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**THE CYCLICAL FLUCTUATION TRANSFER MECHANISM BY
MEANS OF PRODUCTION FACTOR MEASUREMENT**

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Abstract

The publication justifies the appearance of cyclic processes in the economic environment occurring under the influence of changes in the correlation between production factors. Conclusions as to the impact of the change in the production factor structure on the economic development dynamics are drawn based on the performed classification of views on the reasons of economic crises expressed by various economic currents, such as: the German historical school, Marxism, Keynesianism and others. The authors separate monetary and non-monetary factors of overaccumulation as reasons of the existence of cyclical behaviour and justify their influence on the economic crisis origination. An economic cycle is viewed in relation to the interaction between production factors and industrial and financial capitals. The research brings technologies into sharp focus. Being developed so rapidly, they take the form of shocks. Technologic shocks are sudden fluctuations of the marginal productivity and cost of production factors. We assume that shocks adequately explain positive economic activity deviations. According to such paradigm suggesting that the change in the cycle phases is based on technologies, which are currently undergoing major development, it may be assumed that further economic development dynamics will depend on the stability of functioning of IT infrastructure. The results of this article may well be used by companies planning incorporation of foreign representative offices and choosing production factors stipulating operational cost cutting as well as credit subdivisions of banks analyzing prospects of the branch of a corporate borrower applying to the financial institution for a loan.

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Keywords: Production factors, economic cycle, rate of return, consumption, overaccumulation.



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1. Introduction

A significant number of research papers studying cyclic economic processes describe the impact of changes in industrial production on the economic dynamics in general. While upholding this position, we also believe that high elasticity of credit resource supply and the growing role of technology factors in the digital economy sphere have to be taken into account at research of the matter at hand. We refer monetary factors to passive conditions applied by default. However, we do not intend to set aside the mechanism of influence of financial capital on an economic crisis and will duly review this aspect. Some theoretical concepts explain the cyclic process dynamics by the origination and development of technological production methods. This article shows how rapid development of technologies transforms in the form of so-called shocks affecting production processes and the economic dynamics in general.

2. Problem Statement

The aim of the research is characteristics of the process of cyclic transformations in the economic environment taking place under the influence of transformations of the production factor structure. The article also pursues the aim of showing significance of the conclusions to extrapolate the main provisions of the long wave theory to the modern macroeconomic performance. Another set aim is to study the issue of the influence of continuing changes in the correlation of production factors resulting from regular renewal of constant capital elements and steady growth of the value of variable capital elements in the form of an increasing level of qualification, salary on the transfer to the next economic cycle phase.

3. Research Questions

Cyclic processes in the economy depend on the change in the structure of production factors and the existing channels for spreading of such transformations between national economies. One of the questions of the research is identification of the reasons for the transformation of production factors. Another question is identification of channels for international spreading of such changes.

4. Purpose of the Study

The purpose of the study is research of the cyclical fluctuation transfer mechanism by means of production factor measurement. Processes of transformations of production factors have to be reviewed to achieve the set aim. Apart from that, special attention has to be paid to the definition of the mechanism of a modern economic cycle since running of the phases of such cycle is increasingly based on the prevailing concept of the technological development in a specific society.

5. Research Methods

The following methods are used in the article: a historical one to study the views on the nature of cyclic processes expressed by representatives of various economic schools and to identify the main reasons for economic crisis origination; a systemic one to group the main cyclical behaviour appearance

factors. The method of analysis and synthesis are also used. Expert opinions of the world's leading scientists are considered.

6. Findings

We have arrived at the following conclusions as a result of the examination of the essence of cyclic process mechanisms, which have been of interest to scientists on various economic science development stages. Excess of production volumes over the consumption level in the national economy can be singled out among the reasons for overproduction crises. For example, according to Sismondi (2018), the internal market is narrowing and the economy can be developed only by means of external markets. However, in modern conditions, this problem cannot be solved by reference to the world market, as its potential represented by effective demand is limited. Thus, production exceeds demand.

Some researchers believe that the reason for crises is under consumption by laborers. This idea was developed inter alia by Marx (2010) who pointed out that a crisis process was inevitable manifestation of the social nature of capital. The capitalist system can neither exist nor develop without crises: the cyclic process in itself is a trait of the distribution and production sector, and the reason for a crisis lies in overaccumulation of industrial capital. This triggers underutilization of the productive capacity of enterprises. The situation where product supply gets stably higher than demand leads to a sales crisis. Some scientists support the idea that economic dynamics has rather long development stages called waves, which follow each other under the influence of changing technological paradigms among other factors. While studying the issues of the appearance and duration of long waves in the economy, it is worth pointing out that Marxists determined circumstantially the existence of long-lasting fluctuations before N.D. Kondratyev by stating that mass renewal of a part of fixed capital occurs within the terms exceeding the duration of a common economic cycle (Grinin, Devezas, & Korotayev, 2016). For example, the renewal period of industrial capital objects and production infrastructure elements such as railways is 20-50 years. De Wolff also believed that decrease in the rate of return resulted in shortening of the duration of long fluctuations and acceleration of crises, which might lead to capital collapse.

One may accept basic provisions of Marxists in the cyclic development sphere and single out the reasons for reduction of the capital structure: employment of a considerable number of labourers, rapid development of technological innovations facilitating the creation and use of capital saving equipment, i.e. the cost of such equipment in relation to the cost of workforce is decreasing when workforce productivity exceeds the capital-labor ratio (Pavlatos & Kostakis, 2018).

The capital structure can also grow as a result of the use of labor-saving technologies. The capital structure dynamics is cyclic: the appearance of new technologies makes the accumulation of capital invested in production means quicker than the salary growth. A scientific and technological revolution is taking place at the same time leading to cheapening of production means, the growth rate of human labour productivity is ahead of the growth rate of fixed capital productivity. There is a belief that in some conditions significant growth of the rate of return does not stimulate entrepreneurs to introduce any technological innovations in the production process. A decrease in the rate of return pushes towards technological innovations as the only way to overcome reduction in the rate of return. On the economic upturn stages, the capital structure should grow due to the increase in investments and fixed assets, and

the rate of return should decrease. Such situation may be observed by the end of the economic growth phase (Fotini, 2019). In the beginning of the growth phase, shortly after a crisis, there is a large number of unemployed and the economic growth will be followed by the decrease in the capital structure triggered by engagement of the unemployed. At the end of the depression phase when there appears new machinery able to manufacture a new product, the consumer market as well as consumer demand are underdeveloped and new production is doomed to overproduction, which can deepen the crisis. Such conditions raise the question of the rationale for the introduction of new technologies in the production process (Gutowski, 2018). Some scientists have analyzed the desire of entrepreneurs to wait the full period of payback of the made investments and used capital to receive the maximum profit possible. In such case, entrepreneurs will not introduce any innovative technologies or methods. However, competitors may apply them. So entrepreneurs should introduce new technologies not waiting the full payback period, losing the possibility to receive the maximum profit. Such cases are associated with significant risk. The latest option may be the most attractive if the transfer from the old economic structure to the new one is facilitated by the deployment of efficient development institutions.

Dutch economists has described the cyclic process mechanism as follows: expanding, the market reaches the borders of technological development and gets oversaturated with end products. Raw material resources are growing scarce, their prices and prices in the industry increase, however, the prices of raw material resources cannot be exceeded as the market is oversaturated with end products, thus the profit and salary get reduced resulting in the drop in demand followed by the drop in production.

Kondratyev (2002) explained the shift of long waves by the fixed asset renewal period. He singled out specific equilibrium types and corresponding cycles of different duration: the first-order equilibrium occurs between demand and supply, any disturbance of such equilibrium results in commodity stock cycles lasting for 3-3.5 years; the second-order equilibrium is characterized with production price formation as a result of inter-industry flow of capital to equipment – medium-term cycles; the third-order equilibrium stipulates “fundamental capital goods” (industrial buildings, objects of infrastructure, qualified workforce servicing this technological production means). The fundamental capital goods need to be balanced with production factors. Any loss of this kind of balance, namely the balance between the total capital value and labor resources may trigger the origination of “large business environment cycles”. The endogenous mechanism of the turning points of the cycle may be described by studying the loan capital category. High cost of credit resources (high interest rate) is the basis of the upper turning point of the cycle, while the lower turning point is explained by low interest rate.

Overaccumulation of capital and decrease in the rate of return have been studied by other scientists as well, in particular, by French economists which linked long-term cycles (45-60 years) with fluctuations in the workforce number caused by uneven population growth. French economist Fontaine has also taken into account the qualification and education of labourers. Moreover, he has made an attempt at the development of a capital structure formula new for his time, “saving” the capital from dropping: $C/(V+m)$.

Pecas, Ribeiro, and Henriques (2014) has singled out monetary and non-monetary factors of overaccumulation as reasons of cyclical behavior. He has observed fluctuations in three ratios: employment dynamics; volumes of actually consumed income including the volume of consumed

imported goods; amount of actually produced income. Profit and loss are not fundamental economic cycle criteria. Lengthy and significant reduction in production volumes, actual income, employment level may be explained by lack of money demand and absence of the necessary gap between the price and production costs. Cycle fluctuation processes are more prominent in production of industrial goods than in production of consumer goods. Fluctuations of the production volume may be accompanied by the change in its monetary value. The money volume adapts to the production dynamics without any significant impact on it (Seles, Lopes de Sousa Jabbour, Jabbour, Latan, & Roubaud, 2019).

Analyzing individual researchers discovers that these scientists characterize the economic cycle by changes in production of goods and especially in the fixed capital dynamics. Spiethoff considers the development of loans an essential condition for the economic upturn. Production expands at the account of money funds accumulated during the depression phase, afterwards, there is a need for support from the banking sector. In our opinion, lack of savings is the reason for crises. Decrease in the demand for industrial machinery may be caused by the growth of salary paid by entrepreneurs.

The increased production output encourages application of wasteful production methods and leads to losses. Some scientists believe that revival takes place due to the increase in investments rather than growth of the demand for consumer goods. An incentive to new investments is reduction of capital equipment production costs taking place during depression as a result of salary decrease, drop of prices on raw materials, etc. Cassel assumes that the listed factors are insufficient to overcome the depression phase, one needs technological changes, new markets and generous harvests opening new possibilities for capital investments and raising the expected rate of return. Keynes (2002) states that the cycle manifests itself in fluctuations of the propensity to consume, the state of liquidity preference, the marginal efficiency of capital. Explaining the cycle in the article Notes about Economic Cycle included in The General Theory of Employment, Interest and Money Keynes advises to focus on the upward interest rate tendency affected by the increased demand for money for production purposes and speculative operations. In the Keynes' opinion, the marginal efficiency of capital is the crucial component defining cyclic movement. The psychological factor is also important. The sense of insecurity of the future accompanying sharp reduction of the marginal efficiency of capital may cause rapid liquidity preference and interest rate growth. Decrease in the marginal efficiency of capital accompanied by the interest rate growth may aggravate the investment volume drop. Keynes (2002) states that the interest rate reduction facilitates business revival on the later crisis stage. However, reduction of the marginal efficiency of capital during the acute phase of crisis will be so serious that no interest rate decrease will be sufficient to overcome the economic decline tendency. Recovery of the marginal efficiency of capital is the main reason of the beginning of the revival phase. But the downward tendency will continue until there are factors prolonging it. Among such factors Keynes notes the correlation between the lifetime of long-term use capital property and the excess stock storage costs. Continuous growth of stock of produced capital goods reducing the rate of return and high production costs serve as reasons for deterioration of the marginal efficiency of capital. Keynes arrives at the following conclusion concerning the crisis duration: it should depend on the duration of the lifetime of long-term use capital property and standard growth rates in a given period (Keynes, 2002).

One of the reasons for crisis is unreasonably high volumes of investments in capital equipment production. Keynes underlines the significant role of changes in the stock of mineral and agricultural raw materials for the determination of the investment value. He states that surmounting the crisis may be delayed due to the existence of large raw material stock. At the same time, the value of such stock helps “soften” the decline but will slow down the subsequent recovery. In some cases, raw material stock has to be fully depleted before any notable revival of economic activity. Individual researchers assume that today the system of financial and money markets (hereinafter referred to as the “SFM”) gets the primary role in relation to the sectoral structure. SFM strengthens production sectoral ties by capitalization of stock markets and investment markets. The above named authors also believe that the reason for a crisis lies in the breakdown of the demand mechanism. Plummeting demand from the population, small and medium-sized business reduces the need for capitalization of income and the production chain securing it. The growth of demand from the government, growth of state orders may be a way out. Such mechanism was applied by the USA during preparation for the Second World War when F. Roosevelt’s government increased the volume of state orders to overcome deflation. The negative aspect is possible economy slackening described by Keynes as quasi-stationary state (slowdown of technical progress and national income growth as a result of market adjustment to physical population growth), which may appear during the downward investment wave of the cycle.

Stabilization of economic cycles is possible in case of reduction of the share of exchange commodity-related industries. An economic upturn may end at sharp fluctuation of prices on exchange commodities, budgetary or foreign economic misbalance, monetary policy tightening in the conditions of growing inflation. One of the indexes of cyclic fluctuations is the production volume volatility defining the duration of upturns or downfalls in the country economy. Production volume volatility was observed in the course of the following events: upturns and downfalls in the 1950s due to the war in Korea; reconstruction of post-war Europe and Japan; in the 1970s: oil supply disruption, in the 1980s: active liberalization of the capital transactions account and cross-border commodity flows by many countries; in the 1990s: growth of the production volume volatility in the developing countries due to debt, bank and currency crises; in the opinion of M. Coase, changes in the production volume were caused by the transition of some countries from economic planning to the market economy (Coase, Otrók, & Prasad, 2008).

Some researchers believe that the balance of the economic structure is constantly disturbed leading to disproportions. A structural crisis starts to be solved at the moment of the loss of relevancy of former structural elements, appearance of new industries, forms of regulation (Asteriou, & Spanos, 2019).

When a company incorporates a part of production abroad, it can export high-quality workplaces from the country of investment, which raises unemployment of the corresponding category of laborers and will change respectively the correlation between production factors. However, foreign high-tech companies may start production in this country and thus create new high-quality workplaces. Relative growth of constant capital elements will discontinue, the unemployment will decrease.

7. Conclusion

The reasons of recent economic crises are largely explained by factors reviewed in details in this article. However, it is worth mentioning that we have deliberately not analyzed the impact of institutional

environment factors on the economic process dynamics as this issue stipulates explanation of the economic cycle dynamics not only by justification with purely economic factors, but also by inclusion of political motives in the research model as, e.g. in the political cycle model by W. Nordhaus illustrating the influence of the results of activities of politicians during their election campaign on the unemployment and inflation dynamics (Nordhaus, 1975). Our aim has been systematization and determination of the key economic factors affecting an economic cycle, which in our opinion, is achieved.

It should also be noted that another reason for economic crises may lie in the incompetence of the management personnel of financial structures; the distribution of money is irrational and unjustified due to the reduction in their intellectual capital (Konovalova, Mikhailov, & Persteneva, 2015). Such financial resource distribution may result in excessive “inflation” of volumes of issued and unsecured loans, transforming with time in “bad assets” of the financial structures issuing them. In the end, the balance of credit institutions and the financial stability of industrial enterprises are deteriorating leading to reduction in financing of the real economy sector.

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