# SOCIALISM WITH CHINESE CHARACTERISTICS AS A SOCIO CLUSTER: WHICH LESSONS GIVES TO OTHER COUNTRIES?

## Alexander Palagin, Valery Pisarenko

**Abstract**: *The foundations of mathematical techniques for calculating the expected probabilities of so-called "social clusters" transition in the new state under the pressure of the sociological, economic and geopolitical circumstances is proposed.*

**Keywords**: *mathematical methods, social clusters, expert system, probabilities transition in the new state.*

## Introduction

In recent works of authors [Palagin, 2012], [Pisarenko, 2015] was made an attempt to create a basis technology of mathematical techniques for calculating the expected probabilities of so-called "social clusters" transition in the new state under the pressure of the sociological, economic and geopolitical circumstances. In this work we continue to develop an approach to the creation of mathematical models to predict the technology "social clusters" based on the study of the prehistory of the leading industrialized countries.

## About the socialism with Chinese characteristics as a socio cluster

Thus, under the "social cluster" authors propose to understand: small group of people interacting with each other and living in a common area, large and very large group of people who are, in turn, is a component of a larger society. The authors for mathematical modeling of the transition probabilities between different states of the particular society in these studies were offered special models of Markov processes, as well as some sample training and expertise for the probabilities of transitions between the ground states of the proposed model. The increased interest in such research, according to the authors, is due on the one hand, "almost incalculable" recent metamorphosis of the transition series of socio clusters in the CIS to the new "unexpected" state. Therefore, as a result of such events, increasing the relevance of the answer to the difficult question: how a particular state can provide in this context the predictability of their status in the near future? To get closer to a constructive response to this question, the authors of this report considered it appropriate to refer to the position of social simulation clusters to analyze the phenomenon of "socialism with Chinese characteristics", which is under scrutiny leading

political scientists and economists worldwide. The uniqueness of China is not only in the fact that he is part of the famous five BRICS, becoming the second after the United States economy in the world [Novoselova, 2013], and planned for the next XVIII Congress of the CPC to double its GDP by 2020 year [Afanaseva, 2013]. But also in the fact that the country's leadership systematically analyzed the positive and negative consequences of the next stage of transformation and reform of the political and economic policies. And using results of this analysis, then take another reasoned "clarification" of the main course for the successful solution of the new problems in the near future.

In [Chuvankova, 2015] was considered the unprecedented efforts of the Chinese leadership to stimulate small and medium enterprises in the People's Republic of China (PRC).

Private and individual form management played a key role in obtaining the high rate of China's development in the implementation of the tasks set by XVI, XVII, XVIII congresses of the Communist Party of China (in 2002, 2007, 2012 years). Private capital was actively involved in the modernization of the economy and the creation of innovative states. He was involved in the process of large-scale development of domestic and western regions of the country, in the process of eliminating disparities in the development of individual regions.

An important step in the PRC was the publication in 2011 in the country «Standard requirements for small and medium entrepreneurs in the various sectors of the economy». It was highlighted specific types of businesses: small (the number of employees up to 300 people and revenue of not more than 20 million yuan a year); businesses in the service sector (at least 100 people and revenues do not exceed 20 million yuan); small enterprises in agriculture, forestry, animal husbandry, fisheries (with income less than 5 million. yuan). Micro-enterprises classified as farms with number of employees not more than 10-20 people and revenues of less than 1 million. per year. The main role was played by the local governments. The state also stimulated by the support and encouragement of private investment in the construction, maintenance, operation and management of roads, ports and waterways, into the development of urban public transport. Successful measures of encouragement of deposits of the population to the promotional capital of the country have succeeded to achieve that a half of the promotional capital in small and average commercial banks of the People's Republic of China is made by private investments, and in rural areas the share of the private promotional capital has reached 90%. The structure of the small and micro enterprises is differentiated on forms of ownership. The main part of small enterprises – the small and micro enterprises. 80,7% of private enterprises are the share of them. 85% of the enterprises of this category are micro enterprises, 15, 5% - small.

The share of private investments into national fixed assets (without the country yards) has exceeded 64%. For the end of June, 2015 in private and individual sectors of economy it has been engaged

already 265 million people and 190 million people from them worked in a services sector. Growth of volumes of the Chinese investments into economy of the USA is considered in work [Samartsev, 2014]. Analysis of the components of Chinese direct investment in the United States suggest a correction of the external investment policy of China. In the ranking of the countries-investors in the USA economy China is on the Nordic level. But under the existing growth rate (for the period 2008-2012 has increased to 6-8, 5 times according to different sources), and by the end of the 10 th anniversary of China is able to advance to the leading positions. In the USA, Chinese direct investment directed to various sectors, - mainly, in the energy, agriculture, real estate, information technology, and geographic regions tend to be the main residence of the Chinese diaspora in this country - California, New York, Texas. Surprisingly, however, the global meltdown began in late 2015. The richest people managed to lose $ 194 billion. According to the index Bloomberg Billionaires, 400 billionaires lost $ 194 billion in the first four days of trading. By the end of trading, their combined wealth was $ 3.7 trillion, compared with $ 4 trillion to the same date last year. The collapse was observed not only in the US markets, but almost all global markets. His reason was the collapse of the stock exchanges in China and a drop in oil prices.

**Chinese source of the problem.** At the end of 2015, trading on Chinese stock exchanges stopped twice due to a sharp fall in stock prices. The action comes a mechanism for automatic termination of quotations, which is triggered by swings in stock market indices by 7%. On the whole, the Shanghai Composite Index lost 10% in a week, and Shenzhen Component, which is the main indicator of business activity in the country, has lost 14%. The end of 2105 on the stock exchanges in the USA was the worst since 1897 year. This exchange recession is connected with the next devaluation of yuan which was unexpectedly carried out by National Bank of China. Decline in the rate for 0,5% became the strongest since August of last year. Investors have counted such devaluation as confirmation that national economy is weaker, than it was supposed. These fears are confirmed by the next falling of activity of the Chinese industry estimated on dynamics of an index of purchasing managers of PMI. Besides in December, 2015 currency reserves of China were reduced by $100 billion that became the maximum monthly falling.

Automatic exchange "switch" in China has appeared as reaction to a collapse of stock market in August, 2015. Experts have carried to his emergence ambiguously. On the one hand, he allows to cut from influence on the market of panic moods. But with another – shows that the authorities of the country badly control a situation.

**Reaction in the world.** Problems in stock market of China have provoked sales in world stock markets. The American S&P 500 index for December, 2015 has lost 4,9%. The universal MSCI All-Country World index has dropped by 5,2%, it is the worst result for the end of 2015 since 1998. Cumulative capitalization of the world market was reduced since the beginning of year by $2,5 trillion. Because of

fears that problems in the Chinese economy will even more reduce demand for raw materials, reduction of price of oil has continued. Besides on the market press such factors as record reserves of fuel to the USA and the beginning of export of crude oil from this country. At the same time the oil market has practically not noticed strain of relations between Saudi Arabia and Iran though until recently was considered that the prices because of it could fly up.

The price of the American WTI oil has fallen to the level of 2003, quotations of Brent have updated a 11-year minimum.

The budgetary problems because of falling of prices of oil have forced Saudi Arabia to consider a question of privatization of the state oil company Saudi Aramco through a conclusion her on the exchange. According to Bloomberg, capitalization of this world's largest producer of oil can be comparable with an indicator of the current world leader – Apple (now – $560 billion). Except present state of the economy of China experts state the serious fears connected with desire of Peking to change economic model of the country, having replaced based on investments and production on model in which the main sources of growth will be consumption, services and high technologies. So George Soros considers that reorganization of economic model in China can lead to new world crisis, comparable with events of 2008.

To enhance the competitiveness of a particular financial institutions, corporations or the state as a whole is relevant the forecasting of competitive opportunities of other subjects of financial and industrial activity. In particular, the need for such prediction is needed in anticipation of the expected financial and economic crisis, as in this country as in a particular region, to which the entity's financial and industrial activity. Among the basic factors that need to be modeled include the random events described by methods of probability theory. For example, in the works of writers [Palagin, 2011], [Pisarenko V., 2015], [Palagin, 2015] in connection with the task of predicting of the next financial crisis or the recession was proposed the base of the methodology of extraction "from the past" several signs, harbingers financial crisis likely in the near future.

**Simulating the behavior of so-called typical of societies**, understood as a group of people (small, large, extra large groups) in some extreme situations, carrying a high risk of loss of the discomfort level until the risk of death in some crisis situations. It proposed the principle of modeling based on the relevant ontology of possible behaviors of the corresponding cluster model of society based on the basic events, history, factors that fundamentally affect the loss of "some elements of comfort." For example, the risk of fire, floods, earthquakes, epidemics, military action, the crisis in the economy, the national massacre, terrorism, religious wars, etc. In this paper to simulate the proposed ontological basis for characterizing the strength of the social cluster, its geographical and historical coordinates, forms of

threats discomfort and destruction of the cluster, based on the use of training samples of similar situations in the past (as occurred during the ontogeny of this cluster, as well as information the hazards of such external threats, worked in the recent past on similar social clusters). The possibility of use as a mathematical apparatus for predicting the behaviors of the cluster in the event of a range of threats. [Pisarenko, 2015], [Pisarenko, 2011] It is proposed as a method of mathematical model of Markov chains of the first kind with the corresponding Kolmogorov equations.

The offered approach of authors was based on: 1) extraction (and the accurate mathematical formulation) from experience of the past of set of "rules at such background" (in terms of a finite number $N_{initial}$ of pre-history attributes); 2) obtaining value of amount of the post-history attributes ($M_{final}$ pieces of such attributes) of manifestation of the expected financial and economic crisis, – and in such look that for transitional probabilities $p_{ij}$ of independent options of transition from an initial state-$i$ to a final state-$j$ it was carried out $N_{initial}$ ratio:

$$\sum_{j=1}^{j_{max}} p_{ij} = 1 - \varepsilon_i \text{ , where i = 1, ..., } N_{initial}.$$

And at the same time some $\varepsilon_i$ - rather small positive number ($0 < \varepsilon_i \ll 1$), considering "the accuracy level" of the forecast for an initial state-$i$. Pertinently in this regard to note that in work [Lukashyn, 2014] on long-term forecasting of world economy have been rather recently given results of long-term forecasting of world economy. In fact as option of realization of the technique offered by authors for forecasting of development of economy of the region. In work [Lukashyn, 2014] the review of expected projects of various leading cents of economic forecasting for the average and long period of time becomes. In work [Lukashyn, 2014] it is noted, that "no the West in the long-term forecasting of economic development is widely used the neoclassical growth model, based on the Cobb–Douglas function". Later in the article are two prediction method (a method of Goldman Sachs and method PRICEWATERHOUSE COOPERS) and through the use of the Cobb-Douglas function of the results of these two methods.

**Calculations for a method Goldman Sachs.** So, in calculations for the Goldman Sachs method [Lukashyn, 2014] has been considered that the world economic system has undergone serious changes after 2003 because of global financial crisis, "the Arab spring", crisis in Ukraine. For example, according

to the forecasts received at the same time China had to overtake in 2015 Japan by the GDP size. But he has overtaken her in 2011, having become the second economy of the world.

**Calculations for a method PRICEWATERHOUSE COOPERS.** In calculations for the PRICEWATERHOUSE COOPERS method, published in 2006, the predicted evolution of prospects of development of 17 largest economies of the world joined, including "the big seven" (G-7): (France, Germany, Italy, Japan, Great Britain, the USA and Canada) in total with such traditionally developed economies as Spain, Australia and South Korea, and also seven emerging market economies (E-7): Russia, China, Brazil, India, Indonesia, Mexico, Turkey. The forecast has shown that on the total volume of GDP of the country of E-7 the countries of G-7 approximately by 2017 will outstrip. After 2017 the cumulative income of GDP of the countries of E-7 will overtake GDP of the countries of G-7, and by the end of 2050 China, the USA and India which considerably will overtake other countries will be the largest economic powers.

## Conclusion

One of the conclusions of the authors of this report is that a closer analysis of the reasons for success in China to extract lessons from this when choosing a development strategy in other countries may be useful for predicting the evolution of social clusters in other countries.

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