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## Unemployment: Walras's Voluntary and Keynes's Involuntary

**JEL Classification:** B3; C6; D5; E0

**Keywords:** *Walras; Keynes; Voluntary Unemployment; Involuntary Unemployment; Aggregate Supply function*

**Abstract:** *This paper shows that Keynes's involuntary unemployment derives from Walras's voluntary unemployment by means of changing the characteristic of the aggregate supply curve (function) of labour.*

*On the one hand, when the original aggregate supply function is a strongly increasing function, as in Walras's approach, there might only be voluntary unemployment, and its magnitude is the difference between the available quantity of labour and the equilibrium point. On the other hand, if the supply curve of labour is a weakly increasing one, which means that the supply function may have a horizontal segment, then there might be involuntary unemployment if the equilibrium point is located between boundary points of the horizontal segment, and the magnitude of involuntary unemployment is the difference between the right boundary point of the horizontal segment and an equilibrium point.*

*According to Walras's approach, "forced unemployment" might also might be considered, which is the result of the intervention of external forces (government, monopoly, trade unions, and so on) into the market, and is therefore a disequilibrium phenomenon.*

*Finally, in reality there are many types of labour, hence a suggested comprehensive approach of employment might be a useful tool for policy-making and the planning of economics.*

## Introduction

This paper shows that Keynes's involuntary unemployment derives from Walras's voluntary unemployment by means of changing the characteristic of the aggregate supply curve (function) of labour. On the one hand, it will show that Walras's theory allows the defining of voluntary unemployment, despite the fact that post-Walras authors have been asserting that Walras's economy is characterized by full employment. On the other hand, despite Keynes's vague and incomplete definition of full employment, voluntary unemployment and involuntary unemployment, provides a theoretical framework for their definition. This paper demonstrates that Keynes established the following main characteristics of a general definition of involuntary unemployment:

1. It is an equilibrium phenomenon;
2. It may or may not exist, and, if it does, then equilibrium employment is less than the available quantity of the factor;
3. (3) It may co-exist with voluntary unemployment.

Seventy-five years ago Keynes coined the term "involuntary unemployment" in his famous *General Theory*.<sup>1</sup> Since then, this central issue of Keynes's economic theory has been assessed in two very different ways. On the one hand, there are economists who consider "involuntary unemployment" to be an innovation, and one of Keynes's crucial contributions to economic science (Shapiro & Stiglitz, 1985, p. 1217). On the other hand, there are those who consider the concept of "involuntary unemployment" as an issue which does not contribute anything to the employment theory and, as such, is superfluous (Pissarides, 2000, pp. xv-xvi). Keynes himself asserted that 'my doctrine of full employment is what the whole of my book is about!' (Keynes, 1936, xiv).

The crucial reason for this bewildering situation in the definition of involuntary unemployment and its use for the policy-making is the absence of a line of demarcation between pure theory and applied theory. Some economists deny the existence of involuntary unemployment, claiming that in reality it is not possible to find statistical data about it. On the other

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<sup>1</sup> The notion "involuntary unemployment" was in use prior to Keynes both by English economists (see Kahn, 1976, pp. 19-20; Ahiakpor, 1998, p. 17) and also by other countries' economists (see Boianovsky and Trautwein). But their notion differs from Keynes's notion.

hand, the reason for the absence of such data might be the above-mentioned situation of the definition of involuntary unemployment. Therefore, the theoretical treatment has to be a necessary condition of the practical issues, and therefore, this paper will generally consider the theoretical aspect of involuntary unemployment (Walras, 2005, p. 53).

It will be shown that the type of unemployment depends on the character of the original aggregate supply curve of labour. On the one hand, when the original aggregate supply function is a strongly increasing function, as in Walras's approach, there might be only voluntary unemployment, and its magnitude is the difference between the available quantity of labour and the equilibrium point. So, in such a case, an individual is unemployed according to his own wishes, because the equilibrium wage defined by free competition is less than the wage which he requires. But, at the same time it is incorrect to confuse Walras's voluntary unemployment with leisure. Moreover, unfortunately, some modern economists have been confusing Walras's voluntary unemployment with "involuntary unemployment".

On the other hand, if the supply curve of labour is a weakly increasing one, which means that the supply function may have a horizontal segment, then there might be involuntary unemployment if the equilibrium point is located between boundary points of the horizontal segment, and the magnitude of involuntary unemployment is the difference between the right boundary point of the horizontal segment and an equilibrium point. In such a case, an individual is involuntarily unemployed against to his own wishes, because an equilibrium wage defined by free competition is equal to the wage which he requires.

The definition of full employment, and of the kinds of unemployment, is a key issue of the theory of employment. Unfortunately, Keynes's definitions of full employment, voluntary unemployment and involuntary unemployment are extremely vague and incomplete (Hazlitt, 1959; Patinkin, 1949, p. 314; Lipsey *et al.*, 1990, p. 751). These definitions only became murkier as Keynes's followers tried to explain them (*vide infra*).

For example, post-Keynes economists have been discussing whether "involuntary unemployment" is an equilibrium or a disequilibrium phenomenon. There are also two opposing claims: those that claim that it is a disequilibrium phenomenon (Clower, 1965, p. 109; Hazlitt, 1959; Mises, 1998, p. 599; Patinkin, 1949, pp. 337-8; Rothbard, 204, p. 780) and those that claim that it is an equilibrium phenomenon (Davidson, 1967, p. 567; Hahn, 1987, p. 1). In the latter case, the question is whether Keynes's equilibrium theory is equivalent to Walras's one. Unfortunately, Keynes himself alleged that 'Walras's theory and all others along those lines are little better than nonsense' (Skidelski, 1996, p. 615). A majority of economists

assert that they are different theories (for example Blaug, Leijonhufvud, De Vroey, and Davidson), and unfortunately, only a few economists consider them to be related theories (Morishima, 1977; Darity & Horn, 1983, p. 727). It is worth recalling here Chick's assertion that 'It is doubtful, in fact, whether we would have got in such muddle over Keynes if we had understood Walras properly' (Chick, 1978, p. 20).

The second issue of the employment theory is the interconnection between full employment, voluntary unemployment and involuntary unemployment, and their measurement. The point is whether voluntary and involuntary unemployment are mutually exclusive, or if they can co-exist. The economics literature to date has either ignored the co-existence of these two kinds of unemployment, or claimed they were both the same (Layard *et al.*, 1994, pp. 11, 41; Lucas, 1978; Pissarides, 2000; Taylor, 1987).

According to Walras's approach, "forced unemployment" might also be considered, which is the result of an intervention of external forces (government, monopoly, trade unions, and so on) in the market, and therefore, it is a disequilibrium phenomenon. Unfortunately, Keynes combined Walras's two types of unemployment, voluntary and forced, and called them "voluntary" unemployment. On the other hand, some economists interpreted Walras's forced unemployment as "involuntary unemployment".

The result is that in the economics literature, especially in the textbooks, there is either an abundance of variant definitions of involuntary unemployment, or else the concept, as well as voluntary unemployment, is not mentioned at all. Therefore, this paper will discuss whether "Involuntary employment" is an innovation or is irrelevant in economic theory.

This paper consists of five sections. Following the introduction, the second section discusses Walras's theory of employment, and shows that Walras defined voluntary unemployment and forced unemployment. The third section considers Keynes's definition of full, voluntary and involuntary unemployment, and demonstrates how Keynes's vague and incomplete definition of these categories causes serious confusion in the theory of post-Keynes economists. The fourth section deals with the comprehensive approach to employment. Unemployment and the Textbook of Macroeconomics is briefly considered in the fifth section. Finally, conclusions are presented.

## **Walras and Unemployment**

Walras's general equilibrium approach seems to be "conveniently" characterized by full employment in services including labour. For example, Hayek asserted that: 'But it does mean that we have to start where general economic theory stops; that is to say at a condition of equilibrium when no unused resources exist' (Hayek, 1931, p. 34; see also Madden, 1992; Morishima, 1977, p. 58; Negishi, 1979, p. 17). This is incorrect, since Walras's approach assumes that at equilibrium, there might be unemployment of services in the following Economies: Production, Capital Formation and Credit, and Circulation and Money; and unsold goods in an Exchange Economy (Davar, 1994, pp. 51-2, 2014b). In order to define unemployment according to Walras's approach, let us take a concise look at his general equilibrium theory.

First, let us consider the relevant assumptions and definitions in his theory:

1. Walras assumed that the total demand function – as well as demand functions for individuals – is a strictly decreasing function (Walras, 1954, p. 466). The offer function first strictly increases and then strictly decreases. In other words, the offer curve considered rises first and then falls (Walras, 1954, p. 467). Throughout this paper, we will assume that the first is the only case.
2. Walras assumed that demand and supply curves for an individual may be either continuous or discontinuous (Walras, 1954, p. 95).
3. Walras determined effective supply as follows: "We shall apply the term effective offer to any offer made, in this way, of a definite amount of a commodity at a definite price" (Walras, 1954, p. 84). He defined effective demand as: "We shall apply the term effective demand to any such demand for a definite amount of a commodity at a definite price" (Walras, 1954, p. 85). This means that for both demand and supply, for a particular quantity, there is only one price, and vice versa.
4. Consequently, Walras determined the state of equilibrium by comparison of the effective demand and offer of a commodity (Walras, 1954, p. 85).
5. Walras stated that the demand and the offer curves are bounded by an available quantity from above for both the individual cases and the whole economy (Walras, 1954, p. 116, 166, 171). This means that, at equilibrium, if it exists, demand and offer always have to be less than or equal to the available quantity for all commodities and services.

Secondly, let us discuss Walras's method of establishment and re-establishment of equilibrium. Walras employed the common method of

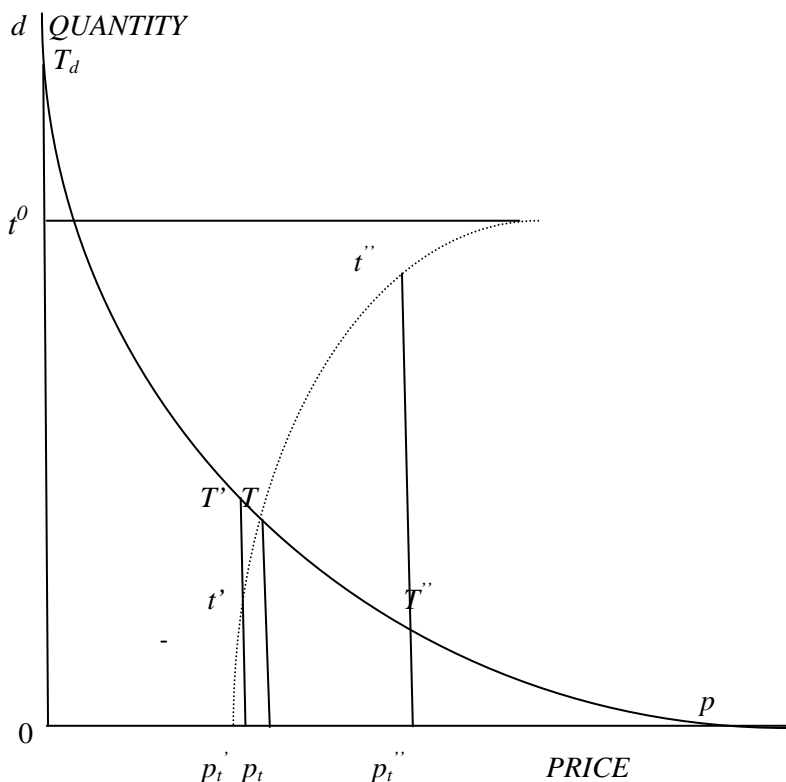
equilibrium establishment and re-establishment (variation of prices) in the four types of economies. Namely, he first considered the problem of establishing equilibrium for given basic data for the economy of the individual (utility functions for each commodity and services separately, and available quantities of goods and services). Determination of the supply and demand for goods and services for each individual economy is the first step in the random price system. The total supply and demand of goods and services may be calculated from the results of models of individuals' economies. At this stage, Walras formulated two models (equation system) for the equilibrium state and the disequilibrium state, and described the process of establishment of equilibrium by means of the *tâtonnement* algorithm (Davar, 1994, 2002, 2012, 2014b; Negishi, 1985, pp.170-173). Namely, Walras shows how this iterative process transforms any initial disequilibrium situation into an equilibrium situation if it is possible, and by this, guarantees its solvability. Each isolated iteration of *tâtonnement* is divided into two stages: firstly, equilibrium establishment for a certain good (or service) – *partial equilibrium*; and secondly, general equilibrium establishment for all categories simultaneously – *general equilibrium*. Walras asserted that the partial equilibrium of a certain category would exist if the essential assumptions (vide supra) plus the additional requirement, that is, the total (aggregate) demand curve and the total offer curve, have *at least one intersections point* (Walras, 1954, pp. 108, 171). Walras concentrated on the *Law of Equilibrium State*, which is different from the well-known “Walras’ Law” formulated by his followers (Davar, 1994, 2012, 2014). While the Law for more advanced economies only applies to new markets entering the system, it automatically includes the law relating to earlier types of economy. For example, the Law of Capital Formation and Credit only relates to new capital goods, saving, investment and rate of income. Thus, the equilibrium law for consumer goods and services for the earlier types of economy (exchange and production economies) is integrated into the law for the economy in question (capital formation and credit).

Moreover, Walras discussed the variation of prices, or re-establishing the equilibrium following changes in the given basic data for an individual or group. This means that, on the one hand, if any individual as supplier of services discovers that in the equilibrium state his services (or goods) are not traded, he might change his initial data according to the results of an obtained equilibrium state. Yet, on the other hand, if any individual as demander of commodities discovers that his demand was not satisfied, he too might change his initial endowment. Then, a new process of equilibrium establishment is required.

*Voluntary unemployment*

Under the above assumptions, if there is a general equilibrium, we could conclude that there should be at most one equilibrium point for a certain service and good (see Figure 1).

**Figure 1.** Walras's definition of Voluntary and Forced Unemployment



Source: Walras (1954, p. 433).

If the equilibrium point for a certain service is on the upper boundary point of the supply curve (called the right boundary point in the case of post-Walras authors, who used Marshall's curves, with axes interchanged, namely, quantity on the horizontal axis, and price on the vertical one), that is, the available quantity point, then it *may be said this service is to be fully employed*. But if an equilibrium point is located below the upper point (left side of the right border point), this indicates unemployment in that part of

the service, which is defined by the difference between the boundary point (available quantity) and equilibrium point, namely as  $(t^0 - T)$ . Of course, if we take into account the fact that the total offer for services is based on the solution of the model for individuals, we may conclude that, in such a situation, the individual is “voluntarily unemployed”. This is because the wage he or she requires to be employed is higher than the equilibrium wage. In other words, in this situation that depends on a person’s contribution to the whole economy, *unemployed means voluntarily unemployed*. It is important to emphasize that Walras’s voluntary unemployment is generally confused with leisure. However, leisure is determined by an individual prior to his arrival in the market, whilst voluntary unemployment is obtained by market forces.

Thus, in Walras’s approach, there would be full employment if the equilibrium point is identified with the upper (right) boundary point (available quantity) or voluntary unemployment if an equilibrium point is under the upper point (to the left of the right boundary point). The magnitude of voluntary unemployment is the difference between the boundary and equilibrium points. It should be stressed that in order to define unemployment of services, if it exists, *the available (existing) quantity of service is required*. The latter was not included in Lange and Patinkin’s approaches (vide infra).

### *Forced unemployment*

Walras also discussed the problem of price (wage) regulation of productive services or products. Walras stated: ‘We must differentiate now between two cases:

1. The case of a *maximum* [price], when it is forbidden to sell a service or a product at a price higher than the fixed price which has been [arbitrarily] set below the level that would have been determined by free competition; and
2. The case of a *minimum* price, when it is forbidden to sell a service or a product at a price lower than the fixed price which has been [arbitrarily] set above the level that would have been determined by free competition. In actual practice it is generally very difficult to enforce such restrictions; but it is not impossible’ (Walras, 1954, pp. 431-432).

Walras discussed this for the three types of services, starting with land-services and then to labour-services: ‘If the State established a minimum wage by legislation or if certain private organizations did the same by the use of threats and violence, either a certain number of workers would not be able to sell any labour at all, or all of them would find it impossible to



sell as much of their labour as they would like – which has nothing to do with the question whether or not it is of benefit to the workers to work more hours at a lower wage or fewer hours at a higher wage' (Walras, 1954, pp. 432-33).

From the above discussion, the following conclusions may be drawn:

1. At the minimum price (wage), the unemployed part of the factor (labour) may be termed *forced unemployment*, determined as  $(t''-T')$ ; which Patinkin calls "involuntary unemployment", (*vide infra*);
2. At the maximum price (wage), the unsatisfied demand for the factor is the *forced unsatisfied demand for factor (labour)*, determined as  $(T'-t')$ ; which Patinkin calls "involuntary over-employment", (*vide infra*).

In this context, it is interesting that Friedman's definition of "natural rate of unemployment" is consistent with Walras's voluntary unemployment.

## Keynes's Definition of Voluntary and Involuntary Unemployment

### *Voluntary Unemployment*

Keynes began – his theory of employment and his book with the central statement: 'The question, also, of the volume of the *available* resources, in the sense of the size of the employable population, the extent of natural wealth and the accumulated capital equipment, has often been treated descriptively. But the pure theory of what determines the *actual employment* of the available resources has seldom been examined in great detail' (Keynes, 1936, p. 4). This means that Keynes, as well as Walras, determined unemployment, first of all, in the general form – as the difference between the available quantity minus employed quantity; and then discussed various possible kinds of unemployment.

Keynes considered three kinds of unemployment: frictional, voluntary and involuntary. Throughout the paper, it is assumed that "frictional unemployment" means a fixed share from the available labour forces, and it cannot influence the issues discussed.

Keynes considered "voluntary" unemployment as being 'due to the refusal or inability of a unit of labour, as a result of legislation of social practices or of combination for collective bargaining or of slow response to change or of mere human obstinacy, to accept a reward corresponding to the value of the product attributable to its marginal productivity' (Keynes, 1936, p. 6). Careful examination of this quotation shows that Keynes, un-

fortunately, combined Walras's two types of unemployment: voluntary and forced (vide supra). Such an intolerable combination of two opposing concepts creates serious confusion in post-Keynes authors' discussion of unemployment (vide infra). Keynes, however, by this definition of "voluntary" unemployment, declared that his own definition of unemployment (involuntary) differs from theirs (Viner, 1964, p. 236).

Moreover, Keynes's definition of full employment includes "frictional" and "voluntary" unemployment (Keynes, 1936, pp. 15-16). If "voluntary" unemployment is only considered according to Walras's definition (vide supra), then such a definition of full employment might have certain reasoning, because in this case each individual is either employed or unemployed by his own wishes. But Keynes also included "forced unemployment", hence such a definition of full employment is not only inconsistent with its practical definition (vide supra), but also creates a mystifying situation (vide infra). Therefore, we cannot agree with M. de Vroey's claim that Keynes considered two types of full employment using the supply curve of labour with the horizontal segment. What de Vroey calls the first full employment is equilibrium employment, since involuntary unemployment exists, as Vroey himself indicates (Vroey, 2004, pp.8-10).

### *Involuntary Unemployment*

Keynes began his definition of "involuntary unemployment" with the following statement:

*'Men are involuntarily unemployed if, in the event of a small rise in the price of wage-goods relatively to the money-wage, both the aggregate supply of labour willing to work for the current money-wage and the aggregate demand for it at that wage would be greater than the existing volume of employment'* (Keynes, 1936, p. 15).

Keynes understood that this definition of involuntary unemployment is very vague, so he clarified it further (Leijonhufvud, 1968, p. 94; 2000, p. 18):

*'An alternative, though equivalent, criterion is a situation in which aggregate employment is inelastic in response to an increase in the effective demand for its output'* (Leijonhufvud, 2000, p. 26).

He then added two simplified assumptions:

*'(1) That all unemployed resources are homogeneous and interchangeable in their efficiency to produce what is wanted; (2) That the factors of production entering into marginal cost are content with the same money-wage so long as there is a surplus of them unemployed. In this case, constant returns and a rigid wage-unit, as long as there is any unemployment' (Leijonhufvud, 2000, p. 295).*

Careful examination of Keynes's definition and clarifications of involuntary unemployment enable us to conclude that Keynes changed Walras's assumptions. Namely, Keynes assumed that the total supply function of labour is a weakly increasing function, and not strictly increasing (and decreasing) function, as Walras assumed. This means that such supply functions might be characterized by a horizontal segment. And secondly, as a result of the first assumptions, in the case of a certain magnitude of wage, there might be a number of magnitudes of quantities of labour. Therefore, in the equilibrium state there might be involuntary unemployment if the equilibrium point is located on the horizontal segment that does not include its boundary points (vide infra). So, Keynes stated that involuntary unemployment is characterized by the rigid-wage phenomenon, and consequently, allows describing the supply curve of labour with a horizontal segment. Moreover, he also hinted at measuring the magnitude of involuntary unemployment as the difference between the right boundary point of the segment and the equilibrium point of employment. Thus, in the absence of rigid wages, there is also no involuntary unemployment. Hence, Keynes assumed that involuntary unemployment may or may not occur. In Keynes's own words: 'Obviously, however, if the classical theory is only applicable to the case full employment, it is fallacious to apply it to the problems of involuntary unemployment – if there be such a thing (and who will deny it?)' (Keynes, 1936, p. 6). Keynes also claimed that "involuntary unemployment," as well as "voluntary unemployment", are equilibrium phenomena (Keynes, 1936, p. 28).

These assumptions, particularly (2), allowed post-Keynesian economists to define "involuntary unemployment" relatively clearly (Negishi, 1979, p. 27; Sachs & Larrain, 1993, p. 62).

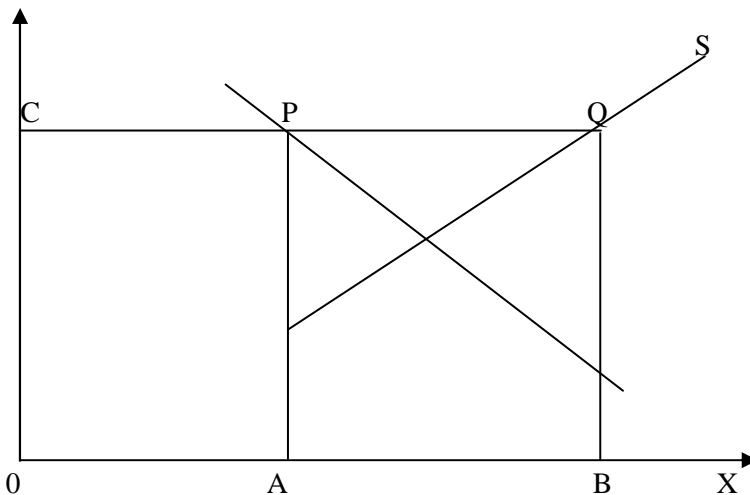
On the other hand, Lange was one of the first economists to define involuntary unemployment graphically, that is, close to its genuine meaning in economics literature. To gain an understanding of Lange's version, here is a long quotation from *Prices Flexibility and Employment*:

*“Involuntary unemployment” in the Keynesian sense is not an excess supply of labor, but an equilibrium position obtained by intersection of a demand and a supply curve, the supply curve of labor, however, being infinitely elastic over a wide range with respect to money wages, the point of intersection being to the left of the region where elasticity of supply of labor to money wages become finite. Thus “involuntary unemployment”, in the Keynesian sense, does not imply excess demand for cash balances, as well as for all other goods are supposed to be in equilibrium in the Keynesian theory. The difference is shown on the adjoining diagram (See Figure 2).*

*D is the demand curve and S is the supply curve of the factor. In our treatment “underemployment” is the excess supply AB (= PQ), while Keynes considers the line CQS as the supply curve, P an equilibrium point, and PQ (= AB) involuntary unemployment. Change in price (OC) appears in the Keynesian theory as a shift of the horizontal part (CQ) of the supply curve. As is easily seen, our treatment is translatable into Keynesian terms and*

*vice versa. The choice is merely a matter of convenience. It seems that our method ties up more easily with general price theory.” (Lange, 1944, p. 6).*

**Figure 2.** Lange’s Definition of Involuntary Unemployment



Source: Lange (1944, p. 6).

Lange correctly defined involuntary unemployment but, unfortunately, he identified it with total unemployment, which is only correct in one case (*vide infra*). Namely, by Lange’s definition “involuntary unemployment” only exists if the labor supply curve includes the horizontal segment (the part with rigid wages) (see Modigliani, 1944, p. 65) and the equilibrium point is located on this line, except at the borders. In other words, involun-

tary unemployment occurs if the employment equilibrium point is located to the left of the right border point of the horizontal segment and is determined as the difference between the latter and former equilibrium points. This means that "involuntary unemployment", if it exists, *is an equilibrium phenomenon*. By this definition of involuntary unemployment, Lange made a *very important contribution*. At the same time, he did not connect his definition to the size of the available labour. Namely, he did not clarify if the right border point can be identified with the size of available labour force, or if the latter is greater than the former, as might be understood from Lange's figure. Thus, Lange did not define "voluntary" unemployment or discuss "full" employment. Therefore, he created a situation in which it appears that involuntary and voluntary unemployment cannot co-exist. Surely, this cannot be so.

### *Two examples of controversial definitions of involuntary unemployment*

There are many controversial definitions of involuntary unemployment, but here we have chosen two examples because the major definitions are variations of these definitions.

#### *Patinkin's version of involuntary unemployment*

Patinkin rejected Lange's definition of Keynes's involuntary unemployment, claiming that:

*"... our interpretation does not tie the Keynesian theory of unemployment to any special form of the supply function for labor. In particular, it is independent of the all-too-frequent assumption that this theory presupposes a supply curve for labor as represented in figure XIV-1."* (Patinkin, 1965, p. 342).

The crucial characteristic of this curve is that it remains infinitely elastic at the prevailing-and presumed rigid-money wage rate  $\omega_0$  until the point  $N_0$ . Accordingly, writers who make use of this curve identify the maximum amount of employment that workers are to offer at the rate  $\omega_0$  with the level "full employment," and define involuntary unemployment as the difference between this level and the one actually existing in the economy, say  $N_1$ ' (Patinkin, 1965, p. 341).

In principle, this is the correct description of Lange's definition of involuntary unemployment, but two observations should be made (*vide supra*). Firstly, Lange did not consider "the maximum amount of employment" and "full employment". Secondly, in Lange's approach, involuntary unemployment is determined by the equilibrium point and not by "the one actually existing in the economy", as Patinkin claimed. He continued: 'If

the curve did not have this shape, but instead always rose (no matter how slowly), and if at every wage rate worker were always at the uniquely corresponding point upon the curve, then, by definition, no involuntary unemployment could ever exist in the system: workers would always be receiving as much employment as they desired at the prevailing wage rate' (Patinkin, 1965). There are two important points:

1. Involuntary unemployment exists only if the labor supply curve includes a horizontal segment, which is correct.
2. Conversely, if the labor supply curve "always rose (no matter how slowly)", then "workers would always be receiving as much employment as they desired at the prevailing wage rate", which is incorrect. Patinkin rejected Lange's "partial" definition of involuntary unemployment and tried to define it "generally" (see Boianovsky, 2006).

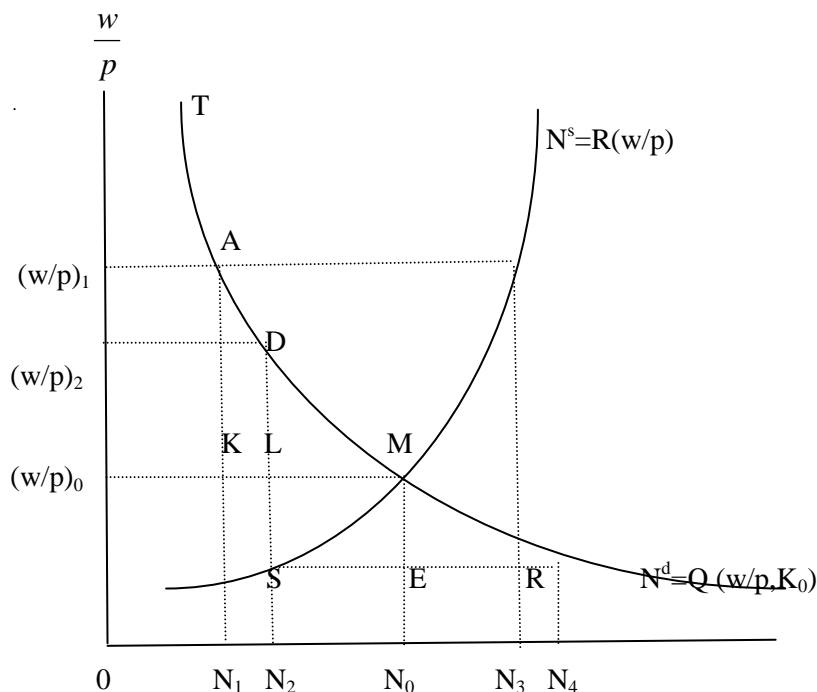
Let us start with Patinkin's definition of full employment: 'It follows that a state of general equilibrium in the economy as a whole, or even a state of partial equilibrium in the labor market, by itself, is *ipso facto* of full employment. It also follows that the bench mark of full employment is not an absolute constant, but something which itself varies with every change in the real wage rate or in the subjective determinants of the labor supply curve' (Patinkin, 1965, p. 315). Here, Patinkin has defined full employment as an equilibrium employment, which is not compatible either with Keynes's definition, which included voluntary unemployment into full employment, or with a practical definition by which full employment means that the whole available labor has to be employed.

Patinkin's definition of involuntary unemployment in its original form (Patinkin, 1965, pp. 314-315; see also Leontief, 1947) is:

*'The norm of reference to be used in defining involuntary unemployment is the supply curve of labor; . . . Hence as long as workers are "on their supply curve" – that is, as long as they succeed in selling all the labor they want to at the prevailing real wage rate – a state of full employment will be said to exist in the economy. It follows that a state of general equilibrium in the economy as a whole, or even a state of partial equilibrium in the labor market by itself, is ipso facto a state of full employment. It also follows that the bench mark of full employment is not an absolute constant, but something which itself varies with every change in the real wage rate or in the subjective or objective determinants of the supply curve. ... Conversely, if workers are not on this curve, they are acting involuntarily. Thus, if they are at the point A in Figure XIII-1 (see Figure 3) ..., involuntary employment to the extent  $N_3 - N_1$  exists. On the other*

hand, if they are at the point E, there exists involuntary unemployment to the extent  $N_0 - N_1^2$ .

**Figure 3.** Patinkin's definition of Involuntary Unemployment



Source: Patinkin (1965, p. 316).

So, Patinkin gave two different definitions of involuntary unemployment. The first definition is the disequilibrium position, which contradicts Keynes's important statement that involuntary unemployment is an equilibrium phenomenon; and, moreover, he ignored Lange's statement that "Underemployment, having been defined by us as excess supply of a factor of production, implies thus existence of excess demand somewhere else in the economy. This treatment of underemployment differs from the "involuntary unemployment" as defined by Lord Keynes' (Lange, 1944, p. 6, note 4); thus, Patinkin replaced Lange's "underemployment" with Keynes's "involuntary underemployment"; yet, according to Walras's approach it is

<sup>2</sup> In the origin ( $N_2$ ), but in the paper "Unemployment and Keynesian Supply Functions" Patinkin asserted 'involuntary unemployment (to the extent  $N_1 - N_2$ ); which are parallel with  $N_0 - N_2 - E. D.$ ), be said to exist in the system' (Patinkin, 1965, p. 369).

“forced unemployment” at the *minimum* wage (point A) (*vide supra*). The second definition is based on two different wages – equilibrium and disequilibrium; hence it is absurd (see also Patinkin, 1949, p. 369).

Patinkin also considered two additional concepts of involuntary underemployment in the spirit of the interpretation of Keynes’s macroeconomic theory. In this case, only one side of an economic phenomenon, either aggregate demand or aggregate supply, is dominant in the definition of involuntary underemployment. Patinkin asserted: ‘In other words, only the desires of demanders influence the determination of national income, while the desires of suppliers are completely ignored. We would then have as a measure of the extent of involuntary underemployment ( $U$ ) in the system

$$U = \eta - Y_0$$

That is, involuntary underemployment is measured by the difference between the level of national income in the norm reference,  $\eta$ , and the level actually prevailing,  $Y_0$ ’ (Patinkin, 1949, p. 371). On the other hand, he continued: “In brief, the level of national income desired by spenders ( $Y_7$ ) is greater than that desired by suppliers. If the level of national income is actually  $Y_7$ , then a measure of the extent to which suppliers are over-employed is the negative quantity

$$U = \eta - Y_7$$

That is, involuntary over-employment is measured by the difference between the level of national income in the norm of reference, and the level actually prevailing’ (Patinkin, 1949, p. 374; see also Trevithick, 1992, pp. 108-109). It must be stressed that what Patinkin defined as involuntary over-employment is equivalent to the *forced unsatisfied demand for factor (labour)* according to Walras’s approach (*vide supra*).

To sum up, to define involuntary unemployment correctly requires the correct definition of full employment.<sup>3</sup> What Patinkin calls “involuntary unemployment” is underemployment according to Lange’s determination and “forced unemployment” according to Walras’s approach; and what Patinkin calls “involuntary over-employment” is “forced unsatisfied de-

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<sup>3</sup> It is necessary to stress that Klein was the first, in our opinion, who defined “unemployment” similarly to Patinkin (see Klein, 1952, pp. 80-87). We decided to use Patinkin’s version because it is much more comprehensive and is used in the majority of modern literature (or textbooks) for Macroeconomics (for example see Chick, 1984; Taylor, 1987; Sachs & Larrain, 1993).



mand of factor (labour)" at the *maximum* wage according to Walras's approach.

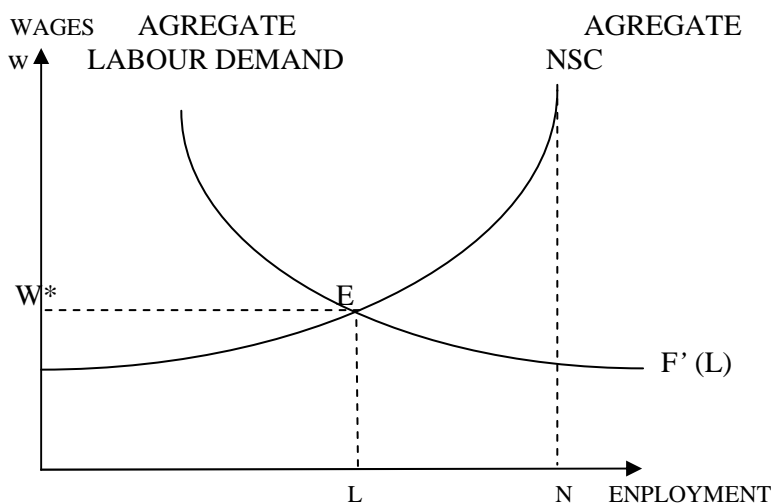
### Shapiro and Stiglitz's version of involuntary unemployment

Shapiro and Stiglitz claimed (see Figure 4) that

*'The equilibrium is depicted in Figure 2 (see Figure 4 – E.D.). It is important to understand the forces that cause E to be an equilibrium. From the firm's point of view, there is no point in raising wages, since workers are providing effort and the firm can get all the labor it wants at  $w^*$ . Lowering wages, on the other hand, would induce shirking and be a losing idea.*

*From the worker's point of view, unemployment is involuntary: those without jobs would be happy to work at  $w^*$  or lower but cannot make a credible promise not to shirk at such wages' (Shapiro & Stiglitz, 1991, p. 131).*

**Figure 4.** Equilibrium Employment



Source: Shapiro & Stiglitz (1991, p. 132).

The first statement is correct, in our view, but not the second one. Thus, if the supply curves of labour are determined on the basis of labour supply of individuals, then 'those without jobs' are in that state because of the labor conditions they offer, or by their own choice, and due to market forces. But when they discover that they are out of work, they might decide to change the labor conditions they offer. However, in such cases, there would

be a new equilibrium process, and, hence, a new equilibrium point would be established. Thus, it is incorrect to call it involuntary unemployment; it is the opposite, it is voluntary (*vide infra*).

### **The Comprehensive Approach to Unemployment**

Based on the above, we can formulate a comprehensive theory of unemployment. According to Walras's approach, kinds of unemployment depend on the type of economy under discussion, namely: is the economy characterized by free competition, where market forces govern the activities of the economy; or are there external forces (government, monopoly and so on) which intervene in the activities of the economy? Walras shows that in the former case, in the framework of his assumptions, there is voluntary unemployment, and in the latter case there is forced unemployment. Keynes, unfortunately, combined these two types of unemployment and called it "voluntary" and introduced an additional type of unemployment – involuntary, which, like voluntary unemployment is also derived from free competition, but with a different assumption. This paper discusses only the approach of pure theory, so the term "voluntary" is used in Walras's sense.

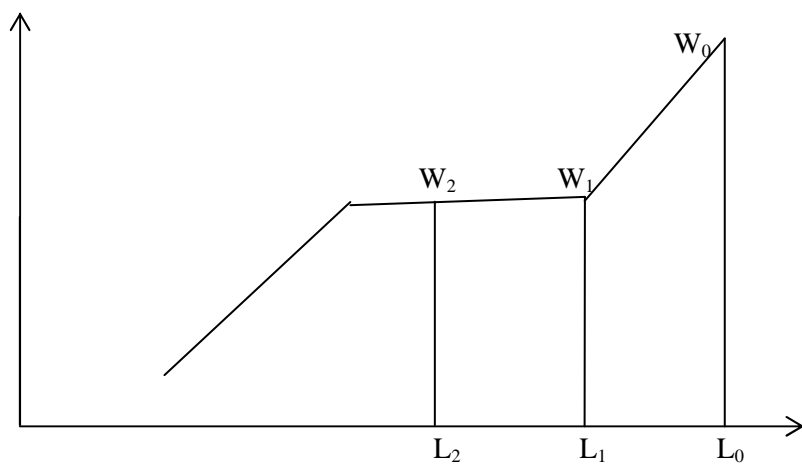
Several fundamental statements provide the general framework for the definition of unemployment. First, it is an equilibrium phenomenon, i.e., unemployment requires a definition of the equilibrium situation. This is established when an effective supply of a factor (labour), which is obtained by the supply curve of factor (labour), equals the labour demand, which is obtained either from the labour demand curve (Keynes-Lange) or the equation system, based on the demand for consumption goods (Walras). Second, if the quantity of the equilibrium point is less than the available quantity of the factor, then there is either involuntary unemployment (Keynes-Lange) or voluntary unemployment (Walras). But if the equilibrium point is equal to the boundary point of the supply curve, which is identified with available quantity, then there is neither involuntary unemployment nor voluntary unemployment, but there is full employment.

In Walras's version, unemployment (voluntary) is obtained when the supply curve is strongly increasing and its right boundary point is identified with the available quantity of a factor. This means that in Walras's approach, for every wage, there is only one effective supply; hence equilibrium point is established, if it exists, when effective demand is met by effective supply.

Lange's version of Keynes's involuntary unemployment is obtained when the factor supply curve has a horizontal segment. Namely, the supply curve is a weakly increasing curve. In other words, in this case, for one wage of labour, there are several quantities of supply, but there might be one equilibrium point; therefore, there might be involuntarily unemployment and its magnitude is the difference between the right boundary point and equilibrium point. Also, in this horizontal segment, the elasticity remains infinite.<sup>4</sup>

Thus, as concluded above, Walras defined voluntary unemployment and linked it to full employment, but he did not and could not consider involuntary unemployment. On the other hand, Lange defined Keynes's involuntary unemployment, but he did not connect it with full employment and voluntary unemployment. Combining these two definitions of unemployment provides the comprehensive approach to unemployment. Therefore, for this purpose, assuming that the supply curve should include a non-increasing segment and the right boundary point of the curve is identified with the factor's available quantity (see Figure 5).

**Figure 5.** The Comprehensive Approach to Unemployment



Source: own work.

<sup>4</sup> Hence we cannot agree with Darity and Young, who recently suggested that 'His definition would have been the following: involuntary unemployment exists if the elasticity of employment (and output) is greater than zero with respect to an increase in aggregate demand' (Darity & Young, 1997, p. 26), because if elasticity is greater than zero, then there might be only voluntary unemployment.

If the equilibrium is at point  $W_0$  (available quantity), then there is neither involuntary unemployment nor involuntary unemployment; that is, there is full employment. If the equilibrium point is at  $W_1$ , then there is only voluntary unemployment, which is determined as the difference between  $L_0$  and  $L_1$ . If the equilibrium point is at  $W_2$ , then both voluntary unemployment and involuntary unemployment exist. The former is determined, as in the previous case, but the involuntary unemployment is the difference between  $L_1$  and  $L_2$ . The total unemployment is the summation of these two kinds of unemployment, i.e., it is determined as  $(L_0 - L_1) + (L_1 - L_2) = (L_0 - L_2)$ . Finally, let us consider two extreme forms of the supply curve: (1) If the supply curve is only a horizontal line, then there is either full employment if the equilibrium point is at the right boundary, or only involuntary unemployment, which is obtained as the difference between the boundary (available quantity) and equilibrium points (equilibrium employment). (2) If the supply curve is only a vertical line, there is full employment in all cases.

To sum up, in the framework of free competition, the kind of unemployment, if it exists, depends on the character of assumptions, i.e., on the form of the supply curve of labour. Generally, there are four possible cases: full employment, voluntary unemployment only, involuntary unemployment only, and, finally, both voluntary and involuntary unemployment.

### **Unemployment and Textbook of Macroeconomics**

The problems of unemployment may be cured by a new generation of economists – if they understand these problems. Unfortunately, Macroeconomics textbooks do not facilitate this, because the definition of Unemployment is so confusing and unclear that it is impossible to learn anything. To illustrate our above statement, we start with a discussion of the definition of voluntary and involuntary unemployment in macroeconomics textbooks. It is amazingly difficult to find textbooks where voluntary and involuntary unemployment are considered, and if they are considered then it is done in a very confusing form (Lipsey *et al.*, 1990). Mankiw and Krugman (2009), two eminent new-Keynesians, who are leading supporters and propagandists of the “Keynesian Revolution”, never mention the term “involuntary unemployment” in their textbooks. But, it is Keynes’ truly unique contribution!

Sachs and Larrain (1993), correctly define involuntary unemployment in principle: ‘The notion of involuntary unemployment is that some people

who are willing to work for the wage received by other workers of comparable ability cannot do so' (Sachs & Larrain, 1993, p. 62). But, following this, it is not clear how its magnitude is calculated. If we take into account the definition that the unemployment rate 'measures the number of people who are without a job and are actively, searching for a job, as a proportion of the total labor force' (Sachs & Larrain, 1993, p. 5), this means that to calculate any unemployment, two sets of data are required: the total labor force and the amount of employed people. The authors forgot about this statement when the voluntary and involuntary unemployment was discussed. Moreover, they asserted that 'There is, in fact no standard accepted procedure to estimate the natural rate of unemployment, and leads to disagreements about methods and magnitudes' (Sachs & Larrain, 1993, p. 506).

This is not accurate, because the natural rate of unemployment is calculated according to the equilibrium state: 'the "natural" rate of unemployment as the rate which corresponds to macroeconomic equilibrium, in which expected inflation is equal to its actual level' (Sachs & Larrain, 1993, p. 496). The problem is how to achieve macroeconomic equilibrium.

On the other hand, Krugman and Wells define the natural unemployment rate as '*The natural rate of unemployment* is the normal unemployment rate around which the actual unemployment rate fluctuates. It is the rate of unemployment that arises from the effects of frictional plus structural unemployment' (Krugman & Wells, 2009, p. 210). When "*Frictional unemployment* is unemployment due to the time workers spend in job search" (Krugman & Wells, 2009, p. 207) and '*Structural unemployment* is unemployment that results when there are more people seeking jobs in a labor market than there are jobs available at the current wage rate' (Krugman & Wells, 2009, p. 208), where did the total labor force disappear? What about Macroeconomics equilibrium?

## Conclusions

In this paper it was shown that Keynes's involuntary unemployment derived from Walras's voluntary unemployment by means of changing the characteristic of the aggregate supply curve (function) of labour.

It was shown that the kind of unemployment depends on the character of the original aggregate supply curve of labour. On the one hand, when the original aggregate supply function is a strongly increasing function, as in Walras's approach, there might be only voluntary unemployment, and its magnitude is the difference between the available quantity of labour and

the equilibrium point. So, in such a case, an individual is unemployed according to his own wishes, because an equilibrium wage defined by free competition is less than the wage which he requires. But, at the same time, it is incorrect to confuse Walras's voluntary unemployment with leisure. Moreover, unfortunately, some modern economists mistook Walras's voluntary unemployment for "involuntary unemployment".

According to Walras's approach, "forced unemployment" might also be considered, which is the result of an intervention of external forces (government, monopoly, trade unions, and so on) into the market, and therefore, it is a disequilibrium phenomenon. Unfortunately, Keynes combined Walras's two types of unemployment, voluntary and forced, and called them "voluntary" unemployment. On the other hand, some economists interpreted Walras's forced unemployment as "involuntary unemployment".

On the other hand, if the supply curve of labour is a weakly increasing one, which means that the supply function may have a horizontal segment, then there might be involuntary unemployment if the equilibrium point is located between boundary points of the horizontal segment, and the magnitude of involuntary unemployment is the difference between the right boundary point of the horizontal segment and an equilibrium point. So, in such a case, an individual is involuntarily unemployed against his own wishes, because an equilibrium wage defined by free competition is equal to the wage which he requires.

The comprehensive approach to employment was presented at the end of the paper. It was shown that the existence of involuntary unemployment depends on the character of the original aggregate supply curve of labour, and is connected with the existence of voluntary unemployment and full employment. Involuntary unemployment might not exist if there is either full employment or only voluntary unemployment, or it might exist alone or together with voluntary unemployment. Finally, in reality there are many types of labour, hence a suggested comprehensive approach of employment might be a useful tool for policy-making and the planning of economics.

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