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A COMPARATIVE SURVEY OF ALTERNATIVE APPROACHES TO THE FUNCTIONING OF LABOUR MARKETS

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No portion of this dissertation has been submitted in support of an application for another degree or qualification of this or any other university or other institution of learning.

To my family

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Introduction

The focus of the present work is the labour market. Our main interest is to study in which way different schools of economic thought have faced the controversy of employers and employees.

The labour market has been analysed over time from different perspectives by economists. This is the subject of this research; first of all, to study how Classics, Marxists, and Neoclassics faced the analysis of the labour market. Secondly, after reviewing each perspective, to establish comparisons between them.

The three schools have been selected with the purpose of comparing them from a microeconomic perspective. Each investigate the situation of the employees; the behaviour of employers and their interaction in the labour market. From each of them we get a different picture of the situation in which some people have work to offer, and others want to acquire this work. We will see that, although different, each approach is similar enough to allow us for comparisons.

The first chapter is devoted to the classics. We will first make some general observations concerning to the classical school. The sense of this small section is to situate ourselves in the context in which we will see immediately after the operation of the classical labour market.

The main part of the analysis is developed in the second section. There we will offer the classical view of the labour market.

To allow for a better understanding of the analysis, this section is divided in two. In the first one the labour market mechanism is outlined and in the second one some comments implied by it. These comments refer to the characteristics of the main variables determined by the market; that is, wages and employment.

Some concluding remarks close this first chapter.

The second chapter has been assigned to Marx. Like in the other chapters there is a first section explaining the perspective to be followed in the chapter. In the second section the Marxian labour market is analysed. In this part we will study first the general way in which the labour market works. Secondly, we will comment the factors determining such behaviour. After this, we will make some observations about the characteristics of wages and of the level of employment and unemployment. The last part of the second section is a comment about the influence of capital and about the Marxian perspective of the division of labour.

The final section of the chapter will make some brief comparisons between classics and Marxists which emerged with the chapter.

The third chapter is dedicated to the neoclassics. Four sections form it. The first one reflects some general characteristics of the neoclassical tradition. The second one present the neoclassical labour market. In that section we will analyse separately the neoclassical labour supply, the neoclassical labour demand and the labour marker equilibrium, together with some considerations about that analysis.

The third section discusses a variation of the general neoclassical labour market. Such variation refers to the possibility of relaxing some characteristics of the theory to observe the effect of wage rigidities. In this part, the main wage rigidity theories are analysed. They are: efficiency wages, implicit contracts, search, insider-outsider, mismatch and unions.

Some conclusions about common and divergent points with the other two schools of though will be offered in the last section.

The last chapter of the present study analyses the comparison of the main aspects pointed out by every school of thought in the previous chapters. In a first section, the comparisons are focused on the components of the labour market. Secondly, the different conceptions of equilibrium and the differences of market process are commented upon. The last part of the last chapter presents the comparison of the variables obtained with the operation of the labour market. That is, the characteristics of wages and employment from the three different perspectives are confronted.

1. The labour market mechanisms in the classical thought

1.1. Some observations on the classical school

The term *classical economics* was first used by Marx in a particular sense to refer to that school of political economy that goes from the middle of the eighteenth century to the middle of the nineteen century. During this time, the classical economists wrote important enquiries about the real relationships of production in their society. In the works of Smith, Malthus, Ricardo, and Mill, just to quote the most outstanding, many ordinary life issues of their time are exposed and a socio-economic analysis, linked with the philosophical assumptions of their ideas, is provided.[1]

The main guideline of this analysis is their belief in a system of spontaneous cooperation. Accordingly, the market would work in such a way that individual interests are naturally satisfied. This means that they trusted in competition and in private incentives to achieve prosperity and general welfare.[2]

One of the areas in which classical authors provided more exhaustive analyses was the one of the labour market. The labour market is in fact not only examined with strict economic arguments, but also taking into account the social situation of the implied agents.[3]

Each member of this school has a quite differentiated point of view. Differences and analogies between their main works appear quite evident, and their 'correlation' is increased by the comments that they addressed to each other. In what follows we will however try to show how a common scheme can be found behind all of their labour market analyses. In doing so, we will mainly refer to such prominent figures as Smith, Malthus, Ricardo, and Mill.

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[1] For a clear exposition of the philosophical classical ideas and their relationship with their economic theories, see Martin (1994).

[2] A good example is Mill's view of the efficiency of a perfectly competitive income distribution with respect to a system of progressive taxes. Mill (1966, p. 647).

[3] See Smith (1979, pp. 83-4) and Robbins (1966, pp. 104-5).

In the next section of this chapter two main points are going to be analysed: the labour market mechanism and the main consequences of this mechanism. With respect to the classical labour market mechanism, we are going to see the determination of the labour demand and supply, the interaction of these two forces generating a short-run equilibrium and possible alterations in the equilibrium with the consequent adjustment to a long-run situation.

With respect to the second issue, we are going to follow an exposition of the effects and characteristics on the two main variables determined in the market, that is wages and labour.

Some concluding remarks will be provided at the end of the chapter.

1.2. The classical labour market at work

In this section we are going to discuss the way in which classics analysed the labour market, in its demand and supply side.

Once we know the factors generating a supply and demand for labour, the market mechanism acts generating a wage and employment level. Several forces can act in the market altering labour supply or demand, or both of them. Hence, every possible alteration will be analysed explaining the adjustment mechanism to a long-run equilibrium.

After the explanation of the labour market mechanism, some consequences and characteristics of it will be analysed. In that respect, different concepts of wages will be explained in a more precise form as well as the existence of different wages in the labour market.

At the same time, important characteristics of the labour variable will be studied: a full employment condition, the influence of unions and the existence of different categories for labour.

1.2.1. The labour market mechanism

The classical labour market is analysed in a different way depending if we are studying a short-run or a long-run situation. The long-run is understood as a period of time long enough allowing for variations of the factors of production. In the short-run, there are possible variations in the production level by using the productive factors with different intensities. In

the long-run, it has passed enough time to allow for changes in the level of capital and in the magnitude of population.

Starting with a short-run perspective, it is necessary to explain the characteristics of the market components: labour demand and supply.

Each of these two forces needs to be explained if one wants to understand how certain variables are obtained through them, and how they vary.

Commencing with the short-run labour demand, the classics explained it on the basis of the *wages fund theory*.

The rationale of this theory lies between the division of capital in fixed and variable.

The concept of capital, in turn, is expressed with similar definitions by the classics. Ricardo, in chapter five of his Principles, defines capital as that part of the national wealth that is used in the productive process and is formed mainly by food, clothes, tools, and raw materials. In chapter four of the first book of the Principles, Mill represents capital as the provision of shelter, protection, tools, and necessary materials for the production process and for the workers' sustenance.

As was said, such defined total amount of capital is made up of a fixed and of a variable part.[4] While the former is made up of what Schumpeter termed 'technological capital' (Schumpeter, 1995), as it is formed by buildings, tools, machinery, etc., it is indeed the latter, destined to remunerate the active labour force[5] that represents the wages fund.[6]

Given its capital nature, the dimension and the variations of the wages fund are determined by past and present savings. The possibility for an industry to grow in fact depends on the capital availability, that is by the income capitalisation under the assumption that every increase of income saved is transformed into capital.[7]

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[4]In the case of Ricardo, the term used to analyse the wages fund concept is 'circulating capital', but following Schumpeter (1995, p. 702), when Ricardo (as is the case of other classics in some moments) wrote 'circulating capital', he was thinking on 'variable capital'.

[5]In the chapter 31 of the Principles, Ricardo shows a numerical example referred to the division of the components of capital.

[6]In the definition of Wages Fund applied by Mill all the expenditure on unproductive labour is included together with the working capital being used to pay wages. Mill (1909, p. 344).

[7]In this point is crucial the classical identification of saving and investment, Schumpeter (1995, p. 710).

Therefore, the labour demand is given by the variable capital, or the capital destined to wages; and it can be increased with augmentations in saving.[8] Accordingly, in every moment there is a given amount that the employer decides to expend in labour after he decides how much to reserve for his own consumption.[9] The remaining quantity is the minimum limit to give to labour, and at the same time, a maximum limit, as the employers do not allow inactive capital.

This quantity rises in proportion to the increases of national wealth,[10] taking into account the classical assumption that the ratio between variable and fixed capital is constant.[11] However, the composition of capital can change with the introduction of new machinery. The initial effect of new machinery on the wages fund is a reduction, because of the substitution of fixed for variable capital. Nevertheless, in a certain period of time, there are positive effects in the national wealth because of the introduction of innovations,[12] moving the labour demand towards its original position.

It is significant that Mill in 1869 abandoned the doctrine of the wages fund, criticising the condition that the amount destined to wages is at any moment a predetermined one. The criticism is focused on the fact that according to the wages fund theory, the demand wage is determined by the number of workers, as there is a fixed amount of money to be shared between the labour force. In this respect, Mill argues: "The price of labour, instead of being determined by the division of the proceeds between the employer and the labourers, determines it. If he gets his labour cheaper, he can afford to spend more upon himself. If he has to pay more for labour, the additional

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[8]In the basis of the wages fund theory, the labour demand can be represented as a curve describing the amount of labour accepted by the employer to different wage rates. However, Fleeming Jenkin (1870) was the first in expressing a labour demand with this characteristics. His representation supposed the starting point of the marginal productivity theory.

[9] According to Stirati (1994), this amount is determined by two factors. The firs one is given by "[...] all the elements of custom prevalent in a given historical period, which reflect the history of bargaining relationships between social classes as sedimented in widely accepted social conventions and/or institutions". The second one refers to "the relative bargaining power of employers and workers. This depends, for example, on the relative amounts of employment and population; on political and institutional changes; and on successful collective action to increase wages (or to reduce them, when employers join forces)."

[10]With an increase in the employers' benefit, his income rises and therefore the amount of saving. We have seen before that an augmentation in saving increases the wages fund and therefore, the labour demand.

[11] This comes from the assumption that the existing capital is used under a given technology and a given composition of output. Only with the introduction of innovations or scale economies there are gradual changes in the production techniques, as we will see when Ricardo speaks (1821, p. 390) about the possible substitution of machinery for labour.

[12]That is the positive effects of an increase in productivity.

payment comes out of his own income; perhaps from the part which he would have saved and added to capital, thus anticipating his voluntary economy by a compulsory one; perhaps from what he would have expended on his private wants or pleasures. There is no law of nature making it inherently impossible for wages to rise to the point of absorbing not only the funds which he had intended to devote to carrying on his business, but the whole of what he allows for his private expenses, beyond the necessaries of life. The real limit to the rise is the practical consideration, how much would ruin him or drive him to abandon the business: not the inexorable limits of the wages-fund. In short, there is abstractly available for the payment of wages, before an absolute limit is reached, not only the employer's capital, but the whole of what can possibly be retrenched from his personal expenditure: and the law of wages, on the side of demand, amounts only to the obvious proposition, that the employers cannot pay away in wages what they have not got". Mill (1869).

Until now we have seen the functioning of one side of the labour market (the labour demand), and now is the turn for the other side: the short-run labour supply.

With respect to the labour supply, the classics made the assumption that it is given by a number of workers determined by the size of the labour force. Moreover, for the present analysis, the labour supply is considered homogeneous and without any movement between workers.

From this presentation of the labour supply, it can be inferred that the workers are offering their labour force independently of the wage (inelastic labour supply). It can be mentioned here that there is an alteration to this explanation made by Blaug (1968, p. 47) when he is trying to interpret the Smithian labour market. Blaug introduces a 'participation rate', in the sense that with an increase in this participation rate, the same number of people supply more labour at a higher wage rate. In this particular explanation, together with the given amount of labour force, there is a positive participation rate with respect to the market wages.[13]

Once the characteristics of the components of the labour market have been developed, the variables wage and employment determined by them are easily obtained. The interaction between the short-run labour supply and demand determines the market wage as a real one. The money wage is obtained by multiplying it by the price of provisions:[14] "The market price of labour is the price which is really paid for it, from the natural operation of the proportion of the supply to the demand; labour is dear when it is scarce, and cheap when it is plentiful". Ricardo (1817, p. 71).

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[13]The different classical concepts of wages will be discussed later on.

[14] The real wage is obtained in that way although there is a straight relation between the monetary wage and the price of provisions. "The money price of labour, as I shall endeavour to show hereafter, does not fluctuate from year to year with the money price of corn, but seems every where accommodated, not to the temporary or occasional, but to the average or ordinary price of that necessary of life." Smith (1776, v. 16).

In this form, from the analysed labour supply and demand, an equilibrium point is obtained. This equilibrium point establishes the market wage paid to the labour force available in the economy.

Nevertheless, it is possible to have movements from both sides of the labour market. On the one side, with an expansion in the economy, the short-run labour demand is growing.[15] On the other hand, with an increase in population, the labour supply grows; this variation in population should be generated by prosperity (positive variation in population), or by poverty (decrease in population). Therefore, if some of these variations are produced, there are changes in the labour forces and therefore in the variables operating in the market: this generates an adjustment towards a long-run situation.

In what follows, we will try to explain the mentioned adjustment process generated in the labour market after some variation in the short-run equilibrium. In the analysis of this process, a particular theory called the *Malthusian population mechanism*, is used. Therefore, the next step will be the exposition of this theory and then the adjustment process from an equilibrium to another.

The Malthusian population mechanism[16] starts to work after an alteration in the economy in the sense that the population adjusts, growing after an increase in wages or decreasing after a fall in wages. This adjustment in population is adopted by the classical authors in their analysis as pushing the economy towards a long-run equilibrium.[17]

The basis of the Malthusian theory is that population, when unchecked, increases in a geometrical ratio, while subsistence increases only in an arithmetical ratio, with the

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[15]The possible variations in the wages fund has been explained before, therefore we can assume now that an increase in the national wealth rises the wages fund.

[16]Although called the Malthusian mechanism, Malthus himself accepted that his ideas were not exposed by himself as the first time. Malthus (1798, p. 6).

[17]"In the first place, if the labourers have, as is often the case, no more than enough to keep them in working condition, and enable them barely to support the ordinary number of children, it follows that if food grows permanently dearer without a rise of wages, a greater number of the children will prematurely die; and thus wages will be ultimately higher, but only because the number of people will be smaller, than if food had remained cheap. But, secondly, even though wages were high enough to admit of food becoming more costly without depriving the labourers and their families of necessaries; though they could bear, physically speaking, to be worse off, perhaps they would not consent to be so. They might have habits of comfort which were to them as necessaries, and sooner than forego which, they would put an additional restraint on their power of multiplication; so that wages would rise, not by increase of deaths but by diminution of births. In these cases, then, wages do adapt themselves to the price of food, though after an interval of almost a generation". Mill (1909, p. 346).

consequence of 'checks' and difficulties in sustenance.[18] For Malthus (1748, p. 48), this mechanism acts continuously: due to the human necessities, population is prevented from increasing beyond the food that the country can produce or acquire. It is possible to have a permanent increasing population only in the case in which the means of subsistence rise.

In this respect, one observation made by Ricardo (1817, pp. 75-7) should be added: from a certain increase in the population of a country, the quantity and the quality of the land diminishes. The consequence is a lesser power of production, whilst the power of population remains the same. The only solution for this situation is a reduction of people or a more rapid accumulation of capital.

These are in a very general form the characteristics of the Malthusian population mechanism. Nevertheless, it should be enough to understand the subsequent analysis of an adjustment process after an alteration in the market equilibrium, and the determination of a long-run state.

Initially, we can assume that the alterations are coming from a situation of continuous growth in the economy. In a growing economy there are increases in the labour demand that make the market wage rise.[19] With the increase in wages, there is a stimulus for population to grow and therefore for the labour supply to increase,[20] and this makes wages fall. At the end of the adjustment, the wage rate is at its subsistence level,[21] as at the beginning: this subsistence wage rate is the natural wage, given by the lowest wage rate that common humanity allows for. The explicit meaning of natural wage used by the classical economists is the one of wages paid to 'common labourers', and refers to a value corresponding with a long period. Therefore, it is obtained without taking account of possible influences of temporary

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[18]"I think I may fairly make two postulata. First, that food is necessary to the existence of man. Secondly, that the passion between the sexes is necessary, and will remain nearly in its present state...Assuming then, my postulata as granted, I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man. Population when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio...By the law of our nature which makes food necessary to the life of man, the effects of these two unequal powers must be kept equal. This implies a strong and constantly operating check on population from the difficulty of subsistence". Malthus (1798, p. 9).

[19]This has been explained with the characteristics of the labour demand in the basis of the wages fund theory.

[20]The validity of this sentence depends on the Malthusian population mechanism that has been analysed before.

[21]Adjustments from the labour demand and supply are operating here. Therefore, the characteristic of the market equilibrium as obtained with the interaction of both forces produces a new wage level for the economy.

events disturbing the market.[22] With the wage variations produced in the market and the consequent adjustment mechanism, there are market wages gravitating around the natural one.

The statement that the per capita wages tend to a subsistence minimum level is a proposition made about the value of wages in the long-run.

To arrive at the *subsistence minimum wage*[23] from the market wage is quite straightforward once the population principle has been accepted. The relation between them is that the market price of labour can differ from the natural one but it has a tendency to conform with it, after the reaction of the labour supply to the increase in population: "Labour, like all other things which are purchased and sold, and which may be increased or diminished in quantity, has its natural and its market price. The natural price of labour is that price which is necessary to enable the labourers, one with another, to subsist and to perpetuate their race, without either increase or diminution (i.e. in the same position of life or comfort". Ricardo (1817, p. 70).

The concept of subsistence minimum, according to the quotation of Ricardo made above, refers to a 'physical subsistence minimum'. However, the classics modified that concept later on substituting it with a 'social subsistence minimum'.[24] The variation is in the sense that the latter concept includes the life conditions and customs in every concrete country.[25]

The mentioned 'minimum subsistence wage' is therefore the wage paid to the workers in every stationary point of the economy, that is to say, in a long-run state. The employers can reduce wages until this minimum because workers can not survive without the anticipated money received by them[26] in the form of wages. But when the national wealth of the country is increasing, employers demand more workers and there is a tendency to raise wages above the subsistence level during an indeterminate period of time.

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[22]"Natural simply means that disturbances other than such as may have been included in the data are assumed to be absent, or that we intend to investigate a process or state as it would be if left to itself." Schumpeter (1954, p. 112).

[23]Different terms are used to speak about the level of wages in the long-run: 'long-run wage', 'subsistence wage', or 'natural wage'. These definitions have the meaning of a wage that deep population stationary in contrast to short-run market wages.

[24]See Schumpeter (1995, p. 734).

[25]Ricardo (1871, p. 74) left clear the possible variations in the natural price of labour. It can vary with the time and with the country, as it depends on the habits and customs of the people.

[26]Wages are anticipated in the sense that workers receive them before the productive process is concluded.

What produces an increase in monetary and real wages is not the current level of wealth, but its increase. The resulting positive effect in wages is because the rise in wealth and therefore in the labour demand (as it has been explained before) is higher than the consequent increase in population.

Therefore, it is possible to have subsequent market wages above the subsistence or natural wage: this creates a secular trend in real wages, in the case of an economy in continuous expansion with an increasing capital level. For such a case to be true, a temporal lag should exist between the expansion of the labour demand, on the one hand, and, on the other hand, the reaction of the population to every increase in wages, as this increases the living conditions.

Malthus (1798, p. 107) recognised the existing lag between an increase in wages and an increase in population, in the case of a sudden increase of capital; but he showed himself agnostic with respect to the positive effect of every increase in the revenue or in the stock of a society. For him, only some increase in capital can generate an increase in the wages fund:[27] these are the cases in which a large part of the additional capital is convertible to provisions and it is coming from the product of land instead of that of labour. Moreover, in any case, the situation of labourers will hardly improve: after a nominal rise in wages, in fact, if the stock of provisions remains the same, there will be a rise in the price of provisions and therefore a very short-run effect, and perhaps none at all, will occur in the workers' conditions.[28] To this effect, a rise in population, after an effectual increase in the funds for labour, should also be added: this will convey more difficulties for the maintenance of higher wages.

With respect to the present case of an evolution in the economy after an increase in its capital, Ricardo (1817, p. 72) introduces an important distinction: the capital of a country can increase in its quantity as well as in its value, or only in the former way. In both cases, the increase in the market wages with its tendency to conform to its natural level is explained;

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[27]"it will be found that the funds for the maintenance of labour do not necessarily increase with the increase of wealth, and very rarely increase in proportion to it; and that the condition of the lower classes of society does not depend exclusively upon the increase of the funds for the maintenance of labour, or the power of supporting a greater number of labourers". Malthus (1826, p. 439).

[28]Ricardo (1817, p. 73) expounded the same analysis of an equal increase of money wages and prices and so maintaining constant the real wages.

however, in the second case, the natural wage does not increase, while in the first it does.[29] The reasoning given by Ricardo for this differences is that in the case in which capital is increasing in quantity and in value, together with the consequent addition of food, clothing, etc., more labour is required to produce a concrete amount of goods. In the case in which capital increases only in quantity, more labour is not required to produce the new amount of commodities. Furthermore, a third case is plausible, when together with an increase in the quantity of capital, there is a reduction in its value. In this last case, less labour than before is required in the productive system, with the effect of a decline in the natural wage.

It seems clear that Ricardo is showing the case of a change in the composition of capital when he develops the idea of an increasing/constant/decreasing value of capital after an augmentation of its quantity. Therefore, a variation in the value of capital should correspond with an increase in the ration between variable and fixed capital.

To finish with the analysis of a growing economy, one more influence in the process should be included.[30] This influence can be found in Mill (1869), when he makes reference to the importance of the capitalistic behaviour in terms of the actual capacity of an economy to grow after an increase in capital: the demand for labour will increase depending on the decision taken by the capitalist, with respect to how distribute his earnings between reinvestment and personal consumption.[31]

Continuing with the involved adjustment from one equilibrium to another, it should be stressed that the same analysis holds for the reverse situation. That is to say, a similar mechanism is observed in the case of a depressed economy with real wages declining,[32] as the labour supply exerts greater pressure on the resources, and causes the negative effects expressed by Malthus. If wages fall below the subsistence level, 'preventive checks', at first, and 'positive checks', later, will make the population fall until wages return to the subsistence

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[29]Another difference in this distinction is the speed of convergence towards the natural wage.

[30]This influence was briefly explained at the beginning of the section when the characteristics of the capital and their influence in the wages fund was analysed.

[31]For Mill, the limited amount to be shared between the labourers is not given by the wages fund itself but by how much the capitalist "would ruin him or drive him to abandon the business".

[32]In page 15 of his Essay on population, Malthus speaks about a rigid nominal wage, or a nominal wage that hardly fall and a gradually increasing nominal price of provisions and therefore "a real fall in the price of labour"

level.[33] However, as Mill (1909, p. 359) says, the preventive checks tend to become stronger as civilisation advances and therefore population has a tendency to slacken its rate of increase, relative to subsistence.

Until here we have seen the short-run characteristics of the labour market and the adjustment process from a long-run equilibrium to another. We could observe that the main characteristic of the long-run state is the determination of a subsistence minimum wage as the long-run equilibrium wage.

Therefore, it is possible to summarise that in the short-run, the labour market is directed by the wages fund theory and the long-run by the minimum of subsistence theory. The evolution from subsequent short-run equilibria to the long-run one is explained with the Malthusian population mechanism and the characteristics of the capital in the economy.

Accordingly, when a long-run equilibrium is achieved, the labour market is exchanging the labour force of the economy[34] for a minimum of subsistence.

Several implications appear from this assertion. The most important ones refer to the homogeneity of wages and labour, the characteristics of this both variables and the condition of full employment.

All of this ideas and their consequences will be analysed in the following section.

1.2.2. Consequences and comments implied by the market mechanism

From the analysis developed in the previous section, important consequences and necessary comments arise. For this reason, some of these commentaries about wages and employment will be expounded in this section.

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[33]The Malthusian ideas have been applied by the classic economists in their explanation of the economic adjustments; although Malthus had a more pessimistic perspective: instead of an economy which long-run equilibrium situation is altered by an expansion and therefore an increasing labour demand with the consequent raise in wages, Malthus alludes more frequently to "the constant effort towards population, which is found to act even in the most vicious societies, increases the number of people before the means of subsistence are increased". In that case, the economy departs from the subsistence equilibrium with an increase in labour supply and therefore a decrease of wages below of the minimum of subsistence, "during this season of distress, the discouragement to marriage, and the difficulty of rearing a family are so great, that population is at a stand". The population adjustment is operating until the proportion between the means of subsistence and population is the same than at the beginning. "The situation of the labourer being then again tolerably comfortable, the restraints to population are in some degree loosened; and the same retrograde and progressive movements with respect to happiness are repeated". Malthus (1798, p. 15).

[34]The labour supply is given by the labour force.

With respect to wages, we will see mainly the characteristics of different concepts of wages and the existence of different wage rates in the market.

As for the employment variable, three issues will be commented on: the condition of full employment, the role of unions, and the differences between productive and unproductive labour.

1.2.2.1. Consequences in wages

In this respect, two main points are going to be developed in this section. The first one is some comments that classical authors make persistently among their writings with respect to the relation between the natural wage and the subsistence minimum. The second point, related with the existence of heterogeneous wages, will be described later on.

The classical wage operating in the market is a 'market wage' in the short-run, and a 'natural' or 'subsistence' wage in the long-run.

The most important these two concepts of wages is the second one as it states a peculiar classical analysis of the labour market. In relation to this analysis, we already know that in the subsistence wage theory, the classics used a mechanism of population adjustment.

This relation between 'subsistence' and 'population' is explicit in several points of the classical writings. While Smith (1776, bk. 1, Ch. 8) developed his analysis by sticking to the idea that population varies with the supply of food, on the other hand, for Ricardo (1817, p. 70), food acts on the natural wage through its price. For him, it is the increase in the price of food[35] that raises the natural wage. This conclusion by Ricardo is criticised by Mill:[36] "[...] the conclusion which Mr. Ricardo draws from it, namely, that wages in the long run rise and fall with the permanent price of food, is, like almost all his conclusions, true hypothetically, that is, granting the suppositions from which he sets out. But in the application to practice, it is necessary to consider that the minimum of which he speaks, especially when it is not a physical, but what may be termed a moral minimum, is itself liable to vary". Mill (1909, p.347).

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[35]To observe the variations in the natural wage, it is necessary to take in account "another necessaries and conveniences required for the support of the labourer and his family" together with the food. Ricardo (1817, p. 70).

[36]For Mill, a permanent better situation of people can be reached only "either by their general improvement in intellectual and moral culture, or at least by raising their habitual standard of comfortable living", but these circumstances are going to happen only rarely. Mill (1909, p. 161).

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Although the main point in the analysis of wages is related to subsistence commodities and food, Mill (1909, p.343) tells us about wages that generally exceed the physiological minimum,[37] and about luxury consumption. The larger is the proportion of wages expended in luxury goods, the lower is the rate of growth of the wages fund and of employment. Nevertheless, in a growing economy, with an increase in production, and assuming constant population, labourers become luxury consumers, while before this kind of consumption was limited to only one part of the population. With additional capital, but with the same population, the standard of living of the labouring class is going to increase.

Until here some assertions about long-run wages established by the classics among their writings have been expressed; and the second necessary comment about wages will be established in what follows. This second point is referred to as the condition of 'homogeneity' or 'heterogeneity' of wages. In this respect, the classics were sure of the existence of different wages in the market, but each of them focus on different aspects to explain the observed differences. For this reason, each of the more remarkable comments concerning with different authors will be analysed in turn.

First of all, to understand the importance of heterogeneous wages in the classical analysis, some earlier observations should be restated. The labour market is analysed as a competitive market and therefore, the labour factor is treated as homogenous, and the wage rate as unique, with perfect mobility of labour between different occupations. However, despite of all these assumptions, the classical authors were aware of the existence of different monetary wages, depending on the characteristics of the job and of the worker. Ricardo (1817, Ch. 1, sec. 2) and Mill (1909, pp. 383, 90), having agreed with Smith (1776, bk. 1 , Ch. 10) with respect to the existence of different wages, argue about the validity of assuming labour as homogeneous with respect to the existence of the same disutility for everyone.

In the *Wealth of Nations* (1776, bk. 1, Ch. 10) there are two kinds of reasons for the existence of inequalities between wages: the first is given by 'the nature of the employees', and the second by 'the policy in Europe'. Competition equalises the net advantages of

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[37]This is because "wages, like other things, may be regulated either by competition or by custom. In this country there are few kinds of labour of which the remuneration would not be lower than it is, if the employer took the full advantage of competition. Competition, however, must be regarded, in the present state of society, as the principal regulator of wages, and custom or individual character only as a modifying circumstance, and that in a comparatively slight degree. Wages, then, depend mainly upon the demand and supply of labour; or, as it is often expressed, on the proportion between population and capital". Mill (1909, p. 343).

different occupations to different individuals, not the monetary wage. The net advantage is the monetary earning compensated by a non-monetary factor.

With respect to the differences in wages due to the particular nature of the employees, Smith (1776, pp. 116-35) enumerates five compensating factors in the wage rate:[38]"The agreeableness or disagreeableness of the employments themselves,"[39] "The easiness and cheapness, or the difficulty and expense of learning the business,"[40] "The constancy or inconstancy of employment in them"; "The small or great trust which must be reposed in the workmen,"[41] "The wages of labour in different employments vary according to the probability or improbability of success in them."[42]

The inequalities generated by the European policy (Smith; 1776, pp. 135-59) are given by the restriction on competition,[43] excessive competition of other kinds of jobs and obstacles to the free movement of workers and capital between jobs or between places.

In the *Principles of Political Economy*, Mill (1909, p.343) asserts that different types of job are paid different rates, depending in some degree on different laws. Wages are determined by a competitive system, and they are limited by natural causes or by the effect of general social circumstances, although law or custom may interfere to limit competition.[44] After this, he judges as 'tolerably successful analysis' that chapter of *The Wealth of Nations* in which Smith expounds the reasons for which there exist different wages. The allusion made by Mill to Smith in this respect is of a critical form, especially commenting on the first case of 'the nature of the employees': "The really exhausting and the really repulsive labours, instead of being better paid than others, are almost invariably paid the worst of all...Desirable labourers, those whom every one is anxious to have, can still exercise a choice. The undesirable must take what they can get...Partly from this cause, and partly from the natural and artificial monopolies which will be spoken of presently, the inequalities

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[38]Smith (1776, bk. 1, Ch. 10) argues that the compensations in the differences of monetary wages will work under some necessary conditions as perfect freedom, knowledge about the employees, employees in a situation of natural state and the worker should have a main job.

[39]Wages vary positively with the disutility of labour.

[40]This is the initial idea of *Human Capital*. People sacrifices present's wage acquiring skill for higher wages in the future.

[41]This become later one of the facts explaining the modern theory of *Efficiency Wages*, in which the employer pay higher wages as an incentive to avoid the costs of supervision and insurance.

[42]This fact involves situations of choice under uncertainty and the application of expectations.

[43]For this reason there exist privileges to corporations and 'gremios'.

[44]There are some kind of labours which wages are fixed by custom; Mill (1909, p. 400) enumerates between this kind of jobs: physicians, surgeons, barristers, attorneys, to mean with all of them 'professional persons'.

of wages are generally in an opposite direction to the equitable principle of compensation erroneously represented by Adam Smith as the general law of the remuneration of labour". Mill (1909, p. 389).

For Mill (1909, pp. 390-94), the main reason for the existence of different wages is related to skilled and unskilled labourers, and with the unequal wages between different social classes. The inequality between skilled and unskilled wages is unjustifiably great, due to the fact that there is a natural monopoly operating in favour of the latter and against the former category of labourers. The skilled workers are therefore receiving a 'monopoly wage', higher than the competitive one, because of the difficulty of the rest of workers obtaining the required educational level. An increase in the unskilled wage to the level of the skilled one should be pursued, but to implement this target, some check should be operating on population.

Another case analysed by Mill (1909, p. 400) with respect to the existence of different wages among the population, is that in which women get generally lower wages than men. The explanation given for this situation is 'custom'. However, in some cases the differentials in these wages come from the competitive process: some jobs accessible to women have in fact a very little demand, and make wages fall to a much lower minimum than those of men.

1.2.2.2. Consequences for employment

The main comments to be developed here will be three. The first of them, and probably the most relevant, refers to the possibility of full employment in the classical economic system.

The second point will clarify the comments made by the classics on the role of unions and on the conditions of the workers as a class.

The third comment will show the classic differentiation between productive and unproductive labour.

One of the more controversial consequences of the classical labour market is to infer if in its system the existence of unemployment is allowed for or not.

In the relevant secondary literature, there are different conclusions depending on their subjective interpretations of the classical analysis. However, to be consistent with the exposition made in this chapter and with the concepts used along this chapter, quite autonomous conclusions in this respect will arise. Therefore, we will obtain conclusions from the characteristics expressed in our analysis about the labour demand and supply.

We have mentioned that the labour supply is given by the labour force. It follows that along it we have the condition of full employment. If the labour demand interacts with the labour supply, we have full employment in the economy: at a determined market wage in the short-run, or at the subsistence wage in the long-run.

If the role of the participation rate is introduced in the classical labour supply, we have the same quantity of labour force along the whole the supply, although with different hours working for every wage.

Therefore, only in this case, it is possible to speak of a rate of unemployment. However, this rate does not refer to involuntary unemployed people but to the possibility of employees working a few number of hours, or voluntary unemployment in the case in which there is a standard fixed number of working hours in the economy.

Also Malthus,[45] allowing for fluctuations in the manufacturing sector, does not speak about labour adjustments that generate unemployment during periods of crisis. He instead alludes to an adjustment in the number of working hours: "When the price is low,[46] the state of the demand will not allow of the usual number of hours working; and when the price is high, it will admit of extra hours". Malthus (1826, p. 445).

Moreover, after periods of expansion or depression, the 'number of working hours', rather than the 'number of workers', is the adjusting variable in the labour market. Therefore, another issue is to observe if in the economy the labour market is operating in a situation of part-time, full-time or overtime.[47]

Only in one particular case can we find the idea of some kind of unemployment existing in the economy, at least in the short-run. This kind of unemployment is technological and is due to the effect of a technological change in the economy.

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[45]Instead of thinking in probable increasing rates of unemployment with a critic situation, Malthus argues about the subsistence circumstances of population and consequently to its own adjustment: "whether the resources of a country be rapidly progressive, slowly progressive, stationary or declining, the power of giving full employment and good wages to the labouring classes must always remain exactly the same conclusion which contradicts the plainest and most obvious principles of supply and demand, and involves the absurd position that a definite quantity of territory can maintain an infinite population". Malthus (1826, p. 373).

[46]In this comment, Malthus specifically writes about the price of weaving.

[47]Although labour is measured in working hours, however if the number of working hours is fixed as a standard general number for every worker, it is possible to obtain the number of workers hired in the economy. In this sense, it is possible to find situations of voluntary unemployment if a positive sloped supply function is allowed.

A good example is provided by Ricardo in his Principles (1821, Ch. 31).[48] The explanation he gives for this phenomenon is that with the mechanisation process there is a change in the composition of capital. Some variable capital is substituted with fixed capital. The main effect is a reduction in the wages fund and therefore in the labour demand. The consequences are a reduction in wages and the creation of unemployment.

This negative effect is showed usually as a short-run effect because, over time, technological progress raises productivity. Schumpeter (1995, p. 753) observes that using a classical analysis, the assumptions of perfect competition and total flexibility in wages, force the wages fund to come back to its original position. In a certain period of time, there should be an increase in savings, with a consequent rise in the labour demand and another situation of full employment.

There is an additional problem in the classical analysis of the introduction of new machinery. We have seen that the immediate effect is on the labour demand, because of the change in the composition of capital. Therefore, with a perfectly inelastic labour supply given by the labour force, the consequence of this effect should be an adjustment in wages but not in employment. if we take into account that the classics wrote explicitly about the existence of this kind of unemployment, this suggests again the possible inclusion of a participation rate in the labour supply.

Whatever it be, perfect competition corrects any situation of unemployment, including if we admit that technological unemployment can exit somewhere in the economy. An illustration of this corrective power of perfect competition is given by Mill (1909, p. 361) when he comments on some proposals (to fix a minimum wage above which the competition will work, or to bargain for more reasonable wages and reasonable profits) to increase the wages by law. He states that competition is necessary in the sense that it is the unique way to maintain full employment in the economy. Wages fall when there are labourers unemployed, but not when everybody has found employment: wages can be lowered by competition until all the labourers have a portion of the distributed wages fund. If wages fall short of the full

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[48]The possible existence of technological unemployment appears in the third edition of his Principles. In the chapter 31, Ricardo writes that in the previous editions he had a different idea about the effect of machinery. In these previous editions, his analysis was developed with the opinion that the introduction of machinery, except with some transitional difficulty, increases welfare and benefits the workers. Another good example where we can find the technological unemployment phenomenon is Mill (1909, bk. 6, sec. 2).

employment level, a portion of capital would remain unemployed, and a 'counter-competition' would commence on the capitalist side and wages would rise.

Until here we have said something about the full employment condition, and about its possible existence in a classical system.

The next step of this section will consist of some brief comments on the classical ideas of the life and working conditions of the employees.

The life conditions of the working class are criticised, sometimes explicitly and sometimes implicitly, in every classical text here reviewed. At the same time, the awareness of the greater power of the employers, favoured by their fewer number and by the law (Smith; 1979, p. 83), is also traceable.[49]

This could seem inconsistent with their defence of a classical economy operating in a system of perfect competition. Therefore, despite the fact that in the classical analysis, researchers claim for competition and *laissez-faire*,[50] in their writings they support the working class with respect to its improvement in the conditions of life.[51] Some significant paragraphs in the classical writings show their attempt to reconcile the defence of perfect competition, on the one hand, and the necessity of improving these labour conditions: "[...] it should be observed, that the principal argument of this essay, only goes to prove the necessity of a class of proprietors, and a class of labourers, but by no means infers, that the present great inequality of property, is either necessary or useful to society. On the contrary, it must certainly be considered as an evil, and every institution that promotes it, is essentially bad and impolitic. But whether a government could with advantage to society actively interfere to repress inequality of fortunes, may be a matter of doubt. Perhaps the generous system of perfect liberty, adopted by Dr Adam Smith, and the French economists, would be ill exchanged for any system of restraint[...]". Malthus (1798, p. 105).

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[49]In that sense it is possible to speak about certain situation of monopsony among the employers as they have advantages (they are a relative few number respect to the number of employees, and there are some laws protecting them) and tacit agreements between them.

[50]"When wages rise, it is generally because the increase of wealth and capital have occasioned a new demand for labour, which will infallibly be attended with an increase production of commodities...These then are the laws by which wages are regulated, and by which the happiness of far the greatest part of every community is governed. Like all other contracts, wages should be left to the fair and free competition of the market, and should never be controlled by the interference of the legislature". Ricardo (1817, p. 81).

[51]"For the purpose therefore of altering the habits of the labouring people, there is need of a twofold action, directed simultaneously upon their intelligence and their poverty. An effective national education of the children of the labouring class, is the first thing needful; and, coincidentally with this, a system of measures which shall (as the Revolution did in France) extinguish extreme poverty for one whole generation". Mill (1909, p. 368).

Along with a certain interest for the life conditions of the working class, the classics in some cases (like the one of Mill (1909, Ch. 10)) made explicit their positive judgement about trade unions. In this respect, a good example is provided by Mill, who argues that unions are a necessary instrument for free market rather than something that limits it.(Mill; 1909, bk. 5, Ch. 10, sec. 5). Chapter 10 of Mill's principles is in fact a good reference to observe a combination of sympathy for trade unions and for the wages fund theory. Mill actually mentions the monopsony power of the employers in pushing wages down, also below the competitive level, so that unions would represent a countervailing instrument to reestablish the equilibrium in the free market.

The last topic covered in this section is the question of the labour homogeneity with respect to its productive nature. In this sense, classics assert that there are two kinds of labour, productive and unproductive.

Productive labour is defined by Smith (1979, p. 314) as one which adds value to the output being produced with it.[52] Unproductive is instead that one which does not add any value to the output. As Mill (1909, p. 53) says, the profits earned by employing unproductive labour are only transfers of income, while the degree of capital accumulation is a function of the part of the labour force employed productively.[53]

The productive labour is by definition the one that is able to push the economy to a situation of growth, given its power to increase capital. Therefore, some instrument for increasing the productive power of this type of workers should be looked for. As it is well-known, the main instrument Smith (1979, bk. 1, Ch. 1) suggests is a higher *labour division.* On the other hand, Ricardo (1817, Ch. 1, sec. 2, and pp. 75-7) speaks about productivity differences due to differences in natural ability or to superior training, although this labour productivity is usually greatest when there is an abundance of fertile land. With a high productive power, the accumulation of capital and of the means of employing labour is more rapid, and therefore the greater rapidity in which the accumulation takes place generates a lag in the adjustment of the labour supply, with a consequent increase in wages. Mill enumerates

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[52]In Smith (1979, bk. 2, Ch. 3) there are two definitions of productive labour, one of them adds net value to the product and it is the value version and the other one is the storage version.

[53]Besides their definition, Smith (1979, bk. 2, Ch. 3) clarifies the distinction offering some examples The example for the productive labour is 'industrial workers'; and for unproductive labour is 'servants' and 'high society people'.

what are for him "the causes of superior productiveness: natural advantages; greater energy of labour; superior skill and knowledge; superiority of intelligence and trustworthiness in the community generally; superior security and co-operation, or the combined action of numbers."[54] Mill (1909, XXXV).

1.3. Some concluding remarks

The literature about classics is indeed massive, with a lot of different interpretations. In all of them, subjective points of view naturally emerge, along with unoriginal formalisation that are not always consistent with the classical original ideas. The aim of this chapter was to provide an as much as possible unbiased analysis of this school of thought about the labour market, placing the classics in their temporal and historical context.[55] In such a way, differences and analogies with respect to the other alternative schools that are going to be presented in the next chapters would emerge more clearly.

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[54]Respect to the last cause Mill says: "Of this great aid to production, a single department, known by the name of Division of Labour, has engaged a large share of attention of political economists". Mill (1909, p. 117). Seven pages after this explanation, Mill quotes Smith: "The causes of the increased efficiency given to labour by the division of employments are some of them too familiar to require specification; but it is worth while to attempt a complete enumeration of them. By Adam Smith they are reduced to three: *First, the increase of dexterity in every particular workman; secondly, the saving of the time which is commonly lost in passing from one species of work to another; and lastly, the invention of a great number of machines which facilitate and abridge labour, and enable one man to do the work of many*" Mill (1909, p. 124).

[55]In this sense, a good reference is Rubin (1979). A History of Economic Thought. London.

2. The labour market under a Marxian perspective

2.1. A view of the labour market from "Das Kapital"

The term *Marxism* is used to speak about a great diversity of subjects and it is applied to several theoretical and methodological analyses, especially if we take account of the unequal and erratic form in which Marxian economics has evolved from the work of Marx.[1]

Nevertheless, in this chapter, a Marxian labour market analysis is outlined based on Marx's original ideas.

To include Marx as a classic or to give him a particular place can be questionable. However, we have to consider that here we are not going to analyse *Marxian economics*, but one specific part of it, the one referring to the labour market. Within this theme, although it is possible to find analogies with the classical analysis, however, Marx offered us a particular vision and explanation of the functioning of the labour market. In this respect, his analysis deserves a separate exposition even if it is necessary to speak about the possible relation with the classics.

Marx assumed the classical analytical instruments to develop particular conclusions. His main attempt was to show that the capitalistic system was not static, but a historically determined one of class exploitation. To develop his investigation, Marx introduced the notion of 'surplus', clarifying that economic phenomena are not to be understood independently of the historical situation in which they are generated. From this point of view, a study of the labour process is developed, showing how 'exploitation' is generated and how it can be measured with an 'exploitation rate'. In the same analysis, 'unemployment' and 'underemployment' are considered as a characteristic of the capitalistic society. Both group of workers form the 'industrial reserve army'.

These ideas will be developed in the present chapter as follows. First, a general overview with respect to how the Marxian labour market operates will be presented. After this, we will analyse the way in which the situation of the labour market is determined as defined by Marx.

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[1]Hobsbawn, (1979); Shaikh, (1990).

The next step will be the study of the determination and the characteristics of wages, the level of employment and unemployment. Immediately after that, the influences of the capital factor and the consequences of labour division will be commented upon.

The last section of the chapter will be devoted to a brief comparison between the classical and the Marxian labour markets.

2.2. The Marxian labour market

The capitalist-worker relationship is the starting point for the connection between the demand part and the supply part of the market for the good 'labour'.[2] This social relation appears from the attempt of the capitalist to acquire some profit, which is obtained from the participation of the worker in the productive process. The labour is producing a 'surplus value' that allows the capitalist to have this profit.

When the market mechanism starts to work, 'labour power' is being exchanged, therefore it becomes a commodity being exchangeable for a market price.[3] The price of the labour is the 'exchange-value of labour-power' what is different from the 'use-value of labour'. The latter is acquired by the capitalist but the former is the one paid to the worker. Therefore, only a part of the worker's working day is spent in replacing the equivalent of his own value. In this form, during one part of the working day, the employee is working for his subsistence (paid labour). The rest of his work during the labouring day is devoted to the surplus for the capitalist (unpaid labour).

Moreover, only during one portion of the working day is the labourer expending necessary labour time and therefore getting his subsistence wage. The rest of the normal working day is surplus labour time that is generating a surplus rate. The labour expended in the first purpose is 'necessary labour'. The labour used for the second objective is 'surplus labour'.

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[2]Marx speaks about the capitalist as the transformed 'owner of money' after the competitive market process has finished with the contract established between buyer and seller of labour-power. He establishes some conditions for the labour-market relationship to be possible: "For the transformation of money into capital, therefore, the owner of money must find the free worker available on the commodity-market; and this worker must be free in the double sense that as a free individual he can dispose of his labour-power as his own commodity, and that, on the other hand, he has no other commodity for sale...Why this free worker confronts him in the sphere of circulation is a question which does not interest the owner of money, for he finds the labour-market in existence as a particular branch of the commodity-market". Marx (1976, p. 271).

[3]"We mean by labour-power, or labour-capacity, the aggregate of those mental and physical capabilities existing in the physical form, the living personality, of a human being, capabilities which he sets in motion whenever he produces a use-value of any kind". Marx (1976, p. 270).

Consequently, in the exchange process of wages for labour power, the worker is not paid according to the technical relation between production and the required labour for the productive process. The reason for this situation is the initial characteristics of the capitalist system.[4] The wage being received by the worker is below his productivity level. In this respect, the exploitation of workers emerges.

The degree of exploitation can be expressed as the rate of surplus value, because "Since, on the one hand, the variable capital and the labour-power purchased by that capital are equal in value, and the value of this labour-power determines the necessary part of the working day; and since, on the other hand, the surplus-value is determined by the surplus part of the working day, it follows that surplus-value is in the same ratio to variable capital as surplus labour is to necessary labour" Marx (1976, p. 326).

In the kind of market process analysed here, the labour-power is transformed into a commodity by the capitalist. However, it has some particular characteristics that make it distinct from the other commodities in the market; these are historical, moral and physiological needs: "[...] a commodity inseparable from and integrated with human beings, who are not only endowed with muscles and a stomach, but also with consciousness, nerves, desires, hopes and potential rebelliousness. The physical capacity to work can be measured by the calory inputs that have to compensate losses of energy. But the willingness to work at a given rhythm, a given intensity, under given conditions, with a given equipment of higher and higher value and increasing vulnerability, presupposes a level of consumption which is not simply equivalent to a sum-total of calories, but is also a function of what is commonly considered by the working class to be its 'current', 'habitual standard of living". Mandell (1976).[5]

Moreover, the heterogeneity of employees is present in different respects as we will show later on in the chapter. One of the most clear causes of labour heterogeneity is owed to different skill level. The existing differences between skilled and unskilled labourers reflected in the higher productive power of the former in relation to the latter is explained in terms of 'composite' and 'simple' labour. The skill is as an additional tool that transfers its value to the value of the product produced by the skilled worker.

The characteristics of the labour market components will be analysed in the next sections together with their determinants.

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[4]When Marx speaks about the functioning of the labour market as a competitive situation in which two parts exchange different things, he clarify: "One thing, however, is clear: nature does not produce on the one hand owners of money or commodities, and on the other hand men possessing nothing but their own labour-power. This relation has no basis in natural history, nor does it have a social basis common to all periods of human history. It is clearly the result of a past historical development, the product of many economic revolutions, of the extinction of a whole series of older formations of social production". Marx (1976, p. 271).

[5]Written in the introduction of the fourth edition of Capital, vol. I.

2.2.1. Determinants of the labour market situation

The price of labour-power, and the amount of surplus value, are determined by: the length of the working day, the normal intensity of labour, and the productivity of labour. These three factors can operate with different intensities and move in different directions and therefore, affect wages with diverse consequences.

An increase in productivity (the other productive factors constant), generates a reduction in the value of labour power (and in wages)[6] and an increase in surplus value. A reduction in the productivity of labour increases the wages and reduces the surplus. "The length of the working day and the intensity of labour constant; the productivity of labour variable: on these assumptions the value of labour-power and the magnitude of surplus-value are determined by three laws. Firstly, a working day of a given length always creates the same amount of value,...secondly, the value of labour-power and surplus-value vary in opposite directions. A variation in the productivity of labour, its increase or diminution, causes the value of labour-power to move in the opposite direction, while surplus-value moves in the same direction...Further, the value of the labour-power cannot fall, and consequently surplus-value cannot rise, without a raise in the productivity of labour...It follows from this that an increase in the productivity of labour causes a fall in the value of labour-power and a consequent rise in surplus-value, while, on the other hand, a decrease in the productivity of labour causes a rise in the value of labour-power and a fall in surplus-value." Marx (1976, pp. 656-9). The changes occurring in the value of labour power and therefore in the surplus value are not in the same proportion, but their change is equal in absolute magnitudes.[7] This is because their proportional change depends on the magnitude they had before the change in the productivity of labour took place.

From a variation in the intensity of labour, with the other factors remaining constant, the effects are similar to the case of a change in productivity. The difference between these two possible alterations is in the price of the good being produced: With an increase in productivity, there are fewer labour costs; with the increase of intensity of labour, the wage costs are the same. The explanation of this is that an increasing intensity of labour is an

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[6]There is a distinction between wages and the price of labour: The wage is the amount of money that the worker receives for his weekly or daily work; the price of labour is given by the relation between the received wage and the length of the working day. The fact is that the amount of labour being supplied can be very different for the same wage being received.

[7]In the chapter 17 of the first volume of Capital, Marx speak about the possibility of an increase in the amount of means of subsistence for the worker as well as for the capitalist, without any change in the price of labour power, neither in the surplus value, after an increase in the productivity of labour.

increasing expenditure of labour in a given time; with the same labour per good (equal productivity) more goods are produced.

With an increase in the working day there is an increase in the surplus value, and therefore a reduction in wages. "The productivity and intensity of labour constant; the length of working day variable: the working day may vary in two directions. It may be either shortened or lengthened...we obtain the following laws: (1) The working day creates a greater or lesser amount of value in proportion to its length, thus a variable and not a constant quantity of value. (2) Every change in the relation between the magnitude of the surplus-value and the value of labour-power arises from a change in the absolute magnitude of the surplus labour, and consequently of the surplus-value. (3) The absolute value of labour-power can change only in consequence of the reaction exercised by the prolongation of surplus labour upon the wear and tear of labour-power. Every change in this absolute value is therefore the effect, but never the cause of a change in the magnitude of surplus-value." Marx (1976, p. 662).

Although changes in the three factors are the more usual situations, its final effect can be obtained by knowing the individual impact of each of them.

With the price of labour power being determined in the form specified above, after an increase in real wages, the labourers can consume more luxury goods in relation with the luxuries being consumed by capitalists. Simultaneously, if the country becomes more productive or more industrialised, there is an increase in the habitual standard of life of its workers. This change in the habits of the society increases the minimum tolerable wage.

Although a minimum possible level is imposed with respect to wages, determined by a physical fixed element and a cultural variable one, this does not prevent the capitalist trying to get more profit from the same wage costs. Possible capitalist practices are: to extend the working day, to increase the intensity of work and to hire women and children. With this kind of reaction, the family has earnings at or above a subsistence level, but being exchangeable for more work. With these practices there are obvious negative consequences in the worker's condition. With the appropriation of supplementary labour, the capitalist usurps part of the customary limits of the individuals. We should remember that in the subsistence wage that customary conditions were included. Moreover, the value of the man's labour power is depreciated as it is spread over his whole family with their inclusion in the labour market. At the same time, the whole family should provide surplus value for the capitalist with the consequent increase in the degree of exploitation.

On the other hand, with the inclusion of machinery there is a higher incentive to increase the working day in order to make profitable the fixed capital. There is therefore the effect of a

direct and an indirect cheapening of labour. The direct one is by reducing the labour power, and the indirect one is by cheapening the commodities that enter into its reproduction.

When these procedures are used excessively, the negative consequences in the conditions of the working class create the reaction against them. A reaction is the creation of laws limiting this kind of exercise and imposing a minimum wage. However, the power of reaction for the workers is lesser in periods in which the amount of unemployment is higher.

Therefore, the working day becomes variable because it changes with the duration of the surplus labour. The minimum limit of the working day is given by something more than the necessary time for the maintenance of the labourer. If the working day were reduced to the necessary labour time, the capitalist mode of production would not work. The maximum limit of the working day is determined by the physical limits for the labourer and by "the general level of civilisation".[8] The physical and social conditions limiting the maximum length of the labouring day are very elastic. In this way, the capitalist has the power to increase it in several circumstances. "Hence, in the history of capitalist production, the establishment of a norm for the working day presents itself as a struggle over the limits of that day, a struggle between collective capital, i.e. the class of capitalists, and collective labour, i.e. the working class". Marx (1976, p. 344).

There is the possibility of determining the normal working day as an specific number of hours worked in the day. In this respect, and with increases in the length of the working day, any hour working more than the normal day is considered overtime and therefore is paid with a higher wage rate. There is the argument that in the sectors with a longer working day, the wages are lower; therefore, workers try to work more during overtime to obtain some compensation in wages. The effect is a tendency to increase the working time even more, and therefore reducing the wage received by the worker again.

2.2.2. Wages, employment and unemployment

One of the consequences of the evolution of a capitalistic economy is the impoverishment of the worker. This consequence is taken into account from a quantitative (wages) perspective and from a qualitative one. With the mechanisation process, skilled abilities are being

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[8]Marx writes about 'the general level of civilisation' in the sense that "[...] the worker needs time in which to satisfy his intellectual and social requirements." Marx (1976, p. 343).

destroyed and employees suffer a mental degradation.[9] There is a relative and an absolute impoverishment for the working class under capitalism. The relative impoverishment is given by the tendency for the rate of surplus-value to grow and by the impossibility of workers to cover their necessities as human beings. The general absolute impoverishment depends on the movements in unemployment.

With respect to the quantitative dimension, the minimum level to which the wage can be reduced is a minimum subsistence level. This minimum wage is historically and morally determined. The standard of living of the population, the temporal and the spatial conditions, decide this minimum wage limit. The value of labour-power is determined by the labour-time necessary for the reproduction or maintenance of the individual selling it. The minimum of subsistence is therefore determined by: the necessary requirements of the worker to work in normal conditions; the habits and expectations generated in a particular country and with a historical situation; the possibilities of procreation and maintenance of a family; and the costs of education in acquiring skill in a given branch of the industry. Therefore, when speaking about the conditions of the labour market, it is necessary to do it with respect to a particular country and in a given period. In this respect, "the average amount of the means of subsistence necessary for the worker is a known *datum.*" Marx (1976, p. 273).

An alternative way of remunerating labour, apart from time-wages, is with piece-wages. Although one is a modified form of the other, there is a remarkable consequence in using piece-wages: the quality of the work developed by each individual must be of good average to receive the full price of the piece, therefore, costs for inspection and control are avoided. At the same time, the increase in labour intensity and in the extension of the working day are in the particular interest of the worker as he can get higher remuneration. With the use of piece-wages to pay the labour-force, the heterogeneity between workers appears more evident: individuals with different skill or strength produce different quantities of commodities and get different wages. Nevertheless, the overall capital-labour relation remains the same.

The initial relation between capitalist and labourer starts the market mechanism for the exchange of labour. However, the process in the labour market generates particular outcomes.

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[9]Marx established three predictions in his analysis: The increase in the amplitude of business cycles, the growth in the volume of the chronic unemployment, and the absolute and relative 'immiserization of the proletariat'.

One of the main characteristics of the Marxian labour market is the existence of unemployment.

The existence of unemployment, given by an excess of labour supply, is inherent to the productive system. "Owing to the magnitude of the already functioning social capital, and the degree of its increases, owing to the extension of the scale of production, and the great mass of workers set in motion, owing to the development of the productivity of their labour, and the greater breadth and richness of the stream spinning from all the sources of wealth, there is also an extension of the scale on which greater attraction of workers by capital is accompanied by their greater repulsion...but if a surplus population of workers is a necessary product of accumulation or of the development of wealth on a capitalist basis, this surplus population also becomes, conversely, the lever of capitalist accumulation, indeed it becomes a condition for the existence of the capitalist mode of production." Marx (1976, pp. 781-93).

To avoid a surplus labour supply, the market mechanism will reduce the wage rate until the market is cleared. Therefore, whatever unemployment is voluntary, (as in the case in which the wage is artificially maintained above of the equilibrium one), is due to the fact that the wage clearing the labour market is below the subsistence level.

Nevertheless, apart from this situation, we can also find in the economy limited technical possibilities: insufficient capital stock to absorb the available labour supply and limited possibilities of factor substitution. In this case, involuntary unemployment emerges from the economic structure.

The existence of unemployment as an intrinsic characteristic of the system emerges from the moment in which the capitalist tries to reduce his labour costs by introducing laboursaving techniques in the productive system. With this behaviour, unemployment and reductions in wages are generated.

Consequently, the amount of labour being used at every moment is determined by the amount of capital and the technique of production. With accumulation of capital during time, the available labour force increases. With the spread of capitalism into the economic system there is a natural effect on the increase of population and an economic one.

The excess of workers appears in different forms. Floating unemployment is increased with the displacement of workers generated by the process of mechanisation. Latent unemployment given by the agricultural workers trying to find an employment in the industrial sector. Stagnant unemployment: individuals working partially or in marginal activities form this component of the industrial reserve army.

The limit to hiring people or in producing output is not given by a full employment condition but by a full capacity of capital equipment situation. When this limit is established in a very restrictive form, there is a high rate of unemployment and a tendency for wages to fall until the lowest possible limit. The minimum level for wages is determined by a minimum of subsistence for the worker and for his procreation.

2.2.3. The capital factor and the division of labour

When all the forces in the productive system are acting, the economy is characterised by cycles and adjustment mechanisms, determined by the characteristics of capital. Therefore, the characteristics of the capital factor and its relation with the evolution of the economy will be analysed now.

As the stock of capital invested is composed of fixed capital[10] and by variable capital, which is the part invested in labour-power, the effect of capital growth can be analysed in the following way. If there is a part of surplus transformed into additional capital, one piece of this part is transformed into variable capital. With this increase, and having the same composition of capital as before, there should be an increase in labour demand and in the fund destined to wages. With these circumstances, and with the one of an increase in the requirements of accumulating capital exceeding the growth in the labour supply,[11] there is an increase in wages. Depending on the size of the increase in wages, the capitalist can stop hiring workers or he can force a reduction in wages. Consequently, the rate of wages depends on the rate of accumulation: "[...] the relation between capital, accumulation and the rate of wages is nothing other than the relation between the unpaid labour which has been transformed into capital and the additional paid labour necessary to set in motion this additional capital. It is therefore in no way a relation between two magnitudes which are mutually independent, i.e. between the magnitude of the capital and the number of the working population; it is rather, at bottom, only the relation between the unpaid and the paid labour of the same working population. If the quantity of unpaid labour supplied by the working class and accumulated by the capitalist class increases so rapidly that its transformation into capital requires an extraordinary addition of paid labour, then wages rise and, all other circumstances remaining equal, the unpaid

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[10]This part of the capital is defined as the value of the stock of durable equipment and inventories of raw materials.

[11]This conditions can happen for several reasons that are summarised by Marx in the chapter 25 of the first volume of Capital.

labour diminishes in proportion. But as soon as this diminution touches the point at which the surplus labour that nourishes capital is no longer supplied in normal quantity, a reaction sets in: a smaller part of revenue is capitalised, accumulation slows down, and the rising movement of wages comes up against an obstacle. The rise of wages is therefore confined within limits that not only leave intact the foundations of the capitalist system, but also secure its reproduction on an increasing scale. The law of capitalist accumulation excludes every diminution in the degree of exploitation of labour, and every rise in the price of labour, which could seriously imperil the continual reproduction, on an ever large scale, of the capital-relation". Marx (1976, p. 772).

Moreover, there is a progressive change in the qualitative composition of capital, in the sense that, with the increase of capital, its variable component increases in a constantly diminishing proportion. Therefore, labour demand falls gradually with the growth of the total capital. Consequently, a surplus of labour is a necessary product of accumulation.

With the existence of cycles in the economy, after an expansion there is an increase in the labour demand. This variation in the labour demand pushes wages up, and the unemployment rate declines, with the consequent higher pressure from the worker side. At the beginning of an increase in wages, prices remain unchanged, the workers experience an increase in their real wages: one consequence of this reaction is a reduction in the rate of capital accumulation and therefore in the aggregate demand. The consequence of this mechanism is clear, labour demand declines, unemployment grows and wages are depressed.

At the same time, there is a tendency for a continuous investment in laboursaving capital, and, therefore, the capital-labour ratio increases. This is a usual reaction owing to the decrease in profits generated during the capital accumulation mechanism. Although, as this practice becomes more common, the capacity of laboursaving from the innovations decreases, there is a decrease in the proportion of wage costs to capital costs. This creates technological unemployment and reduces the bargaining power of the workers with the consequent reduction in wages.

Therefore, with the change in capital composition, the effect of economic cycles, and the increasing investment in laboursaving capital, long-run wages are determined by the variations in the reserve army of labour.

An increase in capital without any change in the productive techniques can be a favourable situation to achieve higher wages. If there is no substitution of labour in favour of capital, an increase in the latter should lead to a reduction in unemployment. The reduction in the existing unemployment offers the possibility of maintaining higher wages.

On the other hand, the effects of mechanisation and labour division are quite pernicious for the labouring class: the possible situation of an increase in the productivity level, does not raise wages. The improvement in productivity favours capital. Less labour is necessary for the same amount of production. Another negative consequence to be stressed is the destruction of demand for skilled workers. The employee becomes a part of the machine he is using, developing a repetitive mechanical work. With this situation, the minimum permissible wage can be decreased as a margin for education is not included.

Marx offers an exposition of the general consequences of labour division and mechanisation in the chapter 15 of the first volume of Capital: One fact is given by "appropriation of supplementary labour-power by capital". There is an increase in the labour supply because, with the new technologies, strong physical force is not necessary. Therefore, the capitalist starts to hire children and women. A consequence of this is a reduction in wages. Before the change, the minimum wage included the necessities for the maintenance of the whole family. In the new situation, every member of the family gets his subsistence wage by himself. Another consequence is "the prolongation of the working day". Machinery is a repository of capital able to increase the lengthening of the working day until high limits. The last comment refers to "intensification of labour". The increase in productivity makes the higher use of labour generate more production in a shorter working day.

2.3. Marx and the classics

The analogies and the differences between the Marxian labour market and the classical school appear clearly. However, some comments are necessary.

The strongest differences between the two approaches analysed until now refer to the existence and the characteristics of unemployment, and with respect to the adjustment process after an alteration in the economy.

In the classical school, we found a particular kind of unemployment, that is the technological unemployment. This kind of unemployment is recognised by both schools and emerges with the technological economic process in every economy. However, apart from this coincidence, in the classical school the existence of involuntary unemployment does not appear, while in Marx the existence of this kind of unemployment is inherent to the productive system.

With respect to the adjustment to an existing unemployment, from a classical perspective, a change in wages, in turn given by an adjustment in population, moves the labour variables to the original equilibrium. In Marx, the 'malthusian population adjustment' does not work, and the variations in labour demand, and in the amount of unemployment, make the labour market move in one or in another way.

For the classics, the limit of the process of adjustment, and therefore the convergence through to some equilibrium level, is given by the condition of full employment. On the other hand, to Marx, the limit is established by the full capacity of capital equipment.

The concept of the 'subsistence wage' is another analogy between the two approaches. However, in this case also, the differences in treatment are evident. In the classic analysis, the subsistence wage is the natural wage and at the same time the long-run equilibrium level for the price of labour. The value of this wage is given by a minimum tolerable level of subsistence for the worker. In the Marxian labour market, the minimum of subsistence is a minimum limit for wages. This means that workers can not receive any remuneration below this quantity, while they can usually receive more than this. The determination of the minimum of subsistence in Marx is obtained taking into account, not only basic necessities, but also the social and historical conditions of the worker in each particular case.

One difference related to the minimum subsistence wage is the mechanism that leads the wage to that minimum. In the classics there is a population mechanism and therefore the labour supply is adjusting to the equilibrium wage. In Marx, wage levels are determined by the respective bargaining strengths of workers and capitalists, and depend basically on the level of unemployment.

Another point to clarify when we try to establish the differences between the long-run wages between classics and Marxists is the following. Marx makes explicit that the minimum wage is composed of two parts. One part is a minimum physical wage, and the other is socially and historically determined. Therefore, with the evolution of the economy, and with the effects of economic cycles, there are changes in the living patterns as industrial capitalism spread over the economic sectors. Therefore, the new patterns of life provide a new reference point in the wage determination.

As in the classical approach the mechanism behind the wage determination is a population adjustment, when the total adjustment is achieved, the long-run subsistence wage is obtained. Therefore, when labour is exchanged for the subsistence wage, the population is stationary, if

a cultural element together with the physical one is included in the subsistence wage. Nevertheless, for Marx, when the variable social or cultural element is included in the wage,[12] there is the possibility of a positive variation in population.

Both the approaches admit the 'luxury consumption' by labourers in the case of an increase in wages. Marx criticises the classical idea of a proportional increase of nominal wages and prices, after an increase in the latter.

An additional criticism made by Marx of the classical analysis is the treatment of capital. Marx speaks of capital as "a part of social wealth which is elastic and constantly fluctuates with the division of surplus-value into revenue and additional capital". It is apparent that he criticised a 'classical fixed' capital.[13] Therefore, one part of the 'classical' capital, called variable capital and addressed to wages, is also a fixed amount. In this form, Marx is censuring the *wages fund* theory (Marx; 1976, p. 759). Marx argues against the wages obtained on the basis of this theory, according to which they represent a fixed minimum long-run equilibrium amount. For him, what is given is not the price of the labour-force, rather a minimum limit for wages, that at the same time is quite elastic. "How absurd a tautology results from the attempt to represent the capitalist limits of the labour fund as social barriers imposed by its very nature...That is to say, we first add together the individual wages actually paid, and then we assert that the sum thus obtained forms the total value of the 'labour fund' handed down to us by the grace of God and Nature. Lastly, we divide the sum thus obtained by the number of workers, in order to find out how much each is permitted to receive on the average." Marx (1976, pp. 759-60).

The determination of wages, as well as the level of employment, have a different perspective in both analyses. The 'classical equilibrium wage' that situate the economy in full employment with a population mechanism that allows for it, contrasts with the 'Marxian wage rates', the 'industrial reserve army' and the intrinsic situation of unemployment existing in the economy.

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[12]We should remember that when the wage is in the minimum allowable limit, the social component becomes zero and only the physical one is included, with zero population growth.

[13]"Adam Smith classifies the means of subsistence of labourers as circulating capital in contradistinction to fixed capital: because he confuses circulating as distinguished from fixed capital with forms of capital pertaining to the sphere of circulation, with capital of circulation" Marx (1977, p. 217). "Ricardo, like Barton, everywhere confounds the relation of variable to constant capital with that of circulating to fixed capital..." Marx (1977, p. 228).)

3. The neoclassical tradition and its analysis of the labour market

3.1. The neoclassical tradition

The neoclassical school arrived to the economic thought following the classical and the Marxian tradition. In relation with the classics, although the main focus of their analysis is totally different, however they suggested some relationships that the marginalists tried to develop with their methods.

With respect to the link with Marx, some authors speak about exploitation as all factors of production are not only productive but they are rewarded according to their attributable contributions to the joint product. In a neo-classical context, the term "exploitation" is used to denote the payment of a wage less than its marginal revenue product. "We might, for instance, adopt the Pigovian criterion of a wage less than the value of the marginal physical product...As long as the wage is equated to the marginal revenue product, the economist is compelled to deny the existence of exploitation, regardless of how low the employer may force down wages." Gordon (1940, p. 414).

The main characteristic that made the neoclassical school emerge and develop was the application of the principle of the marginal utility, and the use of a static microeconomic analysis initiated by Jevons, Menger and Walras at the beginning of 1870.

Although the concept of utility had been already used by the classical authors, it was with the present school of thought that it becomes the focus of the economic analysis. In trying to understand the economy from an utilitarian perspective, mathematical methods are applied to the economic problems. Moreover, the neoclassical analysis is developed in a system of perfect competition in which the main problem is to assign efficiently and optimally the productive resources.

For the classical authors the focus was on the economic growth, how it is generated, its evolution and its consequences, mainly based on the processes of capital accumulation and of population growth. However, in the neoclasscial tradition, the main point is the search of efficiency within a static analysis. Nevertheless, we can find such transitional authors as Marshall (1890), who analysed the neoclassical ideas but who at the same time, developed a long run static theory studying equilibrium in competitive markets.

Among the essential instruments introduced by the neoclassics in their economic analysis, we find the maximisation principle and the marginal substitution between factors. This is introduced in such a way that each agent can be described in terms of a maximising behaviour subject to restrictions.

On this basis, the demand of each input, and therefore the labour demand, is derived from the output demand. With a given input supply, and for a given technique of transformation, the input prices, and therefore wages, are obtained in the same way as output prices, that is, on the basis of their demand and supply.

Every price obtained by the law of supply and demand give to each factor a market price according to its marginal productivity.

Although Fleeming Jenkin in 1870 established a graphical representation of the supply and demand law, however, in 1871, Jevons published his *Theory of Political Economy*, developing the marginal analysis applying it to the case of the labour supply. The analysis made by Jevons is the basis of the analysis of the labour supply developed more exhaustively later on. He established that the worker gets utility from the wage obtained with his job, but he also gets disutility with it, as to work is unpleasant and annoying.

Under these assumptions, it is considered that every worker operates as maximising their utility function in which the pleasure and the displeasure of working are included, subject to a temporal and to a budget constraint.

We will model this idea under neoclassical assumptions, later on the present chapter. There is in such models the crucial assumption that there is a representative agent in the economy. As every agent behaves in the same way (because of the assumption of identical agents), by aggregation we obtain the behaviour of the labour supply side. If the labour supply establishes the relationship between the number of working hours offered and wages, the aggregation consists of adding the working hours offered at each wage by every worker. The question of agents aggregation has generated a big controversy; as an example of the application of such a technique we can see Muellbaver (1981).

The labour demand side is obtained in a similar way, that is, by the aggregation of every individual labour demand, considering a representative firm. Each individual firm behaves as remunerating the productive factors according to their marginal productivity.

3.2. The neoclassical labour market

We have already advanced briefly the main characteristics under which neoclassics model the labour market. Their model is developed under quite restrictive assumptions, and therefore strong conclusions are obtained.

The characteristics of the model, the imposed assumptions, the possibility of their relaxation, and the neoclassical consequences in wages and in employment have been extensively discussed by the economic literature. In Hicks (1932) we can find an analysis addressing these main points, which are essential in the neoclassical analysis of wages.

Although in the present chapter we are going to try to see some analytical characteristics of a neoclassical labour market, however, that analysis will be developed for illustrative purposes, avoiding some technical implications. The reason for this, is that we are interested on a general view of how the labour market operates in the neoclassical tradition, in such a way to obtain their main conclusions, and to compare them with the other traditions analysed in the present work.

For this reason, in this section, we will see how each side of the labour market behaves. We will develop first of all an analysis of the neoclassical labour supply and immediately after the one of the labour demand. Having the behaviour of both sides of the labour market, in the last subsection we will obtain the labour market equilibrium, and explore its consequences.[1]

The next section of the chapter shows a variation in the main analysis developed before. The study of this variation is important because of the strong assumptions and consequences for the general model. This variation, is in the sense of analysing how the market works if wage rigidities are introduced.

There are several possible models which explain the causes and consequences of wages rigidities. Each model emphasises different characteristics of the labour market differentiating it from the rest of the markets. Therefore, the main purpose of the third section in the chapter is to study a representative model for the main wage rigidity theories. Analysing these representative models, we will see that different conclusions, or different explanations for the

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[1] The formal derivations of the analysis developed here can be found in several articles and books, although probably with different notation. See for example King (1980) and Branson (1976).

same conclusion can be found; and therefore, with the possibility of comparison with the basic neoclassical model and with the analysis of the other studied schools of thought.

3.2.1. The neoclassical labour supply

The analysis of the labour supply is developed from an individual perspective. Under the neoclassical assumption of total homogeneity between the economic agents, neoclassics study the behaviour of a representative worker. This worker faces the problem of achieving the mix of real income and leisure that is most satisfactory to him. The problem is solved assuming that the representative worker can allocate his available time, $\overline{T}$, earning real income, Y, and enjoying leisure, L, depending on the real wage rate, $w = \dfrac{W}{p}$.

Therefore, the worker want to maximise his utility function $U = U(Y, L)$ subject to a budget and an expenditure constraint,[2] $Y = \dfrac{W}{p}(\overline{T} - L)$.

The constraint is formed by the real wage and the number of working hours h, that is the difference between the total available hours and the number of hours devoted to leisure.[3]

The equilibrium condition for the individual worker is a point in which the real wage is equal to the marginal rate of substitution between hours of work and income. The marginal rate of substitution is given therefore by the ratio of the marginal utilities corresponded with h and Y. Graphically it would show the point in which the constraint is tangent to one of the indifference curves obtained from the utility function. This is the solution to the maximisation

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[2]The constraint used here is the result of substituting the time constraint $\overline{T} = h + L$ into the budget constraint $Y = wh$.

[3]Some variations can be adapted to the constraint. For example, a non-labour income can be added together with the labour-income, and therefore, the budget constraint becomes $Y = wh + \dfrac{x}{p}$; x indicates the non-wage income. Another possibility is to distinguish in the total number of working hours between standard and overtime hours, if the overtime is paid with an overtime rate, a; in that case, the wage should be expressed in the form $w = w_s h_s + a w_s (h - h_s)$. In the last case, w_s indicates the wage for the standard hours and h_s the standard working hours; therefore, the difference between the total working time and the standard hours is the overtime paid with the premium.

problem, as it shows the maximum level of utility attainable with the wage and the available time.[4]

After a variation in the wage, there is a change in the individual constraint, generating an income and substitution effect. If the substitution is higher than the income effect, the resulting labour supply is upward sloping.[5]

One of the key assumptions in the derivation of the aggregated labour supply is the homogeneity of the workers. Under this strong assumption, every worker has the same maximising behaviour explained above and the aggregated labour supply is obtained by the horizontal sum of every individual labour supply, $w = g(H)$; $H = \sum_{i=1}^{n} h_i$. It gives the amount of employment the labour force will offer at any given wage.

In the aggregated labour supply function, employment is measured in working hours. This variable represents the product of the number of people employed N and the average number of hours worked per individual h. The slope of the labour supply curve combines the effects of a variation in N and in h when there is a change in H. The effect on h is that as the wage rate rises, persons already employed will offer increasing hours of work. The effect on N is that a wage increase will increase the number of employed people, with a given size of the labour force, L^F.

We can suppose some more characteristics on the supply side of the labour market. On the one hand, it can be assumed that there is a minimum number of working hours, h^m, that is acceptable to employers. Therefore there is a further requirement, in the sense that the labourer should work at least some minimum hours. On the other hand, it is reasonable to assume that there is a minimum wage, w^m, for the employees to work. Therefore, at this minimum wage, there is a discontinuity in the labour supply going from h^m hours to zero. The aggregated labour supply can be obtained in the usual aggregative way. As we have seen

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[4]Analytically, the equilibrium condition is obtained with the equalisation of the slope of the utility function and the slope of the constraint.

[5]It is possible to have a labour supply function becoming downward-sloping from certain wage rate level. From this wage value, the income effect outweigh the substitution effect as the value given to leisure is much more higher than the correspondent to an additional unit of income. The odd case of an income effect always higher than the substitution effect would generate a down-sloping individual labour supply function.

before, this function can be represented as showing variations in N or in h after changes in w.[6] In the case showed here, assuming some average, or standard number of working hours per capita, we can represent the number of workers as the variable to express employment. Therefore, the aggregated labour supply function can be written as $w = g(N)$ or $N = N^s(w)$.

Using formal derivations we would show an aggregated labour supply upward sloping (with the assumption of a substitution effect higher than the income effect) and becoming nearly vertical at a high wage level where all potential workers are employed.

3.2.2. The neoclassical labour demand

The labour demand function from the neoclassical perspective is obtained on the basis of the marginal productivity theory. According to this theory, the demand function for every factor of production is its marginal value product,[7] on the assumptions underlying the profit maximisation axiom.

The development of the marginal productivity theory assumes static conditions as taking as given the labour supply. The forces governing supply are left for separate treatment in the way shown in the earlier section. Its approach is done with the same basic analysis of maximisation and marginalism and using the same basic assumptions of homogeneity and perfect information.

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[6]The relation between the labour variables is $H = Nh$; assuming that every worker expend the same average, or standard number of hours, h, working. Therefore, it is possible to obtain the number of people working, by dividing the total number of working hours over the per capita working hours.

[7]From a general profit maximisation perspective, the factor demand condition is given by the equalisation of the marginal cost (MC) and the net marginal revenue productivity (MRP). When the firm is a perfect competitor in the market for its product, MRP coincides with the value of the marginal product (VMP). In aggregated terms, with a downward-sloping product demand curve, MRP will be less than VMP, since it is less than the price. The four possible combinations of product and labour market conditions are:

	Perfect competition in the labour market	Non-perfect competition in the labour market
Perfect competition in the product market	$MRP=VMP$; $w=MCL$; $w=VMP$	$MRP=VMP$; $w<MCL$; $w<VMP$
Non-perfect competition in the product market	$MRP<VMP$; $w=MCL$; $w<VMP$	$MRP<VMP$; $w<MCL$; $w<VMP$

In relation with the assumption of homogeneous workers, it is necessary for the application of the concerned theory.[8] "If the labourer in a given trade are not of equal efficiency, then, strictly speaking, they have no marginal product. We can not tell what would be the difference to the product if one man were removed from employment; for it all depends on which man is removed." Hicks (1932, p. 28).

In the derivation of the labour demand, under perfect competition, the representative firm equates its *VMP* with its *MC*.[9]

The labour demand function is obtained from a production function operating with the level of the capital stock constant or varying in direct proportion to labour in the short-run. This production function has the characteristic of diminishing marginal return from certain level of employment, therefore it is convex in the part with increasing returns and then it becomes concave. From the shape of this production function, a particular average labour productivity (*APL*) and marginal product of labour (*MP*) are obtained.

Graphically, the *APL* can be represented by the slope of a line from the origin to any point on the production function. As employment increases, the average product of labour first increases and then decreases.

The *MP* is the slope of the production function at each point, and would be shown by the slope of a tangent to the production function at each *N*. This function reaches a maximum in the point in which the production function has its inflection point changing from convex to concave. In this maximum, *MP=APL*.

For a competitive firm, with an increase in its level of employment, there is an increase in its revenue after the resulting increase in output. The firm will continue hiring labour until the variation in the revenue equals the change in the cost. Therefore, we obtain the equilibrium condition for the firm to acquire labour in the market as, $w = MP$.

This condition determines the labour demand as the decreasing part of the *MP* function according to the statement of the principle of diminishing productivity.[10] "In a given state of the

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[8]"[...] how much more convenient is to assume homogeneity of factors, or to assume a moderate number of non-competing groups, or to reason, with Marshall, about factors of "normal" or "representative" efficiency. Such assumptions are not only more convenient but "realistic" enough to permit of first, and higher, approximations to the solution of most problems. Mr. Hicks' conclusions in his Theory of Wages are not appreciably damaged by the fact that the assumed "average unskilled labour" to be of uniform efficiency in all industries." Machlup (1936, p. 256).

[9]Because the marginal cost is the derivative of labour costs with respect to employment, its slope depends on the slope of the labour supply. Nevertheless, as we have pointed out before, the labour supply is considered as given.

arts, after a certain point is reached, the application of further units of any variable factor to another fixed factor (of fixed combination of factors) will yield less than proportionate returns." Cassels (1936, p. 226). With the usual characteristics of a perfect competitive market, the aggregated labour demand is obtained by the horizontal sum of many individual demand curves, $w = f(N)$ or $N = N^d(w)$. Once again we have the consequence from the aggregation that the aggregate labour demand is more elastic than the representative individual one.

It can be established that there is some differentiation between a long-run and a short-run state. The difference between them is in the sense of the variability of the productive factors. According to perfect competition, the individual firm has enough information to apply the most efficient technique. This means that after any variation in the market, the firm can adjust the combination between its factors of production to produce under profit maximisation conditions. To allow for this behaviour and for the conception of marginal productivity, there should be the possibility of variations of industrial methods. Therefore, attention is focused on a period long enough for such variations to be practically feasible. "The marginal revenue product with which we shall be concerned is therefore a long-term one, whose time dimension and scope vary with the individual entrepreneur's calculations, which in turn are influenced by the peculiar conditions which present themselves in the sale of his product." Gordon (1940, p. 419).

3.2.3. The labour market equilibrium

There are few things left to say to derive the equilibrium in the labour market as we have already analysed both parts of the market. The intersection between demand and supply determines the labour market equilibrium.

The shape of the labour supply shows that as wage rises, it becomes vertical at some maximum level of feasible employment, identified with the labour force, where full employment exists in the economy. The shape of the labour demand shows a decreasing marginal productivity, because if there is a variation in nominal wages, the firm changes its revenue ($\Delta R = p * MPL * \Delta N$) and its cost ($\Delta C = W\Delta N$).

The neoclassical labour market operates in an static form, in the sense that after any variation in the market, there is an instantaneous adjustment restoring the equilibrium

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[10]"It should be noted that this law besides strictly static is purely physical, and is applicable only on the assumption that the factors (or at least the variable factor) can be broken up into small separable homogeneous units." Cassels (1936, p. 228).

condition. If the real wage falls below its equilibrium level, after an increase in p, excess labour demand appears, binding up the nominal wage until the original real wage is restored.

The equilibrium in the market can be shown with an equilibrium level of employment (N^*) less than the level of labour force (L^F). This situation indicates the existence of unemployment in the economy (u), that is the difference between these two level of labour. This kind of equilibrium unemployment, as the labour market equilibrium is not on the line representing the labour force, is voluntary unemployment. A change in the preferences of the workers, offering every number of hours working to a lower wage, can move the aggregated labour supply until obtain the equilibrium without any level of unemployment. Therefore, u indicates the number of unemployed people who can not find a suitable job, not the people who can not find any job.

As wages are the price of labour, both variables are determined, like for every commodity, by supply and demand. Nevertheless, the input labour has peculiar characteristics differentiating its market from the others. One of the peculiarities in relation with the labour demand is that it is a derived demand; "[...] value of products is not derived from costs but that costs, i.e. value of factors used, are derived from value of products." Clark (1931, p. 170).

One of the important conditions concerning with the application of the neoclassical analysis is that every worker should receive the same wage. Another condition is that the only equilibrium wage equals the value of the marginal product of the workers. According to the labour demand, the number of workers that an employer prefers is the one which makes his profits a maximum; and it is given by the equality of each wage with the marginal product of the labour employed.[11] Therefore, with the interaction with the labour supply, if there is any rate of unemployment in the economy, it is voluntary because of the characteristic of perfectly flexible wages.

3.2.4. Considerations and comments on the neoclassical model

Until now we have seen an exposition of the form in which the neoclassical labour market is constructed, and which are the characteristics of the concerned equilibrium.

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[11] The scale of production and the technique of production in equilibrium must be chosen in such a way that no opportunity remains open form employers to benefit themselves by a change.

A certain evaluation of the model is therefore necessary in that moment. Thurow wrote in 1976 what he labelled as judgement of the neoclassical theory, dividing it in different sections as they refer to particular subjects. These are, the level of applicability, the problem of economies and diseconomies of scale, the impacts of market imperfections, the maximisation hypothesis and the initial conditions.

With respect to the level of applicability of the theory, Thurow (1976) develops mainly two critics. The first one is a temporal critic.

According to the neoclassical theory, each individual factor of production receives the value of its marginal product at each instant of time. The argument to mention here is that there are some contrary cases to the instantaneous marginal productivity hypothesis. In some of these cases, it is necessary to speak, for example, about a lifetime marginal productivity hypothesis.[12] Therefore, the question is what is the time period over which marginal products are paid.

The second critic included in the level of applicability, refers to the labour input homogeneity. The labour factor has a distinctive characteristic that is its heterogeneity. In some cases it is possible to find homogenous groups of workers, therefore, the marginal productivity is applicable to the group level. Examples of this situation is 'skilled' and 'unskilled' workers;[13] another possible divisions are between industries, and between different geographical areas.

Nevertheless, the neoclassical theory treats the labour input as the capital input. On average, the labourer is paid in accordance with the average marginal product of labour. Therefore, individual units of labour may not be paid their marginal products, but the above average workers offset the ones below.

Other theories are necessary to explain the differences between groups, at the same time that it is necessary to take into account that marginal productivity exists by definition if economies or diseconomies of scale do not exist.

The question of economies/diseconomies of scale is important in the sense that technically, marginal productivity is only applicable when there are constant returns to scale.

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[12]The example of Thurow for this case is seniority wage payments.

[13]Including into these two wide groups, there are smaller groups of labourers with differentiated levels of marginal productivity.

With economies of scale, marginal products exceed average products, and with diseconomies we have the opposite situation.[14]

Another important reflection should be made in relation with the impact of market imperfections. If the imperfections of the economic system causes minor deviations from a system of perfect competition, the neoclassical theory is applicable. However, there are important market imperfections requiring major modifications in the theory. These are the cases of monopolies and monopsonies, time lags and disequilibria, knowledge and ignorance, and constraints and imperfections imposed by government.

In a monopolistic situation, the factors receive less than their equilibrium marginal revenue. Therefore, if the actual economy is a mixture of different market structures, it is necessary to know the relevant proportions for each one to know the level of applicability of the neoclassical theory.

Another case for market imperfections is the speed with what the market equilibrium is reached. If there are lags to achieve the equilibrium, as well as if there are rapid changes in the basic factors determining the equilibrium, the economy may be in disequilibrium. If this happens, the factors are paid 'quasi-rents' instead of their equilibrium marginal products.[15]

The main consequence of this kind of imperfection is the inapplicability of comparative statics. If there is a disequilibrium path, it can not be ignored in the analysis of two periods of equilibrium.

The violation of one of the basic assumptions of perfect competition causes another case of market imperfection. This assumption is the existence of perfect, low cost, and widely dispensed knowledge. If this assumption does not work, either ignorance or high-cost information will lead to a system in which identical factors of production are not paid the same amount. The market reacts perfectly to what the agents know, but the outcome is not a marginal productivity one.

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[14]Thurow (1976) offers the example of the U.S. to show that sometimes a whole economy seems to exhibit constants returns to scale, but it has many industries with economies or diseconomies of scale.

[15]The concept of 'quasi-rent' is explained in Gravelle and Rees (1981, p. 283) as appearing when the firm is not in a situation of a marginal firm, because it has excess/shortage profits, owed to their use of an efficient/deficient factor.

The last market imperfections to be commented here will be the existence of constraints and imperfections imposed by government. The question is that the system develops within a framework of rules and regulations affecting to the form in which economics operate.

Until the above point, we could see briefly some important cases of market imperfections to take into account in the discussion of the theory.

Another factor of necessary discussion is the maximisation hypothesis. Under the assumption of maximising economic agents, it is necessary to know to which extent utility maximisation should refer to income earnings and to non-income earnings, including the characteristics of the job such as its comfort, or its prestige. Because the aggregated labour supply depends on the basic assumptions applied to the individual utility maximisation, it could be an important biased effect in the determination of the equilibrium depending on the applicability of these assumptions.

The last consideration we are going to comment, is with respect to some of the initial assumed conditions of the model.

For example, a predetermined initial distribution of earnings and wealth is assumed. Therefore, some starting point is supposed. The question is that the economy does not move towards the same outcome regardless of it starting point. The actual equilibrium depends upon where the economy starts.

Another initial condition is the state of technological knowledge. This initial condition situation affects the marginal productivity of any factor. The range of factor substitution in a profit maximising economy depends on the technological techniques available.

Two final aspects will be briefly commented. One is the necessity of take into account exogenous ingredients (as natural talent in human skills) affecting the factor supplies. The other is the importance of determining if the marginal productivity model is a deterministic or stochastic model. The repercussion of this question is that if the model is stochastic, there is the problem of determining the stochastic process that augments marginal productivity.

The main characteristics and consequences of the neoclassical labour market model have been commented above. The development of this section has been based on Thurow (1976). The intention of the author in his article was not to reject the neoclassical theory, but to clarify the importance of main aspects when this theory is going to be applied.[16]

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[16]This is clearly evident from the title of his article: "A do-it-yourself guide to Marginal Productivity".

3.3. The neoclassics and the rigidity wage theories

The idea of wage rigidities as generating imperfections in the labour market and therefore avoiding the market clearing equilibrium can be initially attributed to Marshall and Pigou.

The wage rigidity phenomena was labelled by Pigou (1913) as 'lack of plasticity' in wage rates. The result of this fact is involuntary unemployment (Pigou, 1913, p. 14). The theoretical foundations of that situation attribute unemployment to some form of labour market disequilibrium, associated with rigid wages. "There will always be at work a strong tendency for wage-rates to be so related to demand that everybody is employed. Hence, in stable conditions every one will actually be employed. The implication is that such unemployment as exists at any time is due wholly to the fact that changes in demand conditions are continually taking place and that frictional resistances prevent the appropriate wage adjustments from being made instantaneously" Pigou (1933, p. 252).

In that sense, the newly founded rationalisations for behaviour to lead to involuntary unemployment (efficient wages, implicit contracts, search, insider-outsider, mismatch, unions), are founded in the New Keynesian or Neo Classical economics and take Marshall's, Dobb's and Pigou's insights (Lawlor, 1993). The main link between them is that there is a short-run equilibrium accounting for involuntary unemployment.

Therefore, New Keynesian economics asserts that labour market may not clear. This characteristic may be explained by rational behaviour of firms and sometimes heterogeneous workers operating in an environment of price-setting and imperfect information. In that sense, the labour market theories emerging with Neo Classics and New Keynesians attempt to build the microeconomic foundations of price stickiness (Gordon, 1990).[17]

In what follows, the main theories of wage rigidities and involuntary unemployment will be shown. The purpose is to understand the microfoundations developed in rational individual behaviour to explain the existence of unemployment.

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[17]"The word *new* rather than *neo* to describe the recent work in the classical tradition distinguishes it from what Paul Samuelson in the early postwar period called the *neoclassical synthesis* of old-keynesian macroeconomics and classical microeconomics. In turn, the word *new* rather than *neo* is used for the recent work in the keynesian tradition, so that it can be properly juxtaposed to the neo-classical approach". Gordon (1990, p. 1115).

3.3.1. A general wage rigidity model

In the section 3.2. the typical neoclassical labour market model was presented. We could see that one of the main characteristics of that model is that it does not explain involuntary unemployment. To explain involuntary unemployment, we are going to introduce the notion of wage rigidity into the model.

The model with wage rigidities means that the nominal wage is rigid in a downward direction, that is, once it reaches a given level, it cannot fall. This situation is generated by imperfections in the labour market. Therefore, it is a good explanation of involuntary unemployment on an whole economy level.

The model used to observe the effect of wage rigidities is the same as that developed in the earlier section.

The aggregate labour demand and supply are as before $f(N)$ and $g(N)$ in a real wage version, and $pf(N)$ and $pg(N)$ for the nominal wage version.

We can assume an initial situation of the market given by the intersection point between labour demand and supply, and therefore, by $(N^*; w^*)$ or $(N^*; W^*)$ in the nominal version, and with a level of equilibrium unemployment of u. Furthermore, the nominal wage W^* is sticky in that level.

To see the reaction of the market, we will allow for some decrease in the prices. This can happen because of a contraction in some component of the aggregate demand in the economy.

With a decrease in the level of prices from p_o to p_1, and with the nominal wage fixed at the initial level, there is an increase in the real wage until w_1. The nominal labour demand and supply curves shift down because of the decrease in prices.

Therefore, if the nominal wage does not adjust to the new situation, there is an excess supply of labour. The effective wages are now W^* and w_1, and the level of employment has fall until N^d (the short side of the market). In the new situation, the market is situated off the labour supply curve, and therefore there is a certain amount of involuntary unemployment, u'. In the final situation, unemployment has risen from u' until u_1+u'; and involuntary unemployment has risen from zero to u at the real wage w_1.

This section tries to provide the main effect of wage rigidities in a neoclassical framework. But, the market has particular explanations and behaviours depending on the cause generating

the rigidity. Therefore, the next sections will be devoted to particular models of wage rigidities, depending on the different situation which is creating it. We will see than when these models are applied to the neoclassical framework, some basic conditions are drop. It is very usual, for example the relaxation of axioms of perfect homogeneous agents or of perfect information. The most developed models in labour economics will be represented, although not all of them. Furthermore, a very wide and increasing literature is available in this respect, in the sense that it is possible to find several models to explain the same wage rigidity phenomenon. In our case, when some formalisation will be applied, one of the most general models will be selected for each case just to see how the market works, and the main consequences of its particular operation.

3.3.2. Efficiency wages

The basis of the efficiency wage models is that workers often have some control over their own productivity. Therefore, if they receive some motivation, they produce more. The forms in which the workers receive the motivation for higher effort are usually two. One of them is by receiving a higher wage than with an other employer; the other one is being threatened with dismissal if they are detected being unproductive.

Therefore, production not only depends on physical inputs and technology, but also on the wage being paid. The performance of the worker depends on the price paid for his services (Solow, 1990).

There are many versions of efficiency wage theory emphasising different facts. The main ideas behind this kind of model are the following.

One of the reasons is to avoid shirking workers. The employer decide to rise wages because monitoring is costly and imperfect; therefore, paying higher wages, the firm tries to eliminate shirking.[18]

Another fundamental motive behind the present theory is to reduce costly labour turnover. If workers receive a high wage, they avoid to quit and therefore the firm does not incur in the costs of hiring and training new people to cover the vacancies.[19]

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[18]There are several models based on this aspect of the market. Some of the more mentioned are Bowles (1981), Calvo (1979), Eaton and White (1982), Gintis and Ishikawa (1983) and Shapiro and Stiglitz (1984).

Another aspect for the existence of efficiency wages is the adverse selection. If the workers are heterogeneous in ability, and ability and worker's reservation wages are positively correlated, the firm has the incentive to increase wages to attract the better candidates.[20]

One more fact with the models of efficient wages is related to psychological and sociological motivations. On the one hand, the efficiency of the individual worker may depend on the work norm of the group with which he develops his job (Akerlof, 1982). Furthermore, Akerlof and Yellen (1990) analyse the cause of the payment of a 'fair wage' because of some ethical motivations. The idea is that if the labourer works a whole day for his employer, he should receive the whole 'fair wage', otherwise he reduces his effort.

The last fact to mention should be added to all the causes expounded above. The rate of unemployment is a reason for workers to provide effort. To be fired is more costly the harder it is to find a job, and therefore the higher is the rate of unemployment. If together with this circumstance, the employer pay higher wages than his competitors (alluding to all the reasons mentioned above) then, the effect is that the wage is at such level that it is not possible to achieve full employment. When all firms use the same strategy, average wages and unemployment have risen, and the economy operates with a certain rate of involuntary unemployment.

The common main analysis behind this theory is the following. Assuming an a economy with identical perfectly competitive firms, the production function of each firm has the form $q = f[e(w), n]$. In this production function, n, is the number of employees, w, is the real wage and, e, is the level of effort per employee. In deciding the wage, the firm increases it while a wage increase of one per cent generates an increase in the level of effort of a higher magnitude. Therefore, the optimum wage (w^*) is that one with what the elasticity of effort with respect to wage is one. This elasticity is the Solow condition (Solow, 1979).

Once the firm has decided the wage in the way mentioned above, it optimally hires labour from the profit maximisation perspective. That is, where the marginal product is equal to the real wage, $e(w^*)f'[e(w^*)n^*] = w^*$. If this wage is higher than the one clearing the market,

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[19]Efficiency wage models centred on this idea are between another Salop (1979), Schlicht (1978) and Stiglitz (1974).

[20]Between the literature available with respect to this idea we find Malcomson (1981), Stiglitz (1976) and Weiss (1980).

there is an excess of labour supply in the economy. The unemployed would like to work at the effective wage, but the firm does not hire them to any wage equal or less than it, because it could reduce the effort level of its employees. Therefore, this attitude generates involuntary unemployment and rigidity in wages.

After that general considerations about the intuition of the efficiency wage theory, we can observe better the rationale behind these models by paying attention to the problem of shirking following Shapiro and Stiglitz (1984).

The firm decides to pay more than the 'clearing wage' to avoid shirking, the reason is that with the 'clearing wage', there is no unemployment[21] in the economy and therefore, the worker is motivated to shirk because he knows that if he is fired, he will find immediately a job in another firm.

When the firm decides to pay a higher wage to avoid this attitude, if the worker is caught shirking, he is immediately fired. Nevertheless, after one firm develops this strategy, all the other firms will do the same, and the workers will have an incentive to shirk again. The situation is different at this stage because, as all the firms increase wages, their labour demand decreases, generating unemployment. And a rate of unemployment is another valid incentive not to shirk, because if the employee is fired, he will not find another job immediately.

In this model, workers have perfect information about all job opportunities, unemployed workers prefer to work for a lesser wage than the one prevailing on the market, there are no vacancies, there is a fixed number (N) of identical risk neutral workers, and M identical firms.

Every worker has an instantaneous separable utility function like the following, $U(w,e)$; $e \geq 0$; $w \geq \overline{w}$. When the worker is unemployed, he receives the unemployment benefit, $\overline{w}$, (that is the minimum plausible wage), and his level of effort is zero.[22]

The worker chooses the level of effort by maximising his utility function. In doing that, he compare the utility from shirking with the utility from not shirking. From the maximisation

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[21]When the authors speak about unemployment, it is with the meaning of involuntary unemployment. Therefore, in a market clearing situation, there is not involuntary unemployment, or as some authors label, 'true unemployment'.

[22]In general, it is assumed that the workers have an infinite life, and a rate of time preference of r; therefore, the function than they maximise is: $W = E \int_{0}^{\infty} u[w(t), e(t)]^{-rt} dt$

problem of the representative agent is obtained the employee condition for not shirking which depends on the following variables: the rate of time preference, the expected lifetime utility of an employed shirker, the expected lifetime utility of an employed nonshirker, an exogenous quit rate, the probability to be caught shirking, the expected lifetime utility of an unemployed, the probability of obtaining a job per unit of time, the total labour supply, and the aggregate employment level.

The critical wage obtained in such a way increases with: effort, the unemployment benefit, the rate of interest, the exogenous quit rate, the flows out of unemployment. It decreases with the probability of being detected shirking.

In this economy, each firm has an identical production function, depending on its labour force. Therefore, as usual, by aggregation, we have the aggregate production function.

The labour demand is obtained by equating the marginal product with the cost of hiring an additional employee. This cost is given by the wage obtained before from the worker non-shirking condition and the unemployment benefit, that is the minimum legal wage.

The equilibrium occurs when the non-shirking condition[23] intersect with the aggregate labour demand.

In equilibrium, full employment is not possible, because, for the non-shirking condition if $N = L^F$ (where L^F is the total labour force), the variable indicating the job acquisition rate takes the value of infinite, and therefore, workers will choose to shirk, as they would immediately be hired.

Therefore, in this particular case, the final market situation depends on the interaction of two functions. One of them is the usual marginal productivity firm condition. The other one is obtained from the workers behaviour and is characterised by the inclusion of the variable effort on his decision problem.

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[23]From this condition can be demonstrated that is a down-sloping function in the space (w, N).

3.3.3. Implicit contracts

The literature of implicit contracts appeared with a basic common idea,[24] but it has grown in an enormous way by changing the main assumptions of the models and reaching different consequences, as we will see later on.

The basic idea of this theory is that employers are less risk-averse than workers and therefore, the firm can offer to the workers contracts including some insurance. The firm can adopt this attitude if it is profitable for it.

It is optimal for the firm to insure the risk averse workers against fluctuations in the marginal product of labour by offering them a sticky wage. With this basis, the present theory could explain that cyclical fluctuations in output are associated with a big employment variability and a small wage variability.

The insurance demanded for the workers is in the sense of covering in the case of industrial crisis, to compensate for the risk of being laid off or a more variable wage.[25]

The assumption of workers being more risk averse than employers can be justified from the following point of view. It is easier for the employer to diversify risk than for the worker. The employer usually divide its capital among different uses, while the worker usually is destined to offer his work to one use only, that is, working for a specific firm.

In this kind of situation, worker and employer decide the contract for the job at the beginning of the period, that is, before whatever event, positive or negative, can happen. With the establishment of the contract, worker and employer are linked to some norms, and to implicit agreements, during certain long-run periods.

Therefore, the situation described above appears because of uncertainty in the future situation of the labour market, depending on the situation of the firm.[26] For this reason, the labour service is exchanged for some implicit set of commitments, over a certain period of time and on terms mutually agreed upon in advance. These characteristics define an implicit labour contract (Azariadis, 1975).

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[24]Some of the remarkable models in implicit contracts in its initial state are Bailiy(1974), Azariadis (1975) and Gordon (1974).

[25]One of the reasons for what workers obtain the insurance from the employer instead of from a private company, is the imperfections in the capital market.

[26]It could be owed to the particular situation of a specific firm, or in one sector, or at the level of the economy.

As we have said at the beginning, multiple modelling reaches different consequences depending on the assumptions applied. In this respect, a great contrast exists between models allowing for involuntary unemployment, where in taking his decision, the worker is employed with probability less than one, and he prefers higher wages (Baily, 1974, Gordon, 1974, Azariadis, 1975).

The contrast is established with another kind of implicit contracts in which both firms and workers prefer full employment to lay off in any given state. The main consequence of this kind of contract is that unemployment can not occur in an equilibrium with rationally negotiated contracts (Akerlof and Mizayaki, 1980; Gordon, 1976; Negishi, 1976; Sargent, 1976; Varian, 1976; Barro, 1977; Grossman, 1977, 1978; Mortensen, 1978; Polemarchakis and Weiss, 1978).

Following Hart (1983), under the assumption of symmetric information about the state of the world[27] for firms and workers, the level of employment obtained is the same as in a pure neoclassical model (Azariadis, 1975).

Another possible different assumption is that there is asymmetric information in the sense that the risk averse firm has more information than the worker with respect to the states of the world. Under this circumstance, a higher level of unemployment is obtained than before. In bad states, employment will fall by more than from an efficient perspective.

Rosen (1985) shows that in a model based on contracts with private information, completely different results emerge depending on the assumptions. In the case of risk neutral firms and risk averse workers, the contract coincides with a situation of common knowledge. If the firm is risk averse, there is involuntary unemployment. Finally, with risk neutral firms, and risk averse workers with a positive income elasticity of demand for leisure, there is involuntary overemployment.

A general model of the problem of obtaining the market equilibrium will maximise the expected profits of the representative firm subject to the condition that the worker's expected utility (depending on wages and leisure) should be higher or equal than a minimum fixed level of utility.

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[27]The meaning of different states of the word is that some situations are expansions for the firm, and in another moments, the firm is suffering a crisis period.

Some of the conditions in applying this theory are that the production function of the firm exhibits decreasing returns to scale, the workers being employed are identical, and the firm sells output at an exogenously given price (p) under competitive conditions.

The labour demand for the firm is given by its marginal productivity and workers will choose to work only if the utility obtained is higher than from non working. In that way, a reservation wage for the worker is obtained from the condition in which the workers are indifferent between working and non working.

We said earlier that workers are risk averse, therefore they want to insure themselves against the risk coming from fluctuations in the product price and therefore in the labour demand curve. At the same time, if employers are assumed to be risk neutral, they will be prepared to offer the required insurance.

The uncertainty is specified by assuming that output price can fluctuate, and therefore, it can take one of a number of possible values with certain probability.

Workers and employer sign a labour contract before the output price is known. This contract specifies the number of workers employed and the wage to pay them. Therefore, the contract is defined as (W_i, N_i), $i = 1, ..., n$, where the subscript i alludes to different states of the world.

Solving the maximisation problem to find out the optimum contract, the marginal utility of income for an employed worker is the same in all states, $W_i = \overline{W}$, $\forall p_i$.

Therefore, in this optimal contract, the wage is rigid and does not vary with the firm's output price.

It is possible to see this result analytically and graphically if we assume that the possible states of the word are only two, and obtaining the isocost and indifference curves of the only employer and the only worker.

The optimal contract is obtained in the tangency point between the isocost curve and the worker's indifference curve. This occurs at a point in which $W_1 = W_2$; corresponding with the conclusion obtained from the initial more general model of a stickiness in wages.

Nevertheless, this rigidity in wages exists during the duration of the contract. As the contract finishes, the conditions for the new ones are reviewed according with the actual situation of the market.

The conclusion underlined above is obtained under the restrictions imposed on the model. Specially, it depends on the assumption that the employer is risk neutral. If the employer is

risk averse, the wages will vary with the firm's output, and the conclusion of wage rigidity does not work.

The solution obtained in developing the problem tells us that the marginal product of labour is not equal to the wage. Depending on the parameters of the model it can be full employment or unemployment in the economy. But, in this last case, it can be shown that the level of employment is higher than in the competitive case.

One possible conclusion is that employment is higher with an implicit contract than in the competitive labour market model.[28] Therefore, the main characteristics of this model are rigidity in wages and overemployment relative to the competitive level. Nevertheless, it should be stressed once more that these conclusions have been obtained introducing particular assumptions on the model, specially in relation with the risk aversion of employer and workers, and the utility function of workers.

One of the most important variation that has been applied to implicit contract models, refers to the symmetry or asymmetry in the information obtained by employer and worker (Hart, 1984; Azariadis and Stiglitz, 1983; Hart and Holstrom, 1986). The model used as a basis above was under the condition of symmetric information; but it is possible that one part of the contract know more than the other, in which case there is an asymmetric distribution of information.

For example, the assumptions can be changed to the case in which the employer is risk neutral and there is asymmetric information in the sense tat only the employer observes the output price of the first period. In this case, the complication is coming from the fact that the employer has an incentive to lie, in order to pay a lower wage. But, with a rational worker recognising such a situation, his strategy is to set a wage which does not vary with the output price. The problem arising now is that when the output price is very low it will be below the wage, and therefore the employer will go bankrupt and the worker will be unemployed. The outcome in this case is a rigid wage and unemployment.

The asymmetry in information can be included in several ways into the model. It is possible to suppose that the workers have some private information (Moore, 1985), or that both worker and employer have some private information (Moore, 1984).

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[28]For the first model obtaining over employment, see Akerlof and Miyazaki (1980), and Pissarides (1981).

In general, the conclusions of wage rigidity does not hold if there is a concave production function and employment can vary. Moreover, if the worker's utility function is such that leisure is a normal good, there is overemployment.

Different conclusions are obtained with this theory by comparison with the basic neoclassical model. The analytical instruments behind both of them are the same as there are representative maximiser agents. Therefore, the different results are obtained from the relaxation of some of the basic original assumptions. One of the main different components is the inclusion of different degrees of risk aversion for employees and employers.

Another important relaxation refers to the assumption related to information and knowledge. In the implicit contract theory there is not perfect information as the agents show uncertainty with respect to future states. Moreover, the information is not the same for every member in the market with the inclusion of asymmetric information.

3.3.4. Search

The theory of search is developed in a context in which the agents have incomplete information about market opportunities. As the agents manage to improve their information, the best alternatives may be allocated.

Consequently, the models in search theory are characterised by uncertainty and dynamics, as the process of searching a job is extended over several periods.

In a job search model we have to analyse both sides of the market. On the one hand, the workers are looking for a job[29] and they are faced with a distribution of wage offers. With this distribution, the searcher tries to find the largest offer, given the costs incurred with the searching.

On the other hand, the firms are offering jobs and wages depending on their labour costs and the costs of maintaining some vacancies.

With respect to the labour supply side, there are different ways to model the searching process by the worker. We can assume that the worker is approaching several firms until a sufficiently high wage offer is discover. Therefore, the searcher does not decide how many firms to approach per day but instead he decides on a minimum acceptable wage which is his

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[29]It can be the case of unemployed workers looking for a job or people working who want to change their actual job.

reservation wage. The worker approaches each firm sequentially and compares every offered wage with his reservation wage. If the first discovered wage is equal or higher than the reservation wage, he accepts the job, otherwise, he goes on searching.

An optimal reservation wage can be found by maximising the accepted wage offer taking account of the search cost.

We can assume that there is no limit in the number of firms to be approached, and that the search cost is fixed through the period, as well as all the other aspects of the market.

The first step would be to find the optimal reservation wage (w_r*).under the assumptions that: if w_r* is equal to the observed wage then the searcher is indifferent between accepting or rejecting the offer; the return to search is constant and positive; there is a rate of discount; and the return to accepting a wage is higher the higher the wage is.

Moreover, with the mentioned conditions, w_r* exists and it is unique. The representative worker obtains his optimal reservation wage by maximising his expected returns to searching once. This is developed under the assumptions that search is random (every firm has the same chance of being approached), and the distribution of wage offers is known to the searchers.

At this point, once obtained the optimal reservation wage, the sequential decision rule is: if $w \geq w_r$* accept and stop searching; if $w < w_r$* reject and continue searching.

Up to this point we have examined the behaviour of the supply side of the market. With respect to the labour demand side, it is necessary to have the condition that firms make different wage offers and persist in doing so.[30]

Therefore, the rule by which any individual firm take the market wage as given can not be applied. Every firm set the wage as a monopsony, taking into account two kind of costs. One of the costs is the labour cost, depending positively on the wage offer. The other cost is the expected vacancy cost depending negatively on the wage offer. There is a negative relation between wages and vacancy costs as the firm faces a fixed cost for each period the vacancy is filled, and a probability that the vacancy is filled in any period, which in turn depends on the wage.[31]

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[30]This is necessary for the labour supply to work as in the search theory. Otherwise, all firms offer the same wage and therefore there is no point in workers searching.

[31]If the fixed vacancy cost is K, and the probability on filling the vacancy is $q(w)$, the total expected vacancy cost is $\frac{K}{q(w)}$.

The attitude of the firm is therefore to find its optimal wage offer by minimising the sum of employment costs and vacancy costs.

A similar problem to the one outlined above appears here. It is necessary to have heterogeneous workers or differences in vacancy costs. The problem arises if all firms face the same distribution of worker's reservation wage, the same vacancy costs, and all workers and jobs are equally productive. In such a situation, all firms will arrive at the same wage offer decision and this is incompatible with the job search by workers (McKenna, 1987).

Once the behaviour of both sides of the market has been defined, the market equilibrium can be defined in different ways. One form to study the equilibrium situation is by analysing the process of finding vacancies in a steady-state.[32]

The process brings searchers into contact with vacancies in such a way that the number of job matches made in any period will depend positively on both the number of active searchers and the number of vacancies.

The unemployment consequences for the search models are focused on the duration of unemployment. Defining $p(t)$ as the probability of locating a vacancy at time t, and $\{1 - F[w_r(t)]\}$ as the probability of accepting the offer on time t; the probability of leaving unemployment is, $\theta(t) = p(t)\{1 - F[w_r(t)]\}$.

The factors affecting $p(t)$ are demand conditions and search intensity. With respect to $w_r(t)$, it is affected mainly by unemployment benefits, search costs, discount rates and time.

One of the main facts concerning this theory is that a rise in unemployment can be due to a reduced search intensity as a sign of discouragement in the search (Bean, Layard and Nickell, 1987).

As usual, there are some implications and possible extensions on a basic search model as the one described above.

One of the main implications is given by the possible variations in the search cost. As this cost increases, there is a reduction in the optimal reservation wage because of the reduction in the returns to search. Nevertheless, this effect can be offset by some factors as the effective rate of unemployment and by some unemployment benefit.

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[32]This is the situation in which the flow into and out of jobs, the stock of vacancies, jobs and of unemployed searchers are all constants.

Another implication is due to the degree of impatience felt by the worker and represented in the discount rate. In this sense, as higher is the discount rate, the lower is the reservation wage and the higher is the probability of leaving unemployment.

Several possible extensions and reformations of the theory with respect to the models used here can be found in McKenna (1985, 1987) and Mortensen (1986).

Once more we see a model using the basic neoclassical instruments but with clear relaxation in some of the most important assumptions. In the case of search theory we have incomplete information, more than one period, monopsonic firms in the labour market (and therefore W is not given) and some heterogeneity in workers.

3.3.5. Insider-Outsider

This theory is focused in a particular description of the labour market which can generate persistent unemployment and higher wages than in a situation of full employment.

The main argument of this theory is that there is the group of insiders or a group of experienced workers in the firm that are not interchangeable with the outsiders or the group of unemployed workers.

The reason for this situation is that the insiders are in a privileged position to bargain with the firm. The usual consequence is that the insiders can hope to achieve a higher wage than the one allowing the firm to employ any number of unemployed workers (Solow, 1990).

From the point of view of the firm, it accepts having to pay a higher wage than the one clearing the market to avoid reductions in productivity. The firm can decides to save wage costs by hiring some workers that are available for a smaller wage than the effective at the moment. There is, however a reaction from the insiders against the reduction in wages by decreasing their productivity and bothering the new workers. At the end of the day, the wage-saving has become an increase in costs.

The process by which an outsider is turned into insider takes time. During this necessary time before becoming an insider, the outsider is an 'entrant' to the firm. The entrants generates costs to the firm, especially turnover costs. With this cost, an economic rent is generated in the firm. The firm and the insider can decide to negotiate that rent. The insider has enough bargaining power to negotiate an increase in their wage above the entrant wage, but not by more than the relevant turnover cost.

It is possible to find different ways to model the insider-outsider theory. The main difference between them is in which kind of costs (the costs incurred by the firm if it decides to hire some outsiders) they focus.

Some models concentrate on hiring, firing and training costs (Lindbeck and Snower, 1984; Solow, 1985). Another group of models treats the firm as having imperfect information about the effort of individual employees (and the future productivity is related to current effort). This generates another kind of labour turnover costs (Lindbeck and Snower, 1984). A third type of model is based in a productivity differential between insiders and outsiders including if they have the same job characteristics. The reason for this is that if the insiders feel threatened, they may cooperate between them, harassing the entrants, and refusing to cooperate with them (Lindbeck and Snower, 1985). A last kind of model focus in the bargaining process between insiders and the firm. The negotiation is developed before the firm hire any outsider. The cost lies in the value of the time that negotiating entails. Moreover, with the inclusion of unions, the bargaining power of insiders increases and creates further costs, specially by strikes and the work-to-rule (Shaked and Sutton, 1984; Lindbeck and Snower, 1984).

To analyse the theory on detail, we can see the rationale of the models examining the costs of insider's cooperation and harassment activities. According to this idea, both workers and firms have economic reasons for behaving in this way. The insiders want to prevent their wage from being eroded. For the firm, it could not be profitable to hire new workers owing to the effect of the insider's unwillingness to cooperate with them. The main part of the analysis in this model is therefore the interdependence of employees who work in conjunction with one another.[33] The insider's cooperation and harassment activities serve to improve their wages and protect their jobs. A result of this attitude is that outsiders become discriminated as they face a more limited choice set than the insiders. The consequence of such a situation is the creation of involuntary unemployment.

We have stressed that the focus of the following model will be the cooperation and harassment activities. By cooperation we will refer to those activities in which workers help one another in the process of production and thereby raising their productivity. By

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[33]The main points outlined here are obtained from the model by Lindbeck and Snower (1988)

harassment, we understand the activities whereby workers make one another's jobs more disagreeable and therefore raising their disutility of work.

There is the assumption that when workers first enter in the firm, they are unable to cooperate or harass other workers before a fixed period of time, or initiation period. Then, there are three homogeneous groups of workers in the economy; that is, insiders, entrants and outsiders. Further assumptions to be applied to the model are: each employee's wage is negotiated for one period at a time (this is the initiation period); outsiders are perfect competitors for jobs (when they become entrants, their wage is equal to their reservation wage during the initiation period); insiders have some market power (they negotiate their wage individualistically, taking the position of the other agents as given). The firm can not monitor the cooperation and harassment activities. While the wage decision is taken between worker and firm, the employment decision is made unilaterally by the firm. In a first step wages are decided, the second step in these models establishes the level of employment, with given wages, cooperation and harassment.

Each insider has an utility function depending on his level of consumption, which is consumed every period; and on his labour.

The decision variables for every insider are: the level of his harassing directed at entrants, the level of his cooperative activities directed at other insiders and to entrants, and his wage, given his reservation wage, which is assumed to be equal to one for every insider.[34]

The utility function of the entrant is defined in a similar way, but including his disutility for being harassed by the insider.[35]

With respect to the insider's cooperation activity, an insider is able to raise the marginal products of workers by cooperating with them.[36]

Therefore, the marginal products of insiders and entrants rise with an increase in the insider's cooperative activities.

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[34]The reservation wage is the one that makes the worker indifferent between be employed or unemployed.

[35]Each entrant's disutility for being harassed is bounded as each insider's harassing activity is bounded from above and below. The same bounded condition is imposed to the cooperating activities.

[36]The definitions of the elasticities of the marginal product of labour with respect to insider and entrants are (with f representing the production function, a_I and a_E the level of cooperative activities directed to other insiders and to entrants respectively): $\eta_I = -(f''/f')a_I l_I$; $\eta_E = -(f''/f'')a_E l_E$

With respect to the determination of the wage, it is assumed that each insider's wage captures some of the economic rent generated through his cooperation an harassment activities. Another assumption is that the greater is the mentioned rent, the higher is the insider wage.

Each insider sets his own wage unilaterally and individuallistically, therefore, taken the wages and employment of all other insiders as given.

In relation with the representative firm, it has a production function with two variable factors of production, that are insider and entrant employees (N_I, N_E).

It is assumed that the firm knows the levels of the cooperative activities, but it can not observe the activities of individual workers. Moreover, the firm can observe W_I and W_E but it can not observe the harassment activities reflected in the level of W_E.

The firm faces its maximisation problem assuming that the stock of insiders carried forward from the past is the firm's incumbent work force, m.

Now that the decision strategy for each part in the market has been defined, it is possible to find the equilibrium characteristics of cooperation, harassment, wage and employment.

With respect to cooperation, in equilibrium each insider cooperates fully with other insiders but does not cooperate with entrants.

The equilibrium cooperation attitude is decided by the insider in such a way that by cooperating with the other insiders, he raises the marginal product of the firms incumbent work force and then he can achieve a higher wage. Another reason is that by refusing to cooperate with entrants, he reduces the marginal product of the entrant work force therefore reducing the number of entrants hired and raising the marginal product of the incumbent work force and achieving a higher wage.

According to harassment, in equilibrium, each insider harasses maximally all workers who enter the firm.

With this reaction, the insider maximises the entrant's reservation wage, discouraging them from entering the firm. Therefore, the marginal product of the incumbent work force is maximised and the insider achieves the highest possible wage.

The insider is not replaced by the entrant as the insider sets his wage taking into account the following considerations. First of all, the insider's reservation wage should be enough low so that the insider does not become unprofitable to the firm and therefore he is not dismissed.

Secondly, the insider should remain at least as profitable as the marginal entrant and therefore avoiding being replaced by the entrant.

Therefore, in determining the level of employment there are three possible situations.

If m is large, it is worthwhile for the firm to reduce employment. Therefore, the insider wage is set equal to the reservation wage. If his wage is less than this, the insider has an incentive to quit. If the wage is higher than it, the firm will dismiss some insiders. Given the wage established in its minimum level, the firm determines the level of employment as the maximum sustainable incumbent work force, according to the maximisation of its profits. Moreover, the firm hires no entrants as the marginal product of an entrant must be less than his reservation wage.

If m is intermediate, it is small enough so that its marginal product exceeds the insider's reservation wage, but large enough so that the marginal product of entrants fall short of the entrant's reservation wage. In this circumstance, the firm hires no entrants as their marginal product is less than their reservation wage. When the insider is setting his wage, it coincides with the marginal product of the incumbent work force. At this wage, the firm retains all its incumbents.

If m is small, the marginal products of both the incumbents and some entrants exceeds their respective reservation wages. In setting their wages, the insiders can not exclude the outsiders from getting jobs. The wage is obtained in such a way that the insider wage is a mark-up (A) over the entrant's equilibrium reservation wage. The firm retains all its incumbents, and entrants are hired until their marginal product is equal to their reservation wage.

After applying all the above conditions two labour demand curves can be obtained, one for insiders and another one for entrants.

Along the insider's demand curve, the insider's marginal product is equal to the insider wage, assuming that only insiders are employed. Along the entrants demand curve, the entrant's marginal product is equal to the entrant wage assuming that only entrants are employed.

The insiders demand curve lies above the entrants demand curve by a factor A, because the insiders cooperate with one another but are not prepared to cooperate with entrants.

In the case of a high m, the insiders wage is reduced to the reservation wage and the firm employs the maximum sustainable m.

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In the case of an intermediate *m*, there is a continuum of equilibrium points, each corresponding to a different incumbent work force. The insiders prevent all entry into the firm through their cooperation and harassment activities and set their wage so as to exploit all their marginal rent and retain their jobs.

In the case in which *m* is small, some entrants are profitable at their reservation wage. The insider wage is set so that the marginal incumbent is just as profitable as the marginal entrant. The firm retains all its incumbents and hires entrants until their marginal product is equal to their reservation wage. The total firm's work force is equal to the minimum sustainable. *m*.

With the above microfoundations of the insider-outsider theory an aggregated labour supply and demand are obtained. The aggregated labour curves are formed by pieces of another curves with an inferior level of aggregation; that is, from entrants, insiders and outsiders. The final functions are obtained depending on the values of *A*, and *m*.

Depending on the value of *m*, it can be at the end a higher or lesser level of unemployment in the economy. Nevertheless, in the present model, insiders and outsiders do not face identical conditions of employment, neither they have the same productivity level. These circumstances make it difficult to distinguish at which point the level of unemployment predicted by the model can be involuntary.

The differentiation of this theory with respect to the basic neoclassical one (and therefore its level of complication), is determined again by the applied assumptions.

In the insider-outsider theory there are heterogeneous agents in the labour market. There are differences in the behaviour and in the model between insiders, entrants and outsiders. Moreover, the theory is characterised by a situation of imperfect information and bargaining power for some part of the workers.

3.3.6. Mismatch

One of the characteristics which differentiates the labour market from the other markets is the heterogeneity of its participants.

In some sense, this characteristic allows the division of the aggregate labour market in smaller labour markets.

If there is an important difference between the way in which the market operates for skilled and unskilled people, we can analyse the skilled labour market and the unskilled one.

The same division may be applied to other cases and therefore, the analysis is referred to separated groups according to different qualifications, geographic areas, sex, age, economic sector, and race.

The models focused in the problematic of mismatch try to explain persistent unemployment rates between these groups (Lipsey, 1960; Archibald, 1969; Baily and Tobin, 1977; Johnson and Blakemore, 1979). From a general perspective, if the market is separated in two, for example between two different regions, the mobility from the region with highest unemployment rate to the other one should eliminate, or at least reduce the unemployment rate.

The present theory applies different techniques to measure a mismatch index. At the same time, it develops different models trying to explain the failure to reduce unemployment with mobility between the differentiated groups.

The persistent and temporal disequilibria existing between labour demand and supply of different groups, generates what is labelled as mismatch.

One important factor to take into account when the problem of mismatch is being analysed is the nature of the structure of the labour force. It is possible to consider it as exogenous or endogenous. Logically, it should be considered as exogenous in the short run because the labour force is already distributed between the different groups. However, in the long run it is possible to have movements from one group to another and then it becomes endogenous.[37]

In the case of modelling an exogenous distribution of labour force, following Layard, Nickell and Jackman (1991), we have a production function, a labour demand and a wage function for each group. These functions depend (among another variables) on the elasticity of substitution between workers of different groups; the labour force of each group; and the productivity of each group.[38]

The combination of the labour demand and the wage function determines the equilibrium for every particular group, obtaining a wage and a rate of unemployment for each group. Such

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[37]It should be considered endogenous in the long-run only in some cases. For example, if the labour market is analysed according to its differences between qualifications or geographic areas. However, in another cases it is always exogenous as there is no movements between the groups differentiated according to their sex or race. In the case of groups according to the age, the movements are always exogenous.

[38]Layard, Nickell and Jackman (1991) propose different explicit production functions depending on which kind of different groups they are analysing. In their model, the wage function is a function obtained from a combination between bargaining, efficiency wage and the neoclassical labour supply.

rates of unemployment increase with the wage pressure relative to productivity and with the relative size of the group.

For example, if there is a relative increase in the population of one group, its unemployment rate increases and its wage decreases (Freeman and Bloom, 1986).

In a long-run situation, there are movements between groups. The number of workers of each group depends on the expected wage, the number of vacancies, the probability of finding a job in each group, and the costs of belonging to a particular group and of moving to another one.

Moreover, these different opportunities generate movements and therefore changes in the proportion of the labour force of each group.

Consequently, in a long-run analysis, a function should be introduced determining the net rate of movements, in which is included a differential cost of belonging to a particular group. In a long-run equilibrium the net rate of movements is zero. There is an equalisation between the net advantages of every group with the behaviour of the population.

Therefore, a new equilibrium rate of unemployment and a wage for each group are obtained.

To see the behaviour of the markets in a steady state, we can assume that employment is changing at a constant steady state rate.

Moreover, there are different natural growths of working population in each group.

With the application of these new conditions to the former analysis, it is deduced that for a given wage, a group will have a higher rate of unemployment if its rate of population growth exceeds its rate of job creation.

We can see graphically the case in which there are two groups with different skill level, with a given labour force. In the skilled group, the wage is flexible and in the unskilled group, the wage is rigid. Then, we have full employment in the skilled market and unemployment in the unskilled one.[39]

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[39]In the presented graph, PM_i indicates the marginal productivity of each group; N_i the two levels of employment; L_i^F is the labour force of each group; and U the level of unemployment.
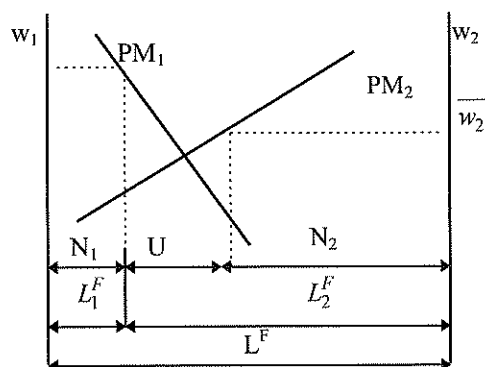
An important consequence obtained from the mismatch analysis is that at an aggregate level, it is possible to have surplus in the labour supply and demand at the same time. This is due to the different behaviour of the different groups in the market.[40]

If in each micro market there are either unfilled vacancies or unemployment, the level of employment in each of them is determined by the short side of each market. Therefore, at the aggregate level, vacancies and unemployment coexist owed to some markets being constrained with their labour demand, and some others with their labour supply.

With this situation, the larger the variance between micro markets, the smaller is aggregate employment relative to the minimum between aggregate labour demand and supply, and the more variable is mismatch.

That consequence can be observed following some models as the one of Bentolila and Dolado (1991) and Franz (1991).

In their models there is an aggregate employment equation, depending on the aggregate labour demand, N^d, on the aggregate labour supply, N^s, and on the variance between micro markets (that at the same time represents a mismatch index).

The aggregate labour demand and supply can be defined according to the number of unfilled vacancies, V, and the level of aggregate unemployment, U; $N^d = N + V$; $N^s = N + U$. By introducing that definitions for labour demand and supply in the aggregated employment equation, they obtain the Beveridge curve.

The Beveridge curve is formed by the aggregate vacancy rate, $v \equiv \dfrac{V}{N}$, and by the

aggregate unemployment rate, $u \equiv \dfrac{U}{N}$, and indicates all possible combinations of the

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[40]An example could be the case of a demand surplus for man, and a supply surplus for women.

aggregate unemployment and vacancy rates compatible with steady conditions in the labour market.

If the equilibrium unemployment rate, $u*$, is defined as the state in which the number of unfilled vacancies is not appreciably below the number of unemployed workers (Beveridge, 1955), in full employment, we have the condition, $u* = v$, and therefore, an equilibrium unemployment rate is obtained which changes with the mismatch index.

Moreover, with an increase in the mismatch parameter, the equilibrium or structural-frictional unemployment rate increases. We have in this economy an observed unemployment rate, u, that can be higher than the structural-frictional one, $u*$, if the aggregate labour supply and demand do not coincide, that is, if there is aggregate disequilibrium. Then, the aggregate unemployment rate can be decomposed into an equilibrium or structural-frictional, or mismatch component, and a disequilibrium component due to insufficient aggregate labour demand relative to aggregate labour supply.

From this approach, and following Padoa Schioppa (1990) and Malinvaud (1986), if there is a rise in structural-frictional unemployment, there is an increase in the ratio $\frac{v}{u}$. This ratio, can increase because: of a reduction in the labour market aggregate disequilibrium, (represented by an upward movement along a Beveridge curve); of growing frictions within each micro market, (with an outward shift of the Beveridge curve); of larger mismatch or intersectoral discrepancies of unemployment and vacancies.

The intersection between the Beveridge curve and the equation determining the aggregated unemployment rate, indicates the observed unemployment rate, u, and the ratio $\frac{v}{u}$.

The outward shifts of the Beveridge curve due to mismatch, represent a growing dispersion of the vacancy/unemployment ratios across micro markets. This dispersion can be measured with various indices, proposed by all the authors mentioned in this section.

The theory of mismatch is one of the more recent in the study of new theories to explain how the labour market works. Its main characteristic is the relaxation of the assumption of heterogeneous workers. Its formalisation allows the study of different cases of discrimination in the labour market and the process of adjustment between a short-run and a long-run state. In this respect, there are mismatch models based on dynamic microeconomics, analysing the variation of wages and unemployment in different submarkets during some

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convergent/divergent processes. Nevertheless, all of these analysis are possible from the relaxation of basic neoclassical assumptions.

3.3.7. Unions

The literature concerned with the effect of trade union behaviour has been increasing since 1970s. Theoretically, several models appear in an attempt to obtain a result from unions' intervention. With this models, a level of wage and of employment are obtained, which are compared with the results in the case of non-union intervention.

The common characteristics of these models allow them to be classified as belonging to different general models (Oswald, 1986).

In general, it is assumed that there is only one union and one firm. The union represents the interests of $m > 0$ identical workers. The number m is assumed to be quite large to assure that the firm will hire only union members. This assumption is known as a 'closed-shop' agreement. The workers that are not employed by the firm, are working in an alternative sector, obtaining a reservation wage, or they are unemployed, receiving an unemployment subsidy. For all the individuals who are not working for the firm, can be obtained a weighted combination of the two possible options, as a function of the rate of unemployment in the economy.

For the application of these models there should be some surplus in the product market of the firm. This assumption is necessary, as the firm should obtain some profit in hiring union members, and as the union needs something to bargain over.

With these general characteristics, the firm tries to maximise its profits subject to its production function and to its labour costs. The union tries to maximise the expected utility of its members. Therefore, the firm has a set of isoprofit functions,[41] and the union has a group of indifference curves.

It is possible to classify the union models, as belonging to one of the two following types.

One group is formed by 'right to manage models'. These models have the characteristic that the firm has the 'right to manage' i.e. to decide the level of employment. There are two

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[41] An isoprofit function shows the combinations of wages and employment maintaining the same level of profits. This function is increasing, until reaching a maximum in the point in which the marginal productivity is equal to the wage, and decreasing from this point. Therefore, the maximum of each isoprofit function coincides with points of the labour demand in a profit maximisation perspective.

variants into these models. One of them is the union monopoly model, as the union sets the wage, maximising its utility subject to the constraint that employment must lie on the demand curve. In a second step, the firm decides the level of employment with the given wage. In the other variant, firm and union bargain over the wage, and the firm sets the level of employment (Nickell and Andrews, 1983). In these models, the firm will always choose the employment to maximise profits, and so employment will always lie on the labour demand curve according to the decreasing marginal productivity condition.

The second big group of union models is formed by 'efficient bargain models'. In these models, wage and employment, are both bargained over between the firm and the union (McDonald and Solow, 1981). In this case, the firm maximises its profits subject to the condition that the union should achieve a given utility level.

At the solution of the bargain, there should be non-negative profits for the firm, and some non-negative minimum level of gain for the union.

The solution to the maximisation problem is that the marginal rate of substitution between wages and employment for the firm should equal the marginal rate of substitution for the union.

The equilibrium condition represents the locus of points (W, N) forming the contract curve. Therefore the contract curve is formed by the points in which the indifference curves for the union are tangential to the isoprofit curves for the firm. Hence, the achieved solution in the bargaining process lies to the right of the labour demand curve.

If the union is risk averse, then the contract curve is upward sloping. According to the equilibrium solution, the level of employment is an increasing function of the wage. If the union is risk neutral, the contract curve is a vertical straight line; and it becomes vertical at the competitive level of employment.

Nevertheless, the contract curve implies a group of possible solutions. To know which of them will be the one agreed, we can use a generalised Nash bargaining solution, introducing a factor s, as indicating the union power.

If there is an increase in the union power, s, there is a movement out along the contract curve, and therefore an increase in the wage. If the union is risk averse in some degree, there is also an increase in employment. In the extreme case of $s = 1$, we are in the case of union monopoly model; and when $s = 0$, we obtain the competitive outcome.

With an increase in the reservation wage, the contract curve shifts to the left, obtaining a higher wage and a lower level of employment.

An increase in the output price, will increase employment, but the effect on wages is ambiguous. An illustrative case of this effect is the one with the Cobb-Douglas production function. In that case, in the maximisation solution, the level of prices does not appear, and therefore, there is no effect on wages.

The main conclusion concerning efficient bargaining models, is that the variables influencing the bargaining process will affect wages and employment in a way that depends on the slope of the contract curve.

More general models of unions can be developed, some of them introducing the bargaining process with respect to the number of hours worked, together with the number of workers and the wage, allowing for cases of overemployment, part-time and full employment jobs (Hart, 1984). In other models, the number of union members is included as a variable instead of being given (Schmidt and Strauss, 1976; Lee, 1978). Another important factor in the union models is the level at which the bargaining is developed. The results are different if the model is focused in the case of total centralisation, that is, with a national union, than in the case of more decentralised unions, at sectoral level or including at the firm level.

The main point achieved with union models with respect to the neoclassical formalisation is the possibility of obtaining an efficient solution. The points over the marginal productivity condition of the labour demand appear as non-efficient. There are possible movements going out of the labour demand on which both parts of the market are in a better situation. These points form the bargaining area. The limits of the bargaining area are the labour demand function and the contract curve of efficient equilibrium points.

3.4. Conclusions

The neoclassical marginalism focused its analysis on individual motivation in the economic decisions and in the operation of the markets.

This method was applied to the analysis of the labour market, introducing a marginalist supply and demand for labour. Therefore, the labour market was studied within the general laws of markets.

The shift experienced from classics and Marxists to neoclassics is evident in the different methods applied. For the classics, the attention was focused on growth and distribution. The question of unemployment is rarely found in their writings and their studies are more from a moral perspective than from an analytical one.

With the Marxian analysis there is an important change with respect to the unemployment as Marx introduced the reserve army of unemployed as a natural feature of a capitalist system.

Therefore, the differences coming with the marginalist approach are evident from several points of view. Their individualistic analysis, focused on representative maximiser agents, and the consequent aggregation of all of these equal agents is something particular to the neoclassical school.

Moreover, the operation of the labour market is developed as the operation of easily another market. There is a factor demand, a factor supply, the market forces, and therefore an equilibrium price exchanged in a full employment situation. There is space for unemployment only in its voluntary perspective.

With the evolution of the analysis of the labour market, and the observation of high and persistent rates of unemployment in the economy, more specific theories emerged. The new theories tried to study situations of wage rigidities generating involuntary unemployment. These theories are more elaborated from an analytical point of view, and they try to explain particularities observed in the labour market. Nevertheless, the microfoundations of all of these theories remain the same, that is, the starting point is a representative maximiser agent, and by aggregation, a labour market equilibrium is obtained. These theories model the representative agent as behaving according to voluntary decisions. Their contribution, therefore is that they change some assumptions in the voluntary unemployment model to obtain involuntary unemployment.

The evolution of the analysis of the labour market from Adam Smith until the new marginalist theories is undoubtedly important with respect to the mathematical analysis. With that analytical evolution, particular situations are addressed, and changes in the economy are studied with the application of the comparative statics. Nevertheless, the overview of the economy, and specially the one of the labour market in which the productive factor is employees, is dramatically changed. The change is from the perspective of a market in which

different agents interact, with social, historical and ethical implications to a mechanical perspective of human interactions.

4. A comparative analysis and some concluding remarks

The present work has studied how the labour market may be analysed from three different perspectives. First of all we analysed the labour market from the point of view of the classical school. We could observe the characteristics and the aptitude of the agents participating in the market. Moreover we could see how the labour market operates and the result of such a process.

Secondly, another chapter was dedicated to the same subject but from a Marxist analysis. The third perspective reviewed was dedicated to the neoclasical analysis.

As each of these theories has been analysed separately the purpose of the present and last chapter is to establish the appropriate comparison between them.

Because in the analysis of the labour market in each theory the use of several concepts and the develop of different processes is involved, in this chapter separated sections will be established. The first of the sections will be devoted to the characteristics of the participants in the market. A second part will compare the notion of equilibrium applied by each school and the market process behind such equilibrium. Another section will show the result coming from every analysis and the particularity of the variables from them.

Nevertheless, as they are mutually functional to their explanation, the concepts will be discussed along all the chapter.

4.1. Components of the labour market

In the three schools of thought, the components of the market are a labour demand and a labour supply. Nevertheless, with differences in the characteristics of both sides of the market.

The labour demand is defined according with the behaviour of the employers. In the case of the classics, the decision of the employers is obtained on the basis of the *wages fund theory*. According to this theory, the composition of capital is the main point for the formation of the labour demand, as the variable capital, according with the saving decisions of the employers, determines the amount destined to pay wages.

One distinctive characteristics of the classical labour demand is the condition of a constant ratio of fixed/variable capital. Therefore, the amount of money destined to the wages fund

and therefore to the labour demand is predetermined. As the labour demand is determined in such a way, it can change with the capitalist decisions about how to distribute his earnings between reinvestment and personal consumption. There is one circumstance in which the composition of capital could change, and it is with the introduction of new machinery on the system. In that case, the portion of relative fixed capital increases and there is a reduction in the labour demand. Nevertheless, this is a short-run effect as in the long-run, there is a gain in productivity and therefore in the labour demand, coming back to the original position. In this part of the analysis one difference emerges among classics and Marxists, in relation to the classical assumption of a constant variable/fixed capital ratio. In Marx, there is a progressive change in the composition of capital. With the increase of capital, its variable component increases in a constantly diminishing proportion.

The other side of the market, that is, the labour supply is classically determined by the labour force of the economy. The characteristic of this supply is that the workers composing it are considered as homogeneous.

The Marxist labour demand and supply are similar in some respects to the classical and neoclassical ones. In the Marxist perspective, labour demand can be understand as determined by the attempt of the capitalist to obtain profits. Something similar happens on the supply side as the workers try to obtain their wages. Moreover, Marx distinguishes between fixed and variable capital and he expresses variable capital as the part invested in labour power. Therefore, with increases on capital there are increases on labour demand and therefore in wages; as, in a similar way, happened for the classics.

In the neoclassical approach, the behaviour of the economic agents is determinate according to the principle of marginal utility. Labour supply is obtained from the analysis of a representative worker, who is an utility maximiser. By aggregation of all the workers (assumed equal), the aggregated labour supply is obtained.

The neoclassical labour demand is obtained in a similar way. With the aggregation of equal profit maximiser firms the labour demand of the economy is obtained based on the principle of the marginal productivity. Both sides of the market enjoy perfect information and they are perfectly homogenous.

These are briefly the main characteristics of the neoclassical agents participating in the labour market. But in the chapter dedicated to that school of though we introduced the possibility of wage rigidities. With the introduction of such possibility, new theories emerged

trying to explain the way in which the labour market operates. One important difference between the basic neoclassical theory and these wage rigidity theories is the characterisation of their agents. In these theories, some of the more restrictive neoclassical assumptions are relaxed. Although the behaviour of the agents is still analysed as rational maximiser, however the assumptions of homogeneity and perfect knowledge are usually relaxed. In the efficiency wage theory, the workers have some control over their own productivity; in the implicit contract theory the possibility of asymmetric information is analysed together with different degrees of risk aversion for each side of the market; in the search theory there is incomplete information about market opportunities and heterogeneous agents; in the insider-outsider theory there is imperfect information; in the mismatch theory there are heterogeneous agents; and in the unions theory the possibility of different power to bargain for each side is included.

4.2. Equilibrium and market process

Before going through the comparison between the equilibrium of the specific market of labour, it is worthwhile establishing such differences about the general concept of equilibrium among the concerned approaches.

In the Classical and Marxist analysis, the equilibrium is reached through the process of competition. Therefore, a market process is the important concept when analysing the way to achieve the market equilibrium. It is important to establish that affirmation, when a comparison with the neoclassical approach is going to be developed. In the neoclassical analysis, the concept of competition as a market process disappears, and a static equilibrium of perfect competition is substituted. Perfect competition is an equilibrium state in which price is a parameter and no market activity is possible. The individual decision-maker in a neoclassical context is the Robinsonian economiser, acting in a mechanical form with respect to knowledge and being a price-taker. One failure of this approach is the fact that all the information is assumed given and known for the acting individuals who are price-takers. This assumption fails to explain how it is possible for the process of price changing to proceed to the equilibrium value. Moreover, such analysis fails to account for any continuity in a sequence of decisions. The neoclassical theory explains the existence and characteristics of an equilibrium state but not how to arrive to that state. Their assumptions for the theory of perfect competition are: (i) A homogeneous commodity offered and demanded by a large

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number of relatively small sellers or buyers, none of whom expects to exercise by his action a perceptible influence on price. (ii) Free entry into the market and absence of other restraints on the movement of prices and resources. (iii) Complete knowledge of the relevant factors on the part of all participants in the market.

For neoclassicism, after some exogenous knowledge appears, there is an instantaneous change from an equilibrium situation to another. It is during this neoclassically ignored interval of time when the forces of competition operate.

The importance of establishing such characteristics of the notion of equilibrium and of perfect competition in a neoclassical approach is going to be clarified. In the analysis of the labour market for classics and for Marx we wrote about market processes and the evolution from one equilibrium to anther, while in the neoclassical labour market such evolution was absent because of the characteristic of instantaneous equilibrium.

Therefore, after having established the general differences with respect to the notion of equilibrium, comparisons will be established in concrete aspects of the labour market from now. Such comparisons are consistent with the comments expressed above as in the neoclassical approach the labour market is analysed as anything else in the economy, subject to the same rules and characteristics.

According to the classical perspective, as the components of the market (labour demand and supply) interacts, an equilibrium is obtained with the balance of both forces. The equalisation of labour demand and supply determines the equilibrium levels of real wage and employment. This notion of equilibrium is supported for the classics by economic and social arguments. Therefore, the process by which both sides of the market find each other in the market is explained alluding to economic, social, and historical situations.

When the marginalistic neoclassical perspective emerged in economic studies, the classical notion of equilibrium was analytically developed by them. Therefore, there is an obvious link between both approaches, as the neoclassical school used its characteristic instruments to develop notions and concepts that were presented by the classical authors without using any formalisation. The classical market process is logically obtained starting from an equilibrium state. The long-run equilibrium situation can be altered by changes in capital. When this happens, a population adjustment starts moving the market to another long-run equilibrium. Along the process between one long-run equilibrium to another, several short-run equilibrium emerge in the economy. Because the variation in the labour supply is slower than the one of

the labour demand, subsequent market wages above the natural wage are obtained in the market. Wages are determined mainly by competition but they are also affected by custom. Therefore, sometimes the wage is above the physiological minimum and luxury consumption is allowed.

Both classical and neoclassical school used the concept of perfect competition to develop the equilibrium analysis and to obtain the market variables. However, while the classics were aware of the unfairness of the competitive system, ethical connotations are absent in the neoclassical perspective. Moreover, the changes generated in the market are analysed by the neoclassical approach using static comparative analyses, as the economy is analysed from an utilitarian perspective and with mathematical methods.

In the classical authors the focus was economic growth; how it is generated, its evolution and its consequences. All of these are largely based on the processes of capital accumulation and of population growth. However, in the neoclassical tradition, the main point is the search of efficiency from a static analysis. The equalisation between supply and demand gives to each factor a market price according to its marginal productivity.

As with the classics, Marx analyses the evolution in the market after an expansion in the economy. At the beginning it generates an increase in labour demand with the consequent augmentation of wages and reduction in unemployment. However, an adjustment process is generated by the labour supply side because of the reaction of the unemployed. Therefore, the approach of the analysis is similar to the classical one, with the difference in the adjustment mechanism, as for the classics is given by the variation in population, while for Marx is given by the variation in unemployment.

One factor establishing analogies between classics and Marxists and however contrasting with neoclassics is to show the economic system as non-static, but historically determined. For the classics and for Marx, the economic phenomena are not understood independently of the historical situation in which they are generated. Contrarily, in the neoclassical analysis such historical situation is not taken into account as they develop static studies.

According to the Marxist analysis, in the exchange process of wages for labour power, the worker is not paid according to the technical relation between production and the required labour for the productive process. The wage received by the worker is inferior to the marginal productivity level because of the process of exploitation. This is an important difference with the other two schools of thought. For the classics, the technical relation were the focus of the

labour demand analysis, and in the case of the neoclassics, the labour demand is the marginal productivity itself.

Another key difference between Marxists and neoclassics is the fact that for Marx labour power has some characteristics that make it distinct from the other commodities in the market; these are historical, moral and physiological needs. However, the application of neoclassical instruments transform the labour input into a factor like anything else. This is changed somewhat when rigidity wage theories are analysed, because with the introduction of such theories, there is a short-run equilibrium accounting for involuntary unemployment. Therefore, the labour market may not clear. For this reason, some theories emerge attempting to build the microeconomic foundations of price stickiness. The characteristics of the labour market are explained by rational behaviour of firms and workers, operating in an environment of price-setting and imperfect information.

4.3. Results of the market

The basic results obtained from the analysis of the labour market are the values achieved by wages and employment. Therefore, this part will be devoted to these two variables, bringing together some of the earlier observations.

4.3.1. Wages

In the classical analysis, when the economy is in a short-run state, the wage established is a market wage. Such a wage gravitates around the natural wage. As the economy moves to a long-run state with the adjustment process of the population, the wage moves as well, until reaching its long-run value; this value is the one of the subsistence wage. The same situation is generated in the Marxian analysis, that is, there is a movement from short-run to long-run wages. Nevertheless, in Marx, the long-run wages are determined by the variation in the reserve army of labour while for the classics they are determined by variations in employed population.

At the beginning of the classical approach, the concept of subsistence wage was understood as a physical subsistence minimum, but it evolved to be a social subsistence minimum. This last concept included the life conditions and customs in every country and

time. The inclusion of these factors makes the concept of subsistence wage similar for classics and Marxists, but, however, different for neoclassics.

One of the characteristics of the classical minimum subsistence wage in the classical approach is the condition of stationary population. When the wage has achieved its long-run state, population has suffered its total adjustment, and therefore enjoys a situation of stationarity.

According to the characteristics of the market participants, the classical wage is a unique one, nevertheless, the classics were aware of the existence of different wages in the economy. An explanation for this situation is that what is unique is not the wage but the net advantage of different occupations to different individuals. Therefore, advantages in monetary earnings are compensated with non-monetary factors. The classical authors give reasons for the existence of different wages in such a way that each of these explanations is directly related to concepts developed analytically later by the neoclassic approach. The main ideas are: changes in the disutility of labour; skill properties; efficiency wages; choice under uncertainty and expectations; and some kind of mismatch as differentials between women and men, as each group could enjoy a separate market into the labour one. In the neoclassical approach the wage determined in the market is considered unique and totally flexible, according with the characteristics of the equilibrium. One of these characteristics is changed when attempts to explain involuntary unemployment. Therefore, wages are no longer flexible, and their characteristic of rigidity is the main consequence generating involuntary unemployment. The nominal wage is rigid in a downward direction, that is, once it reaches a given level, it can not fall because of imperfections in the labour market.

The factors determining the level of wages in a Marxist perspective are: the length of the working day; the intensity of labour; and the productivity of labour. The last of these three factors is enjoyed by the three schools as a wage determining factor. Nevertheless, in the case of Marx, the conclusions obtained after an increase in productivity is generated are completely different to the other two approaches. For Marx, an increase in labour productivity is in favour of the capital, and therefore generates a reduction in wages.

Moreover, when Marx analyses the characteristics of the effective wages, he writes about the possibility of establishing the wages according to two different methods. One of them is 'time wages' and the other one is 'piece wages'. He explain some of the reasons for which employers decide to pay 'piece wages'; among these reasons, it is the capitalist attempt to

avoid costs of inspection and the possibility of observing the differences in skill among the workers. These reasons are between the basic one when the neoclassical concept of efficiency wages is analysed to explain the existence of wages higher than the one clearing the market. That is, with piece wages, workers with different efficiency level can obtain a different amount of money from their work.

4.3.2. Employment

One of the consequences of the classical approach is that in the labour market there is the condition of full employment, or, if unemployment is allowed, it is voluntary. These conclusions were obtained later by the neoclassical approach as in its basic analysis, if there is some unemployment rate in the economy, it is voluntary as given by the individual supply decisions.

From a classical perspective, if there is any variation in the economy, for example an emerging situation of crisis or expansion, the variations suffered in the level of employment are refer to the number of working hours and not to the number of employees. In this form, a position of full employment in some sense is explained after any economic change. Nevertheless, some technological unemployment can exist in the economy after new technology is introduced. However, such unemployment will exist only in the short-run as an increase in productivity is generated in the economy with the new machinery, and with the characteristics of perfect competition and wages flexibility. The effect of the inclusion of new machinery in the productive system is analysed by Marx as well. On his analysis, the effect of new machinery in wages is to reduce it and its effect on employment is the creation of technological unemployment. Therefore, there is some coincidence between the classics and Marx when analysing the short-run effect of new machinery. However, in a long-run perspective, the conclusions for classics and neoclassics are contraries to Marxists, as an increase in the labour demand and in wages is allowed with the productivity gain obtained with the innovations.

Full employment and wage flexibility are common characteristics for classics and neoclassics. Another coincidence between them is the idea that competition corrects any situation of unemployment. According to the classics, competition is necessary because it is the unique way to maintain full employment in the economy. In the neoclassical analysis, if

the equilibrium level of employment is lower than the labour force there is a rate of equilibrium unemployment. Such unemployment is voluntary as a change in the individual preferences of the workers could leads the market to zero rate of unemployment.

We have already said that, for the classics, the labour market were studied as existing with a unique wage and homogeneous labour. However, we have seen that they also gave some explanation for the existence of different wages. In the same way, there are some allusions to labour heterogeneity. In relation to this idea, the labour factor is differentiated between productive and unproductive, the former is the one that causes the economy to growth. Another heterogeneity of employees is given by their training and natural abilities. These ideas of labour heterogeneity made the classics speak about the increase in the productive power of the economy and the possibility of augmenting with a higher division of labour and a superior training of the workers. With these ideas, an analogy and a difference with the Marxists emerge. The difference refers to the effect of labour division, as for Marx it is negative for the labouring class because it reduces wages and destroys demand for skilled workers. The analogy emerges when Marx wrote about labour heterogeneity between workers according to different skill levels.

Although for the strict neoclassical theory labour input is considered totally homogeneous, with the application of modern labour market theories based on neoclassical instruments (that have been analysed in the chapter dedicated to the neoclassical school) this assumption is dropped and the effect of heterogeneous labour is analysed.

Unemployment is a factor differentiating Marxist analysis from the other two schools of though, as for Marx unemployment and underemployment are considered a characteristic of the capitalistic society. Moreover, Marx allows for the existence of both kinds of unemployment; voluntary and involuntary. The explanation for voluntary unemployment is the same as given by classics and neoclassics; nevertheless, when he alludes to involuntary unemployment, the analysis becomes different. Involuntary unemployment is generated because of limited technical possibilities. The problem emerging in the system is an insufficient capital stock to absorb the available labour force and limited possibilities of factor substitution. An additional particular situation that generates unemployment in the Marxian system is the introduction of laboursaving techniques by the capitalist to increase their profits, generating increases in unemployment and reductions in wages. Hence, the situations permitting unemployment and the characteristics of it, are important differentiated

factors that separate Marx to one side and classics together with neoclassics in another side. Moreover, in this respect, Marx differentiates the following kinds of unemployment: Floating (because of mechanisation process); latent (with movements of agricultural workers to the industrial sector); and stagnant (formed by partially and marginally employed workers).

The distinction between neoclassics and Marxists because of the explanation of involuntary unemployment should be made carefully. This is because of wage rigidity theories introduced in the neoclassical approaches. In this respect, involuntary unemployment emerges in the market together with the voluntary one. From these perspectives, in an aggregate level, it is possible to have surplus in both sides of the market as is the case in the mismatch theory. Therefore vacancies and unemployment can be found at the same time and explained in some way.

These exceptions are not applied in the case of the classics, as the question of unemployment is rarely founded on their writings and their studies are more from a moral perspective than from an analytical one.

Another difference separating neoclassics together with classics on one side and Marx on the other is where a limit in hiring people is achieved. In Marx, such a limit is not given by a full employment condition, as for the other two approaches, but by a full capacity of capital equipment situation. The additional characteristic is that when this limit is established in a very restrictive form, there is a high rate of unemployment and a tendency for wages to fall until the lower possible limit.

One of the possibilities analysed by Marx in relation to possible changes in the components of the labour market is the variations in the working day. In that respect, he analyses the differentiation between normal working day and overtime, with the possibility of receiving a 'premium' together with the normal wage when working overtime. This situation is modelled later using neoclassical instruments from a firm level, and with the application of the aggregation of representative economic agents to observe the effect of several changes in the level of employment and in wages.

The comparative analysis carried out in this chapter only stresses some points with respect to which classics, Marxists and neoclassics present an apparent overlapping or divergent perspective. More detailed comparisons can be established on the basis of the full details of the analysis developed in each of previous chapters.

The analysis developed along the present work has been based on primary literature for every studied subject. In this respect, fewer common points can be found in several other investigations based in secondary literature.

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