RELIABILITY OF TECHNICAL-ECONOMIC AND SOCIAL SYSTEMS OF THE SOCIETY AGAINST THE BACKGROUND OF WORLD DISHARMONY

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End of security is an end to the notion of Isaac Newton and Adam Smith for the world!

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SUMMARY

In this moment in the world there are several scientific works concerning the globalization of society and the future of the people, living on Earth [0-3]. To outlining a new vision for the socio-economic growth in 21th century great importance have formulated fundamental regularities of the dynamics of the self-destruction of the modern world, considered in the book of Arkadiy Fedotov "Globalistic – beginning science about recent world", Moscow, 2002 [1].

According to the said author in the modern level of development of the science, it appears possible that the dynamics of the world to be expressed with the help of mathematical formulas to predict his immediate future. The authors of the article have developed a Fedotov’s model in reliability - risk aspect.

Key words: World disharmony, Reliability, Risk


INTRODUCTION

To solve the goal set by Arkadiy Fedotov in “Globalistic”, using the following two formulas:

\[ I_{sd} = A \sqrt{T - T_0} \]  

(1)
Where $I_{sd}$ is the index of sustainable development of the world, expressing the interaction of humanity and the biosphere; $A$ - parameter of the equation – $A = 0, 32$; $T_0$ – the initial year (1950); $T$ – current year,

$$I_d = B/(T_R - T),$$

(2)

Where $I_d$ is the index of the socio-economic disharmony; $B$ – the equation parameter – $B = 1850$; $T_R$ – critical (resource) year in which the index of disharmony $I_d$ tends to infinity, $T_R = 2022$.

On the basis of (1) the pattern is built on the dynamics of the self-destruction of the world (fig. 1a). It essentially expressed analytically index of sustainable development of the world $I_{sd}$ in the range 1900-2000 as well as a function of five parameters change that determine $I_{sd}$ in time: the number of the population, the volume of industrial production, the volume of manufacture of food products, resources and level of contamination of the environment. The listed parameters are calculated for traditional world [1].

**Figure 1** (a) and (b). Fundamental regularities of the dynamics of the self-destruction of the modern world [1]

In the interval from 1960 to 2000, the dependence of the index of sustainable development (Fig. 1.a) is well approximated by the parabolic function (solid line). This function is a mathematical expression of the first law of dynamics of the self-destruction of the world.

The second pattern of the dynamics of self-destruction of the world reflects the interaction within the world society, and is denoted by index of socio-economic disharmony.
disharmony, which varies also in the parabolic function of historical time $T$. Therefore, it is a mathematical expression of the second law of dynamics of the destruction of the modern world (see fig. 1.b). According to this pattern with $T_R = 2022 \pm 5$ years (in the traditional movement of the world) will be the "culmination of the blast in history", i.e. in the relationship between rich and poor, when $T_R = 2022 \pm 5$ years – the indicator $I_t$ tends to infinity.

We think that the idea of "self-destruction of the system (society)" (based on the calculated indicators) can be allocated only for the study period. This is a period in which collects information on the structural and functional condition of the studied system and assess its reliability. Of course, it is accompanied by management of the effectiveness of crisis management in the context of globalization [2].

In the general case, the calculated indicators reflect the most negative trends and favorable perspectives on the dynamics of the system (society). Therefore, it is more accurate to call them, indicators of reliability of the index for sustainable development of the system" and dynamics of socio-economic disharmony in society". These indicators can be used for a comprehensive assessment of the analyzed countries in the world as a whole, himself said Fedotov [1]. Entered indicators can be calculated in various mathematical relationships such as the assessment of the reliability of economic indicators in the analysis and development of plans and programs with their individual characteristics and factors of management and development..

EXPOSURE

In this work, it is considered that it is not mandatory to be expressed with the same mathematical according to economic indicators for each country and for the world. The first addictions will be specific to each individual country, dictated by its individual factors for development, and the latter will be graded and will reflect the influence of the main factors in the world as a whole.

Therefore mathematical and information dependencies for the economic situation of the subsystems do not necessarily match the mathematical fundamentals of the same dependencies throughout the system (economic or social).

The dependence of the index for the assessment of sustainability of development (growth) of the system $I_{sd}$ from historical time $T$ characterizes as the growth of economic activities and the reduction of resources for its op-eration.

Should be noted and the opinion of such a world famous economist as Joseph Stiglitz (Joseph Eugene Stiglitz), the most famous contemporary econ-momist with the left-wing beliefs and with critical views on globalization and free-market economists, winner of the Nobel Prize for the year 2001: “Growing inequality and the deformed system of financing presidential and party campaigns creates a risk that the American legal system to become a travesty of Justice. Some still able to designate it as a system in which “law prevails”, but in today's America, the proud claim „justice for all” is replaced with a more modest claim „, justice for those who can afford it ”. And the number of people who can afford this justice, rapidly declining "(Stiglitz, Joseph, The price of inequality. How today's divided society threatens our future. “East-West” Ed., Sofia, 2014) [3].

Available from authors the index of sustainable development of a sys-tem $I_{sds}$ (TIS or SIS) is calculated as the actual anthropogenic load on the system (the country) relative to permissible for its external environment (natural and social) anthropogenic
load multiplied with the probability of a **non-failures functioning** (NFF) of the system $P_{NFF}(\Delta t)$.

This index is determined by the following formula:

$$I_{SDS} = \frac{P_{BP} + P_{EP}}{S_C \cdot D_{PAL}} \cdot K_{CCE} \cdot P_{NFF}(\Delta t),$$  \hspace{1cm} (3)$$

where $K_{CCE}$ the correlation coefficient of the elements of the system that explores the (TES or SES), $P_{NFS}(\Delta t)$ is probability non-failures functioning of so-ciety, determined in accordance with:

$$P_{NFS}(\Delta t = 1\gamma) = \exp \left\{ - \int_0^{T_{TES}} \omega_{eob}(\Delta t) \cdot t_{\Xi} \right\},$$  \hspace{1cm} (4)$$

where $P_{NFS}(\Delta t = 1\gamma)$ likelihood that the normal functioning of society (NFS) in the intensity $\omega_{eob}(\Delta t)$ of **economic offenses and bankruptcies** (EOB) of time of continuous operation of the society $t_{\Xi}$, measured in hours (within a calendar period $\Delta t = 1\gamma$); $T_{TES}$ period of resource efficiency of the TES.

In formula (3) using the following names: $P_{BP}$ is the bio-power consumption of the society, $\kappa W$; $P_{EP}$ is power of electricity to the public, $\kappa W$; $S_C$ - area of the country $km^2$; $D_{PAL} = 70 \kappa W/km^2$ is the permissible anthropogenic load on the biosphere, $\kappa W/km^2$. Substituting specific data for the index of sustainable development of the system of the Republic of Bulgaria for 2014 is obtained $I_{SDS} = 1.08$, which unfortunately is very unsatisfactory.

Disharmony index of the system (society) $I_{DS}$ is calculated by multiplication of the index of sustainable development of the country's $I_{SDS}$; the risk of occurrence of disharmony in the system (society) $R_{DS}$ and the probability of reliable management system in the range of observation $\Delta t$:

$$I_{DS} = I_{SDS} \cdot R_{DS} \cdot P_{RCS}(\Delta t),$$  \hspace{1cm} (5)$$

where $R_{DS}$ is the risk of occurrence of disharmony in the system (society); $P_{RCS}(\Delta t)$ is probability of reliable control of the system in the range of observation $\Delta t$.

The risk of occurrence of disharmony in the system (society) is deter-mined by formula:

$$R_{DS} = (1 - P_{NFS}) \cdot P_{RIALD} \cdot RL_{DS},$$  \hspace{1cm} (6)$$

where $P_{NFS}$ is probability for the normal functioning of system, $P_{RIALD}$ is probability to **reliable information on the assessment of losses of disharmony** (RIALD) ; $RL_{DS}$ are relative losses (RL) of disharmony in the system (society), compared to its initial maximum value (system reliability equal to 1) [5].

The authors offer the following equation:

$$RL_{DS} = \frac{V_{CFSCS}}{V_{SSS}},$$  \hspace{1cm} (7)$$

where $V_{CFSCS}$ is **value of current, fuzzy social contradictions system** (society); $V_{SSS}$ - **value of sustainable social system** (society) with the reliability of operation equal to 1, as $V_{CFSCS} \leq V_{SSS}$ hence $0 \leq RL_{DS} \leq 1$.

Of course in assessing the reliability of a TIS or SIS must be taken into account and the **rental index of Fedotov** (RIF), which is the income of the rich (10% of the

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total) to the income of the poor (10% of the total) [1]. For the Republic of Bulgaria this index by statistical calculations of the authors is approximately \( RIF = 6 \).

The probability for the normal functioning of society \( P_{NFS} \) in Republic of Bulgaria are calculated on the basis of statistical information for the TES bankruptcies (companies, banks, etc.) in the state. This statistical information for the past year 2014 is:

\[
P_{NFS} \geq 0.75
\]  

From formulas (6), (7) and (8) and calculated values for the year 2014 \( P_{RIALD} = 0.9 \) and \( R_{LD} = 0.75 \) follows that the Republic of Bulgaria in 2014 the risk of occurrence of disharmony in TES, SES and society as a whole is \( R_{DS} \geq 0.16 \). From this value of risk for disharmony in calculating the probability of reliable information for assessing the losses of disharmony \( P_{RIALD} = 0.9 \) will follow that the disharmony index of studied TIS is \( I_{DS} = 0.48 \).

With the growth of the index of sustainable development in society, grow stratification in the global society, terrorism in all its manifestations, the struggle for world domination, military conflicts, corruption, drug addiction, prostitution, degradation of personalities and culture, increase forces for international coercion.

**CONCLUSION**

On the basis of the economic analysis performed we should ask:

What could happen if the society in the Republic of Bulgaria does not develop an optimal scheme for the formation of strategic directions for reliable social and economic development?

The answer is not very complicated, because research and summaries show indicate that slowing economic growth increases the destructive power of the free market and should lead to downhill spiral down until conditions were ripe by means of crisis management for the transformation of economic and social conditions in the public system.

**REFERENCES**

AUTHORS INFORMATION

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