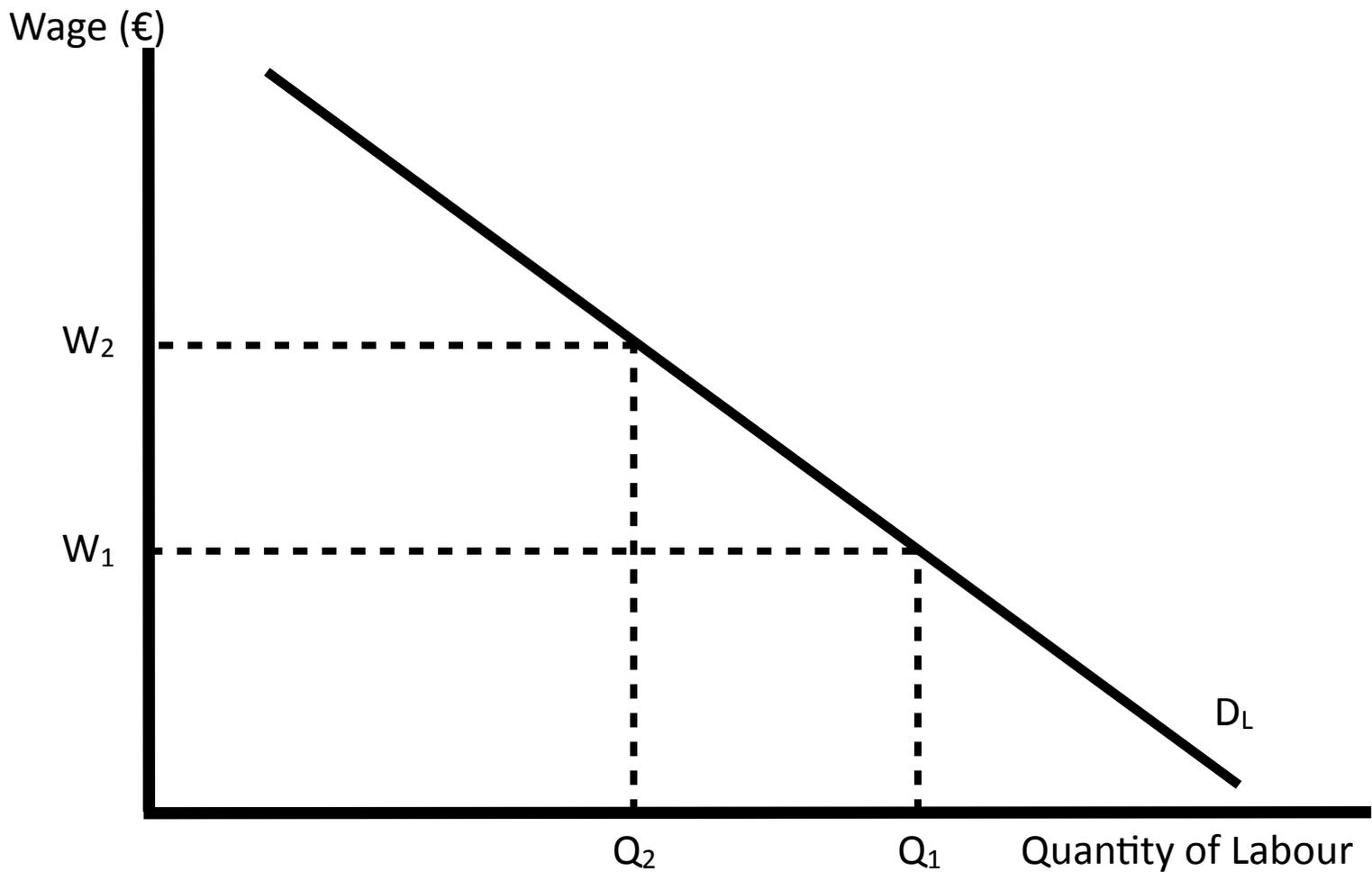


The MRP curve of Labour is exactly the same shape as the MPP curve. This is because the MRP curve is  $MPP \times MR$ . It slopes upwards initially due to the benefits from increased specialisation of labour and then slopes downwards due to the Law of Diminishing Marginal Returns. Exactly like the MPP curve.

As we already know from previous handouts, the MRP curve of any factor of production is its demand curve. This is also true for Labour. But more specifically, it is the downward sloping part of the MRP curve that is the demand curve for labour.

See Graph Overleaf

### The Demand Curve for Labour



At wage  $W_1$ , there is quantity  $Q_1$  of Labour Demanded.

At wage  $W_2$ , there is quantity  $Q_2$  of Labour Demanded.

We can see that the demand curve for Labour is downward sloping from left to right. Thus we can say that the higher the wage rate, the lower the demand for Labour (other things being equal).

An increase in wage rates lessens the profitability to the employer of taking on additional workers. Therefore if the wage rate increases from  $W_1$  to  $W_2$ , the quantity of Labour demanded falls from  $Q_1$  to  $Q_2$ .

As wages rise the demand for Labour falls.

As wages falls the demand for Labour rises.

### **The Demand for Labour**

- 1) **The Wage Rate:** If the wage rate the worker is seeking is higher than the revenue that the worker generates then this worker will not be demanded.
- 2) **Demand for Output:** If demand for the firm's output increases then this may lead to an increased demand for labour.
- 3) **Price of Other Factors of Production (including capital):** Prior to employing more labour the firm would compare the cost of the additional labour with that of other factors of production available to determine which is the most competitive.
- 4) **State Subsidies:** If the state were paying subsidies for the hiring of additional labour then this would make labour more competitive and increase demand.
- 5) **Taxation Rates on the Firm's Profits:** If the profitability of a firm is reduced by higher tax on companies' profits then this may affect a firm's decision to hire additional labour.
- 6) **Payroll Taxes:** If the rate of personal taxation increases then labour may seek a higher wage rate and this makes labour less competitive. Similarly if the rate of PRSI on labour increases this is an additional cost for the firm, which may reduce their demand for labour.
- 7) **Availability of Technology:** A firm's demand for labour will be affected by the availability of new technologies, particularly if it helps to reduce costs.
- 8) **Trade Union Involvement:** If a worker is a member of trade union then the firm may not employ this worker. This applies particularly to some firms in Ireland, which operate without the involvement of trade unions.

## **The Elasticity of the Demand for Labour**

The elasticity of demand for labour depends on the following.

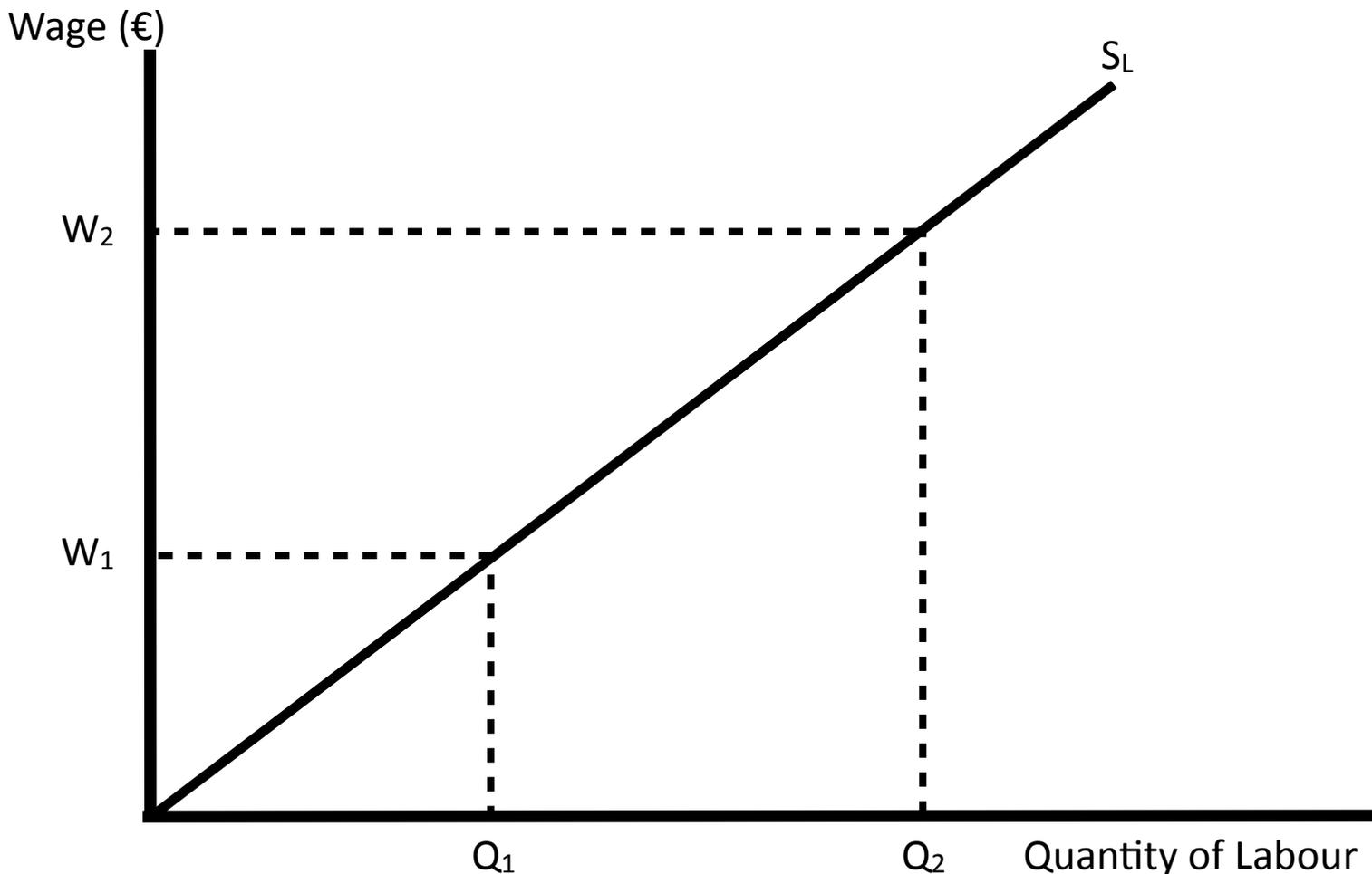
- 1) **The Elasticity of Factor Substitution:** The easier it is for a job to be carried out by a machine, the more jobs will be lost. This is because machines will be substituted for labour which is usually a result of rising wages. However some jobs cannot be performed by machines, therefore as wages increase some workers will still continue to be employed at the higher wage.
- 2) **The Elasticity of Supply of other Factors of Production:** If the supply of other Factors of Production is relatively inelastic, then it would become increasingly difficult to replace Labour with other Factors of Production. So, even though wages are rising, the firm is left with little option but to continue hiring labour as the quantity of other Factors of Production are not easily increased.
- 3) **The Elasticity of Demand for the Finished Good:** If the Price Elasticity of Demand (PED) of the good being produced is low (i.e. the good is inelastic), then an increase in wages can be passed relatively easily to the consumer. However, if the good being produced has a high PED (i.e. the good is elastic), producers may seek to find less Labour intensive methods of producing the good as Labour costs rise.
- 4) **The Ratio of Labour costs to Total Costs:** If the Labour costs embodied in the production of the good or service are a small proportion of the total production cost, then an increase in Labour costs would have a relatively small impact on the total cost. In this case the elasticity of demand for Labour would be low (i.e. relatively unresponsive to changes in wage rates). However, if Labour costs represent a large proportion of total costs, an increase in Labour costs would have a large effect on total costs and as such the elasticity of demand for Labour would be quite high (i.e. quite responsive to changes in wage rates).

### **Economic Consequences of an Increase in the Demand for Labour**

- 1) **Pressure on Wage Levels to Rise:** Employers will be forced to increase wage levels in order to attract workers into those areas where shortages are occurring.
- 2) **Loss of Services:** Where workers are not available it will result in either a deterioration of services in those areas or a total loss of certain services.
- 3) **Loss of Investment:** Indigenous and foreign entrepreneurs may see such shortages of labour as a deterrent to investing and starting a business.
- 4) **Inflationary Pressures:** If wage levels increase such increases may be passed on to the final consumer in the form of higher prices.
- 5) **Immigration:** Shortages of labour in the Irish labour market are reported internationally. FAS has attempted to entice foreign workers to Ireland. The number of applications for refugees' status has also increased.
- 6) **Difficulty in Keeping Workers in Some Sectors:** With labour shortages and the attractiveness of higher pay in alternative employments certain sectors find it increasingly difficult to attract workers e.g. in the hotel, catering, tourism industries. May require state intervention for the re-training of workers to fill sectors with vacancies.
- 7) **Inability to Maintain Development of the State's Infrastructure:** Because of the shortage of workers, developing the infrastructure at the pace necessary to sustain economic growth is not possible and this may affect future investment.

## The Supply of Labour

It is important to realize that when we are talking about the Supply of Labour, we mean the number of man hours that will be made available at a given wage rate.



Above we see the standard Labour Supply curve, (there are exceptions to this which we will discuss later). From the graph we can see that the supply of Labour is positively related to the wage rate. If wages rise from  $W_1$  to  $W_2$ , then the quantity of Labour supplied (the number of man hours) rises from  $Q_1$  to  $Q_2$ .

### **The Supply of Labour Depends on**

- 1) **The Size of the Population:** The larger the population of a country, the more likely they are to have a greater supply of Labour as there are more people available for work. The smaller the population the more likely it is to have a smaller labour supply. **NOTE:** Immigration and emigration trends affect the size of the population.

The larger the population the greater the Labour Force

**Labour Force:** The Labour force comprises those who are seeking work (unemployed) and those who are currently in work (employed)

$$\text{Labour Force} = \text{Employed} + \text{Unemployed}$$

- 2) **The Average Length of the Working Week and Holiday Entitlements:** The more hours, on average, that people work in a week the greater the supply of labour. The greater the amount of holiday entitlements given to each worker, the lower the supply of Labour.
- 3) **Participation Rate:** The higher the participation rate, the greater the supply of Labour. The lower the participation rate the lower the supply of Labour.

**Participation Rate:** The participation rate is the proportion of the population who are in the labour force.

$$\text{Participation Rate} = \frac{\text{Labour Force}}{\text{Working Age Population}}$$

### **The Participation Rate**

The Participation Rate is influenced by the following

- 1) **The Age of Retirement and School Leaving:** If the retirement age is raised then the Participation Rate is increased. Similarly, if the school leaving age is raised, then the number of people leaving school to take up full employment would fall, causing the Participation Rate to fall.
- 2) **Laws and Culture regarding Married Women in the Workplace:** If trends change or taxation legislation is altered which make it more attractive for married women to re-enter or remain in the workplace then the Participation Rate will increase.

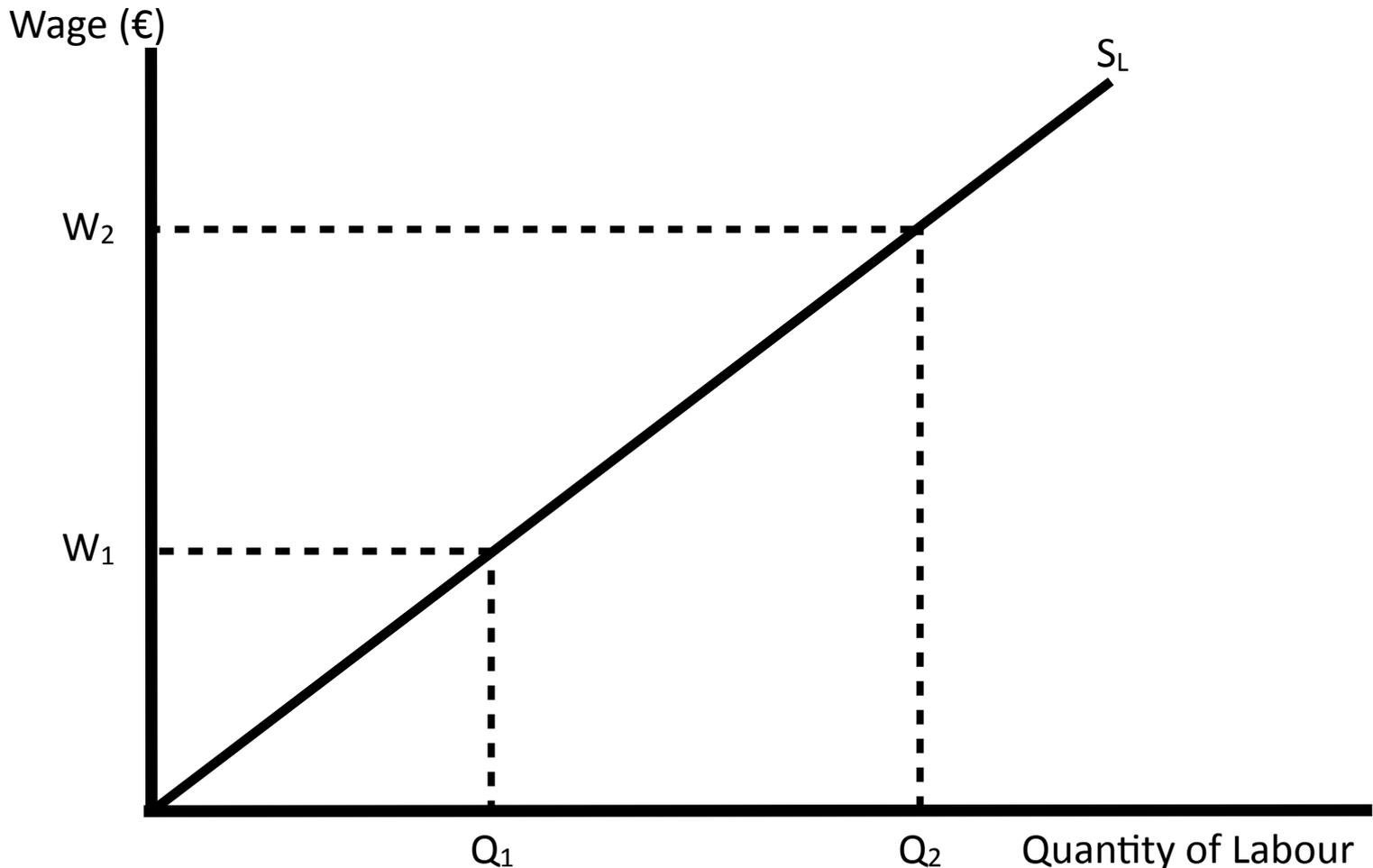
- 3) **The State of the Economy:** When the economy is healthy, there are more jobs available. People who might otherwise not take up employment, are more likely to take up employment which increases the Participation Rate.

**Discuss the Factors that Influence the Size of the Irish Labour Force**

- 1) **Wage levels within the Economy:** Higher wage levels act as an incentive for more people to supply labour. However, wage reductions reduce the supply of labour.
- 2) **Population:** Ireland's population has increased with more citizens within the working-age bracket. The size of the labour force increases, e.g. Ireland has a smaller population than France resulting in a smaller labour force.
- 3) **Participation Rate:** The number of people willing to work within the 16-65 age groups has increased. More women working/people who once retired are willing to take up part-time employment.
- 4) **Rates of Income Tax within the Economy:** In the past a reduction in income tax rates acted as an incentive for people to join the workforce. In the 2009 budget the new 'Income Levy' could now act as a disincentive to work and negatively affect the size of the labour force.
- 5) **Labour Mobility:** The workforce in Ireland has become more occupationally mobile, there are less barriers in place preventing the movement of workers. With EU enlargement, the free movement of labour is increasing. The recent down turn in the Irish economy may see many immigrants moving home and an increase in emigration of Irish citizens.
- 6) **Government Policies:** The government has moved to ease restrictions on the entry of immigrants to Ireland aiming to liberalise entry requirements into certain occupations. E.g. pharmacies; hospital consultants.

### Different Labour Supply Curves

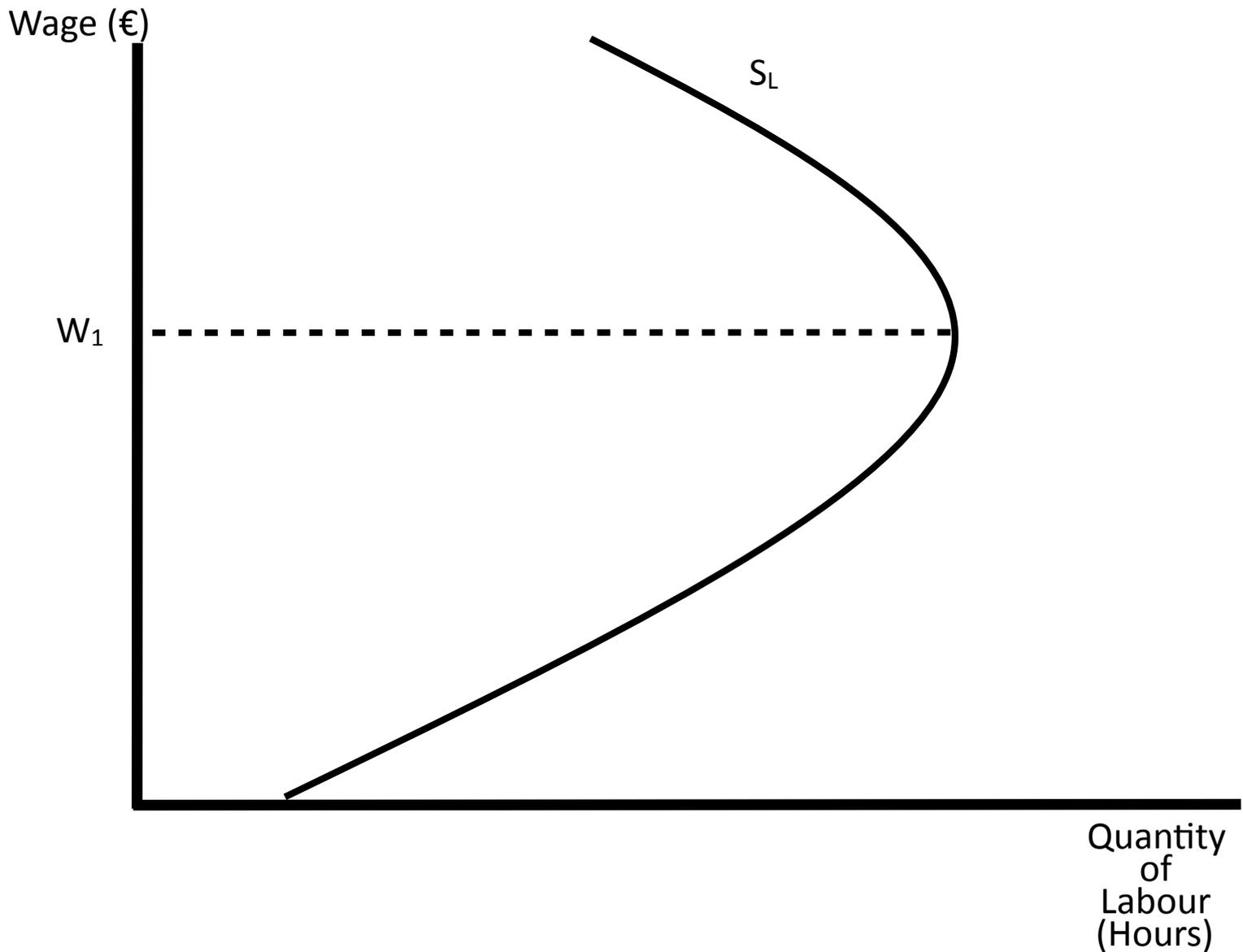
The Labour Supply curve is generally considered to be upward sloping from left to right. This means that as the wage rate increases, the number of hours supplied increases and vice versa.



However, there are exceptions to this curve which we shall now take a look at.

In extreme cases, if wage rates continue to rise, workers would reduce the number of hours of labour they supply. This is due to the fact that, as wage rates reach very high levels, workers achieve a level of wealth that they are comfortable with and start to prefer more leisure time to more money. Therefore as wage rates continue to rise, less hours of Labour are supplied. See graph overleaf.

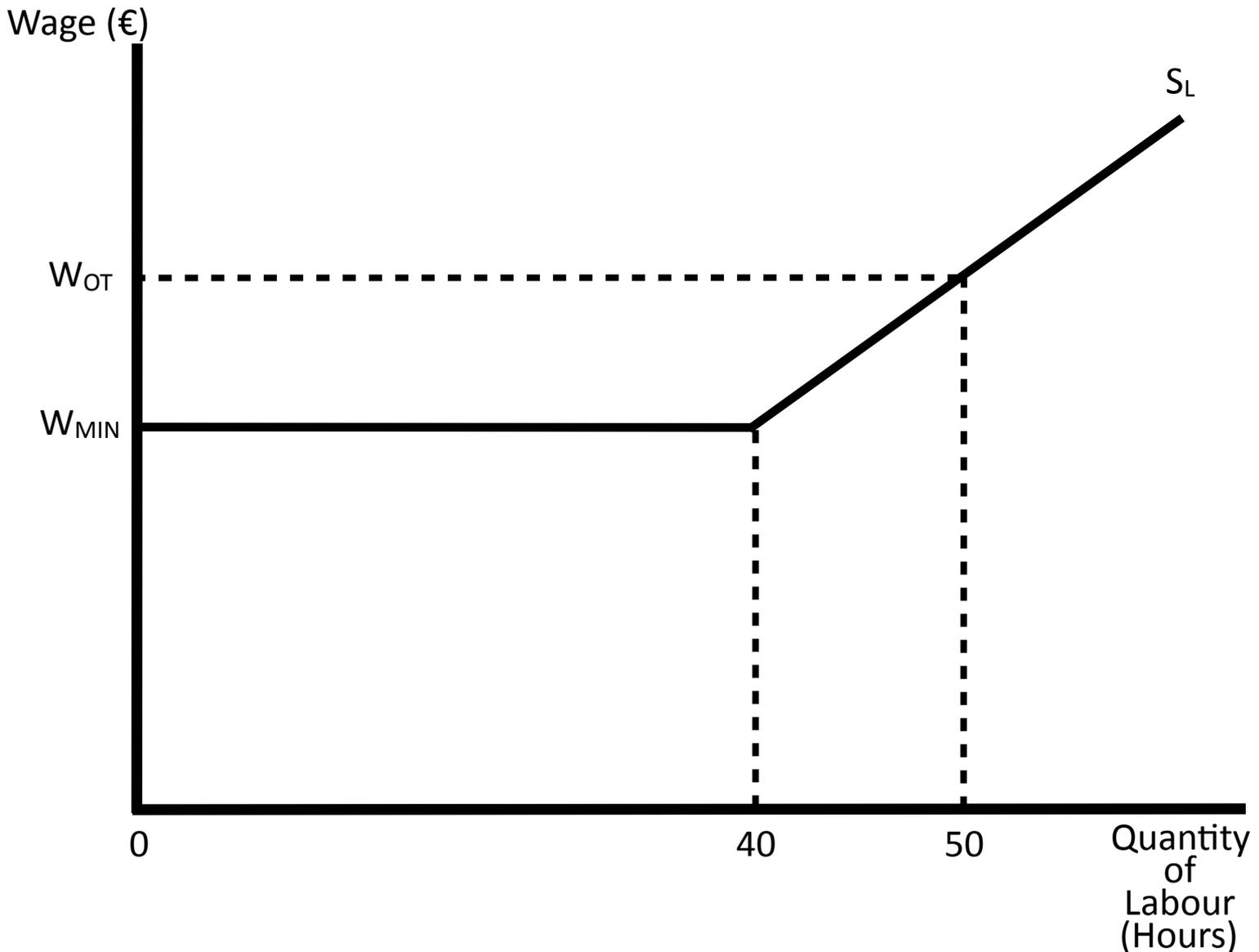
### The Backward Bending Supply Curve



As we can see from the graph above, initially increases in the wage rate cause an increase in the quantity of Labour supplied. However after a certain point ( $W_1$ ), any increase in wages causes a fall in the quantity of Labour supplied.

### Minimum Wage Supply Curves

Trade Unions exist in many Labour markets and have been successful in negotiating a minimum wage for their members. A minimum wage is an hourly rate below which no labour will legally be supplied. We can see from the graph below that, at any wage rate below the minimum wage, ( $W_{MIN}$ ), no Labour is supplied. Then at the minimum wage 40 hours are supplied. Any increase in the Labour supplied after the 40 hours would require increases in the wage rate (i.e. overtime). This is what causes the supply curve to slope upwards again after the 40 hours.



As we can see from the graph above, the supply of Labour jumps from 0 hours to 40 hours per week once the minimum wage ( $W_{MIN}$ ) is paid. Following that, if the firm wishes for its employees to increase the supply of Labour, they must increase the hourly wage (to  $W_{OT}$ ) for those extra hours.

### **How the Wage Rate is Determined**

Like most things in economics, the wage rate is determined by the intersection of the Supply curve for Labour and the Demand curve for Labour.

As said before, the Supply curve for Labour is usually upward sloping from left to right because

- 1) An increase in wages will encourage more people to join the Labour Force (increased Participation Rate)
- 2) An increase in wages usually results in those already in the Labour Force supplying more Labour.

The Demand Curve for Labour ( $MRP_L$ ) is downward sloping from left to right because

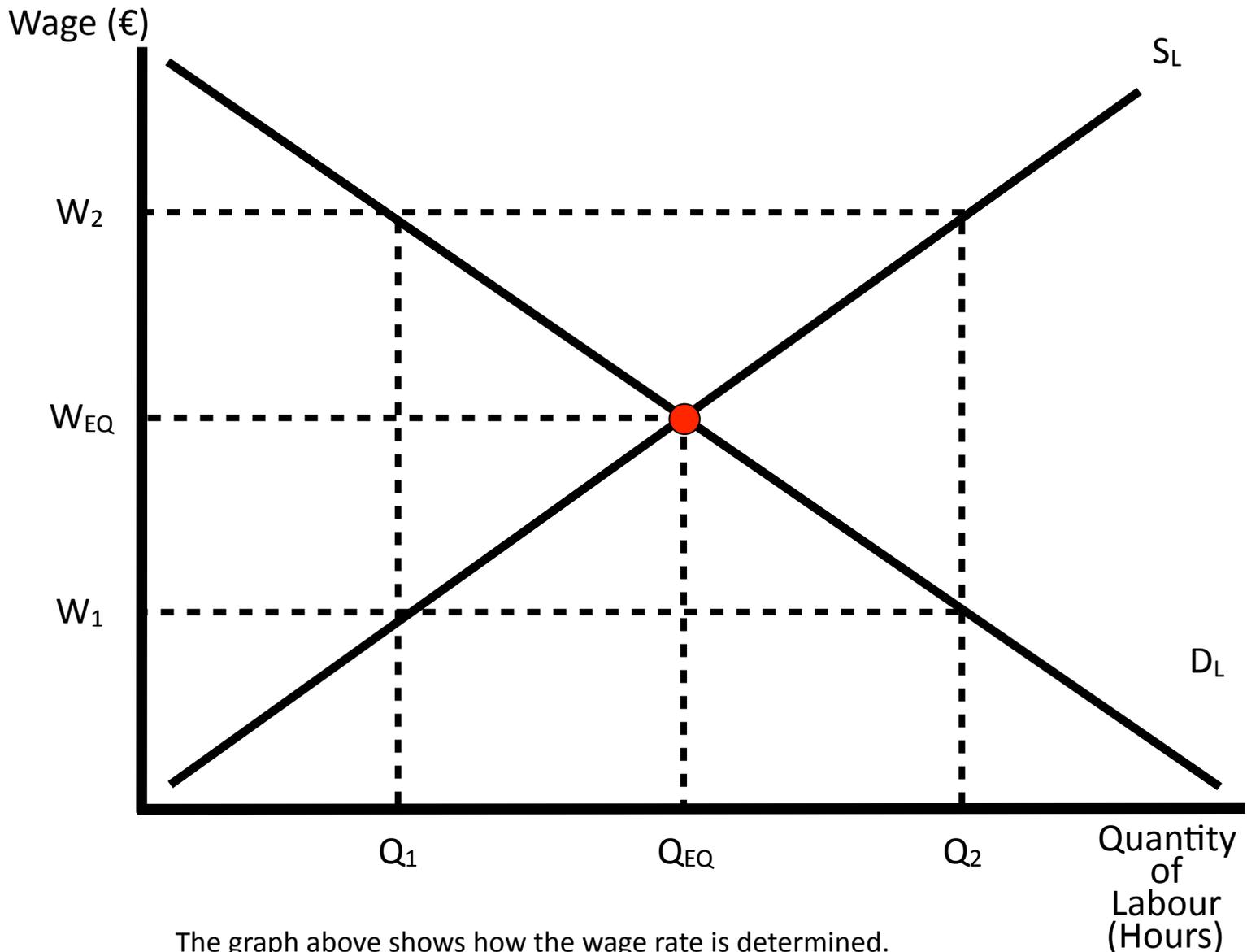
- 1) The Law of Diminishing Returns: this states that as extra units of a variable factor of production are added to a set sized fixed factor of production, eventually a point will be reached when the extra output caused by the last unit of the variable factor employed begins to decline.
- 2) Companies facing a downward sloping demand curve have to lower price in order to sell more output, represented by a downward sloping MR curve.

Now that we understand the shape of each the demand and supply curves for Labour, we can draw them both on the same graph.

### Wage Determination in a Free Market

A free market is a market (i.e. a combination of demand and supply) where there are no trade union restrictions, no employer restrictions and no government restrictions.

If we are trying to determine the wage rate in a free market we simply use the demand and supply curves that we have just discussed.



The graph above shows how the wage rate is determined.

If  $W_1$  is the prevailing wage rate then  $Q_1$  man hours of labour will be supplied but  $Q_2$  man hours will be demanded, resulting in an excess demand (i.e. Labour Shortages). This will drive the wage rate up towards the equilibrium wage rate  $W_{EQ}$ .

If  $W_2$  is the prevailing wage rate, then  $Q_1$  will be demanded and  $Q_2$  will be supplied, resulting in an excess supply of Labour (i.e. Unemployment).

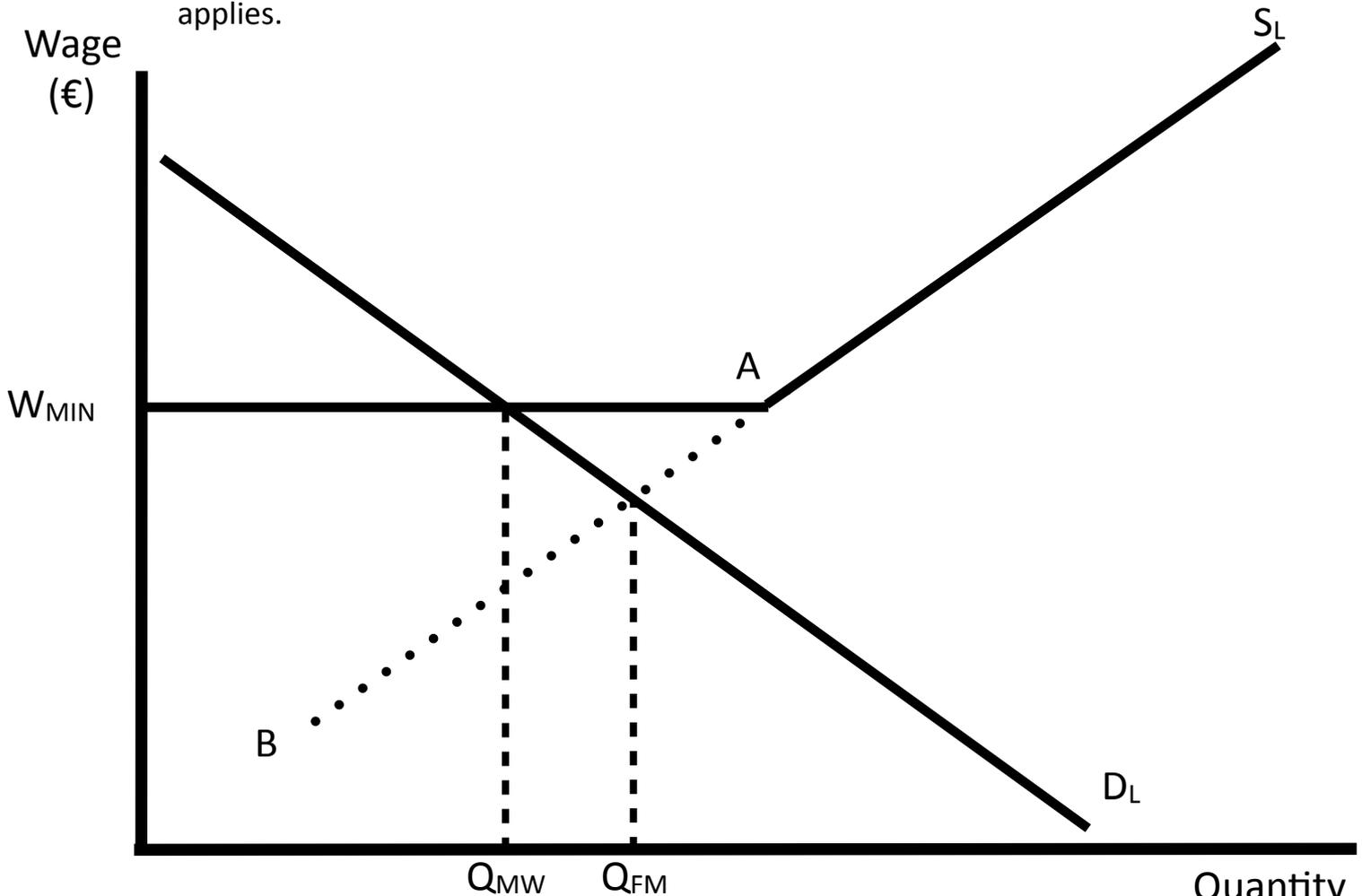
The Equilibrium wage rate is the wage that ensures that the demand for Labour equals the supply of Labour.

**Wages in a Market with Restrictions (Not a Free Market)**

**Minimum Wage**

As said previously, a trade union may successfully argue for a minimum wage in order to try to protect its members interests.

If the minimum wage is set at  $W_{MIN}$ , then no Labour will be supplied below this wage and as such the portion of the supply curve **AB** no longer applies.



However, unbeknownst to most people, minimum wages cause unemployment.

This is because higher wages reduces the demand for Labour and as such the employer will hire less workers then he would have been willing to hire at a wage below the minimum wage .

If we look at the graph overleaf, we see that people would be willing to supply Labour at a rate below the minimum wage, (represented by the portion of the graph AB). If the minimum wage was not enforced the quantity of Labour both demanded and supplied would be , (this is the quantity of Labour that would employed in a free market). However because of the minimum wage only (the quantity demanded due to the minimum wage) is demanded, resulting in unemployment.

### **Economic Advantages of Reducing the National Minimum Wage**

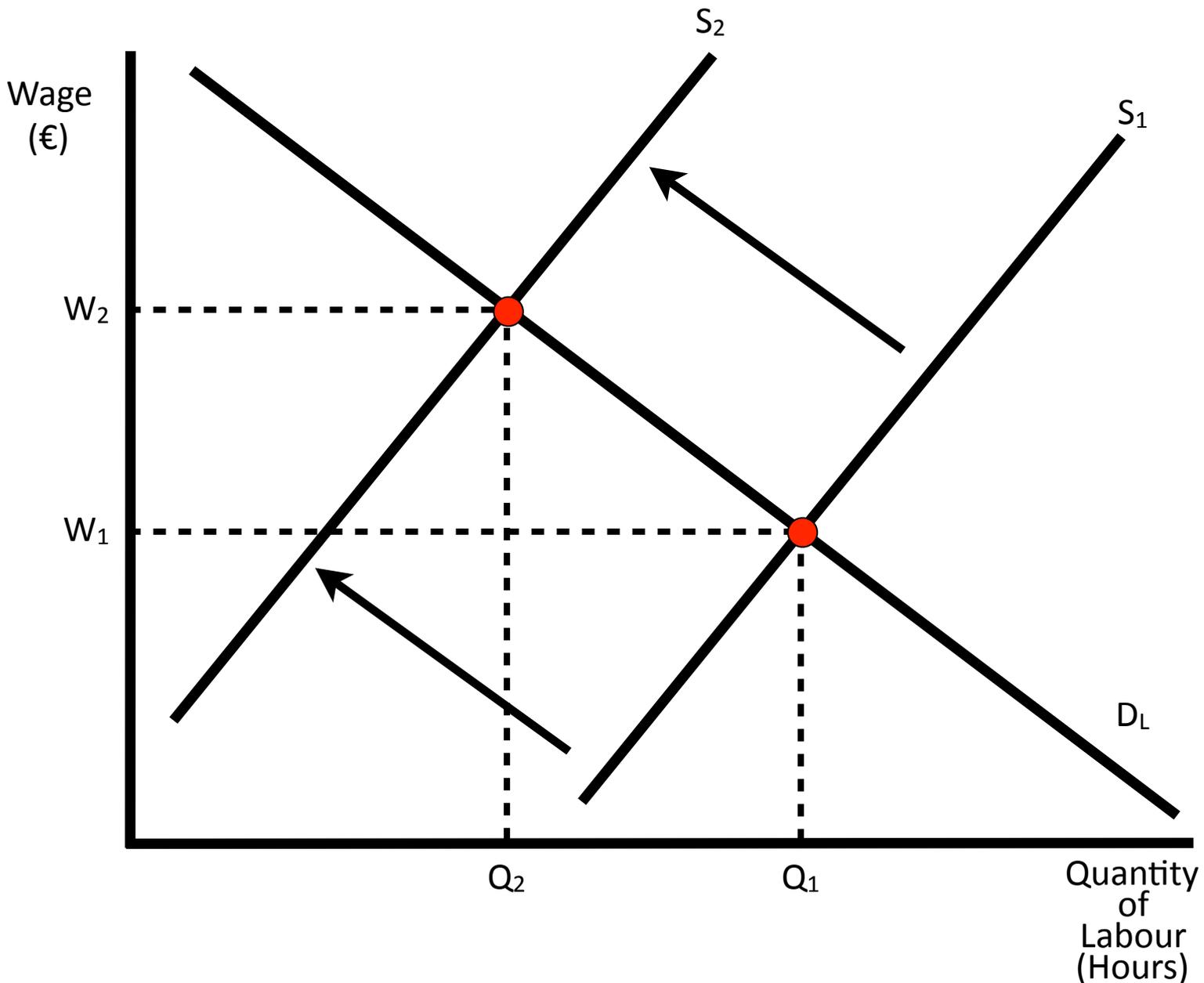
- 1) **Lower Labour Costs:** Resulting in continued production and reduced risk of business closure.
- 2) **Lower Selling Prices:** With production costs falling this may lead to lower consumer prices and increased competition
- 3) **Increased Demand:** The lower wage rate leading to lower prices may lead to increased demand and hence greater demand for workers. Indigenous jobs are protected e.g. jobs in the tourism sector.
- 4) **Investment Stimulus:** Reduced costs may lead to increased investment by entrepreneurs / increased foreign direct investment.
- 5) **Reduced Risk of Re-location:** Irish wage levels may fall more into line with other countries and this may result in less firms considering re-locating to countries outside Ireland.

### **Economic Disadvantages of Reducing the National Minimum Wage**

- 1) **Reduced Standard of Living:** Workers will now receive lower income and so their standard of living will fall
- 2) **Reduced Aggregate Demand:** Lower incomes will reduce spending and so the demand for goods and services may fall resulting in unemployment/less VAT receipts.
- 3) **Impact on General Wage Levels:** This reduction may indicate to employers that all wage levels should fall and this may result in a possible reduction in standard of living among the entire workforce.
- 4) **Workers on Lower Incomes Suffer Most:** If the reduction is confined to those on the minimum wage rate then the burden is not being shared equally within the workforce, which is not equitable.
- 5) **Discourage Employment:** The reduction may not encourage people to join the workforce/ it may lead to a greater participation in the black economy.

### Restricting the Labour Supply

As we can see from the graph below, there is an inward shift in the supply curve of Labour. This is caused by either a profession (doctors, lawyers or accountants) or a trade union actively reducing the supply of its members in order to increase the wage earned by these members. This is an example of the trade union or profession acting like a monopoly and setting the quantity supplied. It is the market that sets the price (i.e. the wage).



As we can see from the graph overleaf, by restricting the supply of Labour (from  $S_1$  to  $S_2$ ) a profession or trade union can increase the wage of its members ( from  $W_1$  to  $W_2$  ).

### **A Trade Union or Profession can achieve these Restrictions by**

- 1) **Setting more Difficult Exams:** Many professions like accounting and law require all students to sit professional exams. If The Law Society of Ireland increased the difficulty of these exams then less people would enter the profession.
- 2) **Limiting Places at College:** In the 80's the government limited the number of places in college for medicine in order to save money on their education. This unintentionally reduced the number of doctors in the country resulting in each of them earning a higher wage.
- 3) **Longer Training Periods:** In Ireland it takes about three and a half years for an accounting student to be fully qualified. If this training period was increased, the supply of accountants in Ireland would fall resulting in each accountant earning a higher wage.

When the profession or trade union sets the quantity supplied rather than the price (the wage that they are willing to work for) there is no unemployment unlike the minimum wage example.

### **The Efficiency of Labour**

The efficiency of Labour depends on the following

- 1) **Education or Qualifications:** The better the quality of education, training or qualifications attained by the worker the more efficient or productive they may be.
- 2) **Degree of Specialisation:** By concentrating on performing a single task workers become faster and more skillful and therefore are more efficient.
- 3) **Innate Talent of the Worker:** Some workers may possess innate / natural talents making them highly efficient.
- 4) **Climatic Conditions:** If a place of work is too hot or too cold then this may affect the workers productivity.
- 5) **Quality of the Other Factors:** The better the quality of the other factors which the worker uses then the more efficient the worker.
- 6) **Management Expertise:** Good managers can get the best out of their workforce, leading to efficiencies, improved staff motivation, leading to increased output.
- 7) **Availability of Other Factors:** Efficiency may be improved if the worker has a greater quantity of other factors of production available for use.

- 8) **Commitment of the Worker:** if workers are highly motivated and committed to work then they will operate more efficiently
- 9) **Living Conditions of the Workforce:** If workers are healthy, well nourished and have decent accommodation then they will work in a more efficient manner.

### **Why are some Jobs Better Paid than Others**

- 1) **MRP:** The main reason that any job is better paid than others is the difference in each workers MRP. A workers MRP is basically the value of what the worker earns for the firm. The higher the workers MRP, the more the firm can pay him. E.g. An investment banker earns the bank more money than a clerk.
- 2) **Different Skills:** The skills attached to different jobs vary and pay is commensurate with the level of skill involved. E.g. A doctor receives higher pay than a nurse.
- 3) **Training:** Workers who undergo longer periods of training will receive higher levels of pay. E.g. A nurse who trains and becomes more specialized will receive higher levels of pay.
- 4) **Educational Qualifications:** Generally wage levels recognize the educational qualifications achieved by the worker. E.g. A teacher with a Masters degree receives a higher allowance than a teacher with an honours degree.
- 5) **Nature and Conditions of the Job:** These may vary between jobs and pay levels will reflect this. E.g. Dangerous work and unsociable hours receive higher pay than a safe nine to five job.
- 6) **Negotiating Strength of the Workers Trade Union:** If a worker is a member of a strong trade union, this trade union may successfully argue a wage in line with that workers MRP.
- 7) **Tradition Attached to Certain Jobs:** It has been possible for those involved in the self governing professions i.e. those in the legal or accountancy professions to maintain high levels of pay because of the tradition which is attached to those professions.
- 8) **Possession of Innate Talents:** Some people possess certain talents and hence may be able to earn very high incomes. E.g. Sports stars, actors or singers.
- 9) **Gender Bias:** Despite legislation, a bias exists in the payment of women in the Irish workforce. Women workers in Ireland earn roughly 80% of their male counterparts.

## Marginal Cost of Labour

**Marginal Cost of Labour:** Is the addition to Total Cost of Labour from hiring one extra worker.

If the firm wishes to hire more labour it must increase the wage in order to attract more workers. But the firm must pay all workers doing the same work equal amounts. Therefore, the firm's total wage bill (Total Cost of Labour) increases by not just the wage of the new employee but also by the increase in wages for the workers that it was already employing.

### Method for Answering Questions

- 1) You calculate the Total cost of Labour before the extra worker was hired. This is Total Cost 1 ( $TC_1$ )
- 2) You calculate the Total Cost of Labour after the extra worker was hired. This is Total Cost 2 ( $TC_2$ )
- 3) You take the answer you got in point 1 away from the answer you got in point 2 **AND THIS IS YOUR Marginal Cost of Labour.**

$$TC_2 - TC_1 = MC_L$$

### EXAMPLE 1

A firm wishes to attract more labour. In order to increase its labour force from 5 to 6 employees, the firm must increase the weekly wage rate from €400 to €440 per employee. Calculate the firm's marginal cost of labour. Show your workings.

### ANSWER 1

- 1)  $5 \times €400 = €2,000$
- 2)  $6 \times €440 = €2,640$
- 3)  $€2,640 - €2,000 = €640$
- 4) Marginal Cost of Labour = €640

### EXAMPLE 2

A firm wishes to attract more labour. In order to increase its labour force from 7 to 8 employees the firm must increase the weekly wage rate from €250 to €300 per worker. Calculate the firm's marginal cost of labour. Show all your workings.

**ANSWER 2**

- 1)  $7 \times €250 = €1,750$
- 2)  $8 \times €300 = €2,400$
- 3)  $€2,400 - €1,750 = €650$
- 4) Marginal Cost of Labour = €650

**Nominal Wages V's Real Wages**

So far throughout this handout we have been discussing wages, but more specifically we have been discussing what are called nominal wages.

**Nominal Wages:** Refers to the money earned after a certain period of work which is expressed in standard currency units.

E.g. €1000 per week.

Nominal wages do not take into account the price of goods and services in the economy. This does not tell us how wealthy a person is as wealth is defined by what you can buy. Therefore we need a type of wage that takes prices into account.

**Real Wages:** refers to the purchasing power of money earned.

Real wages take into account the price of goods and services in the economy and the rate of inflation (the rate at which prices are increasing).

Real wages are considered to be more important in wage negotiations. This is due to the fact that real wages accurately indicate how many goods and services people can buy which is the definition of wealth.

Remember, nominal wages can rise and, in real terms, people can still be getting poorer. If prices are rising faster than the rise in nominal wages, then real wages are falling and as such people are getting poorer.