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GLOBALIZATION OF FINANCIAL SYSTEM AND ITS SYNERGETIC EFFECT AT REGIONAL LEVEL

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Abstract

The globalization of the world crisis as an economic phenomenon affects all spheres of public life. Recent events, which took place in the monetary sphere, gave the opportunity for us to look at this problem from a different angle. Thus, the linear approaches that flowed without deep changes and manifestations of any crises in the financial sphere, all these years have forced the other side to observe non-linear processes. It turned out that the forecasting methods typical for classical economic theory do not work anymore. Then there is a problem concerning what to do and how to identify non-linear processes in the financial and credit sphere. Many researchers believe that the negative trends in economies of countries are associated with the global crisis. However, from the point of view of synergies, it is an evolutionary process that must be considered as a process of bifurcation and creation in the field of the socio-economic system. In this regard, it seems promising to consider the rules of the functioning of the financial system in the Russian Federation from the point of view of a synergistic approach, which is manifested through the functioning of the financial market and its influence on the financial and banking systems.

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1. Introduction

In the context of the globalization of global financial system, the regional financial system of the country requires the search for forms of interaction, areas that meet international requirements and the preservation of the most important original and effective financial institutions and tools that meet national interests. The intensification of the effectiveness of the country's financial system in the context of globalization is inextricably associated with the systemic regulation of key areas of modern financial policy of the state, and the effectiveness of its functioning depends on those goals and objectives that result from the long-term financial strategy of the country. Undoubtedly, a region with its own territorial attributes, the development and the intensification of integration interaction of which are the preparatory stage of the regionalization process, connected with the reinforcement of the role of regional financial institutions and tools as well as their certain tempering influence on world financial processes.

The globalization of the world crisis as a purely economic phenomenon affects all spheres of public life. Recent events which took place in monetary sphere gave the opportunity for us to look at this problem from a different angle. Thus, the linear approaches that flowed without deep changes and manifestations of any crises in financial sphere, all these years forced the other side to observe non-linear processes. It turned out that the forecasting methods typical for classical economic theory no longer work. Then the problem arises of what to do and how to identify non-linear processes in financial and credit sphere.

The problem is extensive enough, and in the framework of this article we will consider the theoretical approaches of synergism in the formation of financial potential of the region.

2. Problem Statement

The course of global economic crisis has bifurcation processes and split-trajectory. The nature of socio-economic system and the influence of each factor on the formation of a financial region create an effect that qualitatively exceeds the influence of each individual factor participating in the economic process. In order to predict the situation and neutralize it or to create positive synergistic effects, we need at least to understand what forms their basis, why such non-linear effects appear in economy. This is a question of a synergistic economy.

3. Research Questions

Negative trends in the economies of countries are associated with global crisis. However, from the point of view of synergism, this is an evolutionary process that must be considered as a process of bifurcation and creation in socio-economic system. In this regard, it seems promising to consider the rules of the functioning of financial system in the Russian Federation from the point of view of a synergistic approach, which is manifested through the functioning of the financial market and its influence on the financial and banking systems at the level of the Russian Federation.

In this research we have chosen the methodology of synergetics, based on the theory of self-organization and the co-evolution of complex systems in order to analyze the current situation.

4. Purpose of the Study

The purpose of the research: through the lens of basic theoretical principles of synergetics in the investigation of processes of financial system, it is necessary to study the dynamics of financial indicators focused on the processes of growth, development and destruction of systems, processes of self-organization and their relation to the systems development processes. It is necessary to take into account a set of internal and external communication systems, internal and external environment as the sources of changes in parameters and the occurrence of instability in financial system.

5. Research Methods

A diverse synergetic economic effect is a financial synergetic effect, measured by additional monetary income obtained as a result of an effective combination of monetary investments in terms of increasing money capital, regardless of the actual effectiveness of the process of social reproduction. On the contrary, the real synergetic economic effect, although is determined in monetary form, is measured taking into account the correlation between the actual result and the real costs, which implies the use of unsatisfactory prices in the calculations and minimum monetary values to an objectively determined price basis.

Thus, synergetics as a process of self-organization of complex systems may change at different time intervals, thereby finding a bifurcation point (bifurcation or even a plurality of development trajectories) and spontaneous selection of development trajectories and the change in the development trajectory and development vector aimed at a particular attractor or "the attraction of variety", providing dynamic balance for a certain time.

This theoretical approach may contribute to the change of such factors as financial, tax and investment, directly associated with financial and credit relations that affect the formation of financial potential of a region. All of these factors are systems capable of self-organization. These factors may be applied equally (in a fractal manner) to all market actors.

There are many factors that may be considered as determinants of economic growth. One of these factors is financial system. The institutional frameworks of financial system, as well as its effectiveness, are undoubtedly important factors in production growth. The theoretical structural model suggests that the development and stability of financial sector have a positive effect on economic growth. However, some questions arise when testing this hypothesis on the basis of empirical data for real economies. The problems related to the relations between the financial sector and economic growth intensified after the last global crisis and the crisis in the euro zone. It turns out that some of the violations observed in the financial sector of economy may have a very significant and long-term impact on the behavior of the real economy. The discussion of these issues is still ongoing. There are still many opportunities for new empirical and theoretical studies of the relation between financial sector and economic growth, especially after the global crisis.

Many financial phenomena, in other words non-linear processes, can be calculated with the mathematical modeling. Thus, the authors in (Zhang & Shang, 2017) suggest "research the stock closing price series from different data that consist of six indices: three US stock indices and three Chinese stock indices during different periods, N-n,N-r can quantify the changes of complexity for stock market data.

Moreover, we get richer information from N-n,N-r and obtain some properties about the differences between the US and Chinese stock indices".

Thus, the global crisis that began in 2007–2008 hit some regions of Europe particularly hard and revealed some of the shortcomings of its economic and monetary union. Despite the fact that the emergency measures were taken to mitigate the repercussions of shock, economic disruption has opened wide interregional gaps in employment and real income growth, including other dimensions. Due to the fact that these differences still exist and are extremely slowly corrected within the current institutional architecture, and as it were shown by the European Commission, the economists and politicians have debated how to complete the integration of economic convergence mechanisms that may prepare member countries to absorb future shocks. (D'Aguanno, 2018).

The growth in the size and complexity of international financial markets has been one of the most striking aspects of the world economy over the last decade. Lane and Milesi-Ferretti (Lane, 2001; Lane, 2006) document the increase in gross cross-border holdings of bond and equities, describing this as a process offinancial globalization. Economists and policy makers have speculated on the implications of financial globalization for the design of monetary policy.

A theoretical foundation for price stability has been given by Woodford (Woodford, 2003), and others, using sticky-price dynamic general equilibrium models. A monetary rule devoted to stabilizing prices eliminates theinefficiency of costly price adjustment. In an open economy, however, the optimality of price stability as the sole goal ofmonetary policy depends on the structure of international financial markets. In (Benigno & Benigno, 2003) the authors show that stability of producer prices is optimal when financial markets are complete. But Benigno (Benigno, 2001) and (Obstfeld & Rogoff 2002) show that the absence of full international risk-sharing may interact with the inefficiency arising from sticky prices, so that price stability may not constitute the unique optimal goal of monetary policy. A drawback of many of these papers is that international financial markets are modeled either by the absence of any type of international risk-sharing (e.g. trade in non-contingent bonds) or by full risk-sharing (complete markets). In reality, international financial markets seem to be somewhere in the middle. Once allowance is made for endogenous portfolio choice, it is possible that monetary policy rules actually affect the structure or efficiency of international financial markets.

One of the possible options is the creation of a system of redistribution of international income based on fiscal transfers. In this regard the question arises of how its existence will change the type of stabilization policy that monetary regulation authorities should follow. The author Lucio D'Aguanno proposes his theory on the basis of a new Keynesian model with an open economy, similar to (Clarida, Galí, & Gertler, 2002) and (Beninho & Beninho, 2003). According to this theory a distinctive feature of the investigation of the structure is that it considers the transfer system based on fees and income from international redistribution so that households may effectively receive dividend payments from international firms. This simple arrangement identifies the effects of transboundary wealth that affect the supply of labor, production and consumption during the business cycle. In accordance with usual specification of preferences, technologies, and macroeconomic shocks, these effects may change international risk and the priorities of monetary policymakers, that is, the relative importance of price and output stability.

When creating econometric models aimed at the confirmation of one of the aforementioned ideas, it is important to clearly distinguish the cause-effect relations of variables and the statistical correlation. Variables, although they often may correlate, are not united by causality. A separate question is whether economic growth is considered as a dependent variable. Both approaches are confirmed in the theory of economic thought. Anestis and Demetriades (Anestis & Demetriades, 1997) point out that when studying the causal relations between the financial system and economic growth, they encounter methodological problems that sometimes make it impossible to identify these relations.

There are also problems with the availability of statistical data. On the basis of analysis of scientific publications, it can be stated that it is impossible to unambiguously answer the question of whether the relations between the development of the financial system and economic growth is unidirectional (if yes, in which direction) or bi-directional. The existing empirical studies support various theoretical approaches in this area (Shan, 2001; Abu-Bader & Abu-Qarn, 2008; Esso 2010)

On the basis of the above system analysis, we investigate the financial and credit system. Taking into account the basic theoretical positions of synergetics in the study of processes in the financial system, it is necessary to study the dynamics of financial indicators focused on the processes of growth, development and destruction of systems, processes of self-organization and their relations with the processes of system development. So, let us provide an example of the activities of the central bank, which according to its policy should be guided by such tasks as ensuring the availability of loans for the real sector of the economy and preventing excess money supply, as well as maintaining sufficient liquidity of the banking system and preventing high volatility of national currency. The current stage of the development of Russia is characterized by the increase in the imbalance of economy and uneven socio-economic development. As a result, there is a threat of disintegration and crises at both national and regional levels.

During the change of the key rate there is the calculation of taxes, fines and penalties. In general, all the calculations vary if there is the refinancing. For example, the deposits of individuals are taxed if the rate on them exceeds the Central Bank's key rate by 5%. If there is a reduction in the rate, it means that the Central Bank stimulates the economy through more affordable loans. Banks offer loans at more attractive interest rates, the population and the business communities are more actively credited (see Risky loan agreement conditions). The business invests the money in production, and the population spends money on large, expensive purchases.

In October 2018, the interest rate increased by 0.25 percentage points from 7.25 to 7.5 percent per year. This decision was made to limit the growth of inflation risks against the backdrop of external conditions, according to the release of the Central Bank. These are the risks of higher prices and inflation expectations in response to fluctuations of ruble exchange rate, as well as the upcoming increase in the rate of Value Added Tax. Taking into account even with these decisions, the Central Bank raised its inflation forecast. Before that, the Bank of Russia had expected that in 2018 consumer prices would rise in the range of 3.5–4 percent, now the corridor increased to 3.8–4.2 percent. Thus, the goal of the Central Bank to increase prices by four percent may be exceeded in the coming months. In addition, inflation will accelerate (the regulator calls the growth of VAT the main reason for this fact), and in 2019 it will be 5-5.5 percent.

In the updated macroeconomic forecast, the Bank of Russia estimated the consequences for the economy, prices and wages as a result of a smooth change in the retirement age. This will supplement an

additional contribution to the VAT's growth rate by about 0.1 percentage point in 2019 and 0.2-0.3 in 2020–2021, because of an additional increase in the number of people employed in the economy, without causing inflationary consequences. Without the reform of pension system, a shortage of staff can lead to faster wage growth in comparison with the growth of productivity. Earlier, the Ministry of Economic Development estimated the contribution of pension initiatives (by their initial parameters) to 1.3 percent of VAT for the period from 2019 to 2024. (Markelov, 2018).

At first glance, these are mutually exclusive. However, due to non-linear approach, the central bank operates in different modes or system situations, each of which can be expressed as a special system of priorities and follows its own laws. The transition of the central bank from one regime to another and the banking system from one situation to another in case of violation of dynamic balance is possible without intermediate states.

In other words, several regimes simultaneously exist in nonlinear development, that is, all these system states form a single complex structure, which is in dynamic balance.

Let us provide another example. The expectations of the devaluation of national currency will lead to the increase in the difference in interest rates on assets denominated in national and international currencies. If economic difficulties associated with sanctions toughen are expected, investors also withdraw funds from sovereign debt instruments and, possibly, from national stock exchanges, which are reflected in increased spreads on such instruments as Brady bonds and a fall in stock prices.

The dynamics of monetary system in this case is easier to characterize not in terms of individual states (transition from one state to another), but in terms of cooperation (synergy) of states of various complexity. For example, the transition from a simple level that includes only one absolutely probable system state to the levels of high degree of complexity (more than two system states), the transitions between them (and, therefore, between systems of "control laws" and structural parameters are often not derived from "accumulated attributes").

In the stock market, as well as in the exchange market, the actions of a participant directly change the market conditions, that is, the degree of reflexivity of the process in this case is much higher. This leads to the conclusion that, for example, in order to increase the level of monetization of economy, it is necessary to take into account not only objective factors, such as VAT, lower inflation, the development of banking retail business, etc. It should also be noted that extremely important subjective (reflecting) factors such as public and enterprises confidence in national money, the policies of the central bank and the banking system as a whole.

6. Findings

Using different mathematical models in synergy, one can predict in which direction attractors will move. There is an early warning system that pays attention to signs of tension in banking sector, such as indicators reflecting the external position of economy, including the real exchange rate or current account balance, as well as indicators characterizing the internal macroeconomic situation. The illustrative example is budget balance and credit growth. These variables may be supplemented by other data, such as forward position of the central bank and other public or private institutions, as well as available credit lines or other funding from unforeseen expenses, although these data may be more difficult to obtain. The countries with

weak basic economic indicators, but with high liquidity will not remain in a strong position for a long time, and, on contrary, countries with relatively low liquidity, but with strong basic economic indicators that are not protected from speculative attacks by "uninformed investors" will be less prone to protect themselves.

In practice, this warning system works as a model based on data and time periods for which they were created (effectiveness within a sample), and on data or a time period for which they were not specifically created (effectiveness beyond a sample). For example, the probability of currency crisis increases if the real exchange rate is overvalued in relation to the trend, and the ratio of money supply M2 to reserves are large. A high ratio of short-term debt to reserves is also prone to increase the probability of a crisis. There is information that also indicates the importance of other variables, such as export growth, the size of the state budget deficit, and the share of international direct investment in external debt.

From the point of view of a non-linear approach, the Central Bank in this case operates in different modes, each of which is expressed as a specific system of priorities and follows its own laws. The transition of a central bank from one regime to another, and the monetary sphere from one system situation to another in the case of violation of dynamic balance can occur without intermediate states. In other words, several qualitatively different modes simultaneously function in non-linear choice forming a single complex system (Nelson, 2000).

7. Conclusion

On the basis of the current analysis of the constructed complex several models are considered.

These models may present an effective tool for the research and prevention of crisis processes, as it allows more detailed identifying and studying of nonlinearity in the dynamics of the development of both the economy as a whole and its individual indicators. This gives new opportunities for the formation of preventive strategic measures at all levels of socio-economic system hierarchy.

To conclude with, we would like to note that a synergistic approach to the formation of regional financial potential helps to trace not only institutional and structural changes with a certain set of factors, but also a certain evolution in each vector, which, in turn, can also be changed in statistical and dynamic trajectories.

Thus, an empirical approach to research on early warning systems presents a comparative innovation with a clear task of forecasting crises, while it is difficult to identify events that can trigger a crisis, including the interaction of a number of economic, political and psychological factors.

The use of early warning systems should be a part of a broader analysis that takes into account all the important and difficult points, some of them must be inevitably ignored by statistical models created for different countries.

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