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THE BRANCH PROCESSES IN ECONOMY

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Now the major tool of development of economy is investment. The basic problem is the problem of modeling of processes of monetary streams, with the purpose of definition of conditions at which investment activity gives profit. In this connection the imitating model has been created, allowing modeling an operated chain of the monetary streams reflecting real processes and redistributions of means at reinvestment with the purpose of reception of the maximal profit [1-3]. Existing models are linear [3], it can't take in consideration the main features of studying processes.

The model allows defining behavior of all system at various modes. Branching processes are characterized by ability to reproduction of self-similar structures. The main feature of such processes is the opportunity of catastrophic growth. In branching processes it is considered, that the life of a separate particle-individual is independent of a life of other individuals. However in practice, nevertheless particles under certain conditions start to depend from each other, so, for example, struggle for the general resources.

Branching processes divide into three classes (subcritical, critical and supercritical), depending on size of a population mean of number of descendants Supercritical case is a catastrophic development.

Each descendant of a particle, is the founder own branching process. We shall stop on the basic assumptions used by development of model. It is supposed, that selection process takes place. .Selection stops, as soon as the size of criterion of selection has started to increase or has practically ceased to fall.

As size of criterion of selection the value defining an opportunity to manufacture of descendants at present of time undertakes. In the elementary case new generation birth process can be described as

$$\varphi = \alpha_0 + \sum_{i=1}^{n} \alpha_i x_i + \sum_{j=1}^{n} \sum_{i=1}^{n} \alpha_{ij} x_i x_j + \sum_{k=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \alpha_{ijk} x_i x_j x_k + \ldots \qquad (1)$$

where x_i – descendants.

Main interest in this problem is the definition of the general number born particles in system.

Let's consider, that, depends on presence in system of some resource. Thus, in system the principle of faltering balance which sense consists that in each present situation the system aspires to balance in conformity with restrictions on resources, intermittence will be observed means, that resources can spontaneously and change in steps.

We modernize a problem, suppose, that at all equal entry conditions we shall define the law of change, depending on values of a random factor as a size of accessible resources. Use of restriction on resources allows describing more objectively the real process.

Our computer imitating experiments allow receive target characteristics of system, proceeding from two approaches - classical and modernized. Last approach most adequately reflects processes for which description use branching processes.

The original program application has been developed for realization of model, allowing spending imitating modeling practically unlimited number of participants of a chain.

The developed program appendix does possible the account and modeling of the nonlinear processes which are taking place at distribution of resources between participants of chains from accounts of priorities and delay at returning of money. Whether if necessary by results of imitating model the developed system allows defining the desirable condition of a

chain is achievable, allows simulating optimum modes of functioning of steady chains. The system allows modeling the closed and opened chains.

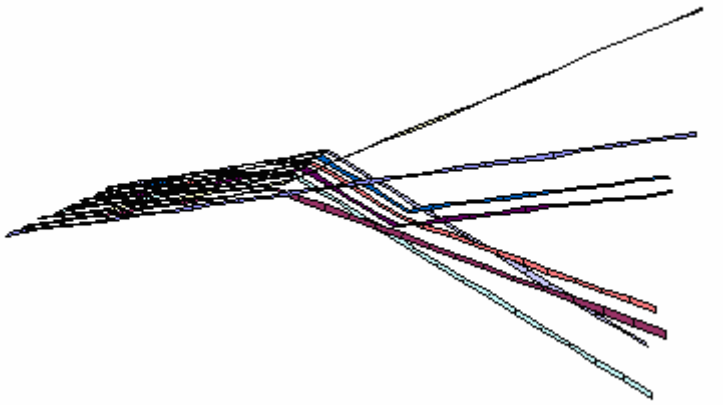

Fig. 1. The simplest case of independent development

Visualization of the received scripts of development of chains, fragments of development of a chain (in case of the long and branched out chain) is possible. Results can be received in a text format, or to export in mdb or xml files.

Probably carrying out of modeling in view of periodicity of external monetary injections controls with use of computer program interactive interface.

Modeling is conducted in view of inflationary processes, the estimation of the future investments in view of discounting with the purpose of decision-making on an opportunity or expediency of investment is possible. Arrangement of priorities to participants of a chain is appointed on the basis of the analysis of their characteristics and history of participation in a circuit, priorities in current of process of modeling can be renominated.

On each participant of process the estimation of risk from its participation in the general circuit is possible. Definition of the steadiest sites of a circuit on the basis of the entered integrated criteria is possible.

The model allows defining behavior of all system at various modes. Branching processes are characterized by ability to reproduction of self-similar structures. The main feature of such processes is the opportunity of catastrophic growth. In branching processes it is considered, that the life of a separate particle-individual is independent of a life of other individuals. However in practice, nevertheless particles under certain conditions start to depend from each other, so, for example, struggle for the general resources.

The information on each participant of a chain is stored in base, visualization of history of each participant is possible. Addition of the new participant and continuation of a chain probably is possible as by user activity, and also automatically.

Literature

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