The Dualism of Economic Systems and Its Role in Development of Economies

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Abstract. **The role of economic dualism in the evolution of economic systems are tackled in the article. It shows that economic systems have the properties similar in their manifestation to dualism.**

Keywords: **economic systems, discrete unit (corpuscle), field-essence, dualism properties, the phenomenon of dualism.**

I. INTRODUCTION

Physicists know the so-called effect of dualism, when particles at the same time exhibit properties both of discreteness and field (photon wave) [12]. But if certain effects are inherent in the micro world, do they work as well at the macro level – at the level of economic systems? In particular, do economic agents show qualities similar to properties of discrete particles and fields? Most likely, we can say yes to that, to some extent any part of any system, including economic has the property similar in its manifestation to dualism.

II. THE PHENOMENON OF DUALISM

The phenomenon of dualism lies in the fact that a particular element has both properties: a) *discrete unit* (*corpuscle*), which coordinates can be uniquely determined in space and time as a certain *point*, and b) *field-essence*, which has a substantial length in space and duration in time.

Such considerations provoke the idea of dualism of economic systems. It is known that any system exhibits significantly greater qualities (properties) than those possessed by its subsystems. What is the source of this new quality? Let us assume that they are carriers of the same parts (subsystems) that make up a whole new system, but do not act as discrete units, and field essence. Prior to the formation of this whole the mentioned qualities occur in each subsystem (part of the whole) but on the virtual (ie, potentially possible) level not on the real one.

Economic systems exhibit their field properties in space and time (fig.1):

- *in space* as medium of economic relations: first, with *suppliers* of inputs, and secondly, with *consumers* of goods, thirdly, with *state* that provides social services and fourth, with *population* of the concrete territory (administrative region) delegating the right to dispose public (natural and infrastructure) assets of the area elected to the local authority and administration; fifth, with a variety of *competitors* (for resources, for potential customers, with the possibility of using limited natural resources and infrastructure), *sixth* with *lower-level structures* (subsidiaries and conjugated enterprises);
- *in time* as subjects, which are the subjects of cause-effect relationships: first, as a result of the events that took place *in the past* (being the carrier of heredity, and history of their predecessors), and secondly, as a source (cause) of events extended *in the future*.

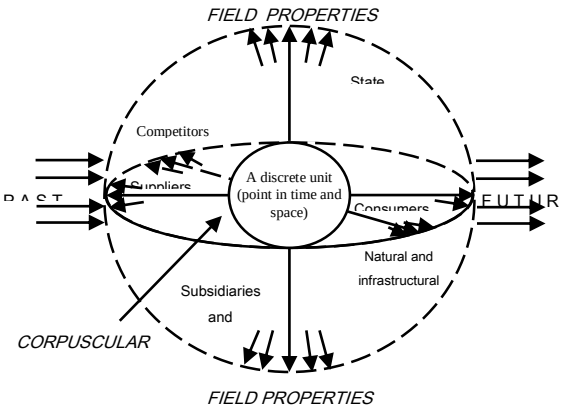

Fig.1. The dual nature of economic agents.

Any company, showing the properties of the essence (ie, a discrete unit) with its address (legal or individual), property, performers has at the same time impact on other areas of activity outside their formal presence, as if creating a kind of

economic field. For example, we can say that every company creates prerequisites for the operation, respectively, resource providers and consumers of their goods.

The automobile industry development in the United States is an excellent illustration. The car (assuming the specific company for its production) has created infrastructure, related products, life style of America, provided the development of petrochemical industry, road construction, tanker fleet, cars service, training drivers for road police control and nowadays satellite navigation, and many other things.

In the Soviet Union the construction and operation of many enterprises had an enormous impact on the development of entire regions and countries on the whole. Cities (it is enough to recall AvtoVAZ with its city of Toliatti, with KamAZ with Naberezhnye Chelny, Norilsk metallurgical plant with the city of Norilsk), highways were built, sea and air routes were laid, infrastructure was formed, natural ecosystems were changed, vocational and technical schools, higher education institutions were opened.

Economic agents can influence policy and the whole countries. The most typical examples are the active U.S. policy to promote poultry companies products (known as "Bush legs") to foreign markets, resource wars in the Persian Gulf, lobbying under the influence of VPK of various forms of acute exacerbations of international situation and the cold war, and in modern history – the incitement of the North revolutions, with the "oil" subtext.

A man also has dualism properties. His physiological nature is limited by the size of a biological body, and realizes corpuscular properties. Personal (social) essence of a man has nonmaterial (information) nature of realization. It is formed by the society (carries information about all social fields) and in turn, itself participates in the formation of the field.

III. The Wave Nature of The Economic Essences

The activities of economic agents are characterized by wave (cyclic) character, which applies to both corpuscular and field nature of their functioning. Rhythm of economic processes is observed at any level of economic systems existence [11]. The duration of production operations, the frequency of raw materials supply and finished goods shipping, operating hours, seasonal nature of work changes, periods of working capital turnover, capital amortization period, the periods of reproduction of natural factors, the payback investment period, the change of periods of basic technology, the basic goods samples or production modes and others are among the major cycles.

Cyclicality of economic systems have dynamic wave properties, including amplitude (ie, differences of economic parameters), the wavelength (period between the beginning and the end of the cycle), the frequency of alternating waves.

Approaches to economic field assessment. Materialized images left by the field essences of economic structures can be roughly measured by means of statistical tools. The Nobel laureate of Russian origin V. Leontiev's research can be considered as a milestone, which laid the basis for formalizing and quantifying the properties of the field of economic agents. His "input-output" method based on the account of intersectoral balance allows us to estimate both direct and indirect (materialized) results of the sectors. This means that you can actually estimate the part of the cost of products manufactured at the enterprises of the given industry, and the part of the past labor cost, products of related industries, which is materialized in goods of the sector under consideration.

In many countries this methodological approach has allowed to perform assessments of direct and indirect (materialized) energy capacity of goods in various sectors of economy. The former is formed within the framework of ongoing production processes of considered enterprises. The latter is caused by the activities of enterprises in other sectors to ensure resource supply.

"Energy memory". In the 1970s the work of American scientists H. Odum and E. Odum have significantly deepened the research period prior to production history of economic assets. It goes about a kind of gradual energy concentration of materialized production factors. The results of the research, the scientists have summarized in a book titled "Energy basis for man and nature". Somewhat later Howard Odum introduced into scientific use a new term "emergy" (from the English "*energy"* and "*memory"*), which meant energy memory, ie amount of energy, materialized in a particular asset in the history of the formation of its material and information content [5].

"Externalities". Economic research of 1960-1970 allowed "see" another facet of the virtual images of the field nature of economic agents. A new economic concept – "externalities» became to be used in everyday life [3;4]. Non formalized effects of businesses that are not "captured" by the official (documented) system of economic accounting businesses that they have produced are called so. More often externalities are understood as environmental impacts. In principle they can be any results that are perceived by other economic agents from the activities of enterprise [2;6].

Negative external effects of individual metal and energy companies reach 30-40% of their internal results [7]. This is the economic damage from the breach (pollution) by enterprises under consideration. And it has outside effects on other sectors of economy; companies in these sectors perceive negative consequences.

Externalities can also be positive. Thus, the positive external effect of recreational facilities (resorts, rest houses) is comparable with the income received by these enterprises. External effects of forests 3–4 times and activities to protect areas 5–6 times cover the amount of cash directed to these areas [8;10]. External effects of beekeeping (according to foreign and domestic research) are from 15 to 20 times higher than the income that beekeeping households receive [8].

Thus, each company creates a unique information-energy field. Directing capital flows of different degrees of power in different areas (sectors) of activity (eg, resource production, or use of goods), this field is the source of a specific quasi-energy of companies. And this energy is in a certain way directed and concentrated by the information. The mentioned above gives grounds to speak about the information vector of the energy

field. The field spreads in space and extends in time. As we have seen, this field can have both negative and positive value, bringing destructive effects or additional benefits of economic and informational forms to other businesses (for example, in the form of increased costs, damages, lost profits).

IV. The Role of Economic Dualism in the Evolution of Economic Systems

The formation of quasi-energy field is a prerequisite for creating variability in the possible change in economies state. Each of the virtual variants of development options for economic systems evolution must pass natural selection, proving its worth in terms of efficiency and the ability to reduce the production of entropy. In his Nobel speech, and a number of publications, Nobel Prize winner Werner Arber has suggested a genetic dualism which manifests itself at the level of biological organisms. In particular, the genetic mechanism is responsible for not only life and development of each individual biological organism, but also the evolution of the entire population to which it belongs [1]. Similar processes occur at the level of economic systems development, which content and form are determined by the mechanism of evolutionary triad (heredity-variation-selection) operating in tough competition.

V. Conclusions

The phenomenon of dualism lies in the fact that a particular element has both properties: a) *discrete unit* (*corpuscle*), which coordinates can be uniquely determined in space and time as a certain *point*, and b) *field-essence*, which has a substantial length in space and duration in time. Such considerations provoke the idea of dualism of economic systems.

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