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Wage Inequality in its Relation with Macroeconomic Stability: A Synergetic Approach

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**WAGE INEQUALITY IN ITS RELATION WITH
MACROECONOMIC STABILITY:
A SYNERGETIC APPROACH**

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Wage Inequality in its Relation with Macroeconomic Stability: A Synergetic Approach

JEL Classification: *B4; D63; E24; J2; J31*

Keywords: *wage inequality; unemployment; instability; evolutionary economics, synergistic effect*

Abstract

Research background: The authors' researches in the field of economic equilibrium, labour market stability and working motivation; the synergetic paradigm; the research literature and statistical data dealing with wage inequality and unemployment.

Purpose of the article: To present a dispersion (probabilistic) approach in using neoclassic demand and supply curves analysis and, thus, to propose a new definition of the equilibrium problem, which is closer to evolutionary paradigm; with help of the D-S curves, to prove the connection between degree of wage inequality and the general level of unemployment; to demonstrate two types of extreme macroeconomic instability in their relation with the character of wage inequality, and to regard them from the standpoint of the synergetic conception.

Methodology/methods: Induction and deduction reasoning, analysis and synthesis, the method of analogy, content analysis of relevant literature, mathematical methods, interdisciplinary approach, the synthesis of orthodox (neoclassical) and heterodox (evolutionary) economics.

Findings & Value added: Both situations – very low and very high wage inequality – are related with extreme macroeconomic instability. The first situation can be related not only with general poverty and homogenous, low skilled workforce, but, primarily, with absence of evolutionary change. A very high wage inequality can be related with inflexible labour markets, the relatively low level of social mobility

and weak social cohesion. In the article, these two situations are compared with two types of disorder in the synergetic conception. With help of the curves of demand and supply, we demonstrate the action of macroeconomic synergistic effect, which is accompanied by economic growth, decreasing unemployment and the wage levelling. Our approach confirms that in a dynamic economy the actual level of employment is lower than potential one. Moreover, this approach can be used for diminishing the theoretical gap between such opposing interpretation of unemployment as neoclassical and Keynesian.

Introduction

The problem of wage inequality is one step away from the problem of income inequality. The latter, in its turn, seems to be eternal and omnipresent as the biblical god-father: it is one of the key topics in endless discussions of scholars, philosophers and moralists, it is used by politicians and preachers in their pathetic speeches, and it sounds in revolutionary hymns as well as during the small disputes of common men in public transport. We are not moralists, but as economists we are interested in the issue of economic inequality in its connection with the viability of the socio-economic organism. So the goal of this article deals with the impact of income, i.e. wage, distribution on macroeconomic stability.

During the last decades preceded the Great Recession of 2007-2009, many OECD have been characterised by increasing wage inequalities (Damiani and al., 2011, p. 163). So it is no coincidence that some economists speak about the contribution of growing income inequality in USA to the Great Recession (Krugman, 2014b). For now there are a very large number of publications dedicated to both the statistical data analysis and the theoretical explanation of the increase in wage inequality since the late 1970s. Among such explanations are the “skill-biased technological change” (SBTC) hypothesis (see e.g. Katz & Murphy, 1992; Autor et al., 1998), the theories that emphasize the role human capital, educational systems and educational inequality (Krueger & Lindahl, 2001), the role of institutions (Checchi & García-Peñalosa, 2008; García-Peñalosa, 2010), the rent sharing theory (Blanchflower et al., 1996), and others (Damiani et al., 2011; Schmitt et al., 2013).

In this article we are going to consider wage inequality in its relation with such an aspect of macroeconomic instability as unemployment. As Nobel laureate Paul Krugman noted, “jobs and inequality are closely linked if not identical issues” (Krugman, 2014a). The **purpose of the article** is to present a dispersion (probabilistic) approach in using neoclassic demand and supply curves analysis and, thus, to propose a new definition of the

equilibrium problem, which is closer to evolutionary paradigm; with help of the curves of demand and supply, to prove the connection between degree of wage inequality and the general level of unemployment; to demonstrate two types of extreme macroeconomic instability in their relation with the character of wage inequality, and to regard them from the standpoint of the synergetic conception.

Research Methodology

The article uses the methods such as induction and deduction reasoning, analysis and synthesis, the method of analogy, content analysis of relevant literature – both the statistical data analysis and the theoretical one, mathematical methods, interdisciplinary approach, the synthesis of orthodox (neoclassic) and heterodox (evolutionary) economics.

Market equilibrium and price dispersion

Traditionally, in modern economics the market equilibrium between supply and demand is represented by corresponding curves. The demand curve is the graph depicting the inverse relationship between the price of a certain commodity and the amount of it that consumers are willing and able to purchase at that given price. Analogically the supply curve represents the direct relationship, which must exist in competitive markets, between the price of a certain commodity and the amount of it that sellers are willing and able to offer. The point of intersection of these curves defines the equilibrium price and the equilibrium quantity of that market.

This approach to the estimation of market equilibrium originates from neoclassical conceptions, which connected slopes of demand and supply curves with the law of diminishing marginal utility and the law of increasing marginal costs, respectively. Like the neoclassical tradition we would like to use the curves of demand and supply. But in contrast, here the market equilibrium is regarded not as a dead point of equilibrium but as a price dispersion of a definite type.

In our opinion, the curve of demand describes not only the dependence where a definite quantity of demand corresponds to the single price. It is evident that a consumer agrees to buy a certain commodity on the level “ q_1 ” at the price not exceeding the level “ p_1 ”. Therefore we can suppose that a score “ p_1 ”, corresponding to “ q_1 ” in Figure 1, is the limit of a certain price set, while the demand graph represents the upper frontier of the cloud of consumers’ price preferences. That is, if a demand curve as a function may be defined by a formula:

$$D = Fd(p),$$

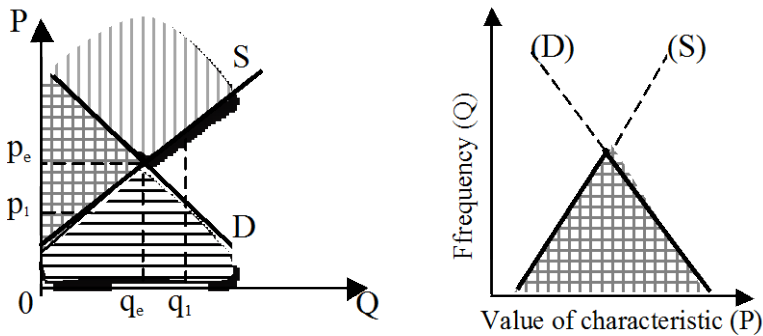
the set of consumers' price preferences may be defined as the antiderivative of the demand function:

$$Q_d = \int Fd(p)dp.$$

We may apply an analogical principle in relation to the supply curve. We can suppose that the sphere of sellers' price preferences, including the supply curve, also contains some space over it. So we may regard the supply curve as a bottom frontier of the cloud of sellers' price preferences and define this by a formula:

$$Q_s = \int Fs(p)dp.$$

Figure 1. Market equilibrium and price dispersion



Source: (Voznaya, 2005).

The intersection of these two sets of price preferences reflects not only the equilibrium price point as the curves of supply and demand do, but also the price dispersion (this variation is marked with hatching in Figure 2). Here, the demand curve describes the upper frontier of the buyers' price preferences, and the supply curve describes the lower frontier of the sellers' price preferences. So we are dealing with price dispersion where the equilibrium price "p_e" reflects the most frequent (modal) price level (Figure 1, on the right). Normal Gaussian distribution may depict the ideal situation. But the more elastic position of demand and supply curves, the less price variation outlined by these curves is.

The step to evolutionary economics

According to our dispersion approach, it is not correct to define the market equilibrium as the point (of intersection of the curves of demand and supply) but as a structure of certain type. From this point of view, equilibrium means such a functioning of market, which ensures its (market) survival. This also means that we should not associate the market with mechanical systems, comparing the demand and supply with the types of mechanical forces, but rather with living systems (Vozna, 2016). So, our approach having based on the neoclassical curves of supply and demand, nevertheless is closer to evolutionary economics, whereas the research programme of the latter is based not on mechanistic analogies but on biological ones (Horodecka, 2017).

Unlike neoclassical economics that defines different optimum points (as the point of market equilibrium, a consumer optimum, etc.), evolutionary economics takes also into account heterogeneity and structures. Similarly with synergetics, it operates with terms such as evolution, self-organized change, self-transformation and dissipative structures. The dynamic process and variety are key characteristics of evolutionary theory (Nelson & Winter, 1982).

Wage dispersion, from the evolutionary point of view, should be considered as an objective characteristic of dynamic process and technological change. In its turn, the very low wage dispersion (on the macro- level) can correspond to the absence of technological change and to highly elastic supply and demand on the labour market. In this last situation we are dealing with comparatively homogeneous workforce, where one worker can be easily substituted for another worker.

Between Scylla and Charybdis: Two types of disorder

Historical examples do not say in favour of communist levelling, nor in favour of excessive economic polarization. For example, the Russian-American sociologist Pitirim Sorokin (1947), on the basis of his historical analysis of different social and political systems, concluded that a human society is always politically, socially and economically stratified, but every society always deals with the struggle between the forces of alignment and the forces of stratification: when the oscillation of the stratification profile in definite direction becomes too strong and sharp, the opposing forces increase their pressure in different ways, and a stratification profile returns to an equilibrium point.

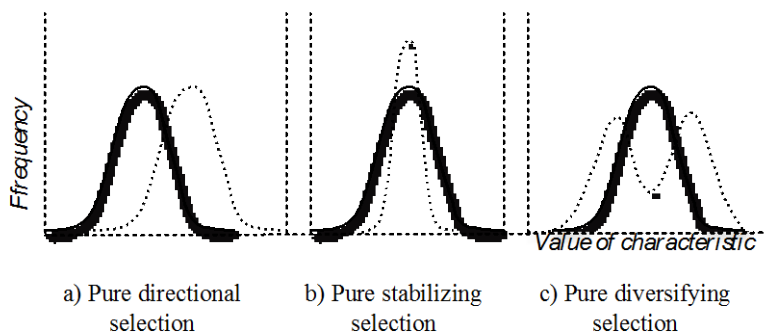
So we can conclude that the both cases – the excessively (economically) homogeneous society and the excessively polarized one – are related with instability. These two poles of economic stratification can be compared

with some synergetic and evolutionary conceptions' theses concerning the processes of disordering and selection.

I. Prigogine and G. Nicolis, in their book *Exploring Complexity*, indicated at least two types of disordering. The authors wrote that order looks like a kind of compromise between two antagonistic factors. The first factor is a non-linear process like a chemical one, which continuously and uncoordinatedly sends innovative signals in the form of fluctuations. Another factor resembles the process of transportation because it catches, passes, and stabilizes these signals. The violation of the delicate balance between these two factors leads to the qualitative change of a state that occurs in a system. One of them is a chaotic state in which every element of a system acts independently. In another situation, we deal with a homeostatic, frozen state, which is characterized by complete homogeneity and in which all fluctuations are suppressed. Complexity, therefore, is constricted from both sides by two types of disorder (Nicolis & Prigogine, 1989).

It makes sense to compare these two types of disorder marked by Nicolis and Prigogine, with the types of selection defined by evolutionary theory. There are the three types of selection – directional selection, stabilizing selection and diversifying selection. They are shown in Figure 2, where the solid lines represent the pre-selection distribution of the characteristic, and the dashed lines represent the distribution of the characteristic after selection. The directional evolution moves the mean in a particular direction. The stabilizing evolution tends to remove any change away from the favoured value of a characteristic, whereas diversifying evolution promotes the coexistence of different types of behaviour within a population and may lead to the emergence of two separate populations (Andersen & Holm, 2014).

Figure 2. Three types of pure selection



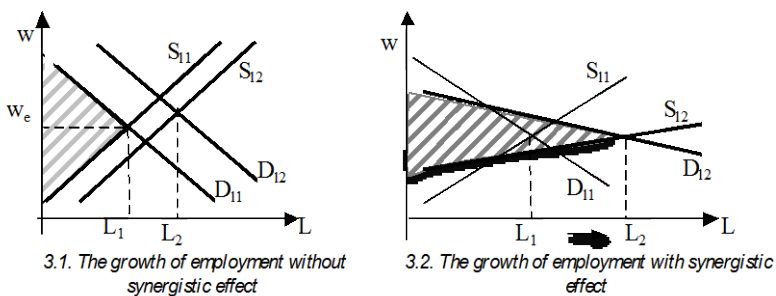
Source: (Andersen & Holm, 2014)

In the point, where the stabilizing selection “removes any change away” and “comes to a halt”, it resembles the type of disorder in description of Nicolis and Prigogine, where we are dealing with a homeostatic, frozen state, in which all fluctuations are suppressed. The diversifying evolution resembles the second type of disorder that is characterized as a chaotic state in which every element of a system acts independently. In general, we can compare the society with complete economic equality and the economically polarized society with these two types of disorder (selection) respectively. It means that socio-economic systems, approaching to one of these poles, are approaching to the high level of uncertainty and instability (in the sense of their further evolution and survival).

Inequality and unemployment from the synergistic point of view

Synergistic effect is an effect arising as a result of interaction between two or more elements (of a system) that produces an effect greater than the sum of their individual effects. The synergistic factor of economic growth we interpret here as such an increase of openness and, thus, interaction among economic system components (sectors, regions), which, on the one hand, leads to economic growth, and, on the other hand, is followed by the reduction of differences between these components in prices, wage rates, profit rates, productivity and so on.

Figure 3. The synergistic effect in the labour market



Source: Own.

In Figure 3, the synergistic effect for the labour market is demonstrated. The curves of supply and demand outline the dispersion (set) of wages. If the hatched area in Figure 3 is constant, the removal of the curves of supply and demand in the more elastic position shifts the equilibrium point on the right, i.e., it is accompanied by the growth of employment. The removal of

the curves in a less elastic position means the shift of equilibrium point on the left, i.e., the reduction of equilibrium employment level. In other words, the excessive growth of wage differentiation (*ceteris paribus*) decreases the general level of employment, whereas the reduction of this differentiation has to increase the general level employment.

1. Our approach reveals the relationship between rates of unemployment and wage inequality. Our theoretical conclusion is coherent with some data analysis researches. For example, Checchi and García-Peñalosa (2008), on the basis of deep data analysis, made conclusions about the positive direct correlation between unemployment and inequality, and about the evidence of a trade-off between unemployment and income equality; according to their calculations, an increase in unemployment of 1 percentage point is associated with an increase in Gini of 1 point.

2. In Figure 3.2, the maximal level of employment can be reached if to shift the curves of supply and demand on the right, in the maximal elastic position. However, in this point we have the zero wage dispersion and, thus, the situation when evolution comes to halt (look above). So, our model is coherent with the fact, that under conditions of dynamic (evolutionary) economy the actual level of employment should be lower than potential one.

3. We can explain the synergistic effect for labour market from both the technological and institutional points of view. If the high wage inequality is the result of differences in productivity, it can be caused by low technological synergy related with the weak diffusion of innovations. As for institutions, we can consider the phenomenon of social cohesion, whereas less equal societies tend to be less cohesive.

4. As the symptoms of the weakening of the synergistic effect in labour markets we can take into consideration the tendencies of the decreasing role of trade unions (see Checchi & García-Peñalosa, 2008) and the increasing CEO earnings during last decades. So, Piketty (2014), argues that high-level executives set their own pay, constrained by social norms rather than any sort of market discipline; he attributes skyrocketing pay for a CEO (during last decades) to an erosion of these norms (Krugman, 2014a).

5. Whereas our approach is based on the principle of heterogeneity, it can be considered as the attempt to harmonize so opposing theories of unemployment as neoclassical and Keynesian.

Conclusions

The presented dispersion (probabilistic) approach in using neoclassic demand and supply curves proposes a new definition of the equilibrium problem, which is closer to evolutionary and synergetic paradigms. So our approach should be regarded as the attempt of the synthesis of orthodox (neoclassic) and heterodox (evolutionary) economics.

With help of the curves of demand and supply, and using the dispersion (probabilistic) approach to analysis of market equilibrium, it is possible to prove the connection between degree of wage inequality and the general level of unemployment.

Both situations – the very low wage inequality and the very high wage inequality – are related with low macroeconomic stability, and also they can be compared with the two types of disorder in the synergetic conception.

In summary, our approach confirms the fact, that under conditions of dynamic economy the actual level of employment is lower than potential one. Moreover, this approach can be used for diminishing the theoretical gap between such opposing interpretation of unemployment as neoclassical and Keynesian.

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