

The dialectical analysis of the essence of economic phenomena and a model developed on its basis reveal the hidden relationships between economic parameters, which cannot be detected by other methods of research. Although neoclassical theory fixes the relationship between gross saving and gross investment, nevertheless, it is not aware of the interdependence between gross saving and gross profits, also between gross investment and gross consumption in debt as well. Consequently it ignores the links between the all aforementioned macro-parameters (i.e. saving, profits, investment and consumption in debt), which exist within a closed economic system. But without all this, it is impossible to understand how the reproduction is performed, how the general equilibrium is formed, how business cycles occur. Therefore, without understanding of these processes it is not possible to create an adequate mathematical model of a decentralized economic system and develop an effective economic policy.

The search for a new paradigm

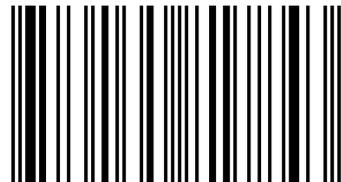


Paata Leishvily

The Frame of Reference for New Economic Thinking



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Preface

The mainstream economics does not yet give us an exhaustively clear explanation of how the market economy performs, because it studies economic phenomena, but not the essence of economy. In *Dialectics vs. empiricism in economics* is stated, that to know the economic reality means to know its essence and, therefore, to know it as the integrity, but not just as a set of various phenomena. The essence has different forms of manifestation. If confined only to the study of phenomena, the knowledge will remain fragmentary, that is incomplete and superficial. Phenomena appear and disappear, generate and destroy each other, but the causal relationships between them, that is, the economic laws by which they interact, remain unchanged. Just they should be learned in order to understand how a decentralized economy functions. The study of essence of economic processes using dialectical method allows to detect relationships between economic phenomena that cannot be detected by the formal logic and mathematical methods and are not directly visible on the level of empirical facts.

In *Towards the teleological understanding of economic value* a new understanding of the category of economic value is proposed. According to this understanding, economic value is the unity of economic utility and economic costs. Interprets these categories of utility and costs as relative and imminently implying one another. There exists a specific attitude of man towards the limited goods which are involved in his teleological activity. On the basis of this new understanding of economic value, attempts to give a new explanation of the law of increasing marginal costs, as the opposite form of manifestation of the law of diminishing marginal utility. The paper suggests the original interpretation of global and local criteria for optimum, and the economic mechanism for comparison of costs and utility. Propose many ideas which proceed from the teleological understanding of man's activity and which are in harmony with the ideas and principles of econometrics.

In *The Symmetry of Economic Activity: The Dialectical Analysis of Economic Phenomena* is shown, that the dialectic and teleological analysis of economic activity allows to reveal reflective relations between such fundamental economic categories as production and consumption, supply and demand, product and resource, costs and utility, profit and saving, expansion and recession, etc. These concepts receive sense only from each other and are mirror-like reflected in each other. The reflection is manifestation of symmetry, which is the most universal property of a universe. Revealing of reflection and internal symmetry inherent to

economic activity, allows more deeply to understand an essence of economic processes, logic of business cycles formation, to create adequate "symmetric" model of economy, to develop effective anti-recessionary policy.

Reproduction is infinitely renewable, continuous production process. This means that as a result of production its premises, conditions for continuing production are also reproduced. The functioning of economy, as integrity, as a living organism, cannot be explained without the understanding of this process. Neoclassical theory considers the production of goods as a unidirectional process from consumption of primary resources until production of final products. It gives a formal explanation of circular flow for does not explain the reproduction process of primary resources. But from a purely economic viewpoint the reproduction is completely closed, circular process, in which all primary resources are reproduced through consumption of final products, where there are no non-renewable resources. In *About Simple Economic Reproduction and Macroeconomic Indicators* an original model of a simple economic reproduction is proposed. The lack of a clear understanding of reproduction process caused significant weaknesses of calculation methods of the main macroeconomic indicators of the SNA 2008 (GDP, GNI, etc.). Adequate methodological basis of their calculation is given.

The purpose of paper *The relativity theory of general economic equilibrium* is to propose a new approach to the understanding of self-regulation mechanism of decentralized economic system. As a result of the dialectical analysis of fundamental economic categories of market economy it appears as the form of a complex, non-linear, functionally closed and causally open system of economic actions. These systems have a number of unique properties that are well studied by second-order cybernetics. This allows in the study of economic processes the unique research and development of this science to be involved in the interdisciplinary format. The self-organization of a market economy is carried out through the recursive processes. Recursive processes in the economic system, as well as in other complex nonlinear dynamical systems, generate "eigenvalues" ("fixed points"). These "eigenvalues" are the equilibrium prices to which through the recursive processes tend the actual market prices, thus providing a tendency of the system to the general equilibrium. However, due to constant influence on the system of random external factors, the general equilibrium is never achieved. On the base of the created model the hidden relationships among the gross profit, gross saving, gross investment and gross consumption in debt, as well as the relationships among the other economic parameters are revealed. This is

important for adequate understanding of economic reproduction, tendency to general equilibrium, genesis of economic cycles, etc. The proposed understanding of self-regulation mechanism of decentralized economic system will help to improve the applied economic models and to develop the effective economic policy. The original interpretation of economic self-regulation mechanism of market economy is given. The “Symmetrical model” of general economic equilibrium, which shows how economic forces arise, where they are directed and how interact with each other, which provide the homeostasis of a decentralized economic system, is proposed. This model shows the attractor of a real disequilibrium economy.

Acknowledgment

After the crisis of 2018-2010, which led to the complete discrediting of neoclassical theory, the demand for new scientific ideas and an alternative vision of the most fundamental economic problems has sharply increased in economic science. At the same time, the discrediting of the neoclassical theory led to a critical attitude to the very idea of a general economic equilibrium, which is the central idea of neoclassical paradigm. The emphasis is increasingly shifting to the creation of disequilibrium models of economy. This book argues that this approach is incorrect. The wrong is not the very idea of equilibrium, but its neoclassical understanding and its concepts and equilibrium models, which are caused by false methodologies of neoclassicists.

Without a preliminary dialectic analysis of economic categories and the operationally closed model of commodity-money flows of a market economy created on its basis, it is impossible to find out feedbacks that ensure the self-regulation of the economic system. The “Symmetrical model” of general economic equilibrium, which shows how economic forces arise, where they are directed and how interact with each other, which provide the homeostasis of a decentralized economic system, is proposed. This model shows the attractor of a real disequilibrium economy. It is shown that the evolution of market economy, which due to the immanent logic of intrasystem processes generates extreme inequality in income distribution, leads to a disruption in the harmony and symmetry of counter flows of commodity and money, thus destroying the system of positive and negative feedbacks that provide the homeostasis of economic system.

This book is a collection of articles. Since each of them is a complete whole, the reader can get acquainted with the articles in any sequence, but after reading all of the articles, he will get a new non-standard understanding of functioning of a market economy. Although each article gives a complete analysis of a specific topic, nevertheless, all of them are arranged in such a sequence that they serve as different stages in the development of a single original concept, beginning with a methodology and ending with a mathematical model of a general economic equilibrium.

Dialectics vs. empiricism in economics

Along with development of economic science the methodology of scientific research was changed. But the "hard core" of neoclassical paradigm was mainly formed in the period when in scientific community of economists the ideas of, first positivism, then, logical empiricism, Popper's falsificationism, Samuelson's descriptivism, logical empiricism and instrumentalism in Friedman's interpretation dominated. This means that this "core" was formed when, in matters of methodology, the authors of a paradigm were adhered to, or strongly inclined to the ideas of empiricism. From the 70s, the scientific community of economists is increasingly subject to methodological views of post-positivists, such as T. Kuhn and P. Feyerabend, who deny the necessity of any single methodology at all, and which are called "methodological pluralism". Nevertheless, the dominance of empiricism in the methodology of mainstream economics continues up to this day. In this article the shortcomings of empiricism, as an integral component of intellectual atmosphere, in which the "hard core" of neoclassical theory was being created, are considered. And also, expediency is argued of application of the dialectical method to analyze the intractable problems of economics.

A characteristic feature of positivism and empiricism is that the sole object of knowledge is considered to be the facts available to sensations, and the only source of knowledge - experience. Therefore, such terms are unacceptable for it as "law", "reason," "essence," "substance." The concept of "cause" is replaced by the mathematical concept of "function". Positivists do not see the difference between objective and subjective (logical) contradiction.¹ Every contradiction is considered to be inevitable subjective evil, the result of errors and inaccuracies in thinking. The basic

¹ The opposition is the unity of identity and difference. "Essential difference is therefore **Opposition**; according to which the different is not confronted by *any* other but by *its* other." (Hegel). Knowledge of objective contradiction is necessary for understanding the essence of the object. But a logical contradiction is the result of wrong thinking.

method of scientific knowledge is considered to be observation, and the main function of science - a description. But the commitment of neoclassicists to such methodology creates a lot of questions.

The failures of mainstream

Economics aims to describe only the external, visible part of the economic reality. But if you do not see essential relationships, it is impossible to give a logically consistent explanation of economic processes. That is why the mainstream is divorced from reality and is full of logical contradictions. Here are a few examples.

1. When explaining the law of diminishing marginal utility a simple empirical observation is presented as "economic law". An explanation is given that

" . . . the diminishing marginal utility results from the fact that your enjoyment of the good drops off as more and more of it is consumed. The law of diminishing marginal utility states that, as the amount of a good consumed increases, the marginal utility of that good tends to diminish." (Samuelson, 1992, p.84)

These conclusions, concerning the quantity of consumed good, are unreasonably extended to the quantity of purchased good (or the quantity in the stock). But, in the first case, the need means decreasing (as they are saturated), while in the second - fixed. Neoclassicists violate their own methodological principle "ceteris paribus". In the first case decreasing need is projected only on the next unit of consumption good, while in the second - a fixed need is evenly divided over the total quantity of goods in a stock. Accordingly, as the quantity of goods is increasing, in the first case, the *marginal* utility of *additional* units decreases, while in the second - the *average* utility of *all* units decreases. Since all items in stock are in the same position and do not have priority, they cannot have different utility. In the case of change of quantity in a stock or quantity demanded, the curves of marginal and average utility coincide. Therefore, if we are talking about the stock or demand, we should talk not about the law of diminishing **marginal** utility, but about the law of diminishing **average** utility.

2. The "law" of diminishing marginal utility is put into the basis of the theory of consumer choice. According to this theory:

"A consumer with a fixed income and facing given market prices of goods will achieve maximum satisfaction or utility when the marginal utility of the last dollar spent on each good is exactly the same as the marginal utility of the last dollar spent on any other good . . ." (Samuelson, 1992, p.86-87).

This is explained by the fact, that if on the last dollar spent on various goods, are accounted the different marginal utilities, then consumer will benefit from the redistribution of money as long as there will be established the equality of marginal utilities, after which any redistribution will lose any sense. But does the consumer tend to the optimal use of only the last dollars spent on various products? No. He seeks to make optimal use of all of his income, all the dollars spent on goods. However, since all products have a different elasticity of utility, then the equality of marginal utilities means inequality of average utility for each dollar spent on purchases of various commodities. Therefore, according to the very same theory, the consumers must reallocate their expenditures so that the average (not marginal) utility per dollar spent on all kinds of goods will be equal. Accordingly, the condition of consumer equilibrium should be a proportionality of the average (not marginal) utilities to the relative prices. Similar arguments are valid also for the producers' cost minimization rule.

3. According to the law of diminishing returns, marginal costs do not always have a tendency to increase, but at first they decrease and only after that they do increase. In other words, they have a U-shaped curve. At that, according to the neoclassical paradigm, the firm's supply curve in the short run is stipulated by the increasing (right) half of the U-shaped curve (which is located above the "Shutdown point"). But it would have been correct if all the enterprises had usually worked under overload of the productive capacity, under the conditions of surplus of variable costs over the fixed costs. In reality, the enterprises, as a rule, have the reserved productive potential, the surplus of fixed costs over those which are variable. Consequently, the increasing of variable costs, when production is increasing, leads to the improvement of technological proportions between the fixed and variable costs. Thus, with the increase of production in the

enterprises, marginal costs do not increase but, on the contrary, decrease. And from this point of view, the basis of firm's supply curve must be not the right, but the left half of the U-shaped curve. (This is nonsense of course.) (See, Leishvily, 1996, p. 14)

4. The neoclassical theory of price cannot explain the formation of prices and runs into a logical "vicious circle". On the one hand, it is argued that the market prices of commodities depend on the decisions of individual sellers and buyers; on the other hand, it is argued that their individual decisions themselves depend on the system of market prices. It remains unclear how the pricing happens. While it is true, that each price is in the functional relationship with all other prices, but it is not sufficient for understanding the mechanism of price formation and constructing the models.

I gave a few examples showing the disparity of neoclassical theory with the facts, its deviation from the declared methodological principles, logical contradictions and inconsistencies. Such "failures" of this theory are numerous. And they all, ultimately, are caused by an empirical approach to the study, by the desire to describe the isolated facts and externally observable processes rather than to understand the essence and the internal relationship between them.

Reasons for failure of mainstream

According to the positivism the scientific concepts are developed based on the generalization of certain facts and phenomena. Out of the many phenomena of some kind the scientist identifies their common features, being abstracted from their specific characteristics. Thus are created scientific concepts (production, consumption, demand, commodity, etc.). Then there are distinguished repetitive forms of relationships between phenomena and are called the "laws" ("diminishing marginal utility," "increasing marginal costs", etc.). From such abstract "concepts" and "laws" deductively hierarchically organized system of terms, concepts is erected, a scientific theory is created.

But in order to find a common feature of all phenomena of some kind, you must first define the set, which makes this kind. But you need to have a

criterion for the selection of this set, i.e. know that most common feature, which we want to find. But how do the authors of neoclassical theory solve this old philosophical problem? They outline many of the primary phenomena for subsequent generalizations not based on any scientific principles, but based on the "common sense", i.e. already existing common, non-scientific, abstract and vague, intuitive notions.

1. Such procedure of scientific concepts formation does not take into account one very important circumstance. There are not in the world fully isolated, out of universal connection existing phenomena. Any thing or process is an element of a system of interacting things, processes and relationships. Every single economic phenomenon always appears and disappears within a regularly evolving system of economic phenomena, in the bosom of a given integrity. Moreover, each thing is what it is, thanks to its relations with other things. Outside of these relations, apart from the whole, a part of which it is, it ceases to be what it is.² For example, a commodity is a commodity only because it is in relationship of exchange with other goods and is the object of ownership of its owner, the object of solvent needs of its buyers, etc. That is, because it is a part of a system of certain economic relations. Outside this system, it ceases to be a commodity, as such, although it still may be a product or resource, or generally good.

The necessary and stable causal relationships between phenomena of the system are laws, which determine the origin, evolution and death of the individual phenomena within this system. But the set of these laws just is the essence of this system of phenomena.³ Empirically observed phenomena (economic subjects, goods, services, markets, etc.) appear and disappear, but the system itself, elements of which they are, and the laws by which the system operates, remain as a constant, stable base, as the

² "The single members of the body are what they are only by and in relation to their unity. A hand e.g. when hewn off from the body is, as Aristotle has observed, a hand in name only, not in fact." (Hegel, p. 405-406).

³ Essence - is what is constant in a variety of phenomena, is the foundation of any phenomenon and manifests itself only through the phenomenon, but it itself is hidden from direct observation of researcher. For example, a fall of stone, the ebb and flow of the sea, the movement of planets and other phenomena we can observe directly. But is it possible to see directly the law of gravity? No, it's impossible. But the law of gravity is the essence of all these phenomena which seemingly have nothing in common with one another. The gravity, i.e. essence, can be detected only through the thinking, cognition. The same is true for the essence of economic phenomena.

essence of transient phenomena. Each phenomenon is caused by this entity. Of course, except for necessary and sustainable relationships between phenomena, in the system there also appear the occasional and transient relationships. However, they are not essential for the knowledge. The essence, the laws make that universal, which is manifested in a variety of single facts. To know the truth means to know a universal.

However, universal as the essence, differs from the general, which empirics isolate from that set of homogeneous phenomena as "common features". There are two different understandings of the *general*: a) as something that is a part of each of some objects, and determines their similarity on the "common ground" (what the empirics isolate as a common feature when they form the scientific concepts and laws); b) as something that exists independently, irrespective of objects under consideration (such as a common ancestor, common property, etc.). Just in this sense, the laws constitute that common basis or essence, in the bosom of which various phenomena are formed, evolve and disappear. At that, along with the general properties, these phenomena may have opposite, or even, mutually exclusive, features. Moreover, just their dissimilarity of various phenomena within a single system is the condition that all they perform different functions and complement each other as necessary elements of a single system.

In addition, the sequence of analysis of scientific categories and of linking them with each other should be dictated by the real historical process of development, starting from the "embryonic" forms and ending in the modern highly developed economies. In the process of learning, a part of the whole must be picked out for investigation in the order in which they occurred historically.⁴ A more complex category can be developed only after, and on the base of simple one. And every act of analysis should be a step in the way of identifying the relationship between parts of a whole. Such analysis, due to the very sequence of steps of this analysis, reproduces the logic of formation of real functioning economic system as integrity. But when positivist outlines the group of phenomena, from which he abstracts common features for formation of scientific concepts, or when he studies this or that element of it, he first, does not recognize the necessity to adhere

⁴ "And its nature [of the world] is much more easily conceived if one thus watches its gradual origin than if one considers it as ready-made." (Descartes, p. 292).

to a "logic of the historical process" and, second, he is pulling out facts from that system of relations, elements of which they are.⁵

At such way of researching the scientist breaks the relationships of investigated phenomenon with other phenomena of the system. But outside of these relationships thing ceases to be what it is inside the functioning system. There broke the essential relationships of the whole and a part, of causality, of interaction. So it turns out that in the course of study of an object just those of its features remained outside the attention through which it performs a definite function in the system. Consequently, the researcher cannot see those most essential features, which make this object as a part of a system, within which it "lives" and out of which it is "dead." And just these relationships between the elements of a system, "unseen at the beginning" suddenly come out afterwards in the form of logical "vicious circles" or inconsistency with the facts that discredit the theory as a whole. So from the beginning empirics do not consider an object under study as part of the whole in composition of the whole. Especially it is difficult to see a whole when talking about the economy as a social organism. To make it would not be so difficult if it was a separate company or mechanical device.

"When we deal with the fact of mutual dependence of parts within easily foreseeable whole - whether it's clock mechanism, or a small team of working people, which have divided responsibilities in a common effort ... here it is clear that some details are dependent on each other, and tracing step by step the all amount of dependencies between different parts, we understand the whole." (Ilyenkov, 1991, p.282).

But in the case of a market economy seemingly independent people and things, which are not directly dependent on each other, are linked in a certain entity. The economic system seems to be **result** of interaction of originally independent elements and processes (separate subjects, commodities, transactions, market processes, etc.) , rather than a **cause**, which itself determines the way of their interacting and in general

⁵ "... The definition of whole in principle cannot be obtained ... through the fixation of those " common features ", which each separately considered part of the whole, each of its constituent elements possesses, just as the idea about the form of house can't be made from those features, which each single brick possesses."(Ilyenkov,1991, p.282).

determines their origin, function, and death. "Methodological individualism" of neoclassicists is just one of the manifestations of such understanding of reality. However, this methodology cannot be successful. We can carefully examine the separate parts from which the object under study is composed. But that's not enough for understanding of the object itself as integrity. Because we still do not know why these "parts" are connected with each other just this way and not another, we do not know why and how they shape that integrity which we want to explore.

2. According to empiricism only empirically perceived facts are recognized as source of knowledge. But what is a fact? Regardless of subject, there exist only concrete objects and processes of their transformation into each other according to the objective laws of nature (physical, chemical, biological and other processes). But whether this or that fact is perceived as a fact of economic, political, moral, religious, aesthetic or any other activity, all this depends on the subject's attitude to these facts, and accordingly, on their interpretation. Indeed, the facts themselves are not **economic** facts. It all depends on the goals, needs, which provoked them. Consequently, the subjects differently perceive one and the same objective facts. And even within the very economic activity facts are perceived differently. For example, production and consumption, as such, are merely subjective interpretations of objective processes taking place, rather than the objective characteristics of these processes. As it was noted, objectively there exists only a transformation of one object into other according to the laws of nature. But whether man will name them the production or consumption - it depends on his attitude towards this process. Accordingly, he will be called producer or consumer. From this also depends whether this or other objects will be products, or resources for him, and he will treat them as the embodiment of costs or the embodiment of utilities, etc. Similarly, all other economic categories - they are relative and exist only in the mind of man.

"Economics is not about things and tangible material objects; it is about men, their meanings and actions. Goods, commodities, and wealth and all the other notions of conduct are not elements of nature; they are elements of human meaning and conduct. He who wants to deal with them must not look at the external world; he must search for them in the meaning of acting men." (Mises, 1996, p.92)

Also: "Production is not something physical, material, and external; it is a spiritual and intellectual phenomenon." (Ibid, p.141)

In other words, to be a producer, consumer, product, resource, etc. - all this is not an inherent property of objects or subjects, but the functions, which they perform. A person produces not because he is producer. On the contrary, he is producer because he produces, because he performs this function. At that, the various functions performed by subjects and objects are interrelated, changing all the time, transformed into each other, appear and disappear. Manufacturer of products simultaneously is a consumer of resources; otherwise he will not be able to produce. And then he will be the seller of commodity, which means that he will become a buyer of money. But then again, he will be a buyer of other goods and seller of money, etc. For it is impossible to buy goods without selling money. At that, by entering into various economic relationships with each other, the subjects mutually stipulate the nature of functions they perform. Similarly are interconnected creditor and debtor, the exporter and importer, the product and resource, etc. These relationships between the elements of economic system, arising and disappearing according to definite economic laws are just the invisible "threads" that bind all economic phenomena, processes, objects and subjects to each other, forming an integrity, which we call the economy. If you break these "threads", then the seller cease to be a seller, the buyer - to be a buyer, the creditor, debtor, product, resource, commodity, money (and so on) will no longer be what they are. And the economy will cease to be economy.

If we want not only to describe, but also to understand how the economy operates, we must perceive economy as a single organism, as a system. It means that both concepts, reflecting these phenomena and processes must be a uniform system. That is, the economic categories should not be the "frozen" categories, artificially tied to each other, but as fluid and flexible, they should transform into each other, organically interrelate with each other as economic phenomena and processes are. But to identify and understand these relationships is possible only through the dialectical method, only by analysis of essence.

Relations, which "are not seen" by the orthodox

Since the methodology of mainstream economics does not recognize the existence of essence as such, it does not investigate it, and therefore cannot see these relationships. These relationships are not visible externally, at the level of phenomena. Even on the contrary, at direct observation certain phenomena may seem not only independent from each other, but also the opposite, even mutually exclusive. Therefore, neoclassical theory is not aware of a deep inner connection between the seemingly separate and opposing categories - production and consumption, supply and demand, utility and cost, profit and saving, etc. Production is investigated separately from consumption, utility - separately from cost, demand - separately from supply, etc. Such method does not allow to see the inner unity of these opposites. Therefore, the theory of production is not related organically to the theory of consumption, demand theory - to the theory of supply, utility theory - to the theory of cost, etc. Here are examples of some of those essential relationships, which neoclassical theory cannot see because of false methodology, because of inability and unwillingness to investigate the essence of economic processes and the inability to see the economy as integrity:

1. The neoclassical theory does not take into account the deep inner link between production and consumption in general.⁶ But they are inextricably linked. The process of production of products itself is the process of consumption of resources, and the consumption of resources - is production of products. That is, it's not two different processes, but the same process seen from different points of view. In essence, these are two different aspects of one process of transformation of some goods into others. In a market economy, where the goods have the form of commodities, this process takes the form of "transformations of some commodities into others."

Due to this circumstance production and consumption sectors are also connected inseparably. The point is that the primary resources for production are not production factors themselves (labor, land and capital), but their services. Accordingly, owners of production factors sell to

⁶ "The product, therefore, of individual consumption, is the consumer himself; the result of productive consumption, is a product distinct from the consumer." (Marx, 1996, p. 193).

entrepreneurs not the production factors themselves, but either their "services" or "rights to use services." But if the primary resources are not the factors of production, but only their services, being sold by owners of production factors, then regardless of whether production factors themselves are reproducible or irreproducible, in all cases the primary resources, as commodities, are reproducible. Reproduction of primary resources ("services" and "rights") as commodities is reduced to the reproduction of the life of production factors' owners. And that means that it is reduced to consumption of final products of production sector by these owners. For the reproduction of rights of ownership on production factors and their services (sold as commodities on recourse market) is reduced to reproduction of subjects of this right. They sell these "services" and keep them as a permanent source of income just because they do not sell production factors themselves. From this it follows that the sector of consumption of final products is the sector of reproduction of primary resources, and the sector of production of final products is the sector of consumption of primary resources. Each of these sectors produces goods that are consumed by the opposite sector. Therefore, what is a "resource" for one side is a "product" for the other. Just because of this contradiction, they are necessary for each other, they are necessary parts of a single whole. Just this whole dictates the proportions of social production and consumption. This whole is market economy "producing commodities by means of commodities." But the relationship between production and consumption, as parts of the whole, takes the form of market exchange. But since the neoclassicists investigate the production and consumption in isolation from each other, they lose sight of properly economic context. It remains to focus on non-economic aspects of these processes. The result is a "technologism" of production theory and "psychologism" of consumption theory and the total absence of understanding of economic essence of these processes.

2. Supply and demand seem to be the opposite phenomenon. Demand is desire to buy; supply is the desire to sell. But a desire to buy commodity itself is a desire to "sell" money, and a desire to sell commodity - is a desire to "buy" money. That is, in essence, both are a desire to exchange some economic goods for others. And in this sense they are identical. Since it is impossible to wish to buy good and do not wish to sell other good, then the

subject cannot be a buyer, without being a seller either. Demand cannot be without supply, and supply - without demand, etc. Because of this, though these processes are mutually opposite, but they complement each other and together form the wholeness, just which the market is.

"The exchange value is a property of certain things, which consists in the fact that they cannot be obtained or concede free of charge, but can be bought and sold, received and given in a certain quantitative proportion in exchange for other things. The buyer of one thing is the seller of that one, which he gives in return. The seller of one thing is the buyer of that one, which he gets in return." (Walras, p. 35)

3. Utility and cost are the opposite phenomena, but they also have the same essence. Both are teleological **attitude** of subject to objects through the prism of his needs (satisfied or unsatisfied). Economic utility - is the ability to satisfy the economic needs, and as a result of this satisfaction, utility is transformed into economic cost. Economic cost is utility, sacrificed for the satisfaction of needs. That is, utility correlates with unsatisfied need, and cost - with satisfied need. If as a result of consumption of utility the needs are not satisfied, and if the utility does not transform into a cost, it means that it turns into a loss. Utility - is a future cost and cost is a past utility. And as a result of economic activity the economic utility of resources turns into economic costs embodied in products. In the process of activity, they are transformed into each other parallel to the process of satisfaction and emergence of economic needs. Economic utility and costs are internally interconnected and together form a single whole - economic value, manifestation of which just is a price. Without understanding of economic value as a unity of utility and costs it is impossible to understand - how prices are formed and how the market self-regulation is performed. Still Friedrich Wieser pointed to the relationship between utility and cost:

"... The theorist must cover all economic phenomena in their interrelation caused by the unity of economy. Concepts of utility and costs are also ultimately related to each other, and their deeper meaning can be learned only when is understood their inner relationship." (Wieser, 2011).

4. Profit and saving are also intrinsically interconnected. In fact, the alternation of incomes and expenditures takes place both in production sector, and in consumption sector. Incomes of producers are expenditures for consumers, and expenditures of producers are incomes for consumers. Accordingly, the difference between incomes and expenditures takes for them mirror opposite forms - profit and saving. That is precisely why the gross profit and gross saving are inwardly interconnected. As soon as incomes of ones are expenditures for others, and vice versa, the profits and saving cannot be independent magnitudes. The changing of relative prices of primary resources and final products in a market economy, in opposite way is reflected on the magnitude of gross profit and gross saving. And in conditions of equilibrium (optimal) prices gross profit and gross saving are equal.

5. The same as the reverse side of current production is the current consumption, the other side of investment is the consumption in debt. If one person invests, it means that someone else consumes in debt. One is impossible without the other. They represent two aspects of one and the same process of redistribution of production and consumption possibilities over time. Moreover, the subject itself carries out such redistribution in order to optimize economic activity. And it depends on the subject, whether he refers to the current consumption as to expenditures for the sake of future benefits, or as to the current benefits at the expense of future benefits, i.e. whether he refers to it as to the investment or as to the consumption in debt. They mean withdrawal of excessive economic benefits (opportunities) from one time interval and involving them into another time interval.

Is it possible to look "beyond" the facts?

Someone can seem that all this is only a "dialectical rhetoric" and "play of words", which has no sense from a scientific point of view. But it is not the case. These transitions of opposite categories into each other reflect the "real life" of economic processes. And through the dialectical thinking, one can obtain a "new knowledge" that cannot be obtained either by direct

observation of empirical facts, nor by syllogisms of formal logic, or by mathematical methods.

For example, according to above noted, it appeared that all subjects simultaneously are producers and consumers, buyers and sellers. As such, they do not differ from each other and together form **a set** of identical subjects. At the same time, it appears that each of them produces what the other consumes and consumes what the other produces. In this way, the subjects are "tied" to each other. **The set** appeared as **integrity**, a closed system of relationships, just what the economic organism of society is. In such a way, each subject turns out to be a part of that integrity. This means that not only the actions of individuals cause the operation of economic organism, but also the functioning of this organism as a whole determines the actions of individuals. Not only individuals "create" society, but also society "creates" individuals. As member of society, individual becomes a part of it. For it turns out that the individual's needs are part of social needs, individual's production possibilities are part of society's production possibility, individual supply and demand are part of social supply and demand, etc. Hence it is clear that the seemingly independent individuals are dependent on one another as well as the elements of a single system.⁷

This system is self-sufficient, contains all the necessary elements, and does not need anything else. For in the system itself all is produced, that is consumed, and all is consumed, that is produced. Some produce the final or intermediate products, others - reproduce the primary resources. However, as was shown earlier, such distinction between products and resources is conditional. These are the relative concepts. In a broad sense, all of goods are both "products" for their producers, and "resources" for their consumers, all of them have economic value, which is perceived as costs for producers, and as utility - for consumers, etc. Because each subject

⁷ And since society's capacities are limited (by the available resources and technologies), then, if one consumes more, then someone else should consume less, if one consumes in debt, someone has to invest. In addition, anyone who consumes in debt today, in the future will be forced to limit consumption. If in general the society today consumes in debt more than invests (waste the stocks of resources), then tomorrow it would have to reduce consumption. That is, imbalance between investment and consumption in debt generates fluctuations of economic activity. Lack of understanding of the relationships between investment, consumption in debt, saving and profits led to the wrong economic policies of leading countries, a huge growth of consumption in debt, an imbalance between these economic flows and, ultimately, the world crisis of 2008.

must produce for others, and all others must produce for him, then there exists a necessity of sectoral structuring of social production in accordance with the structure of social needs. The total volume of production of any goods shall conform to the total volume of consumption of that good. If we combine all the producers of similar goods, and hence also the consumers of similar goods (because their production requires the same consumed goods), we get sectors of economy. In such understanding economic sectors are not only the sectors producing the final (or intermediate) products, but also sectors, reproducing the primary resources, i.e. consumption sectors. Each of sectors transforms a set of consumed goods into produced good. In order that this process continued permanently, produced goods are exchanged for consumed goods. At that, under conditions of optimal functioning of economy, every sector should produce the goods in an amount necessary to satisfy the needs of all consumers. And further, to exchange their goods for all needed to him goods. Therefore, in the conditions of optimality, in the result of exchange excess goods do not remain. And the optimal prices are such ratio of commodity exchange, in which all goods are sold.

From the said above we can conclude that, in a certain interval of time, the condition is optimal in which the value of "product" of some sector, consumed in other sectors, is equal to the value of "products" of other sectors, consumed in a given sector.⁸ This is a state of general equilibrium, at which deficits and surpluses do not occur, the optimal proportions of goods exchange (equilibrium prices) are established, supply and demand reflect production and consumption and, hence, are also in balance, etc.

In essence - it is a law of general equilibrium, which forms the optimal proportions of goods' production and consumption in conditions of perfect competition. Absolute volume of production and consumption does not matter, it implies only their proportions. At the same time, this law is such not in the sense of **repeatability** (i.e. not in the interpretation of positivists), but in the sense of **necessity**. For, in the case of compliance with this law, the economy necessarily is in equilibrium, and in it such proportions of goods exchange (i.e. prices) are established, in which all that is produced is consumed, and all that is consumed is produced. But if these

⁸ In this case the term "products" is implied in a broad sense that is they can be not only final products, but also primary resources, reproducing in consumption sector.

proportions are violated, then necessarily the deviation will happen from equilibrium and the integrity of economy will be disturbed, deficits and surpluses will arise.

And the matter is not the question if such an ideal state of economy really exists. Of course, it does not exist as, by the way, a perfect competition does not exist. And what is most important, it does not exist because the existence of profit (P), saving (S), investment (I) and consumption in debt (D) is not taken into account here. (Say nothing of the government, foreign trade, etc.). Regarding this issue, without going into details, we can only note the following. By the inability to know the essence it is caused that the neoclassical theory, although it fixes the relationship between saving and investment, is not aware of interdependence between saving and profit, also, between investment and consumption in debt. Therefore, it is unaware of the connection between all the above mentioned categories (saving, profit, investment and consumption in debt), which exists within the framework of a closed economic system. But without this it is also impossible to understand how a general-equilibrium is configured, how economic cycles appear. (See, Leiashvily, 2011, 2012).

Nevertheless, the above described ideal construct is necessary for understanding of what is a general economic equilibrium. And only after that we can understand what the deviation from equilibrium means, how self-regulation of sectoral structure and of economic activity (business cycles) happens, what happens when monopoly, government intervention, foreign trade, etc. take place. In this paper, we do not consider these issues. We want only to show that the dialectical method allows detecting something that is not seen directly at the level of empirical facts; detecting phenomena that cannot be detected through formal logic or by mathematical methods, because this "something" is not an empirical fact or phenomenon. That "something" is located on the other side of phenomena and is the universal and necessary causal relationships between them, i.e. are laws, as stable and unchanging basis of all changing world of transient economic phenomena. Phenomena themselves and the individual facts appear and disappear, generate and destroy each other, but the causal relationships between them, that is, the economic laws by which they

interact, remain unchanged. Just they should be learned in order to understand how a decentralized economy functions.

Economics reflects only external, visible part of the economic reality. But such superficial, partial reflection of reality does not allow even adequately describing it, and certainly does not allow understanding it. Mainstream cannot understand the economic processes in their unity and interdependence. But without the understanding of how the market economy functions, it is impossible to create appropriate economic models. Therefore, modern economic models, including the equilibrium models (DSGE model), do not reflect reality either, as it is evidenced by the failure of economists to predict and prevent the global economic crisis.

Conclusion

1. The Popper's scientific authority has had an enormous impact on the outlook of scientific community in the XX century. Under his influence, many economists formed prejudice and false attitude towards the dialectic, historicism and to all, what Popper treated negatively.⁹ Popper's aversion to the dialectic, Hegel, Marx, is so strong that after reading his works, the reader has no longer any desire to become better acquainted with their works, with the dialectic at all. (See, Popper 1992, 1963). (All the more to read the text of Hegel, by itself, is "not easy" occupation). But acquaintance with dialectic in the interpretation of positivists, neo-positivists, post-positivists and especially of Popper, gives a distorted view of it, and accordingly, the dismissive attitude to it. All this prevents any serious relation to any attempt to revive interest to dialectic. Just this prevents to overcome methodological problems and the crisis of economic science.

As Blaug pointed, to defeat the old theory, is not enough to subject its premises to devastating criticism or to collect new evidence - it is necessary

⁹ "Hegel never enjoyed a good reputation in the Anglo-Saxon world, where he was called a reactionary apologist of the Prussian monarchy, the forerunner of totalitarianism of the twentieth century and what is worst of all from the English point of view, metaphysician difficult in reading. This bias to Hegel did not allow seeing his role as a founder of modern philosophy. Whether we want to acknowledge or not, but we owe the debt to Hegel by the most fundamental aspects of today's social consciousness." (Fukuyama, 2005, p. 107-108).

to suggest a new theory. (Blaug, 1994, p. 659). It is obvious that the new paradigm cannot be based on the old methodology. Dialectical methods of investigation are based on dialectical logic which differs fundamentally from the formal or mathematical logic and which completely dominates in economics. An attempt to reconsider the fundamental categories and all scientific tools of economics on the basis of dialectical method will allow to take a fresh look at the economic realities and to discover in them that which cannot be discovered by other methods.

2. The economic activity is a form of human activity in general. But human activity is expedient activity. The underestimation of this truth generates many misunderstandings in the theory. Market economy is only one form of manifestation of economic activity, which can be manifested as well in the form of natural and regulated economy. And to understand the essence of economic activity, it is necessary to investigate the expedient activity in general. Economic activity is a teleological process, activity in accordance with a pre-set goal. This is one of the fundamental provisions, which should penetrate the whole body of this science.¹⁰ Instead, in the mainstream the processes are analyzed from the standpoint of psychologism, technologism, methodological individualism. This leads to inadequate reflection of real economic processes. Enrichment of teleological approach to studying of economic activity by dialectical analysis and investigation of economic activity in historically- logical context will allow to receive principally new understanding of fundamental economic categories and the relationships between them, as well as a new understanding of market mechanisms of formation of general economic equilibrium, business cycles and economic growth.

3. The causes of crisis of economics lie deep on the level of methodology. In the framework of applied by it methodology the logical contradiction of neoclassical theory cannot be solved. To know the economic reality means to know its essence and, therefore, to know it as the integrity, but not just as a set of various phenomena. If confined only by the study of phenomena, the knowledge will remain fragmentary and

¹⁰ Now classical fundamental treatise of Mises "Human Action" is based on a teleological understanding of economic activity ("praxeology" in Mises's interpretation). This allowed him to come closer to understanding the essence of economic activity, but he was unable to learn it fully, for, like neoclassicists, he did not accept dialectic and strictly adhered to the methodological individualism

superficial. Because without the knowledge of essence, the inner, deep connections, interdependence of these phenomena will not be understood, those laws and forces which bind these phenomena into a single economic organism, and turn them into a part of whole will not be understood. But to learn the essence of economic activity is possible only on the basis of dialectical methods of investigation.

4. At present the mainstream is a compilation from the various theories developed by different authors in different times and reflecting the different fragments of economic reality. Theories of demand, supply, money, equilibrium, competition, consumer choice, production factors, etc., are artificially spliced between one another. They lack internal unity. Therefore, the mainstream is more like a "dead" construction, composed by independent "blocks" than a single system of organically interconnected categories and laws reflecting the "life" of economic organism. Therefore, there arise inconsistencies and logical contradictions between these "blocks." If we want not only to describe, but also to understand how the economy operates, then the concepts also should be the same flexible, transforming into one another, organically interconnected into a single system as the phenomena and processes, which they reflect.

5. The dialectical contradictions between production and consumption, supply and demand, utility and costs, etc. exist objectively and "to get rid" of them is impossible. These objectively existing contradictions mutually stipulate one another. An economic subject cannot be a consumer without being a producer. And this means that the economic good cannot be a resource without being a product. Consequently, this good cannot have economic utility for consumer, without embodying the economic costs for producer. Also, the monetary price can't reflect the utility of good for buyer without reflecting the costs for seller, etc. If we "do not note" the objective contradictions, because of this, they will not cease to exist, but necessarily "stuck out head" in the form of subjective (logical) contradictions either inside the theory or between the theories and facts. Just this is confirmed by the abundance of such contradictions in neoclassical theory. The theory should reflect the objectively existing contradictions.

6. Economic theory still does not give us an exhaustively clear explanation of how the market economy performs, because we study

economic phenomena, but know not well the essence of economy. Of course, in such circumstances, the effective regulation of the economy is impossible. As soon as we learn the essence of economy, a real opportunity of effective regulation without crises will appear which so painfully affects the welfare of society. The spirit of pluralism, as proclaimed in the WEA, gives hope that the clash of opposing points of view will generate new ideas, which will open our eyes to essence of economic reality, and "breathe life" into frozen, lifeless categories of the "dismal science."

References

1. Blaug M. (1994), *Economic Theory in Retrospect*, "DELO, Ltd., Moscow.
2. Descartes R. (1950), *Selected Works*, Gospolitizdat Publishers, Moscow.
3. Friedman M. (1994), *The Methodology of Positive Economics* \ \ THESIS, issue 4.
4. Fukuyama F. (2005), *The End of History and the Last Man*, "ACT: Ermak", Moscow.
5. Hegel G. (1974), *Encyclopedia of the Philosophical Sciences*, vol.1, "Misl", Moscow. (in Russian)
6. Ilyenkov E. (1991), *Philosophy and culture*, Politliterature, Moscow.
7. Leiashvily P. (1996), "Towards the teleological understanding of economic value." // *International Journal of Social Economics*. Vol. 23, N 9, p. 4 - 14.
8. Leiashvily P. (2011), "The Dialectics of Economic Activity (In Searching of Symmetry in Economy)," // *Georgian International Journal of Science and Technology*, V.3, Issue 3.
9. Leiashvily P. (2012), *Economic Activity: Teleological Analysis*, Nova Science Publishers Inc., New York.
10. Marx K. (1996), *Capital*, Volume I. [Marx & Engels. *Collected Works (MECW)*: Volume 35, Moscow, London, New York. "Progress Publishers, Lawrence & Wishart, International Publishers".]
11. Mises L. (1996), *Human Action. A Treatise On Economics*, Fourth Revised Addition, Fox & Wilkes, Sun Francisco.
12. Popper K. (1992), *The Open Society and Its Enemies*. Volume 2, "Kulturnaia inisiativa", Moscow.
13. Popper K. (1963), *Conjectures and Refutations*, Routledge & Kegan Paul, London.
14. Samuelson P., Nordhaus W. (1992), *Economics*. 14-th edition, NY. McGraw-Hill, Inc.
15. Walras, L. (2000), *Elements of pure economics*. Izograf, Moscow, (in Russian)
16. Wieser F. (2011), *Social Economics*. (http://libertarium.ru/lib_mbv_v_18)

Towards the teleological understanding of economic value¹¹

At the present stage of economic science the investigation of the problems of value has been pushed into the background. Researchers have concentrated their attention on the problems of price. However, the theory of value was put aside not because the problem of value had been solved; on the contrary, this problem appeared to be too complicated. Many economists found it more convenient to do without it, declaring it a pure theoretical fiction and constructing the theory of supply and demand, in which all the questions of price formation, income distribution and other problems are solved without using the category of value [1]. However, since a deep analysis of the problems of price and price formation is impossible without preliminary researching of value, the contemporary theory of price contains logical contradictions. At the same time, it is impossible to solve the problem of value without preliminary analysis of individual economic value and, ultimately, without teleological analysis of labor.

As we can see from the history of development of economic theory, either "utility" or "costs of various production factors" were always declared as substance of value; and when scientists begin the value analysis from the concept of "costs" they are eventually forced to resort to the concept of "utility". By contrast, when they begin with the concept of "utility" they come, in the end, to the concept of "costs". All this happened regardless of whether they understood this concept of "costs": as "expenditure of labour", or "expenditure of all the production factors"[2]. To break out from this vicious circle, I consider it necessary to reach a new understanding of the concepts of "utility" and "costs", because the reason for all these difficulties is that these concepts are regarded as not inwardly interrelated, as independent categories. However, with more thorough

¹¹ Reprinted from *International Journal of Social Economics*. 1996. Vol. 23, N 9, pp. 4-14 with permission from Elsevier Science.

analysis, we find out that these categories are relative, one implying the other.

For a correct understanding of economic value it is also necessary to have a correct interpretation of "labour". In its essence "labour" is a teleological activity, not an expenditure of physiological energy. Therefore we must analyse labour not from a physiological, but from a teleological point of view, as the process of realization of the aim. According to teleological analysis, labour is the unity of aim, means and results. Without any of these elements, labour is not labour. At the same time, it should be noted that "means" imply all limited resources needed for the realization of aim: minerals, land, material resources, (4) time, etc. as well as physiological labour itself. Thus, physiological labour is only one of the elements of teleological labour. These two different interpretations of labour (teleological and physiological) obviously became the reason for many errors in the history of economics. Economists always argue about the problem - what is the basis of economic value: "labour", "production factors" or "utility"? But if we analyse labour from the teleological point of view, the principal differences between these theories of value disappear immediately. In fact, they imply one another, because "production factors" (including labour) and "utility" are the component elements of teleological labour: means and results. Factors of production are the means which ought to be spent for getting the results. Furthermore, we can perceive utility as the results received due to these factors of production.

Economists usually interpret "utility" as the ability of things to satisfy the human requirements. Although this definition is correct, it is incomplete. In this definition, as in economic theory in general, the differences are not clearly fixed between general utility and economic utility, between general needs and economic needs, but there exists a principal distinction between them.

As to the category of costs, the problem is more complicated. Although "costs" are one of the fundamental concepts in economics, they have not had a clear definition up to now. Thus, for example, in the *Economic-Mathematical Dictionary*, in the article "Input, costs", it is noted: "cost is a widespread concept in economic literature, that doesn't have, however, universally recognized definition. Generally - it means resources, abolished in the process of production...for the sake of receiving the products of this

production" (Lopatnikov, 1987). Although, indeed, we do not have a strict definition of the category of costs, nevertheless, as is clear from the context, this concept is usually used in the economic literature. "Costs" are understood as resources consumed in the process of production. Thus, in this interpretation, "costs" means things, objects. I think such an understanding of "costs" is also principally wrong, and gives birth to misunderstandings in theory.

Men satisfy their needs by means of teleological activity, but living organisms do this by means of direct appropriation. Direct appropriation means absorption of an object up to full satisfaction of needs, or to total abolition of the object, i.e. predatory consumption. The needs are associated here with the insufficiency of the organism, as in vital needs. The abolishing objects are not apprehended as the costs of something, but mostly as appropriation. The concept of costs is absent in predatory consumption; there is only metabolism between the organism and the environment, and the organism itself is not distinguished from this environment, but is an organic part of it. During this activity man consciously sets aims, finds means and receives results. So the man is not a passive part of nature, but rises above it and dominates it as an active organ. Let us consider in detail the structural elements of teleological activity of man - aims, means and results: aims are the needs of a man, that which he is striving to satisfy; means are the resources necessary to satisfy his needs, and perceived by the subject as utility; and results are the products, (5) which are perceived by the subject simultaneously as satisfied needs (as realized aims), and as used resources (i.e. as costs).

If we consider the activity not as a separate act, but as a permanent process, then obviously, the aims, means and results are relative categories and they turn into one another. The objects themselves are neither means nor results. Only the subject regards them either as means or as results. This is because the results of each activity serve as means in the following acts; means themselves results of previous acts; and the aims or needs themselves are results of satisfaction of previous needs (as they appear only as a result of satisfying of the previous needs). Man has unlimited needs, but the resources for satisfying those needs are limited. That is why people are forced to make a decision - what needs to satisfy and what not, i.e. they choose the ends. However, it is impossible to satisfy all the needs because

resources are limited, but in choosing the ends man also chooses the means and results.

What conclusions can we draw from this? Economic needs are not all needs in general, but those which can be satisfied only by means of teleological activity. Consequently, they demand realization of the expenditure of limited resources. These are "solvent" needs. If the needs are satisfied without any spending of resources, i.e. without applying to the teleological activity (in this case) they are not economic needs. Alternatively, if the needs cannot be satisfied because of a lack of real possibilities for satisfying them, i.e. because of the lack of resources, those needs belong to the sphere of dreams and fantasy. But we cannot regard them as economic needs, as the real incentives of economic activity.

Economic utility is the ability of limited goods (resources) to satisfy the solvent needs of people. In the process of satisfying needs, these resources are consumed or spent, i.e. they disappear as a utility and are transformed into the costs. Consequently, the utility of limited resources is the ability of those resources to be spent usefully, the ability to be transformed into costs. The greater are the deficiency of goods, according to the sum volume of needs, the greater are the share of needs which can be satisfied by each unit of those goods. Consequently, the greater are the ability of goods to satisfy these needs, the greater are their economic utility. Deficiency and economic utility are identical concepts. The various objects themselves are neither useful nor harmful. The object becomes useful only when people see in it the possibility to satisfy their needs. Consequently, utility is not objects, but the relation of a subject to objects. Economic utility and needs are correlated concepts. They give birth to one another, exist simultaneously, and strive for one another as "+" and "-", defining each other quantitatively.

Economic costs are already realized economic utilities, which are incorporated in the products. Consumed resources are perceived by the subject as costs. Just as the utility is inherent in the resources, so the costs are inherent only in the products. However, at the same time, we must not understand the product only as something material. The product is the result in general; it is the satisfied needs, satisfied by means of the spending of limited resources. Moreover, the various objects themselves are not the products or costs. They turn into them only after man sees in them the

results of his activity, if he sees (6) in them the resources (utilities) sacrificed for the sake of satisfying his needs. In other words, the costs (as well as the utility) are the attitude of a subject to the objects, but not the object itself. So the process of interaction between needs and utility is logically completed by the economic costs, which remove the contradiction between them.

Products are usually considered in the economic literature not as costs, but as utilities; and the resources, vice versa, as costs necessary for receiving these utilities. Such an approach is quite correct and necessary, but we must take into account that in this case the product is in an absolutely new role, in the capacity of a resource for satisfying other needs in further acts of activity. From the point of view of past and completed acts, this product is perceived by man as costs. Correspondingly, resources may be perceived as costs from the point of view of further acts of activity, and as potential costs after they are spent. So far resources are perceived as utilities, as the potential ability to satisfy needs.

Economic needs, utilities and costs do not depend on the concrete content of these needs, or on the concrete form of resources or products, although they can exist only in the form of concrete needs and are embodied in concrete resources and products. Weight does not exist in abstract kind, but is always the weight of concrete things. Furthermore, although weight is inherent in different concrete things, its essence nevertheless reduces to one and the same: weight is specific (gravitation) relations between two things, masses. Analogically, economic needs, utilities and costs are the specific (teleological) relations between subject and object, which are involved in the expedient activity of man.

If resources were not limited in relation to the needs of a subject, they would not be perceived by man as costs. The attitude to them would not be careful. We should deal with direct, predatory consumption; that is why, from the economic point of view, we must perceive only the expenditures of scarce resources as costs. For example, the use of water takes place in production process, but if water is not a scarce resource (limited according to needs) then the use of water is not taken into account from the economic point of view, but only from the technological point of view. However, as soon as water becomes a limited resource, its use will immediately be taken into account also, as the economic costs will be not only technological, but

also economic expenditures. Thus, the more limited resources are, the more carefully man regards them. Correspondingly, after their spending (productive or consumer) they are perceived as large or small economic costs, depending on the degree of deficiency of these resources. The more deficient the resources are the more economic costs they represent after consumption. However, the scarcity of resources in comparison with needs already means the economic utility of those resources. That is why the volume of economic costs depends on the economic utility of spent resources. As we can see, technological and economic costs are different concepts (although interconnected). Technological spending of resources of the same volume may represent economic costs of different volume depending on the deficiency or economic utility of these resources. I think that the reason for many delusions in the theory of the economy is the inaccurate differentiation of technological and economic costs. (7)

Going through many intermediate stages of production, the primary, irreproducible resources are transformed into the final products which satisfy people's ultimate needs. At this intermediate stage, all the products are simultaneously resources for the next stages, up to that point when the final consumer products will be produced. At this point it seems that the chain is broken. The primary resources were transformed into the final products which disappeared in the process of consumption by man. However, the chain is not broken; these final products are also resources. They are resources for satisfying people's ultimate needs. In the process of consumption they really disappear, are spent, but this consumption and satisfaction of people's ultimate needs are "reproducing" of man. As you know, man is just the main aim of production and, in this sense, man appears as the product of his own activity. Only after satisfying his needs, reproducing himself and his kin, does he, at the same time, also reproduce his needs, aims, and the means appropriate to them. As is known according to the above-mentioned conception, means and resources are not objects in themselves; they turn into limited resources only because man regards them as the means for satisfying his aims. Thus, in this respect, primary, irreproducible natural resources in the long run are also "reproduced" by man (reproduced not in the technological, but in the purely economic sense). In reproducing himself, man also reproduces his attitude to natural objects, such as the scarce resources without which he cannot exist. That is

why the reproducing of man is the reproducing of primary resources. The degree of scarcity (i.e. the economic utility) of these resources depends on man, on the structure of his needs and on the level of his technological knowledge. According to the changes of needs and the development of technologies, unlimited resources may transform into limited, or less limited into more limited, and vice versa.

As man "produces" (in the economic sense) the primary resources by the fact of his existence, so economic costs, incorporated in the primary resources, are the costs for reproducing man himself, i.e. the costs, incorporated in the final consumer products. The circle is closed. We seem to lose our footing. The cause and effect chain transforms into functional dependence. Not only do primary resources appear to be spent on the production of final products, but also, conversely, final products appear as "costs" or "expenditures" in the "production" of primary resources. However, if the primary resources stipulate the final products, and final products stipulate the primary resources (if this is right), then where is the cause which stipulates both resources and products? The cause is man and his attitude to surrounding nature. Furthermore, all the processes in economics are stipulated by the external economic factor of the level of man's development, because on that level depend the volume and the structure of his needs, and the level of technological knowledge (which stipulates the unit of costs). But the needs and the level of knowledge, in their turn, stipulate the degree of scarcity of existing natural resources.

Costs are not economic costs, if they do not have economic utilities as a consequence, and utilities are not economic utilities if they are received without cost, i.e. free of charge. These concepts imply each other, but without each other (8) they lose any sense. However, because they imply each other internally, and each transforms into the other in the process of economic activity, so it is clear that there exists something else behind them, that they are different forms of manifestation of some third concept, general for both of them, which integrates them into itself as the different sections of a single whole. This third concept, which synthesizes them, is "economic value".

Economic value can be defined as man's specific attitude to the scarce goods which have got into the field of his economic activity. These goods are regarded by man as resources or products, depending on what place

they occupy in the concrete act of teleological activity. Accordingly, he perceives them as utilities or costs. But from the position of activity as a permanent process, as a system, which consists of separate acts of activity, the difference between products and resources, and, correspondingly, between utility and costs, has become obliterated (because they transform into one another and mean the same thing). On this systemic level, both resources and products are essentially the same limited goods, and utility and costs are the economic values, as man's specific attitude to these goods. But on the level of separate acts of activity, the limited goods inevitably appear in the form either of a resource or of a product, and man regards them either as utilities, or as costs.

The value of one and the same scarce good appears before the consumer in the form of economic utility and before the producer of this good in the form of economic costs. However, people are consumers and producers simultaneously. This is stipulated by the logic of teleological activity, because the production process itself is, at the same time, the consumption process (consumption of resources). And the produced products themselves are, at the same time, resources for producing other products and so on. Accordingly, utilities are destined to be transformed into the costs, and the costs are destined to be transformed into the utilities. Because of this, not only does the value of resources (including the primary resources) stipulate the value of products (including the final products), but, conversely, the value of products also stipulates the value of resources [3]. In the infinite chain of converting resources into products and products into resources, man is the main link. Furthermore, he also appears as the resource and as the product, and as the main end of economic activity. He is the starting point for measuring utilities and costs, and values of all goods.

Such activity is at its optimum where the equal economic costs of resources correlate with the equal economic utility of results (products), i.e. the equal profitable distribution of costs. This alone should be considered as the criterion of optimum. In all other cases the economic equilibrium is broken. On the one hand appears the deficiency (when the utility which fits to the unit of cost is more than average); on the other hand there is surplus (when the utility which corresponds to the unit of costs is less than average). They are both interstipulated and proof of decreasing optimum. The law of diminishing marginal utility and the law of increasing marginal

cost for each product of consumers' collection exactly point to the limits, beyond which production must not be continued and before which production must not be stopped. Further (9) production will lead to the superiority of marginal costs over marginal utility, i.e. will lead to surpluses. However, the superiority of marginal utility over marginal costs points to the fact that this product is still deficient, and we must not stop production until marginal utility and marginal costs become equal. Only this will be the optimal limit of production of this product from consumer net, at existing stores of resources and existing structure of subject's needs.

At the same time, the increasing of marginal costs in the production process has economic, but not technological, reasons. We must proceed from the assumption that in the feasible space from the technological point of view the production process needs a fixed amount of resources for each unit of product. This amount of resources is expressed in the definite size of economic value, which depends on the deficiency of these resources. This is direct economic cost, but, with the exception of direct costs, total costs for unit product include indirect costs or benefits (see, Figure 1).

Costs and utilities

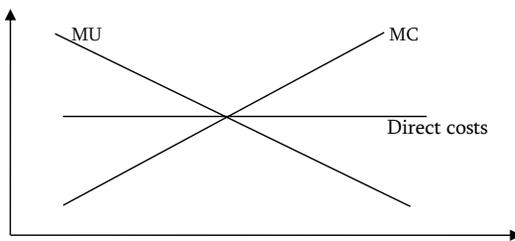


Figure 1. Direct economic costs

Marginal economic costs (MC) and utility (MU) are equal only in point of intersection (E) of decreasing schedule MU and the flat schedule of direct costs. Before this optimal production point (E), marginal utility (MU) exceeds the direct costs, but after point E the MU is below the direct costs. It means that before point E marginal product includes some surplus of utility which is not paid by economic costs, i.e. it is received free of charge and is the consequence of excessive deficiency of this product. In

other words, the actual utility of product is more than optimal utility which corresponds with direct costs in the conditions of optimum. After point E actual utility of marginal product is less than optimal utility. This means that some part of direct costs is transformed into the losses.

In the case of deficiency, the total economic costs of marginal product are less than direct costs by the amount that corresponds to the excess utility. However, in the case of overproduction the total costs also include the losses (besides the direct costs). As we see, the schedule of increasing marginal costs is symmetrical to the decreasing marginal utility schedule relative to the direct costs (or optimal costs and optimal utility) schedule. Only point E is the optimal point where $MU = MC$. (12)

The processes in the ideal form, which we can consider as a simple model of market price-making processes, take place in the mind of the subject. Taking into account accessible natural objects, the subject defines approximately which of his most vital needs are capable of being satisfied, on the basis of his technological knowledge. After that, by the method of iteration, he tries to reply to the following questions:

- 1) What are the alternative possibilities of production of either product? For example, from which of the existing resources (a, b, c, ...) is it possible to make the product A? This question is used to find new technologies. The resources a, b, c, ... (in appropriate quantities) become of equal value for the subject, if he can produce one and the same product (or satisfy one and the same need). In other words a, b, c,... resources have equal values through the economic utility of produced goods. Correspondingly, the values of a, b, c, ... resources together correspond to the economic utilities (and values) of produced goods.
- 2) What is the alternative possibility of the use of resources? In other words what (and how many) products A, B, C,... is it possible to produce from one and the same resource, a? The discovery of new possibilities from its use stimulate the appearance of new needs. The subject perceives the values of A, B, C, ... products (in appropriate amounts) as equal, if the economic costs of their production are equal; or if the economic utilities (and values) of products A, B, C, ... correspond to one another as economic costs needed for their production.

These questions, set one after another and step by step, by means of alternative methods, the ways in which the subject obtains the value system of resources a, b, c, ...and products A, B, C, ..., which mutually stipulate one another so much, that they compare with one another through each other. The logical end of this iteration process is the creation of optimal estimations (economic values) of resources and products, which make it possible to distribute scarce resources optimally, and satisfy needs as much as possible in existing conditions of deficiency of resources, systems of needs and levels of technological knowledge, i.e. the logical end is Pareto optimally.

The above-mentioned economic mechanism regulates the proportions of distribution of resources for satisfying the concrete structure of needs (productive and final). However, how are the values of resources and products compared, or, in other words, how are utilities and costs compared? Since, under conditions of optimal activity at each equal level of costs come equal levels of economic utility, we obtain the following conclusion: when we compare the economic costs (of resources) with economic utility of products, we compare these costs with the costs necessary for producing compared utility in the optimal regime of production activity. In other words, the actual costs are compared with optimal costs (or alternative costs) and, conversely, the comparison of costs with utility may be brought to the comparison of actual (12) utility with that utility which must correspond to the compared actual costs under optimal conditions. In other words, the given utility is compared with the optimal or alternative utility. As a result of such comparison it is revealed to what optimal extent the costs are carried out for achieving this utility, or to what optimal extent this utility is to be produced with these costs. The idea at "alternative value" is based on this principle. An equally useful distribution of costs is a certain global criterion of optimum, i.e. the criterion from the point of view not of a separate act of activity, but all the activity as an aggregate of separate acts, as a single optimizing system. As to the local criterion of optimum, this is optimal from the point of view of separate acts of activity, as separate elements of a single system. Not the equally useful costs, but on the contrary, the maximum utility (of results) on minimum costs must be considered as local criterion of optimum. The local criterion of optimum facilitates the efficient use of resources in the

technological sense, i.e. facilitates the decrease of costs in the production of a unit of product (improvement of technology, decrease of waste, change of traditional resources by progressive ones and so on). But global criterion of optimum facilitates the optimal distribution of total reserve of resources for different kinds of consumption (productive and private), i.e. facilitates the formation of the optimal structure of production (consuming of resources), according to the needs.

Without the local criterion of optimum the equal utility of costs (i.e. the global criterion of optimum) may be achieved under conditions when the maximum of goods on minimum of costs is not guaranteed. In other words the equally low effectiveness of each unit of costs is possible. That is why the local criterion of optimum is as necessary for the maximum satisfaction of the existing structure of the subject's needs by existing reserve of resources, as is the global criterion. Both these criteria acquire meaning only together and complement each other by economic content.

Above we discern the essence of economic value, but in the purest form this essence manifests itself in the individual subjective value. Gradually subjective value is transformed into market value, which is only one form of manifestation of economic value in the historically definite conditions (in the market economy). As a matter of fact the market value remains the subject value, although at this stage, qualitatively new formation, society appears as the subject. Thus, the market value is the social (but not individual) economic value. In a market economy the individual and market values exist simultaneously; moreover, the market value is the result of market interactions of individual values of goods and individual values of money, and display in market prices. Consequently, as society cannot exist without individuals, so market values cannot exist without individual values. The market value and individual economic value are considered as different stages of development of one and the same phenomenon. That is why they have as many similarities as differences. One of the essential differences is that, unlike individual economic value, the market value can be exactly measured by a special unit of account - by money, whereas the quantitative determination of individual economic values takes place not by the measuring of any unit or scale, but by commensurability, i.e. the subject directly (12) compares the various economic values against one another, as the commensurability of the time,

length, weight and so on, before the appearance of appropriate scales or units of measuring of these magnitudes.

We know, for example, that the unit of weight, the kilogram, in its substance is a definite weight, which is only conventionally accepted as a unit. It is clear that the unit of weight is not the iron weights, which are put on the scales. The iron weights are only the external material of carriers of kilogram, and this kilogram may be expressed by other things. Similarly money, as the unit of measuring the market value, is the value itself, a certain magnitude of value, which is only conventionally accepted as a unit of account, as scales for the measuring of all other market values. That is why money is not gold, and not a banknote, but is the value itself. Furthermore, the size of this value depends on the scarcity of this gold or banknotes, i.e. depends on the stock of money. Accordingly, if money is the unit of account, then it is obvious that it is the unit of account of both social utility and social costs simultaneously, as the social value itself is a unity of social utility and social costs. Accordingly, the prices, as monetary manifestation of market value, exactly express in dollars the social costs and social utility of goods simultaneously.

We can imagine the nation as a single economic subject. The functioning of a national economy is impossible, if what happens on the individual level and what happens on the national level are not one and the same. In other words, in some way, for the commensurability of social needs with the abilities of satisfaction of these needs, comparison of the inputs with outputs must take place. A certain mechanism of optimization should exist which would bring to conformity the structure of production with the structure of needs.

As the macrocosm repeats the structure of microcosm, so all the fundamental laws of national market economy exist in embryological form in the individual economy. On the individual, as well as on the national, level there function the laws of decreasing marginal utility and increasing marginal costs, the local and global principles of optimum, and so on. However, all this is realized on the social level with the help of a far more complicated mechanism, realized not by means of individual, but also by means of market values, i.e. by means of the complicated mechanism of prices and price making [4].

It is important to note that in contemporary microeconomics the formation of economic equilibrium is shown on the prices level. Even in such popular manuals of "economics" as P. Samuelson and W. Nordhows, C. McConnell and S. Brue, and others, the value theory is not stated at all. Only the problems of price making are discussed. In reality, however, with the help of prices and price making, only that economic mechanism appears which functions on a far deeper level, thanks to the economic value. That which in microeconomics is described on the level of phenomena must, on the level of functional interdependences, be scientifically investigated on the level of essence, on the level" of cause and effect connections. This is very important. As you know, the aim of science is to transcend into the sphere of essence, and not only to describe the phenomena.

Einstein expressed the idea that the beauty of theory, to a certain extent, is the criterion of its truth. If we look at the contemporary paradigms of price from (13) this point we may discover some kind of "aesthetical flaw" in this theory: it lacks inner symmetry. It is confirmed that to establish the equilibrium of prices on the market, equality of marginal utility and marginal costs must be reached. In general, the idea of decreasing marginal utility and increasing marginal costs has great importance in microeconomics (also they stipulate the shape of demand and supply curves). But, at the same time, the law of diminishing marginal utility is a purely economic law which describes the character of the subject's attitude towards scarce goods. The law of increasing marginal costs is explained by purely technological laws which are caused by violation of proportions between the fixed and variable resources. This is not an economic law. Moreover, in the manuals it is explained that, generally, marginal costs do not always have a tendency to increase, but at first they decrease and only after that do they increase. In other words it has a U-shaped curve, unlike the decreasing curve of marginal utility. (It is not symmetrical.) Consequently, according to the paradigm, the supply curve in the short run is stipulated by the right half of the U-shaped curve. But it would have been correct if all the enterprises had usually worked under overload of the productive potential, under the conditions of surplus of variable costs over the fixed costs. In reality, the enterprises, as a rule, have the reserved productive potential, the surplus of fixed costs over those which are

variable. Consequently, the increasing of variable costs, when production is increasing, leads to the improvement of technological proportions between the fixed and variable costs. Thus, with the increase of production in the enterprises, marginal costs do not increase but, on the contrary, decrease. And from this point of view, the basis of supply curve must be not the right, but the left half of the U-shaped curve. (This is nonsense of course.)

The reason for this confusion in economics is a mix up of concepts of economic and technological costs. The microeconomics paradigm needs serious revision, and for this we must turn to the teleological understanding of economic value.

Notes

1. Some economists suggest "the theory of marginal utility" although it leaves a number of questions without answers.
2. Among the various theories of value are such, in which the scientists try to synthesize these two principles within the limits of a single theory. However, these attempts finished in dualism, i.e. external coexistence of two different initial principles.
3. In this respect it is interesting to recollect one of the basic principles of linear programming, that in optimal production with optimal estimations of all resources the costs and results are equal.
4. Unfortunately the size of this article does not make it possible to discuss an exceptionally interesting problem: the monetary form of displaying of value mechanism of comparing economic costs and utility on the market level. See Leishvily (1990).

References

1. Leishvily, P. (1990). *Analysis of economic value*. Moscow, *Economica*.
2. Lopatnikov, L.L. (1987). *Economico-Mathematical Dictionary*. Moscow, *Nauka*, p.125.

The Symmetry of Economic Activity: The Dialectical Analysis of Economic Phenomena

Introduction

The modern studies in economics are focused on research of economic phenomena and ignore essence of these phenomena. In other words, at the level of methodology mainstream does not recognize «that at the back of this being there is something else, something other than being itself, that this background constitutes the truth of being»¹². For this reason, despite doubtless achievements of modern economic science, still there is a big gap between the economic theory and the economic reality¹³. As professor Mark Blaug wrote, "... modern economics is sick. Economics has increasingly become an intellectual game played for its own sake and not for its practical consequences for understanding the economic world. Economists have converted the subject into a sort of social mathematics in which analytical rigor is everything and practical relevance is nothing. To pick up a copy of *The American Economic Review* or *The Economic Journal* these days is to wonder whether one has landed on a strange planet in which tedium is the deliberate objective of professional publication. Economics was once condemned as "the dismal science" but the dismal science of yesterday was a lot less dismal than the soporific scholasticism of today."¹⁴

If we wish not only to describe, but also to understand, how the economy functions, we should perceive economy as a single organism, as a system. For the reality is not motionless set of phenomena but alive process

¹² Hegel G. 1999. *Science of Logic*. Moscow, "Misl", (in Russian), p. 423.

¹³ Whatever "clever" theories were advanced, they lead "nowhere" (Kaldor), whatever complex mathematical models were built - they remain "abstract games of little relevance". (Worswick). (See "*Foundations of Economic Thought*". 1991. Ed. by Y. Greedy, N.Y. P. 665 - 666).

¹⁴ Blaug Mark. Ugly Currents in Modern Economics. *Policy Options*. 1997, September. pp 3 - 8.

in which these phenomena are interconnected, mutually turn into each other under the certain laws and in this mutual interlacing forms a single economic organism. It means the concepts reflecting these phenomena and processes also should represent a single system of internally interconnected concepts. That is economic concepts should be the same fluid and flexible, mutually turn into each other, internally interconnected among themselves (but not externally, artificially attached to each other) as well as economic phenomena and processes are. But to reveal and understand these interrelations is possible only by means of a dialectic method, only by analysis of essence. But as methodology of economics does not accept essence as such it does not investigate it and consequently does not "see" these interrelations.

These interrelations are not visible at a level of phenomena. Even to the contrary at this level phenomena may seem opposite, mutually exclusive. That is why economics does not see the deep internal connections and mutual transitions between the outwardly opposite concepts - production and consumption, supply and demand, utility and costs, profit and saving, etc. But these are really existing relations. And therefore economics reflects only external, visible part of an economic reality. But such superficial, partial reflection of reality at best allows only describing (defectively) an economic reality but does not allow understanding it. If not to see these interrelations is impossible to give consistent logical explanations of economic processes. That is why these explanations of a mainstream are torn off from a reality and are full of logical contradictions. For example, on the one hand there is affirmed that market prices depend on economic decisions of individual sellers and buyers, on the other hand - these decisions depend on market prices, and remains unclear how the pricing is going on. The theory of diminishing return not corresponds to the facts. In general between micro- and macro-economic unbridgeable gap, which is confirmed by conclusions from the Sonnenschein-Mantel-Debreu theorem, and so on. Examples are numerous. And as a consequence of it mainstream cannot understand economic processes in unity and interconditionality, cannot understand as the market functions. But if it is not understood it is impossible to construct adequate economic model. That is why, all current models of economic equilibrium, in one way or another based on the ideas of neoclassical theory, including the model AGE (applied general

equilibrium), CGE (computable general equilibrium) and DSGE (dynamic stochastic general equilibrium), were discredited and also do not reflect reality, because based on the incorrect assumptions. (Just about this testifies the inability of economists to predict and prevent a world economic crisis, about it write many known economists, against it protest a post-autistic movement of students, etc.). That is the main obstacle for creation of effective model is not a level of development of mathematical instruments but the incorrect assumptions on which they are constructed.

For example existing paradigm of economics realize the interrelation between investments and saving, but does not realize interrelation between profit and saving, and in general between profit, saving, investments and consumption on debt. However this interrelation is of critical importance for understanding the mechanism of market self-regulation and construction of adequate model of general equilibrium. The same is possible to say about understanding of deep interrelation between economic needs, utility, costs and losses. Without it is impossible to understand how the general equilibrium as the condition at which the production and consumption structures conforms to each other, at which there are no deficiencies and surpluses, are not losses is shaped. Also the existing paradigm does not accent attention to distinctions between production factors and primary resources and so on.

To learn the economic reality means to learn its essence and, hence, to learn it as integrity, and not just as set of the various phenomena. The essence has various forms of manifestation. If to be limited by studying only of the phenomena the knowledge remains fragmentary, that is incomplete and superficial. For without perception of essence won't be understood internal deep causation, mutual conditionality of these phenomena; won't be understood those laws and forces which unite these phenomena in a single economic organism and transform them into parts of a single whole.

The methods of researches in mainstream resolutely ignore the dialectic methods. Quite often, researchers artificially split object of research into the "component parts" and research these parts separately from each other. Production is researched separately from consumption, utility - separately from costs, demand - separately from supply, etc. And, further, they artificially unite these mutually opposite concepts within the frame of the

single theory. Such method doesn't allow to see internal unity of these contrasts. Therefore, the production theory inwardly isn't connected with the consumption theory, the theory of demand - with the theory of supply, the theory of utility - with the theory of cost, etc. But in fact production simultaneously is as well consumption, producer is consumer, demand is supply, product is resource, utility is costs, etc. And only in unity they are an economic activity, economic actor, economic good, economic value, etc.

Methodologically it is incorrect to separately investigate at first the different fragments, artificially extracted from the researched object, and then to hope that by mechanical integration of received results we can get the adequate general theory¹⁵. That is why when examining such "fragments" of economic reality, from the very outset, out of attention stay just those properties thanks to which they are the parts of concrete whole and carry out the strictly definite function within the frames of this whole, and by this beforehand doom the results of the analysis to inadequate reflection of the reality.

Attempt of dialectic analysis of essence of economic activity with application of the scientific toolkit developed by modern Economics, allows to look in a new fashion at the functioning of economy and to find out in it surprising integrity and "symmetry". This integrity of economy and inherent in it symmetry is the form of manifestation of essence, of its reflection and dialectic contradictions inherent to the essence in general, including, the essence of economy. To perceive the essence, first of all, means to perceive the reflective determinations and the internal contradictions inherent in it. Because the essence is a whole, and the whole imply contradictions in itself. Reflective determinations are determinations, which are mirror reflected in each other and either mutually pass each other depending on the "point of view", or find sense only through repulsion from each other, and separately they lose any meaning. Reflection is mutual representation of one concept into another. Though reflective relations between various concepts are not always obvious and their revealing demands the special analysis and a habit to specifics of dialectic

¹⁵ "The single members of the body are what they are only by and in relation to their unity. A hand e.g. when hewn off from the body is, as Aristotle has observed, a hand in name only, not in fact." (Hegel G. 1974. *Encyclopedia of the Philosophical Sciences*. Volume 1, Moscow, "Misl", p. 405-406. (in Russian)).

thinking. But having found out a reflection, in such a «mirror self-repulsion» it is impossible not to see the phenomenon of symmetry.

Symmetry is inherent in the essence of the phenomena and, hence, is one of essential properties of the entire universe. Therefore it finds external manifestation in the most various forms. Displays of symmetry of the world surrounding us are incalculable. It is not only flowers, snowflakes or beer honeycombs. As well, it is an elementary particles and a Galilee's principle of relativity, laws of conservation of energy and many other fundamental phenomena of physics, chemistry, biology, society and so on¹⁶. However, the possibilities of this theory are not sufficiently used in economic modeling, primarily because there is no clear understanding of the fact that there is symmetry in the economy. The comprehension of that symmetry, as well as its accompanying asymmetry, are inherent in economy, as well as to the all other nature, allows us to deeper understand the essence and regularities of economy and give new opportunity to modeling of economic processes. And also, it will allow drawing practical conclusions for working out of more effective anticyclic policy. However, to distinguish the symmetry, which is inherent in the entire universe as well as in the economy, the dialectic analysis of economic phenomena is necessary.

This article as a whole is an attempt to show possibilities of dialectical and teleological analysis of economic activity.¹⁷ On the basis of such analysis new interpretation of some basic concepts (production and consumption, primary resources and final products, utility and costs, profit and saving, investment and consumption on debt, etc.) is given. This new interpretation consists in a revealing of dialectic interrelations between them. All these ideas have received the concentrated reflection in "symmetric model" which is constructed taking into account the internal, intrinsic interrelations between the economic processes revealed as a result

¹⁶ "Ontologically symmetry is a property of system to coincide with itself on a number of signs. But such a coincidence is a reflection, mediation of itself by itself, is a locking. As the group is a mathematical expression of the symmetry it models any phenomena for which are typical the periodicity, repeatability in space and time. That's why the group is recognized as one of the powerful means of the analysis of the most general laws of the universe: alive and lifeless nature, society." (Yatskevich V. 1990. *Dialectics of an optimum choice*. Kiev. «Naukova dumka», (in Russian), pp. 70-71)

¹⁷ The details of these issues covered in the book: Leishvily P. 2011. *Economic activity: a Teleological Analysis*. Tbilisi. "Siahle." S. 192.

of dialectic and teleological analysis of economic activity. That is why that symmetry which exists between reflective concepts of an essence of economic activity is reflected in the model.

The end of given papers is to renew the interest to dialectics, to Marx's ideas and Mises' praxeology stated by him in "Human action".

The ends, means and results

1. To have a fair idea of market economy, it is necessary to understand the essence of economic activity in general. The economic activity is an expedient activity, which is activity for the purpose of satisfaction of deliberate needs. Still Mises, wrote: «Economics, as a branch of the more general theory of human action, deals with all human action, i.e., with man's purposive aiming at the attainment of ends chosen, whatever these ends may be»¹⁸. Underestimation of this truth should cause, and has caused many misunderstandings in the theory. Activity consists of actions. Structural components of action are the end, means, result. The **end** is unsatisfied need. At the same time, it is the realized need, satisfied exclusively through expedient activity, hence, through expenses of means.¹⁹

Means are useful objects which it is necessary to sacrifice for the sake of result, i.e. for satisfaction of need. Means are something useful. After all utility is ability to satisfy needs. Fundamental property of means is that “its destiny is to be destroyed” (Hegel). Therefore, after reception of result and satisfaction of the need, the utilities of sacrificed means are perceived as costs.

Result is the realized end, hence, the satisfied need. At the same time, a result incarnates in itself not only an end but also means, which have been spent in the process of purpose realization, i.e. incarnates in itself costs. Therefore, a result is unity of realized end and the sacrificed means, there is a unity of the satisfied needs and costs (sacrificed utilities).

¹⁸ Mises, L.1996. *Human Action. A Treatise On Economics*. Fourth Revised Addition, Fox & Wilkes, San Francisco, p. 884.

¹⁹ “Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses”. (Robbins, L. 1945. *An Essay on the Nature and Significance of Economic Science*. London, Macmillan and Co., p 16)

2. The result is an effect of the certain cause and differs from simple effect only by this, that the cause, causing it, is a man, his free will, but not casual cause. The expedient activity of a man taken on the whole, in aggregate of his separate acts, is the same causal connections of the nature, but realized and directed by human reason and will. Therefore, as well as any effect is the cause of other effect, then any result is means (or a condition) for achievement of new end, for reception of new result.²⁰ But as a result is the realized end, then the essential unity of end, means and result become apparent. They are reflective concepts which get sense only through each other, and without each other they do not make sense.

As a result of each action is means for other ones, then all of them are necessary elements of system. Without any of these actions, expedient activity, as system, loses integrity, stops to be the optimal system focused on an ultimate end. If the result of some action did not become a means or condition for other actions, then such result is useless and means sacrificed for reception of useless result have been lost. If all actions have executed the functions, if the result of each action became a means for other action, so, there is no loss of means and useless results, there are no losses.

In that case expedient activity as a system represents integrity. This system is in equilibrium and this equilibrium is the necessary condition of its optimal state. So, an economic action is structure-forming unit of economic activity; is its constituting element. Each action reasonably corresponds with other ones. Results of one economic action are the means for another.

Resources and products

1. The subject has a set of realized material needs, and he owns set of goods, able to satisfy them. The realized material needs, for which a subject has opportunities of their satisfaction, - are **economic needs**. And the material goods, giving these opportunities, - are economic **resources**. But

²⁰ «The End achieved consequently is only an object, which again becomes a Means or material for other Ends, and so on forever.» (Hegel G. 1974. *Encyclopedia of the Philosophical Sciences*. Volume 1, Moscow, "Misl", (in Russian), p.398). "All objects, therefore, in which an external end is realized, are equally only a means of the end. Whatever is intended to be used for realizing an end and to be taken essentially as means, is a means which, in accordance with its destiny, is to be destroyed." (Hegel G. 1999. *Science of Logic*. Moscow, "Misl", (in Russian), p. 846.)

resources themselves cannot satisfy needs. In order to begin the action it is necessary that will should make decision. Speaking about means, we mean that the end, in relation to which it is means, is already chosen and exists. But speaking about a resource, we imply that it is possible to satisfy set of alternative needs by it, but what will be chosen from them as the end, depends on the will of its owner. And after realization of the chosen end we will get a **product** which is able to satisfy new alternative needs, and, hence, itself is a new resource. That is instead of the end, means and result we get needs, resources and products, which represent the potential ends, means and results. In actual ends, means and results they will be transformed only after a decision-making, after a choice as end one of alternative needs, and as a means - corresponding resource. Thus, needs, resources and products contain an opportunity of choice of ends, means and results. Giving this opportunity to the subject, they give economic freedom to him.

2. An animal directly takes an object from nature in a ready type when it has a need and absorbs it, the person himself makes products, and then consumes them. For example, a man produces bread not then, when he will get hungry, but long before it, foreknowing that sooner or later he will get hungry. That is he produces bread not directly for satisfying of hunger, but for creation of stocks of bread, which for some time release him from dependence on the needs.²¹ He transforms reality, and as a result of expedient activity gets new reality, in which the stocks of bread appear.

Thus a direct end of production is a creation of **possibilities** (resources and conditions) for satisfaction of final needs, but not directly the satisfaction of final needs. But creation of these possibilities itself is one of needs of man. Moreover, it also is specific, truly human need, which is not present in animals, is the need in a release from the dependence on wild

²¹ "The worker of bakery plant works not only then, when directly wants to eat bread, and works not to bake so much bread, how much it is necessary for satisfaction of momentary hunger. ... he works to make a certain product - bread, though at present personally it is not so necessary to him. Just this context is especially typical for labor activity, which has been directed not on creation of product, necessary for satisfaction of actual, presently experiencing need, but demand, pursuing satisfaction for food in general, which can arise in him or in someone another, tomorrow or sometime in the future. ... the end of labor consists in satisfaction of possible need". (Uznadze, Dmitry. 2004, *The general psychology*. Moscow, "Smisl; SPb.: Piter), (in Russian), p. 126).

nature, need in freedom.²² This is a need, which reflects the essence of a man. Unlike an animal a man wishes not simply to be, but wishes to be a man, that is, to be free. That is why it turns out that an end of economic activity is not only satisfaction of material needs, but also release from the dependence on material needs, from dependence of external reality which is generated by these material needs, that is finding of economic freedom.

A man surrounds himself with material goods on which his will spreads to, which he owns, disposes and uses, and which make his property, as a guarantee of his material independence and freedom,²³ because the property itself is a necessary condition of economic activity and, consequently, a condition of satisfaction of subject's needs. Consequently, the need for property accumulation is manifestation of need for economic freedom, i.e. is essential need of man.

3. Transformation of resources into products, which serve as resources for other products, has no end and is the circular process, or closed chain, including in itself a man as one of the links.²⁴ The whole process of expedient activity can be presented as a process of "production" and "consumption" of a man. In fact a man is not only a subject, but also main object of economic activity. It means that a man concerns to himself as to a resource and as to a product of his activity. Finally, the whole economic process is carried out for the sake of satisfaction of his final needs. It is a primary aim of activity. And in the process of realization of this aim, a man, as labor force, and as entrepreneur ability, is a main factor of production. Just by his physical, mental and volitional efforts are created those goods, by which he satisfies his needs. Consumption of labor force, i.e. labor of man, along with services of other factors of production, is primary resource, without which it is impossible to get final products. On the other hand, consumption of these products is reproduction of a man, reproduction of his ability for labor. Consequently, man, as a main production factor, and his labor as services of this factor, as a primary resource, are also the main products of his activity.

4. But having reproduced himself as a resource or a product (i.e. object), he also reproduces himself as a subject with his needs. Therefore, the satisfaction of system of final needs of man means reproduction of new

²² In this context means economic freedom.

²³ "Free will, in order not to remain abstract, must in the first instance give itself reality; the sensible materials of this reality are objects, i.e., external things. This first phase of freedom we shall know as property." (Hegel G. W., F., *Philosophy of Right*, Moscow, "Misl", 1990, (in Russian), p. 94.)

²⁴ See: Leishvily P. 1996. "Towards the teleological understanding of economic value". *International Journal of Social Economics*. Volume 23, Number 9, (p. 4 - 14).

system of the needs. It means that in the course of activity there are reproduced not only a man and his labor force, but also all production factors and primary resources, including, natural resources. For, objects are not production factors themselves. They turn to those only in relation to needs of men. Therefore, even so-called "irreproducible" natural resources "are created" by a man in the sense that just his needs will transform objects of the wild nature into production factors, and their use - into primary resources. Satisfaction of final needs of man and by that, reproduction of a man with his new needs, means, at the same time, reproduction of primary, «irreproducible" natural resources.²⁵

The whole economic activity appears as the closed process, in which are involved both a man (as the main resource and a product of his activity), and natural objects. All goods involved in this process, simultaneously are resources and products. Consumption of primary resources is production of intermediate products, their consumption is production of final products, and consumption of final products is reproduction of primary resources again, etc. Changes in production and consumption of one goods are reflected in production and consumption of others. It is the difficult system needing regulation.

5. From all this it follows that, just like every cause generates an effect, which is the cause of another effect, so every resource serves for reception of the products, which are resources for reception of other products. But the difference between these processes is in that unlike cause and effect relations in the nature, transformation of resources into products, occurs not on the basis of a case, but on the basis of decisions accepted by the subject, a conscious choice, i.e. according to his reasonable needs. Before each action, each transformation of resources into products, the decision is made, the choice from alternative possibilities is done, and the purpose is put. The subject knows in advance, which result will be received, and for which other needs it will serve as a resource. This makes economic activity the organized in space and time process of realization of ultimate goal - increasing of economic freedom of subject.

Utility and costs

1. The account of that economic activity is expedient activity, allows a little bit different interpretation of interrelation between some fundamental

²⁵ Though, as objects, certainly, they are generated by the nature.

economic concepts. As it was mentioned, since satisfaction of economic needs takes form of realization of the set ends, then, consequently, these needs are "paid" by means, because means are "sacrificed" to the ends. I.e. economic needs are paid needs, and therefore, solvent needs. If needs are insolvent, if they are not provided with resources, they don't generate real stimulus of activity, are not actual but just potential, which will grow into actual only then, when resources will appear. In the foundation of the ends of economic activity solvent needs lie only. From this it follows that resources and needs mutually generate each other. These are relative concepts. Resources generate needs as they transform potential needs into the actual. And needs generate resources as only in relation to them those or other objects become resources. For in itself, the object is not a resource. As without ends there are no means, and without means – there are no ends, so without needs there are no resources, and without resources – needs. Only "having found each other", potential needs and potential resources become real.

As follows from above said, in the course of expedient activity products are deliberately created as resources. Moreover, the product is not a product, if it is not capable to satisfy those needs, for which it has been created, that is, if it is not a resource. Therefore, realization of the ends is not only satisfaction of needs, but also transformation of potential needs - into actual. It turns out that expedient activity not only satisfies the needs, but generates them itself together with producing resources and by that, generates stimulus for itself.

2. Economic activity, as well as expedient activity in general, is the form of interaction of subject with objects. In the course of this interaction the attitude of subject to objects involved in economic activity changes. These attitudes reflect the categories - needs, utility, costs and losses.

The **need** in general is the contradiction between the subject and object. This is attitude to reality through a prism of the due. This is a realized desire of subject to implement one of the cognized by him possibilities of changing reality according to his notions about the due, which arises in case of divergence between wished and actual.²⁶ Utility of limited goods is **economic utility**, giving a possibility of satisfaction of alternative needs. But after the satisfaction of needs, in the process of which the limited goods are destroyed, their utility is perceived as economic costs.

²⁶ The need is something that stimulates the expedient activity. But deliberate activity may begin only if there is the possibility of satisfying needs.

Economic cost is the utility of limited goods, sacrificed to needs, i.e. “payment” for satisfaction of needs. Costs should be understood as the sacrificed opportunities of satisfaction of alternative needs.²⁷ At the same time, costs always are useful costs, because due to them one of the alternative needs is realized and so, the useful result is received. The **economic losses** are attitude toward the useful limited goods, used without result, consequently, is the attitude toward loss of possibilities of satisfaction of needs. That is, they are costs without results. If in result of use the utilities have not turned into costs, this means they are turned into losses. Losses, as well as costs, are disappeared utilities. However, satisfied needs correspond to costs, unsatisfied – to losses. That’s why inefficient costs can be always presented as the sum of efficient costs and losses, into which utility of used limited goods is turned.

3. Thus, **needs, utility and costs** (losses) represent single system of reflective definitions²⁸ corresponding to the **ends, means and results**. Such internal relationship of these subject-object attitudes, that all of them represent the teleological attitude of the same subject to different objects at different stages of consumption of resources and production of products, makes possible and necessary their quantitative comparison, commensuration. Just due to it, these specific, teleological attitudes of subject toward objects, engaged in expedient activity, become those invisible strings, only through which it is possible regulation and optimization of activity.

Production and consumption value

1. Natural utility of good is caused by **natural properties** of object (physical, chemical, etc.), in result of which it is capable to satisfy needs.

²⁷ For economic utility itself is also understood as opportunity of satisfaction of alternative needs.

²⁸ A need is not actual need, if there is not the real opportunity of its satisfaction, that is, if there is not an utility. And an utility is ability of satisfaction of needs, and, so, unthinkable without a need. Utility is doomed to transformation into costs or into losses for its destination is to be used for satisfaction of needs. And depending on results of this using it will turn either into costs, or into losses. Consequently neither costs nor losses can exist without utility, because they both are a "former utility". In addition, costs and losses, as "former utility" are the same, with the only difference, that in one case they satisfied needs, and in the second – they did not. So, needs imply existence not only of utility, but also of either costs or losses, depending on that, if the needs are satisfied or not as a result of use of utility.

This is necessary, but insufficient condition for value. Needs and utility are possessed by all live. But only a man has the ends and values. Only a man has the ends as the deliberate needs, and also Reason and Will, thanks to which the man is able to set and realize the ends through means. But besides perception of his needs a subject must know about presence of utility of these goods. Without this knowledge it can't be chosen as means for the corresponding needs. But even this is not enough. The utility of limited goods about which the subject knows, is only **economic utility**, but not the **economic value**. It is possible to know that some goods are capable to satisfy his needs, but having knowledge is not enough for this good possessed value for him. This good, besides, should be under his power, should submit to his will, hence, he should own it. Only in this case it is capable to serve as means for his ends, to give him freedom, and, hence, to be value for him²⁹.

2. The good, if it has value, not only satisfies some concrete need of its owner, but also gives him economic freedom. For thanks to knowledge of properties of the good, the subject can use it as means for variety of alternative needs, ands. Therefore, before to consume the good, the subject should make a choice - which need to satisfy? How to distribute the goods for satisfaction of various alternative needs? How to distribute its consumption in time? Just in this his freedom consists. At that, the need for this freedom, need for available opportunities to put and realize the ends according to own free will - just is the highest, specifically human need. And such freedom to a man is given by those goods which are in

²⁹ A subject may know that the certain goods are capable to satisfy his needs. But if these goods belong to other subject, another's goods do not represent value for him. They do not provide to him economic freedom. Similarly, the subject can know that some good has social value, but subjective value for him this good becomes only in case of possession of it. J. Schumpeter writes: "Nobody values bread according to the quantity of it which is to be found in his country or in the world, but everybody measures the utility of it according to the amount that he has himself, and this in turn depends on his general means." (Schumpeter J., 1908. "On the Concept of Social Value" / *Quarterly Journal of Economics*. Volume 23, number 9, p. 214). «Much becomes clear if to have firm definition of what is a value. Value - remaining opportunity to satisfy the need». (Hegel G. 1990. *Philosophy of Right*. Moscow : "Misl", (in Russian), p.403). «As the thing has value, I can satisfy with it my need, not this need, but all needs. As I have the property as some value.... It serves for satisfaction of my needs only in general as universal, my need as conceivable is need in general. Thereby the thing has for me significance as opportunity to satisfy my needs....». (Ibid,404).

possession of the subject, in his property³⁰. The goods which are in the property of the subject, besides natural utility, possess also specific utility, ability to satisfy specific need of a man - need for freedom. This specific utility just is the economic value.

3. In production sector the economic utility of resources is perceived by subject as a **use value**, and economic costs - as **production value**³¹. As utility of resources after their use turns into the costs, so the use value of the spent resources turns into the production value of the produced products. Production value consists of objective and subjective costs. Subjective costs in the form of the spiritual efforts caused by risk are a necessary component of full production costs along with the costs of "objective" resources. And excess of utility of a product over objective costs for its production (over utility of the spent resources), takes the form of **surplus value**.

In consumption sector, consumed resources are the final products of production sector, but "products" of consumption sector are primary resources of production sector. Therefore, the final products, which have a production value for the subject as a producer, for him, as a consumer, have a **use value**. But primary resources, which have use value for him as producer, for him, as consumer have "**reproduction value**". As utility of final products after their consumption is perceived by consumer as consumption costs, so use value of consumed final products is transformed into the reproduction value of primary resources. Reproduction value of primary resources is also consists of objective and subjective costs. Subjective costs in the form of volitional efforts, stipulated by abstinence, are necessary component of full reproduction costs along with the "objective" cost of consumed final products. But the excess of value of reproduced primary resources over the value of consumed final products (over the objective costs of reproduction), takes the form of **saved values**.

³⁰ “. . . the substantial end consists of that to be free, and it consists only in property.” (Hegel G. 1990. *Philosophy of Right*. Moscow : "Misl", (in Russian), p. 396). “. . . as free I exist in things which I own.” (Ibid, 400).

³¹ In an exchange sector the value of bought goods perceived as economic utility, which is acquired at the price of economic costs, that is, at the price of sacrificed economic utility of the sold goods. Unlike the sector of production and consumption, in exchange sphere production value is revealed in the form of exchange value.

So, just as the subject is unity of producer and consumer, and the good is unity of a product and resource, utility and costs, so the value is a unity of use and production values. But surplus and saved values are an increase of economic value, therefore, increase of economic freedom that results from volitional efforts of subject as producer and consumer, as result of enterprise and abstinence³². These are the same reflective concepts as those previously discussed.

Production and consumption. Supply and demand

1. In market economy consumption of final products in consumption sector (households) is reproduction of primary resources for production sector (firms). And consumption of primary resources (by firms) is production of final products (for households). That, which one party produces, another - consumes. Between production and consumption, as between the reflective parties, the contradiction arises. Each of them consumes and, hence, destroys what another creates. Process of production of own product is, at the same time, the process of destruction of other party's product. For the resource of each party is a product of other party, and the product of other party is a resource for the first party. However, just owing to this contradiction appears the unity of them. They become necessary for each other, become necessary parts of a single whole. Just this whole is an economy. But the contradiction between production and consumption, as between the parts of single whole, is resolved by exchange.

Though conditionally we divide from each other production sector (firms) and consumption sector (households), final products and primary resources, but in essence production of products itself is a consumption of resources. So, each economic subject simultaneously is both producer and consumer; and each economic good simultaneously is both product and resource. Thus, production and consumption, producer and consumer, product and resource are relative, reflective concepts.

³² It is interesting to note that in history of economic thought in understanding of source of value increasing significant contribution made by both the theories of surplus value, and theories of abstinence. But these theories are examined only one-sided process of value increasing and therefore were regarded as mutually exclusive theories.

2. Exchange proportions should provide equality of volumes of production of each party to volume of consumption of other party. Such accordance is provided by optimal exchange proportions, i.e. by a system of equilibrium market prices. Integrity of economy is caused by that each subject and each sector produce products and consume resources in strict accordance with production and consumption of all other subjects and sectors, because each of them produces, what others consume and consumes what others produce. Therefore volumes of their production and consumption come to accordance with each other through an exchange of products and resources.

In this exchange arise the same reflective relations as in production and consumption sectors. Namely, each party of exchange offers its product in replacements – for purchased one. Just to this the essence of exchange is reduced. Demand always is solvent demand. If it is insolvent, it is not actual need. But solvency of demand is provided by supply. The payment for the bought goods is the sold goods (or money behind which the goods are). Demand for goods is supply of money and supply of goods is demand for money. That is the reflection exists between a supply and demand, between buyer and seller. Demand is impossible without the supply. Demand itself is the supply. And a subject cannot be buyer, without being seller. Each party in an exchange simultaneously is both buyer and seller. If to take aggregate of all sectors of economy (both areas of production of products and areas of reproduction of resources), full accordance between their production and consumption is possible only at such exchange proportions of their goods, at which supply of production by each sector corresponds to total demand for its goods by other sectors³³. “Selling” and “buying”, “demand” and “supply”, “buyer” and “seller” are the same reflective concepts as all considered earlier.

3. In conditions of division of labor production, consumption, supply and demand mutually stipulates each other. Because to offer for an exchange is possible only what this sector has produced. But production of sector stipulates consumption of resources, and accordingly, its demand for product of other sectors. That is, solvency of demand of each sector on products of other sectors can be ensured only by supply of own product,

³³ In given context primary resources itself are the products of corresponding sectors of reproduction.

but supply - by demand for products of other sectors. Just this reflection between production and consumption, product and resource, supply and demand, purchase and sale, stipulates that all sectors turn to necessary parts of a single whole. Each part (private subject, sector) can function only in interaction with other parts, and completely depends on them, as well as all of them depend on it. Overproduction or underproduction in any of sectors disturbs integrity of a single economic organism. Economy as integrity is self-sufficient. It consists only of its own parts and does not need anything else.

4. In the process of exchange money has only "technical" function. But the essence of market relations is, that in condition of division of labor, each subject produces the goods for others, and consumes another's goods, sells his own goods, and buys - another's goods. And, all participants of the market together represent closed whole, within the limits of which they are interconnected, so that each of them represents a necessary part of this integrity. If at least one of them drops out of this integrity, integrity will be broken. For it made a certain part of these products for the whole. That is, its good was a certain part of final product of a society. And at the same time, it consumed goods of other subjects, that is consumed a certain part of final product or prime resources. If it ceases to produce, the society will remain without its goods, a deficiency will arise. If it ceases to consume the goods of other producers, the society will remain with over produced goods. After all it is clear that if someone ceases to produce, someone other cannot consume. And on the contrary, if someone ceases to consume, some other remains with excess product and there will be losses from production of surpluses.

Therefore, if any subject begins to produce or consume more or less than it is caused by requirements of integrity of an economic organism, then together with economy's integrity its normal functioning is broken. For restoration of economy's normal functioning, restoration of integrity is necessary. New optimal proportions between production, consumption, new exchange proportions should be generated. Accordingly, the new system of prices for resources and products should be formed.

Barter. Buying and selling

1. In market economy subjects are connected among themselves in a single social organism only through a market exchange of goods. Just in exchange there arise the market forces, bringing into balance social costs for production of goods with their social utility. By this is ensured the even-utility of social costs, and therefore, the accordance of structure of a social production and consumption to the structure of solvent needs. Utility of the goods, bought by the subject, is utility gained through payment, through expenditure of resources. It is paid utility. The size of this utility is measured by those costs, which the subject sacrifices for the sake of its reception and which are embodied in the sold goods, produced by him³⁴. Actual exchange rates are formed by comparison of production costs of the sold goods to the utility of purchased goods. In such way each party defines the worst (marginal) exchange rate acceptable for him. And the variant which is the worst for one party - is the best of possible for other party. Actual proportions of an exchange are result of the compromise of the parties in the mentioned limits. But as each of two exchanged goods is purchased one for one party, and sold - for another, then the utility of each of goods is measured by the costs, incarnate in an opposite good. Taking into account that both exchanging parties represent in the market the same aggregate social production and social needs, we will receive the following. Social utility of the good **A** is measured by social costs for production of good **B**, but social utility of **B** – by social costs for production of **A**. Because social utility of any goods is measured by that size of limited resources and, accordingly, their social utility, which society, in the person of this or that buyer, can allocate for acquisition of these goods. But as producers, the parties are interested not only in utility, but also in production costs of purchased goods. Thus, in exchange of the goods, each party as consumer, compares his costs with utility of the purchased goods,

³⁴ As in the conditions of division of labor the subject by his resources produces goods for others, and then exchanges them for the goods necessary to him, then the goods, produced by him, carry out for him a role of an intermediate product. In these conditions production and exchange represented for him two stages of single process, in result of which by the available to him primary resources, the subject receives those final products, which correspond to his final needs.

and as producer - with production costs of purchased goods³⁵. They have mirror identical and at the same time, opposite relation to each other.

2. Considering that in process of an exchange of goods also occurs commensuration of social costs for their production, it turns out that in the same exchange relation occurs commensuration of social costs for production of goods with social utility of the same goods³⁶. For utility of this good is measured by the costs of opposite one. So being commensurated among themselves as costs the goods commensurate also the own costs with own utility. And so each goods from own part.³⁷ Besides, from this follows that the goods in an exchange are commensurated as utilities also. And again, if utilities are measured by size of payment which is offered for them (and in this case payment is the costs of the opposite good), then being commensurated as costs, the goods are commensurated as utilities also. Here too are apparently the mirror-symmetric relations between the goods.

3. For the satisfaction of some need society can apportion certain amount of resources which, finally, should be paid by other resources of the same value, but embodied by now in other goods. This is inevitable

³⁵ For in market economy subjects search most profitable production sector and try to create the greatest social utility by the least social costs.

³⁶ "Everything that exists stands in correlation, and this correlation is the veritable nature of every existence. The existent thing in this way has no being of its own, but only in something else: in this other however it is self-relation; and correlation is the unity of the self-relation and relation-to-others." (Hegel G. 1974. *Encyclopedia of the Philosophical Sciences*. Volume 1, Moscow, "Misl", (in Russian), p. 301).

³⁷ Still K. Marx denoted that A. Smith is genius even in his errors and contradictions. It seems to me, that the arsenal of Smith's insights can be enriched by one more. From one side, A. Smith wrote, that the value of good is measured by labor, embodied in a good itself, but he writes elsewhere, that a value is measured by alive labor, which can be bought on this good. Certainly, it is contradiction. But if logically continue the chain of reasoning, then in this contradiction it is possible to see the dim perception by A. Smith of quite rational mechanism of commensurate of costs and results. So if to suppose that the amount of labor, which is bought by this good, depends on the utility of this good, then it turns out that according to A. Smith, value is simultaneously measured by both, the costs of labor for production of good and its utility. And if, further, suppose that the purchased alive labor is equivalent to labor, embodied in the purchased good, then it will turn out, that in the process of exchange of two goods, the utility of first of them is measured by the purchased labor, or by costs, embodied in an opposite (purchased) good. Consequently, in the process of exchange there takes place commensurate of costs of labor for production of this good with utility of the same good. In conditions, when each good directly, or through money, is commensurated with all other goods, the mentioned process conduces in a tendency to the even-utility of costs of labor in all economy, i.e. conduces to the optimal state of economy. (Leiašvily P., 1990. *The Analysis of Economic Value*. Moscow, "Economy", (in Russian). p. 101).

consequence of a division of labor. But if actually some goods are produced more or less than it is necessary for satisfaction of solvent needs of a society, then there arises a discordance between the size of costs, embodied in these goods, and size of costs, embodied in those goods, by which the first goods will be paid. Naturally, in the conditions of free competition, separate producers will correct their activity, for not to remain at a loss, expanding or reducing the volume of output. As a whole, the mechanism of an exchange of goods on the basis of social values is directed to establish equilibrium in all economic system, at which to equal sizes of social costs correspond equal sizes of social utilities. Just this even-utility of costs is a condition of proportionality of social production.

Objective and subjective factors of production

1. The Economics differentiates four factors of production: Entrepreneurship, Labor, Capital and Land. For this article it is fundamental to select Entrepreneurship, as a subjective factor of production, attributing all others to objective ones.

An entrepreneur sets the objective factors of production into interaction, and as a result he gets the final product. However, from this does not follow that objective factors of production are primary resources. They are only necessary conditions of production, but not resources. Their feature is that in the course of their industrial consumption they do not disappear. Time of existence of these factors of production is much more than time necessary for the production of one or another final product. Therefore, entrepreneur needs not the factors of production, but only their services, he needs opportunity to use them in the period of time, sufficient for the production process.

It is necessary to distinguish from each other production factors, their services and the right of use of these services. Factors of production are assets, but primary resources are their services, or flow generated by assets and measured in unit of time. Production factors provide a production opportunity. Services - are the use of these opportunities. The right is a possibility to use these services. To have an opportunity of produce the specific good – the right of temporary using of services of production

factors is necessary for entrepreneur, i.e. he needs the future services of which he can dispose.

As a resource are services, which on sale in a form of right of use of them, reproduction of resources is reduced to reproduction of a life of owner of this rights, owner of production factor. Marx's approach to a question on purchase of the right of use by labor in conditions of market economy should be extended to all objective production factors³⁸. Because producer buys for needs of production not a title of ownership on production factor, but time, during which he has the right to use its services³⁹. So, the cost of life of the subject in function of "owner" of production factor during the certain time is cost of reproduction of primary resource (services of this factor) during the same time.

2. As the entrepreneur has bought primary resources, the final product produced by him belongs to him. However, the final products necessary for an exchange for primary resources make up only a part of final product. Consequently, to owners of primary resources, as payment for their resources, only the part of that is produced by these resources comes back. Other part is a surplus product, which entrepreneur saves up and does not exchange for resources. Accordingly, the structure of final product includes necessary and surplus products.

In exchange for their resources the owners receive a necessary product, i.e. vital means. Consuming necessary products as consumers, they reproduce themselves as owners of production factors and, accordingly, their services. However, the quantity of these services, the right of

³⁸ Marx writes concerning labor force: "He must constantly look upon his labor-power as his own property, his own commodity, and this he can only do by placing it at the disposal of the buyer temporarily, for a definite period of time. By this means alone can he avoid renouncing his rights of ownership over it." (Marx, K, 1978. *Capital*, volume 1, Moscow, "Politizdat", (in Russian), p.178). "Therefore the labor-time requisite for the production of labor-power reduces itself to that necessary for the production of those means of subsistence; in other words, the value of labor-power is the value of the means of subsistence necessary for the maintenance of the laborer." (Ibid., p. 181.)

³⁹ Difference is only that in case of reproduction of the owner of labor force, there is also generated labor force itself, as capacity for work. For it is capacity of owner itself. But in case of reproduction of owner of other production factors reproduction of owner does not mean the reproduction of Capital or Land. In this case property exists separately from an owner. Therefore, reproduction of owner means reproduction of rights, but not of those useful properties of production factor, for the sake of which the rights of use of them are purchased by entrepreneurs. Also it is necessary to notice that, certainly, nothing prevents producer to buy a title of ownership. But in that case he comes forward not as "producer", but as "owner". It is simply the other function which can be combined with the function of "producer".

temporary using of which they sell as primary resources to entrepreneurs, depends not on the quantity of necessary products consumed by them, but on the quantity of production factors, which they possessed. The owner exchanges for vital means or necessary products not all his resources, but only their part and saves up the other part. Thus, the structure of primary resources also includes necessary and surplus resources. Necessary resources are a part of primary resources which are necessary for owner for an exchange for vital means and reproduction of their life, but the other part is surplus, more precisely, saved resources. It is a part of resources, which are not used for an increase of current consumption, do not exchange for a means of subsistence.

In other words, as a result of consumption of necessary product are reproduced more primary resources than it is necessary for an exchange for a necessary product. The same as from a necessary resources is produced more product than it is necessary for an exchange for a necessary resources. So, to producer remains surplus product, and consumer remains saved resources.⁴⁰

3. So, what for what is exchanged? The necessary resource is exchanged for a necessary product. But the product is produced from resources. It turns out, that live services of production factors are exchanged for embodied services just what the products are. Buying resources, an entrepreneur buys a possibility of production of products from a society, but sells to a society the real products. He transforms a possibility into the reality. But this is connected with risk. Just for this he requires a payment. The social product is produced by all society, but the risk connected with this production is taken on himself by an entrepreneur only. It is his contribution into a social production. And he requires for his contribution into production his fraction of social product as well as all those who have brought the contribution to this production by services of their production factors.

On the other hand, it turns out that owners sell the right of use of services of own factors to entrepreneurs, and so, sell the future services. But then redeem these services back in embodied form together with the services of entrepreneurs when pay for ready products. That is, for all

⁴⁰ Saved resource is invested in physical capital and surplus product - in human capital.

consumed resources, which entrepreneur buys in the market of resources, society compensates to him at payment of product's price. The entrepreneur is only intermediary in a time interval between an input of social resources and output of social products, between present and future, who makes decision at own risk concerning the distribution of resources according to social needs. Accordingly, shoulders a material liability for these decisions. To the services of objective factors he adds his own services of subjective factor and together sells them to society in embodied form.

But though society as a whole in such form carries out an exchange of live services of production factors on embodied services, but finally separate subjects exchange their services among themselves. For products bought by them personify services of different production factors belonging to different owners. Products of production are products of all social production as single organism. And each member of society as owner of this or that production factor brings his contribution to a social production by delivering to society the services of his production factor. Therefore, the distribution of produced goods occurs according to this contribution.

4. The entrepreneurship, as subjective factor of production, means not only personal qualities and psychological readiness to incur risk. It means also availability of financial resources either own, or borrowed. But the property is necessary for their borrowing too. An entrepreneur basically should be the proprietor. He cannot take risk on himself if he has nothing to lose⁴¹. Therefore entrepreneurship as production factor means availability of financial capital, as well as objective production factors mean availability of human, physical and natural capital.

5. As production is connected with a risk that resources can be spent, but products may be not received, so consumption is also under the risk of remaining without products for consumption. The economic activity in general, and especially in conditions of spontaneous market, proceeds in conditions of uncertainty. But in conditions of uncertainty consumers are also compelled to be insured and do saving, the same as producers are compelled to go for entrepreneur risk. Producer demands a payment for

⁴¹ If subject inputs in production someone else's property, then it is not his risk. Then it simply is a manager, who delegated the right of making economic decisions. The main criterion of entrepreneurship is – “Who takes ultimately the risk for results of production?”

risk, and consumer demands such payment for his resources which allows him to do saving. For in conditions of uncertainty insurance is the same necessary component of consumption, as necessary products are.

However, consumption is not the prime end for economic subject. Consumption is a primary end only for consumer. The prime end of a man as a subject in general is freedom, but the prime end of economic subject is economic freedom, and consequently, an increase of the property. Because a property just is a determinate being of economic freedom.⁴² Saving is not only means of insurance of future consumer possibilities, but also means of accumulation of a property, as one of the main stimulus of economic activity in general. But to do saving, abstention from satisfaction of current needs that requires strong-willed efforts is necessary. Thrift is as connected with strong-willed efforts of saver as entrepreneurship - with strong-willed efforts of entrepreneur. Both, entrepreneurship and thrift are mirror-contrary ways of increasing of property and economic freedom, which is the prime end of economic subject.

Profit and saving

1. Alternation of incomes and expenses takes place both in production sector and in consumption sector. Incomes and expenses are the same reflective concepts as production and consumption, products and resources, utility and costs. Incomes of producers are expenses of consumers, and expenses of producers are incomes of consumers. Accordingly the difference between incomes and expenses accepts the mirror opposite forms for them - profit and saving. Just for this reason profit and saving are inherently interconnected. So far as incomes of one are expenses of others and vice versa, then profit and saving cannot be independent amounts. As incomes and expenses of producers as well of consumers are stipulated by prices of products and resources, then the more the prices of products exceed the prices of resources, the more are the profits and less are the saving. And vice versa. The more the prices of resources increase and the

⁴² "This first phase of freedom we shall know as property". (Hegel G. 1990. *Philosophy of Right*, Moscow. "Misl", (in Russian), p. 94). "If emphasis is placed on my needs, then the possession of property appears as a means to their satisfaction, but the true position is that, from the standpoint of freedom, property is the first embodiment of freedom and so is in itself a substantive end." (Ibid, p.104).

prices of products decrease, then the more are saving and the less profits. That is the change of a parity of prices of resources and products in market economy is exactly in opposite way reflected on sizes of gross profits and gross saving.

2. Society as a whole as well as each economic subject separately, at the same time is producer and consumer. Therefore, both in one and in the other quality he at the same time is an entrepreneur and a saver. The producer is not only an entrepreneur, but also “saver” for he saves up the part of income. Just these “saving” are withdrawn profit. And making decision on expenses producer calculates not only the expected profit from future incomes, but also what “saving” from the previous incomes will remain. Also the consumer is not only saver, but also “entrepreneur” who takes the risk on himself when he invests his saving. And making a decision concerning the current expenses he considers not only what savings will remain from the last income, but also whether there will be an excess of future incomes over the current expenditures, i.e. whether there will be "profit".

Therefore, all economic subjects adopt each decision concerning expenses taking in view of both received and expected income. Consequently, decisions are made from positions of both saver and entrepreneur. For in general, excess of expected income over the current expenditure is his profit, but excess of already received income over the current expenditure is saving. And in alternation of incomes and expenses from position of subject it depends whether the difference between incomes and expenses is considered as profit, or – as saving. That is “profit” and “saving”, “entrepreneur” and “saver”, are the same reflective concepts, as concepts “producer” and “consumer”.

Investments and consumption on debt

1. During the use of capital, it wears out. But the capital goods are the assets on which depend the incomes of subject, his production and consumer possibilities, his economic freedom. Therefore, owner is interested not only in restoration of the worn out capital, but also in the increase of capital, as a guarantee and source of his economic freedom. For this reason he saves a part of his resources and uses them not for increasing

of current consumption, but for restoration and increasing of property, in other words, he invests into the physical capital.

2. Consumption of vital means by entrepreneur is a «consumption on debt from himself». In fact he consumes on account of future payment, due to the future surplus product as a unique source of his incomes,⁴³ i.e. he consumes a surplus product of the past production, not knowing whether he can compensate it by surplus product of current production. It means he invests the surplus product of past production in his current consumption. Without such investments he cannot exist and, consequently, carry out the function of entrepreneur. The produced surplus product is invested also in education, science, culture, healthcare, security, law and order, etc. These investments into the human capital create conditions for normal functioning of not only economy, but also a society as a whole.

3. Investments are carried out due to saved resources and surplus product. The first are invested into the physical capital, the second – into the human capital⁴⁴. These are production factors or assets services of which just are the resources and products (as materialized services) for current consumption. But on the other hand investment goods themselves appear as products of their own services. Assets themselves are created by the same services which they do. And the services are done by the same assets which they create. Assets and flows of their services stipulate each other and are in the same reflective relations as products and resources. Investment goods differ from ordinary products only by the period necessary for their production and consumption. All those goods for which this period is more than the period accepted for unit belong to the investment goods.

⁴³ From Marx's letter - to Engels (June, 23rd, 1868), Marx quotes A. Smith: "... 'His profit, besides, is his revenue the proper fund of his subsistence. As, while he is preparing and bringing the goods to market, he advances to his workmen their wages, or their subsistence, so he advances to himself, in the same manner, his own subsistence, which is generally suitable to the profit which he may reasonably expect from the sale of his goods. Unless they yield him this profit, therefore, they do not repay him what they may very properly be said to have cost him'. And further Marx makes comments: 'This second manner of pressing the profit into the **prime cost** — because already consumed — is really fine' ". (Marx, K., Engels F. 1986. *Letters on "Capital"*. M. Politizdat. p.163).

⁴⁴ As a result of investment the creation of investment goods, restoration and increment of physical and human capital is carried out. And over time, also of natural capital, in which it is necessary to more and more to invest for saving it.

4. Investment into the physical and human capital is a processes being beyond circulation of necessary product and necessary resource. Investment assumes another form of relationships between consumer and producer, rather than current production and consumption. Instead of exchange (buying and selling), credit relations are here implied. Just as the other side of current production is current consumption, the other side of investment is consumption on debt. If someone invests it means someone another consumes on debt. One is impossible without other. They represent two aspects of the same redistribution in time of production and consumption possibilities. Moreover, such redistribution is possible not only between various subjects. But also the subject itself carries out such redistribution as optimization of its activity. And it depends on the subject whether he concerns to current consumption as to the expenses for the sake of future benefits, or as to benefit in the present due to the future expenses, i.e. whether it concerns to them as to investments or as to consumption on debt.

They imply the withdrawal of surplus opportunities from one period of time and bringing in of additional opportunities into another period. Investment means restriction of current needs of subject for the purpose to use resource for satisfaction of future needs. And it means, a subject "exchanges" satisfaction of current needs for satisfaction of the future ones. For that purpose he "credits" future needs by resources, saved from current consumption. Until the satisfaction (i.e. product) will be received in the future, until then consumption of invested resources is "consumption on credit." Between the investments and consumption on debt reflective relations exist too. They are internally interconnected and mirror opposite the same as profit and saving, as production and consumption.

5. The debt and the credit as well are reflective concepts. They represent the various sides of the same relation. The credit of one party is a debt - for another. One is impossible without other. In the conditions of monetary economy credit resources are formed from the temporarily free monetary resources (i.e. from profit and saving). But whatever was the source of an origin of monetary credit resources, if to divert from «monetary veils» and to consider purely «commodity relations», the essence remains invariable. In case of consumption on credit, «the commodity credit», in the form of final products, consumers can take

exclusively from entrepreneurs (i.e. owners of products), and in case of production investments, «the commodity credit», in the form of primary resources, producers can take exclusively from consumers (i.e. owners of resources). Thus, both producers, and consumers simultaneously are both creditors and debtors⁴⁵.

6. Above we have noticed that producer and consumer as though “exchange” the products which are resources for the opposite side. And consequently, for the uninterrupted flow of economic process, accordance of production of final products and reproduction of primary resources is needed. But the necessity of such “rigid” correspondence in an exchange exists only between necessary products and necessary resources. As to investments and consumption on debt (accordingly saved resources and surplus product), though they are also interconnected among themselves in the long-run period as components of single system of economic flows, but in the short-run period they do not depend from each other directly.

Accordingly, investments and consumption on credit, as well as saved resources and surplus product, on which they depend, are the most changeable components of economic flows during the fluctuations of economic activity. Circulation between necessary products and resources though is also subject to the fluctuations, but in a significantly less degree.

Global and local criterion of optimality

1. We already marked that in production sector and in consumption sector products and resources are perceived in an opposite way. Resources of one sector are products for another and on the contrary. Accordingly, the goods, which in one sector are perceived as utility, in another are perceived as costs. But from the point of view of economy as a whole, i.e. in a general sense of economical, resources are that the subject consumes, and

⁴⁵ Speaking generally about the credit, taking the “monetary credit» from himself (especially during the period of crises) and the subsequent covering of a duty to himself, occurs in the form of use and replenishment of savings. It is a usual way of redistribution of consumer and production potentials in time that is meant by a necessity of optimization of economic activity in time.

products - that what he produces. At that, resources are perceived as utility and products - as costs⁴⁶.

From these general economic position⁴⁷ (i.e. if to distract from distinction between sectors of production and consumption) to receive the most useful products by existing resources, in economy as a whole resources should be optimally allocated so that on each unit of costs (i.e. of sacrificed utility of resources), the equal size of utility of produced products should come. But actually, the deviation from optimal allocation of resources always takes place. In some goods the economic utility fitted a unit of cost, is more than average. In other cases - vice versa. In one case we receive *deficiency*, in the other - *excess*. It means that the certain part of resources is spent for production of economically less useful goods (excesses), in result of which they are not enough any more for production of more useful goods (deficient). Deficiency and excess are measured by degree of a deviation of existing quantity of the goods from optimal quantity. But optimal quantity is a quantity, at which there are obtained the even-utility costs, that is accordance of structure of costs to structure of needs. Thus, overproduction of goods in some sectors causes underproduction - in others. Underproduction and overproduction, deficiency and excess – are interdependent phenomena. The condition of equilibrium is an even-utility of costs in all sectors, that testifies optimality, that is accordance of structure of production and consumption to the structure of needs.

2. But even-utility of costs is only *global* criterion of optimality, which promotes to optimal *allocation* of available resources between sectors. However, for optimal usage of resources it is not enough to allocate them optimal. After all even-utility of costs does not exclude possibility of even low efficiency of costs. It is necessary also that effective technologies be used. After all, reception of a maximum of total utility of products by available resources means as well that this total utility of products is received by the minimum total costs. One is impossible without other. Therefore, making economic decisions, the subject is guided, also, *by local*

⁴⁶ At the same time product is perceived as utility for new needs, for the product of a single act of activity is a resource for another.

⁴⁷ i.e. irrespective of whether we mean production or consumption (i.e. reproduction of resources) sector.

criterion of an optimality, which means reception of a maximum of utility by a minimum of costs, and also reception of a maximum of surplus utility. According to local criterion of optimality the subject not only aspires to receive maximum utility on a *unit of cost* (to produce the most deficiency products by available resources). He, also, aspires to carry out a minimum of costs for each *unit of utility* and, hence, to use the most effective technologies in production of these goods.

3. Local optimality criterion is displaying in maximization of incomes and minimization of expenditures. But firms' incomes are households' expenditures, but firms' expenditures – households' incomes, but the difference between incomes and expenditures in the one case takes the form of profit, in other - a form of saving. In the course of exchange by goods the economic subjects repay to each other profit, or saving, depending on whether they buy final products or primary resources. For profit and saving are the components of prices of bought goods. Therefore, although in the process of production (reproduction) of goods subjects create and save additional utility in the form of profit and saving, but in the process of exchanging of goods they carry additional expenditure by paying to other their profit and saving. That is, in the result of exchange gross profit and gross saving mutually balance each other.

In conditions of equilibrium, profit in composition of income from a sale of some product should be equal to the sum of saving in composition of used resources' cost paid by producer. But saving in composition of income from sale of some resource should be equal to the sum of profits in composition of cost of products consumed in the process of reproduction. Hence, it is clear - what is the optimal price, i.e. the equilibrium price from a macroeconomic point of view. Product price is optimal, if profit in it is equal to the sum of saving, which are contained in the costs of the resources expended in production of one unit of this product. Similarly, in optimal price of resource saving should be equal to the sum of profits contained in the costs of final product used in reproduction of units of that resource⁴⁸. In all other cases the price of goods is either overestimated, or underestimated. There takes place a deviation from optimal prices

⁴⁸ Since profit and saving have opposite signs, then in equilibrium conditions they must compensate each other, both at the level of whole economy and in a composition of each price. Ideally, the profit and saving rates in prices of all products and resources should be equal.

corresponding to even-utility of costs. Until the average rates of profit and saving are equal in economy, deviations of individual rates of profit and saving in different goods compensate each other. But if equality of average rates of profit and saving is violated, this already violates the macroeconomic equilibrium. Profit is negative saving, and saving is negative profit. Therefore, in economy as a whole, together with the even-utility of costs, exchange presupposes equality of gross profit and saving. Thus, in accordance with the global criterion of optimality the equality of gross profit and gross saving is a necessary condition for the optimal state of economy.

4. In case of deficient and excess goods there is violated a balance between utility and cost, which is reflected in deviation of rate of surplus or saved utility from the average (optimal) magnitude. This means that contradiction between use and production values is sharpened inside the economic value, in which is reflected the violation of the harmony between production and consumption in a system as a whole. But just this creates appropriate incentives that lead to the elimination of deficits and surpluses and restoration of optimal proportions between production and consumption. The subject aims to expand production and reduce consumption of scarce goods and, on the other hand - to reduce production and expand consumption of surpluses.

Local and global criteria of optimality in unity form general criterion of optimality - Pareto optimality, which ensures maximum utility together with a minimum of costs already at a level of all system. Such state of economy is arrived in conditions of equality of total utility and total costs.

"Symmetric model" of general economic equilibrium

1. There is considered a decentralized closed economic system in which are produced capital goods and m kinds of final products by means of n kinds of primary resources⁴⁹. Intermediate products in given model aren't

⁴⁹ Though given model is considered on a market economy example, but it reflects functioning of closed economic system in general, whether it be natural, market or regulated economy and at any level from individual till world economy. For it reflects system of interdependence not between various economic subjects. It reveals an essential relation and parameters of those economic flows (of goods and their values) which provides integrity of economic system as that. Each of these flows (production, consumption, profit, saving, investment in physical and

considered. Sector 1 (see Tab.1) reflects a process of consumption of primary resources and production of final products. Sector 4 reflects consumption of final products and reproduction of primary resources. Sector 2 reflects the market of products and sector 3 - the market of resources on which the equilibrium prices balance supply and demand⁵⁰.

Incomes and expenses are formed on the basis of prices of goods. At that expenses of buyers are incomes of sellers, and vice versa. On the one hand prices reflect inputs for production of goods (hence are formed on the basis of prices of other goods, expended on their production). On the other hand prices reflect utility of goods (for utility is ability to satisfy solvent needs), and as such they stipulate the size of expenses of buyers which they sacrifice for the sake of acquisition of this utility⁵¹.

human capital, etc.) are necessary for any economic system. For integrity in general is a unity of necessary parts on the basis of realization of their essential relation. Though, instead of the money prices, there may be subjective estimations or optimal estimations, instead of measurement of values by monetary unit can be simple commensurations of values in consciousness of the individual or in memory of computers, etc. But in any case the essential relations between necessary flows which provide integrity of system are invariable. Economic systems differ by a level of development of division of labor. For individuals specialize on performance of one or another functions owing to which they become interdependent and are integrated into a single economic organism.

⁵⁰ Thus, that is the end of production of products, is the means for reproduction of resources, and that is the end of reproduction of resources, is the means for production of products. So the model reflects the fact that production and consumption (i.e. reproduction of resources) are in reflective relations to each other. They are necessary addition for each other within the limits of a single whole and, at the same time, are opposite to each other. Thus, sector 1 and 4 reflecting production and consumption are considered as mutually opposite the same as sectors 2 and 3 reflecting the market of products and market of resources.

⁵¹ Price represents for buyer his expenses on unit of product. So in this model incomes and prices, paid from these incomes, have an opposite sign. This reflects the fact that as a result of purchase of goods, prices "neutralize" incomes as well utilities satisfy ("neutralize") needs as a result of consumption. One and the same good simultaneously is produced and consumed, sold and bought. Diagonal elements show both production (exchange) value of sold goods and use value of same goods, as bought. As production value, it is extensive magnitude and consists of elements of costs (objective and subjective), shown in lines. But as the indicator of use value or utility, it is intensive magnitude and as such, it is not summarized from the elements, but itself breaks up in elements of columns showing utility of given goods for their consumers. As each element of matrix simultaneously is an element of lines and columns they simultaneously show both utility and costs. Lines show elements of costs of production of given goods, and columns - distribution and consumption of these goods in production of other goods. Accordingly, elements of matrix in composition of lines show costs of production, and in composition of columns - utility of goods for consumers. Therefore summarizing in lines we receive costs for production of supplied goods, and summarizing in columns - aggregate utility (measured by quantity of money sacrificed, for its acquisition, that is demand).

Appendix 1

| Sector 1 | | | | Sector 2 | | | |
|----------------------|----------------------|----------------------|----------------------|--------------------|---------------------|---------------------|--------------------|
| $- a_{11} X_1 V_1$ | $- a_{12} X_1 V_2$ | $- a_{1n} X_1 V_n$ | $- \alpha_1 C_1 X_1$ | | | | $X_1 p_1$ |
| $- a_{21} X_2 V_1$ | $- a_{22} X_2 V_2$ | $- a_{2n} X_2 V_n$ | $- \alpha_2 C_2 X_2$ | | | $X_2 p_2$ | |
| ... | ... | ... | ... | | | ... | |
| $- a_{m1} X_m V_1$ | $- a_{m2} X_m V_2$ | $- a_{mn} X_m V_n$ | $- \alpha_m C_m X_m$ | | $X_m p_m$ | | |
| $- \gamma_1 Y_1 V_1$ | $- \gamma_2 Y_2 V_2$ | $- \gamma_n Y_n V_n$ | $- P_1$ | $I = S$ | | | |
| | | | $- RC$ | $-(A + Rp)$ | $-\delta_m Q_m p_m$ | $-\delta_2 Q_2 p_2$ | $-\delta_1 Q_1$ |
| | | | $P = D$ | | | | p_1 |
| | | $Y_n V_n$ | | $-\beta_n Y_n V_n$ | $- b_{nm} Y_n p_m$ | $- b_{n2} Y_n p_2$ | $- b_{n1} Y_n p_1$ |
| | | ... | | ... | ... | ... | ... |
| | $Y_2 V_2$ | | | $-\beta_2 Y_2 V_2$ | $- b_{2m} Y_2 p_m$ | $- b_{22} Y_2 p_2$ | $- b_{21} Y_2 p_1$ |
| $Y_1 V_1$ | | | | $-\beta_1 Y_1 V_1$ | $- b_{1m} Y_1 p_m$ | $- b_{12} Y_1 p_2$ | $- b_{11} Y_1 p_1$ |

Sector 3

Sector 4

Table 1. Matrix of closed economy

- x_i - final products, $i = 1, 2, \dots, m$;
- p_i - price of final product, $i = 1, 2, \dots, m$;
- y_j - primary resources, $j = 1, 2, \dots, n$;
- v_j - price of primary resources, $j = 1, 2, \dots, n$;
- a_{ij} - consumption of resource j for production of unit of product i ;
- b_{ji} - consumption of product i for reproduction of unit of resource j ;
- α_i - profit rate in production of product i ;
- β_i - saving rate in reproduction of resource j ;
- γ_i - share of resource y_j , consumed on credit;
- δ_i - share of product x_i , consumed on credit;
- C_i - cost price of product i ;
- Q_i - quantity of product i consumed in reproduction of all resources
- P - gross profit; S - gross saving;
- I - investments into production
- D - consumption on credit
- P_1 - profit from investment;
- RC - reinvestments into consumption;
- A - depreciation charges;
- Rp - reinvestments into production;

| | | | |
|--|---|--|--|
| Sector 1 | | Sector 2 | |
| C_p Costs of production | P_n Net profit | GDP Gross Domestic Product | |
| I_g - gross investments into production 1. depreciation 2. net increment of physical capital 3. changes of stocks of product | P₁ - profit from previous investments; R_c - reinvestments into consumption | I = S I - inflow into production S - outflow from consumption | NDP Net Domestic Product |
| GNI Gross National Income | P = D P - outflow from production D - inflow into consumption | A + R_p A - depreciation charge R_p - reinvestments into production | D_g - consumption on credit 1. consumption of entrepreneurs 2. net increment of human capital 3. changes of stocks of products |
| NNI Nat National Income | S_n Net saving | C_c Costs of consumption | |
| Sector 3 | | Sector 4 | |

Table 2. The main economic flows in closed economy

2. According to a matrix, in a direction clockwise there is a transformation of resources into products which serve as resources for reception of other products etc. Counter-clockwise there is a transformation of incomes into the expenses, which themselves are the incomes and are transformed again into expenses etc.

3. The square block matrix of $(m + n + 2)$ dimensions is presented. As cost of sold and bought goods is the same size each element of a diagonal brings into accord with each other lines and columns in the whole model. In conditions of system' equilibrium, each element of a diagonal (sectors 2 and 3) is equal to the sum of elements of corresponding line and, simultaneously, to the sum of elements of corresponding column of sectors 1 and 4. Therefore, first, the sum of elements of each column or every line in table is equal to zero which reflects the fact that the system is closed. Secondly, the sum of elements of each of m lines of production sector (1) and n lines of consumption sector (4) in model is equal to the sum of elements of corresponding columns of opposite sector (sectors 4 and 1). That is, in a closed economic system in conditions of system' equilibrium there is produced only what is consumed and is consumed only what is produced. Such conformity between production and consumption means that supply and demand, purchase and sale of all goods (products and resources) completely correspond to each other.

4. The model description:

Constants: a_{ij}, b_{ji} . Variables: $x_i, y_j, p_i, v_j, \alpha_i, \beta_j, \gamma_j, \delta_i$.

$$I. \\ (1 + \alpha_i) \sum_{j=1}^n a_{ij} v_j = p_i, \quad (i = 1, 2, \dots, m); \quad (1)$$

$$(1 + \delta_i) \sum_{j=1}^n b_{ij} y_j = x_i, \quad (i = 1, 2, \dots, m); \quad (2)$$

$$\sum_{i=1}^m a_{ij} x_i = y_j (1 - \gamma_j), \quad (j = 1, 2, \dots, n); \quad (3)$$

$$\sum_{i=1}^m b_{ij} p_i = v_j (1 - \beta_j), \quad (j = 1, 2, \dots, n); \quad (4)$$

$$x_i \geq x_{min}, \quad y_j \leq y_{max}, \quad 0 < \alpha_i, \beta_j, \gamma_j, \delta_i < 1.$$

II.

$$\sum_{i=1}^m \alpha_i C_i x_i = \sum_{i=1}^m \delta_i Q_i p_i; \quad (5)$$

$$\sum_{j=1}^n \gamma_j y_j v_j = \sum_{j=1}^n \beta_j y_j v_j; \quad (6)$$

III.

$$\sum_{j=1}^n y_j v_j + \alpha_0 \sum_{j=1}^n y_j v_j = \sum_{i=1}^m x_i p_i + \beta_0 \sum_{j=1}^n y_j v_j; \quad (7)$$

5. The equations 1-4 are received by summation of $(m + n)$ elements in lines and $(n + m)$ elements in columns of matrix. According to conditions I a sum of costs for production and profit is equal to the product price, and the sum of consumer expenses and saving, having on unit of reproduced resource, is equal to resource price. Quantity of sold (bought) goods is equal to a sum of consumed and invested (consumed in credit) goods. At that the products can't be bought (sold) less than it is caused by the minimum admissible consumption level. Also, resources can't be sold (bought) more than it is caused by physical limitation of production factors (accordingly, their services).

6. According to these formulas mutual transformations of resources y_j and products x_i as well as their prices (p_i and v_j) into each other occurs by the same matrixes A and B. But the directions of these transformations are the opposite. Therefore changes of elements of matrixes will exactly in opposite way be reflected on the ratios between x_i and y_j on the one hand and on ratios between p_i and v_j - on another. For example, reduction of technological coefficients a_{ij} simultaneously causes on the one hand increase of supply of products x_i^s and decrease of their supply prices p_i^s and, on the other hand - decrease of demand for resources y_j^d and increase of demand prices v_j^d on them. Similarly, the increase of consumer

coefficients b_{ji} simultaneously will cause, on the one hand, increase of demand for products x_i^d and decrease of demand prices on products p_i^d , and on the other hand - decrease of supply of resources y_j^s and increase of supply prices on them v_j^s . All these processes completely correspond with real market processes. For considering that market prices are the result of the interaction of supply and demand prices, we receive the following. As a result of increase or decrease of goods' consumption norms it becomes, accordingly, deficient or surplus. An increase of deficiency of the goods is accompanied by increase of their prices, and decrease - by decrease of prices⁵².

According to these formulas the prices of products p_i and resources v_j have opposite signs, and secondly, all prices and rates of profit and saving⁵³ mutually cause each other.

7. Cost of the sold and bought goods is the same magnitude. Therefore considering that $C_i = \sum a_{ij} v_j$, and $Q_i = \sum b_{ji} y_j$, following equality takes place:

$$x_i p_i = (1 + \alpha_i) \sum_{j=1}^n a_{ij} v_j x_i = (1 + \delta_i) \sum_{j=1}^n b_{ji} y_j p_i, \quad (i = 1, 2, \dots, m); \quad (8)$$

From this equation follows, if $\alpha_i = \delta_i$, then:

$$\sum_{j=1}^n a_{ij} v_j x_i = \sum_{j=1}^n b_{ji} y_j p_i, \quad (9)$$

⁵² That is technological and consumption coefficients are coefficients of transformation of resources into products, and products - into resources, and the prices are coefficients of transformation of money into the goods and the goods into money and, accordingly, incomes into expenses, and expenses - into incomes. At that producers and consumers are the two parties which are in reflective relations. Therefore coefficients of transformation of incomes into expenses for one party are coefficients of transformation of expenses into incomes - for another. For expenses of one are incomes of others. And coefficients of transformation of resources into products for one party are coefficients of transformation of products in resources for other party, for products of one party are resources for another. But, behind the nominal prices there are real proportions of an exchange of goods. Therefore, if technological and consumption coefficients are coefficients of production and consumption of goods, the prices are coefficients of their exchange.

⁵³ Despite the specific form of expression, profit rate and saving rate represent the prices – the price of enterprise risk and the thrift price (insurance of future incomes).

Any deviations of equation's (9) parties from each other should be compensated by corresponding deviations of α_i and δ_i from each other.

Similarly in resource market:

$$y_j v_j = \sum_{i=1}^m a_{ij} x_i v_j + \gamma_j y_j v_j = \sum_{i=1}^m b_{ji} x_i y_j + \beta_j y_j v_j, \quad (j = 1, 2, \dots, n); \quad (10)$$

If $\beta_j = \gamma_j$, then:

$$\sum_{i=1}^m a_{ij} x_i v_j = \sum_{j=1}^n b_{ji} y_j p_i \quad (11)$$

The deviation of equation's (11) parties from each other should be compensated by corresponding deviations of β_j and γ_j from each other. It is clear that equality $\alpha_i = \delta_i$ ($i = 1, 2, \dots, m$) means also that $P_n = D_g$, and equality $\beta_j = \gamma_j$ ($j = 1, 2, \dots, n$) means that $S_n = I_g$. Though, on the other hand equality $P_n = D_g$ is possible also in case if deviations of α_i and δ_i for one products is compensated by their deviations in opposite direction for other products; similarly in the market of resources. Equality of $S_n = I_g$ is possible, if deviations of β_j and γ_j and from each other in the markets of some resources are compensated by their opposite deviations in the markets of other ones.

8. According to given model P and D correspond to the same element of a diagonal. Therefore, according to conditions II, in conditions of equilibrium $P = D$. Similarly, in conditions of equilibrium $I = S$. Thus, P_i is a profit from previous investments, received in a current interval of time. Therefore P_i is a part of P, but isn't a part of current I, and R_c is a part of both I, and P^{54} . Considering above-mentioned, as we see from table 2, the basic ratios of flaws are following (see tab. 2):

⁵⁴ According to given logic it turns out that on the one hand $I = I_g + R_c$ (1), and on the other hand, $I = S = S_n + A + R_p$ (2). But as in conditions of equilibrium $R_c = R_p$, a $I_g = S_n$, it turns out that on the one hand $I = S$, and on the other hand $I \neq S$. Certainly this is contradiction. However in equations (1) and (2) investments I reflect the same stream in different intervals of time. But the profit from investments P_i , absence of which in equation (1) causes the contradiction between the equations (1) and (2), arises just in a space between these intervals of time. But as in static model time isn't structured on last, present and future intervals occurrence of such "contradiction" is inevitable.

As profit P_i received from investments I_g , is framed cost equivalent to cost of depreciation charges A which are reinvested and (together with net investments) become a part of new investments I_g which will again bring the profit P_i etc. It repeats endlessly. The chain of causes and effects get appearance: $I_g \rightarrow P_i \rightarrow A (+ I_n) \rightarrow I'_g$. In a chain of causes and effects each effect

$$P = P_n + P_I + R_c = P_g + R_c ; \quad P_g = P_n + P_I ;$$

where P_g - gross profit.

$$D = D_g + A + R_p ;$$

$$S = S_g = S_n + A + R_p ;$$

where S_g - gross saving.

$$I = I_g + R_c .$$

It follows from this that for achieving the equilibrium in the system there is not enough maintenance of equalities $P_n = D_g$ and $S_n = I_g$. It is necessary also, that $P_I = A$ and $R_c = R_p$. With a view of analysis simplification, further we accept conditionally that $P_I = A = 0$ and $R_c = R_p = 0$. As the given model is static, such assumption doesn't break the general logic of reasoning

9. Gross profit:

$$P_g = P_n = \sum_{i=1}^m \alpha_i C_i x_i = \alpha_0 \sum_{j=1}^n y_j v_j ; \quad (12)$$

where C_i - cost price of product i ; α_0 - average rate of profit.

Consumption on credit:

$$D_g = P_g = \sum_{i=1}^m \delta_i Q_i p_i = \delta_0 \sum_{j=1}^n y_j v_j ; \quad (13)$$

where Q_i - quantity of product i consumed for reproduction of primary resources; δ_0 - average norm of consumption on credit (as percent from expenses on paid consumption);

Gross saving:

itself is the cause of other effect. But when this sequence of causes and effects becomes isolated in a circle, when the effect caused by some reason, becomes the cause not of other effect, but the reason of itself, then causality is transformed into interaction, into functional relations. The contradiction mentioned above just is a result of that relation of cause and effect is represented as functional relation for the static model can show only functional, but not cause and effect relationships.

$$S_g = S_n = \sum_{j=1}^n \beta_j y_j v_j = \beta_0 \sum_{j=1}^n y_j v_j ; \quad (14)$$

where β_0 - average rate of saving.

Gross investments into production:

$$I_g = S_g = \sum_{j=1}^n \gamma_j y_j v_j = \gamma_0 \sum_{j=1}^n y_j v_j ; \quad (15)$$

where γ_0 - average norm of investment into production (as a share from cumulative cost of consumed primary resources). That is under condition of $\alpha_0 = \beta_0 = \gamma_0 = \delta_0 = r_0$ we have:

$$P_g = S_g = I_g = D_g = r_0 \sum_{j=1}^n y_j v_j ; \quad (16)$$

where: r_0 - interest rate which regulates all these parameters not only by means of money market but also thanks to that any economic decision, concerning use of money, considers alternative cost of this decision.

Condition of macroeconomic equilibrium is equality $P_g = S_g = I_g = D_g$. Even if all private markets are in balance, the general economic balance will not be reached until equality $P_g = S_g = I_g = D_g$ will be reached which means that: $\alpha_0 = \delta_0 = \beta_0 = \gamma_0 = r_0$.

10. According to a condition III the "Walras Law" is carried out:

$$\sum_{i=1}^n y_i v_i + P_g = \sum_{i=1}^m x_i p_i + I_g ; \quad (17)$$

That is $GNI = GDP$. At that, $y_j \leq y_{\max}$, $x_i \geq x_{\min}$, i.e. GDP can be increase and decrease in the limits caused by these restrictions. In the case under consideration depreciation $A = 0$, therefore we receive $NNI = NDP$, or:

$$\sum_{i=1}^n y_i v_i + P_n = \sum_{i=1}^m x_i p_i + I_n ; \quad (18)$$

or:

$$\sum_{j=1}^n y_j v_j + \alpha_0 \sum_{j=1}^n y_j v_j = \sum_{i=1}^m x_i p_i + \beta_0 \sum_{j=1}^n y_j v_j ; \quad (19)$$

From this it follows that at $\alpha_0 = \beta_0$ takes place $\sum_{i=1}^n y_j v_j = \sum_{i=1}^m x_i p_i$ and, hence:

$$P_g = S_g = I_g = D_g = r_0 \sum_{i=1}^n y_j v_j = r_0 \sum_{i=1}^m x_i p_i ; \quad (20)$$

and $\alpha_0 = \delta_0 = \beta_0 = \gamma_0 = r_0. \quad (21)$

11. Considering that in equilibrium state are observed (17) and (18), we receive:

1) Target function for entrepreneurs - maximization of profit,

$$\Psi_p = (1 + r_0) \sum_{i=1}^m x_i p_i - \sum_{j=1}^n y_j v_j = P_g \rightarrow \max ;$$

From here a dual problem:

Primal problem:

maximization of incomes.

$$f_p = (1 + r_0) \sum_{i=1}^m x_i p_i \rightarrow \max ;$$

$$\sum_{i=1}^m a_{ij} x_i = y_j (1 - \gamma_j), \quad (j = 1, 2, \dots, n);$$

$$x_i \geq 0.$$

Dual problem:

minimization of expenses.

$$g_p = \sum_{j=1}^n y_j v_j \rightarrow \min ;$$

$$(1 + \alpha_i) \sum_{j=1}^n a_{ij} v_j = p_i, \quad (i = 1, 2, \dots, m);$$

$$\sum_{j=1}^n \gamma_j y_j v_j = r_0 \sum_{j=1}^n y_j v_j ;$$

$$v_j \geq 0.$$

2) Target function for owners - maximization of saving,

$$\Psi_c = (1 + r_0) \sum_{j=1}^n y_j v_j - \sum_{i=1}^m x_i p_i = S_g \rightarrow \max ;$$

From here a dual problem:

Primal problem:

maximization of incomes.

$$f_c = (1 + r_0) \sum_{j=1}^n y_j v_j \rightarrow \max;$$

$$(1 + \delta_i) \sum_{j=1}^n b_{ij} y_j = x_i, \quad (i = 1, 2, \dots, m);$$

$$\sum_{j=1}^n \beta_j y_j v_j = r_0 \sum_{j=1}^n y_j v_j;$$

$$v_j \geq 0.$$

Dual problem:

minimization of expenses.

$$g_c = \sum_{i=1}^m x_i p_i \rightarrow \min;$$

$$\sum_{i=1}^m b_{ij} p_i = v_j (1 - \beta_j), \quad (j = 1, 2, \dots, n);$$

$$\sum_{i=1}^m \delta_i Q_i p_i = r_0 \sum_{j=1}^n y_j v_j;$$

$$x_i \geq 0.$$

12. According to the target and dual problem, production optimization is reduced to a finding of optimal vectors \mathbf{x} and \mathbf{v} . At that vectors \mathbf{p} and \mathbf{y} are set as constraints. On the other hand, consumption optimization is reduced to optimization of vectors \mathbf{p} and \mathbf{y} . At that the vectors \mathbf{x} and \mathbf{v} are set as constraints. That is by their actions consumers and producers form for each other conditions necessary for optimization. By their actions they mutually complete each other. The parameters optimized by each of parties serve as restrictions on a basis of which the optimal decisions are accepted by other party.

13. In the aspiration to maximization of profit P and savings S economic subjects optimize economy for they promote to achieve the "saddle points" at which **minmax** of one party is equal to **maxmin** of other party. At that $P_{\max} = S_{\max} = I_{\max} = Q_{\max}$, and $\mathbf{y}_j = \mathbf{y}_{\max}$. That is the problem is reduced to an optimization problem. In such optimal condition to increase profit is possible only at the expense of decrease of saving but to increase saving - only at the expense of profit decrease⁵⁵. To be maximum they can only simultaneously, and only in case of their equality. Thus, it is important to notice that macroeconomic parameters are immediately formed on the basis of microeconomic processes, i.e. there is no gap between micro- and makro- processes.

14. Quantity of equations in model is: $2m + 2n + 3$, and quantity of unknowns: $4m + 4n$. Unknowns are more than equations. The system has

⁵⁵ At that, profit and saving have an opposite sign.

uncountable set of decisions. So, there can be an uncountable set of equilibrium states at the most different levels of interest rate; accordingly, at different levels of average rates of profit, saving, investments and consumption in credit.

15. *Business cycles.* On the basis of “symmetric model” business cycle fluctuations can be interpreted as follows (See Figure 1). Under equilibrium conditions, the money flows flowing through tanks (resource market and product market) and the pressures in them are equal, since the leakage of money S and P balance each other as well as the flow of money I and D . Under such conditions, resources and products have the optimal prices. At these prices entrepreneurs receive a normal profit, which they consider as appropriate reward for the burden of entrepreneurial risk. The owners are doing normal savings satisfying them as payment for abstinence.

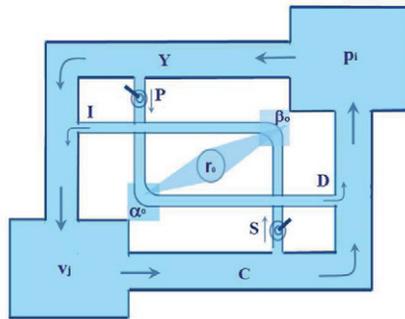


Figure 1. "The symmetric scheme" of circulation of financial flows (Don't taking into account reinvestments).

In the phase of economic expansion in the economy the flows of incomes and expenditures increase. In result of Keynes psychological law the consumers' marginal propensity to save increases and the marginal propensity to consume decreases. As a consequence, in the general background of increasing of all money (and commodity) flows, in consumption sector the share of S increases, and the share of C decreases. On the other hand, as a result of formation of optimistic moods, the marginal propensity of producers to take risks increases. As a consequence of this opposite processes take place in production sector. The marginal propensity to expansion of production (to production

consumption) increases and the marginal propensity to withdrawal of profits (to production saving) decreases. Accordingly, in general money flow the share of P decreases, while the share of Y increases.

The result of such redistribution of flows the “monetary pressure” in the upper tank (market products) decreases and in the lower tank (market resources) – increases. Accordingly, the relative prices of the products begin to decline and the relative prices of resources - to increase. But such changes in the system of prices provoke the phase change of economic cycle. A recession begins. The rate of profits is reduced, which leads to a decrease in propensity to take risk. As a result the production is reduced and the consumers’ incomes and their propensity to save are reduced, etc. That is, arise opposite trends arise - the shares of S and Y are reduced, and the shares of P and C are growing. This leads to a redistribution of flow; the ratio of “money-pressures” in the markets of products and resources is reversed. The relative prices of products again begin to rise, and of resources - to decline. Recovery begins.

As a result of these fluctuations of economic activity the money supply required for service of transactions also fluctuates. In the phase of expansion the monetary resources are introduced in the circuit, and in the phase of recession – they are withdrawn. One should keep in mind that although the rate of profit received and withdrawn by producers are different, as well as the rates of saving received and withdrawn by consumers, but changing of the ratios of these norms in the process of expansion and recession causes only a redistribution of economic flows, but not the changes in the total money supply in the circuit. Input and output of financial resources occurs at the expense of monetary assets of economic subjects. And all these processes of input and output of money in circulation, or redistribution of cash flow depend directly on the level of interest rates. Level of r_0 effects the economic decisions and thus it effects P, S, I, D, α_0 , β_0 , δ_0 , γ_0 . But P and S are the temporarily available money resources, which form the supply in the money market, and I and D form the demand for money. A supply and demand in the money market form the interest rate through which the economy seeks to restore the “golden ratio” $\alpha_0 = \beta_0 = \delta_0 = \gamma_0 = r_0$ and, accordingly, restore the balance and the optimal ratios between the prices of resources and products.

In conditions of monetary economy the fluctuations of business cycle are the only mechanism that leads into conformity P, S, I and D (respectively, α_0 , β_0 and r_0). But it does not provide equality, which is necessary for general equilibrium. It only keeps their divergences within certain limits. Decentralized economy is a system with “feedback,” i.e. cause-and-effect relationships are closed in a circle and transformed into a functional relationship by which any deviation excites the forces for its self-elimination, which are proportional to the magnitude of this deviation. Natural laws of the market are “blindly” operating laws. The “blindness” is manifested in the fact that the uncontrolled self-stimulation and self-retardation of economy continues until they reach a critical turning points - a maximum production capacity and minimum consumption possibilities. Therefore, without government regulation of economy it is impossible in principle to eliminate cyclical fluctuations. (See Fig. 2).

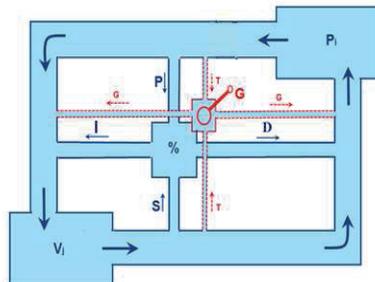


Figure. 2. The scheme of economic flows in a regulated economy, where G - government transfers, T - taxes.

Self-regulation of economic structure in market economy

How it is possible to interpret the economic meaning of this model?

1. As the quantity and price of a sold and bought product is the same magnitude it is clear that if incomes from sale of this or that product surpass the costs for its production (accordingly if the price of unit of a product surpasses its cost price), then the total quantity of sold products should also be more than that quantity which is necessary for covering of mentioned costs. There should be a source of payment of producer's profit. The quantity of sold product necessary for compensation of costs for its

production is a necessary product, but other quantity from which the profit is paid - is the surplus product. But it means, also, that consumers pay for whole product more than producers have spent for its production. And someone should pay for this surplus product.

The similar problem arises in the market of primary resources. Owners demand for their resources such prices, which allow them not only to satisfy current needs, but also to make saving. From this follows that in how many times the price of a resource is more than costs for its reproduction, in the same time the quantity of sold resource should surpass that quantity, which is necessary for covering of mentioned costs. There should be a source for covering of consumers' saving. The quantity of sold resource necessary for compensation of costs for its reproduction is a necessary resource, but other quantity from which saving is paid - is a surplus resource. And again, someone should pay for surplus resource. As to surplus resources and surplus product, surplus resources are invested into production of physical capital, and surplus products are invested into the human capital.

2. It follows from the above mentioned that proportions, in which the prices of products are distributed on costs and profit, correspond to proportions in which quantities of produced products are distributed on necessary and surplus products. But proportions, in which the prices of primary resources are distributed on consumer expenses and saving, correspond to proportions in which quantities of corresponding reproduced resources share on necessary and surplus resources.³⁰ But it means also that producers (buyers of primary resources) pay for all resource more than consumers (owners) have spent for its reproduction. Besides payment for a necessary resource they should pay for surplus resource. Finally, it turns out that consumers pay for final product more than producers have spent for its production, and producers pay for primary resources more than consumers have spent for their reproduction. But where is a source of payment for surplus product and surplus resource? Who is their buyer?

3. According to this model a source of payment for surplus product, from which entrepreneurial profits are formed, are entrepreneurial profits. For entrepreneurs themselves are consumers, buying the final products by their incomes which are just the profits. That is, they buy a part of products produced by them from each other in the same way as all other consumers.

In its essence the consumption of entrepreneur is investment in the human capital. Entrepreneurs invest earlier received profits in current consumption, in other words, this is consumption on debt, which will be paid by the future profits. But a source of payment of surplus resources from which consumers' saving are formed are themselves the saving. For saving are those free money resources, which through the money market are transformed into credit resources for investments into production. Just it is a source of payment for surplus resources.

That is, surplus resources are bought by entrepreneurs, but they buy them by loaned money resources generated from the saving of owners of these resources. Thus, in resource markets the saving, transformed into credit resources for investments, additionally pour in. And in the product markets the profits of all class of entrepreneurs consuming these products, additionally pour in.

4. As we have seen, it follows from the analysis of this model that in conditions of equilibrium the cost of primary resources spent for production of given product corresponds to cost of this product spent in reproduction of primary resources. And the profit received from realization of this product corresponds to cost of this product consumed on credit (invested in consumption). On the other hand, cost of final products consumed in the process of reproduction of given resource, corresponds to cost of this resource consumed in production of final products. But the saving formed from incomes of this resource's sale corresponds to cost of this resource invested in production (consumed on credit).

To generalize the above mentioned, it follows from this model that under equilibrium conditions the total value of goods of some branch consumed in other branches, equals the total value of goods of other branches consumed in this branch, and the gross profit, saving, investment and consumption in debt equal each other. This can be termed the "Iron law" of general equilibrium. It provides formation of optimal proportions of commodity and financial flows within the economic organism, which provide its integrity.⁵⁶

⁵⁶ The theory of imputation, based on the law of diminishing return, doesn't give the satisfactory answer to a question how imputation proceeds and what part of products value should be imputed to various production factors by which these products are created.

5. The prices of final products allow to get profit, and the prices of primary resources allow to do saving. That is, the prices of final products comprise the premium over the cost of primary resources spent in their production. But the prices of primary resources comprise the premium over cost of final products consumed in the course of their reproduction. This means that profit and saving compensate each other in composition of each price (be it the product or resource price). The profit in composition of product price is compensated by saving, which is a component of prices of spent resources. But saving as a part of resources' prices is compensated by profits, which are a component of prices of consumed products. The price is system magnitude. Each price is function from all other prices, they cause each other, forming math group. Therefore, from the macroeconomic point of view the equilibrium price is the price in composition of which profit and saving counterbalance each other. And in case the prices of all goods represent the equilibrium prices, then in economy as a whole the profits and saving counterbalance each other and, it means, the economy is in a condition of macroeconomic equilibrium.

6. To the extent to which producers force consumers of their products to pay excess over their expenses for consumed resources, to the same extent they are required to pay excess at purchase of these resources. And the profit is only a source of covering the additional expenses on resources. But in that case a question arises - If the profit covers only additional expenses for resources, then what is the benefit of entrepreneur? Why he runs risks if it does not give surplus? But the question is that, as a matter of fact, the profit is not any surplus, the same as saving. Only on a surface of phenomena it seems that the profit and saving are surpluses in a composition of prices of products and resources, which arise in the course of an exchange. But actually the profit is a payment for risk, which society pays to entrepreneur.⁵⁷ This is the money expression of that part of a social

⁵⁷ The neoclassical theory divides profit into normal and economic profit. But what is named a normal profit, is a payment for services of own production factors, which the subject pays to himself as he is the owner of these factors, and would pay it to another if these factors belong to another. However, in "Symmetric model" flows of incomes aren't differentiated depending on who the proprietor of factors is and to whom they are paid - to themselves or to another. Therefore, the so-called "normal profit" is decomposed on factorial incomes and is included in the structure of corresponding flows. As to economic profit, according to paradigm it doesn't exist at all in conditions of static equilibrium. The argumentation is that the profit is a payment for not insured risk, which is bound to functioning in conditions of uncertainty and

product, which producers of this product demand as a payment for entrepreneurial services to society (for services of subjective production factor). However, this is a part of social production cost of product, because the product cannot be produced without entrepreneurs and hence without performing maintenance costs of their lives.

Saving is the monetary value of that part of social product, which the owners of resources have obtained from the society as a payment for the function of saving resources required for investment in production. But it is a component of costs on reproduction of these resources in the sense that saving are costs on satisfaction of one of the necessary needs in a system of consumers' needs. These are costs on insurance of future consumption, as one of the needs along with other needs. So, profit and saving are not mutually covered surpluses of products' and resources' prices over the costs of their production (reproduction). It is a payment for risk and insurance, for entrepreneurship and thrift, for enterprise and abstention, as economic functions necessary to implement the economic process.

7. Rates of profit are different in different sectors of production. But in these sectors the degrees of entrepreneurial risk caused by noneconomic (natural, social, etc.) factors are also different. Therefore, even in conditions of a perfect competition sectoral profit rates differ from each other (deviate from average profit rate). But in condition of general equilibrium sectoral profit rates should be equal to sectoral norms of surplus product. The profit rate is the price of risk. Conditions of a perfect competition mean its alignment not between various branches, but between the separate producers of the same sector. It only means that sectoral profit rates correspond to degree of entrepreneurial risk in these sectors.

presence of innovations (We do not concern problems of monopolies, as a profit source). Therefore, existence of profit is bound to dynamic economy, in which future always is indefinite. But in static economy the future is predicted, there are no innovations and uncertainty. I.e. the static economy isn't bound to risk and, hence, its compensation in the form of profit converges to zero. But it is necessary to object that the static character of model doesn't mean at all that it models economy in a static condition. The static economy doesn't exist as that. The model, but not an economy which it models, is static. It models real, hence, dynamical economy in which both risk and uncertainty and profit always take place. The static model abstracts not from presence of risk and necessity of compensation for it, but from changes in time of economic parameters, which are caused by various factors (changes in needs, technological knowledge, investments, external economic and natural conditions, etc., including the most entrepreneurial activity). Certainly, the model always means simplification of reality. But simplification shouldn't mean distortion of a reality and under the pretext of simplification, instead of modeled object shouldn't be put something that doesn't actually exist.

Entrepreneurs shift to other sectors if this correspondence is broken. The same is in the sector of resource reproduction (consumption sector). The saving rates in different “sectors” of reproduction of resources differ from each other. But the efforts of abstention in them also differ, which are necessary for creation of these saving. Efforts of abstention for creation of saving depend on size of incomes. Abstention from satisfaction of needs for necessary means of existence demands bigger subjective efforts than abstention from satisfaction of need for luxury. But the problem is not at all only in this. The problem is that difficulties of transition from one “sector” of reproduction of resources to another are caused by noneconomic (social, political, etc.) factors. But anyway, however the saving norms in reproduction of various resources differ in conditions of equilibrium, they are equal to the norms of investments of these resources in production.

8. We have partially simplified above the analysis to facilitate perception of article content. At the given stage it is necessary to make some specification. As it has been noted, surplus product is completely invested in a human capital, and its cost in conditions of equilibrium compensates the profits from sale of all products. But the surplus product consists not only of the products consumed by entrepreneurs and it is paid not only from profits. As it can be seen from table 6 (see: Appendix B) the surplus product consists of 3 components: 1) consumption of entrepreneurs; 2) consumers' consumption in debt; 3) changes of consumers' stocks of product. Accordingly, these expenses are paid not only from the profits invested in consumption, but also from consumers' saving, reinvested in consumption.⁵⁸ Similarly surplus resource is completely invested in a physical capital and in equilibrium conditions it corresponds by cost to

⁵⁸ Like investments into production, investments into consumption also can be parted conditionally on "depreciation" and "net investments" into the human capital. For example, expenses for consumption of entrepreneurs, as well as expenses for maintenance of the law and order, security, public health services, social protection or government, are some kind of expenses for restoration of human capital i.e. they are the costs necessary to be carried out permanently for maintenance of existing level of human and social capital. However, this doesn't happen at accumulation, increment of human capital or any values. But net investments into the human capital are investments into the rising of a level of welfare (consumption on credit housing services, cars, home appliances etc.), in education, science, culture, public health etc. To sum up, these investments occur not only as a net increment of able-bodied population (labor and enterprise potential), but also an increment of public goods, non-material values. That is, the increase of human, social and intellectual capital, assets, which raise economic potential of a society, takes place.

which balancing function is carried out by the interest rate. And an essence of these processes is redistribution of production and consumption opportunities in time. Demand for money for investments by D and I (see Table 2) can be satisfied not only through supply of money from money flows P and S, but also at the expense of money assets. The significant role in supply and demand formation in money market has not only money flows P, S, I and D, but also monetary accumulation from previous saving. In the form of assets, money plays function of tank from which monetary resources replenish and leak from monetary flows. Fluctuations of velocity of money circulation complicate the problem of interdependence of flaws P, S, I and D in the short-run. Therefore, in the short-run these flaws possess large degree of independence from each other and are interdependent through the interest rate and the money market. But in the long-run they are interdependent with all economic flaws for they carry out system functions. Accordingly, achievement of equalities $P = S = I = D$ is provided only in a tendency, through fluctuations in time of all economic system relative to equilibrium condition, that is, through business cycles.

10. In conditions of equilibrium the outflow from producers' incomes as withdrawn profit P_n should be compensated by inflow of means in the form of credits for production investments I_g . But outflow from consumers' incomes in the form of saving S_n should be compensated by inflow of means for financing of consumption on credit D_g . That is, the condition of maintenance of demand in resources markets is $P_n = I_g$, and in product markets - is condition $S_n = D_g$.⁶⁰ But that, as saving S_n outflows from sector 4 in conditions of equilibrium, should equal to that through the money market inflow in sector 1 as production investments I_g . But that, which in the form of withdrawn profit P_n , outflow from sector 1, should be equal to that, which in the form of consumption on credit (consumer investments) D_g inflow in sector 4. It is reflected in the model according to which production investments I and gross saving S correspond to the same element of a diagonal of sector 2. Therefore, in conditions of equilibrium of system, if to be fulfilled, equalities $PI = A$ and $R_c = R_p$, then $I_g = S_n$. Similarly, consumer investments and gross profit correspond to the same element of a diagonal of sector 3. Therefore, $P_n = D_g$.

⁶⁰ At this equality $P_i = A$ and $R_c = R_p$ (See, Fig. 1) should be observed.

11. Both producers and consumers of final products have certain stocks of products, which are a component of their investments. Stocks of product at consumers are paid, but not consumed products and, as those, they are investments into consumption. Stocks of finished goods at producers are investments into production. For, stocks of finished goods at producers are not yet realized product, so it is only a potential product. For only realization of product proves that the product is recognized as a product, as social utility. But before that, it represents only embodiment of costs or the invested resources, which can bring both profit and loss in the future.

12. According to this model, market equilibrium between supply and demand is the market condition in the reviewed time interval of which as many goods are sold and bought in the market as they are produced and consumed. Clearly, quantities of goods sold and bought in some interval of time cannot be unequal. Only consumption and production, which stand behind supply and demand, can be unequal. Deviations of production from consumption are reflected on change of size of stocks of products at consumers and producers. Or, either the supernormal stocks arise or stocks are exhausted. These fluctuations of stocks are reflected on a ratio between the desire to buy and the desire to sell the goods, that is, on a ratio of supply and demand and, as consequence, on market price fluctuations.⁶¹ In such conditions producers want to sell and consumers want to buy at the given price different quantities of goods, or the given quantity - at the different prices. But the prices and quantities of sold and bought goods can't differ. Economic forces arise, which restore balance³⁷. I.e. according to this model consumption can be both more or less than production at the expense of changes in stocks. The price deviates from equilibrium price, but it isn't equal to zero even if the excessive supply takes place.⁶²

⁶¹ If it is produced less than is consumed, stocks are reduced at producers, and at consumers, on the contrary - stocks increase both at those and at others. These changes of stocks are exactly in opposite way reflected in desires of consumers to buy, and desires of producers to sell. That has an opposite influence on supply and demand. Growth of stocks at consumers weakens a competition between them (i.e. doesn't offer the high prices) and growth of stocks at producers - triggers a competition among sellers (to agree on the low prices). As a result - the price decreases. But reduction of stocks causes inverse processes. Market price in a surveyed time interval is only an average from many individual prices in individual transactions (commit for the same interval of time) between set of sellers and buyers, who are in competitive relations.

⁶² According to Arrow-Debreu model and equilibrium models derived from it, "the goods delivered over available demand receive the zero price" (Karlín, 1964, p. 330). But existence of goods with zero price has no sensible explanation from the standpoints of economics. After all,

13. The general economic equilibrium is a condition of Pareto optimality, which means that all resources are used completely and redistribution of resources can give advantage to someone, only at the expense of another's disadvantage. Such equilibrium means that everyone who wants to work works, and works as much as he wants to work. That is, all those who work consider that 1) their work is paid adequately, and 2) at the given payment they have found optimum balance between work and rest. All entrepreneurs don't want to pass to other sectors and hence, consider that their risk is paid by adequate profit (i.e. profit rate corresponds to risk). And all savers consider that their efforts on abstention allow to create saving adequate to these efforts. That regulating role in equilibration of flows of resources, products, and money and debt instruments is played by an interest rate. Therefore, the certain state of equilibrium corresponds to each level of interest rate.

In condition of general equilibrium in economy not only renewal occurs, but also a net increase of physical and human capital, that is, increase of economic potential occurs. By that, economic equilibrium in itself wears a germ of development and, hence, disturbance of equilibrium. The economy in the state of equilibrium pushes out itself from this state. Equilibrium is a condition of optimality, at which existing potential is completely used. And just in this condition an increment of this potential occurs. But in conditions of increased potential the existing state of economy ceases to be optimal because an unused potential appears. Accordingly, equilibrium existing before ceases to be equilibrium because the economic forces appear that are directed on use of this potential. The competition conducts a new equilibrium state and an optimality, which will be also broken owing to the internal logic of functioning of market economy.

In condition of dynamic equilibrium the optimality of economic activity means a growth of welfare in economy not at the expense of such redistribution of resources at which benefit of some is got at the expense of

excessive supply (as well as supply and demand) exists in time. If overproduction and excessive supply takes place, then supernormal stocks of those finished products will occur that can be sold in the future. Therefore these products won't have the zero price. But in case if this or that product has no demand at all and it is absolutely clear that it won't arise in the future either, then this product has no social utility at all. In that case this good is no good any more, it is no product. Such "product" becomes an embodiment of losses measured by cost of spent resources.

losses of others. In condition of dynamic equilibrium growth of welfare occurs only at the expense of a net increase of physical, human, social and intellectual capital. As a result of this, not only the quantity of available primary resources increase, but also the technological coefficients decrease that in its turn allows increase of consumer coefficients for all consumers. A unique source of economic growth is the increment of economic potential, which occurs in an equilibrium state and means optimal use of existing potential. That is, self-increase of economic potential and the economy together with it takes place.

Fluctuations of economic activity

1. Economic expansion and recession is a self-exciting and self-bracing of economic processes within turning points - peak and trough. Expansion of production helps to increase incomes and increasing of incomes - to expand production. At recession everything is the opposite. Reduction of production leads to reduction of incomes and reduction of incomes - to reduction of production. Expansion and recession nourish themselves by themselves, with each new turnover amplifying themselves until they reach these extreme points. Therefore, it is important to understand what is going on in these extreme points of business cycle. In brief we can say so. The peak is stipulated by the fact that society cannot produce more, while the trough – by that society cannot consume less. At these points of phase shift of business cycle the change of the ratio of relative prices of products and resources stipulate the changing of propensity to produce and propensity to consume. Like the pendulum market economy is moving by inertia from one extreme to another, but can't stop at equilibrium point, where inertia is maximal. Business cycle fluctuations are manifestation of economic symmetry in dynamics.

2. In monetary economy barter of goods is mediated by exchange of goods for money. In such conditions a change of nominal prices leads to change of real (relative) prices. Nominal prices of products contain a profit, but nominal prices of resources contain saving. Since the exchange of goods takes place according to the formula $q_1 p_1 = q_2 p_2$, then $q_1/q_2 = p_2/p_1$. That is, the change in relative prices (q_1/q_2) is inversely proportional to the change in ratio of nominal prices (p_1 and p_2), and therefore is also

inversely proportional to the change of rate of profit and saving, on which nominal prices depend.

All this is important because the change of ratio between profits and saving, mutually payable in exchange process, changes the relative prices, i.e. changes actual proportions of exchange of goods. But economic agents respond just to these relative prices. And nominal prices - is just «money veil» under which are concealed the relative prices. This means that ideally the optimal prices of all products and resources must contain the same profit rate and saving rate. Respectively, the average rates of profit and saving must be equal in the economy as a whole. In the process of ups and downs of economic activity, imbalances of profits and saving inside the prices of goods are accumulated at micro level and at macro levels are transformed into imbalance between gross profits and gross saving, and hence, into imbalance between investments and consumption on debt.

This means that imbalance between the mutually-paid profits and saving in composition of prices of various goods generates incentives for expansion or recession of corresponding sectors of economy and by that ensures the correspondence of economy structure to the structure of social needs. But if these deviations do not compensate each other in economy as a whole, if these deviations are accumulated and concentrated in sectors so that the gross profit in production sector is more or less than gross saving in consumption sector, then this already means a macroeconomic disbalance between social production and social consumption in general. It already is that gives rise to fluctuations of business cycles.

3. Increase of production promotes to reduce the relative prices of products, and to their growth - on resources⁶³. Decrease of production, on the contrary, promotes to growth of relative prices of products and reduces them on resources. This means that increase of production promotes to decrease of profit rate, but decrease of production - to increased profit rate. In opposite way the saving rate responses to changes in relative prices. At a macro level the change of relative prices of products and resources simultaneously and in opposite way effect the average profit rate and

⁶³ While the market grows, producers seek to capture the market and increase profits in the first place due to the volume of production, but not due to an increase of prices, i.e. competition forces them to lower the relative prices of products and to increase production. Such policy led to the increasing of risk and reduction of profit rates.

average saving rate. An increase of one of them is only the reverse form of manifestation of decreasing - of the other, and vice versa. One is impossible without the other.

Through such impact on profit and saving rates, the changes of relative prices at a sectoral level determine the reallocation between sectors the volumes of production of products and consumption of resources, that is optimizes the structure of economy. But the same process at a level of whole economy causes the cyclical fluctuations. This is the optimization of level of economic activity, which occurs in the form of restrictions of its marginal deviations from production and consumption possibilities of society.

When resources are exhausted and economy can no longer expand in some sectors without reduction in others, there begins an accelerated increasing of relative prices for resources. At that, in conditions of satiation of needs the relative prices of products (especially capital goods) are reduced. Deviations of profit and saving rates in different sectors no longer compensate each other. That means that in all sectors of sphere of production there take place one and the same tendency of decreasing of profit rate, and in all sectors of sphere of consumption – increasing of saving rate.

At the peak, average propensity to produce reaches a maximum and average propensity to consume - a minimum. In this extreme point the marginal propensity to produce and to consume are equal to zero. Just this is the peak when producers do not want to expand production more and, consumers do not want to increase consumption.

In recession occurs mirror opposite processes. In conditions of total decrease of production a rapid drop in resource prices (incomes of consumers) begins. However, because after a deep and prolonged recession society can no longer limit consumption of necessary products, the relative prices of necessary products are raising against the background of falling of other prices. Thus, at the trough a savings rate decreases and profit rate increases in the sectors producing necessary products. These sectors begin to increase in the background of general economic stagnation. Just this is a trough, as a reversal point of cycle, when consumers do not want to cut consumption more, and hence producers are able to stop decrease production and begin to increase output. The average propensity to produce

gets its minimum and starts to increase. At the trough the marginal propensity to produce and to consume are equal to zero.

4. At the peak, in result of sharpening of competition for the reallocation of resources between sectors, resource prices increase faster relative to prices of products. Profits are reduced so much that do not cover the risk, increased due to the difficulties of selling products.⁶⁴ In conditions of decreasing of profit rate this means that a risk premium decreases. Because profit is the reward for entrepreneurial efforts, and the profit rate is the price of these efforts for bearing the burden of risk. In conditions of recession and increasing of profit rate, on the contrary, the price of risk rises. On the other hand, at the peak, with high incomes of consumers their needs are more or less satisfied. So abstinence is associated with abstinence from luxury. But this requires less subjective efforts than abstention from necessary products even though they cost far more than necessary products. In conditions of high saving rate all this means that reward for efforts of abstinence increases, because the saving rate is the price of abstinence. In economic recession conditions and low incomes everything is reversed and the price per abstinence decreases. For the prices of necessary products are low, but abstention from their using requires great efforts. That is, the price for efforts for abstinence increases dramatically in the peak and decreases in the trough of a business cycle. But payment for risk, by contrast, sharply decreases at the peak and increases at the trough. Thus, at the peak producers don't want to increase production, and consumers don't want to increase consumption. At the trough on the opposite – they do not want to decrease either production or consumption. These are extreme points of the cycle.

5. Rates of profit and saving vary in opposite way in result of expansion and recession. When divergences between gross profit and gross saving and, accordingly, deviation of actual prices from optimal ones reaches culmination, then the relative prices change so much that cause the change of propensities into opposite direction. The phase of business cycle is changed and the processes continue on the principle of self-excitation or self-braking until reach a new turning point. The market cannot restore macroeconomic equilibrium, except through fluctuations between extreme

⁶⁴ Especially it concerns the sectors, producing the investment goods and durable goods.

points of a peak and trough, stipulated by the maximum of production possibilities and a minimum of consumption possibilities.

Economic expansion occurs against a background of integrity and preservation of proportions between different parts (economic flows), and recession means rupture of coherence between them and integrity destruction. Therefore, if the recession which has arisen in this or that sector within of intrasectoral fluctuations of economic activity, reaches critical level, it accepts cumulative character and is transferred on chain reaction. In the conditions of crisis balance is restored. But it is restored not by expansion of deficient sectors, but by recession of less deficient (relatively redundant) sectors. Those sectors are reduced, which still insufficiently were reduced. They come to accordance with those sectors, which cannot be reduced more and have reached "bottom". But why cannot they reduce more? Because society cannot do without products of these sectors. Cannot consume necessary products less. Therefore demand for their products ceases to fall at the expense of reallocation of solvent demand from other sectors, and, hence, at the expense of acceleration of falling of demand for products of other sectors. At the bottom, proportions and integrity of an economic organism are restored. Expansion in a condition of dynamic equilibrium begins.

6. Needs and, accordingly, demand are real, only if they are solvent. But the solvency of demand of some sectors for resources is stipulated by the solvency of demand of other sectors on his products, and vice versa. Volumes of production and consumption of various goods mutually cause insolvency of various subjects⁶⁵. To provide economic recovery the gradual and coordinated expansion of production of products and consumption of resources of all sectors, interconnected in a single whole is necessary. Growth of each sector depends on growth of others. No sector can increase production without increase in consumption of resources. And no sector can increase consumption of resources if its suppliers do not increase production of products, etc. That is why expansion happens gradually.

⁶⁵ In conditions of crisis there are many unused resources (products) and unsatisfied needs. But for a while they are only potential resources and needs. For resources are in the property of not those subjects who can satisfy own needs by them. While there is no solvent demand for resources, there is no solvency of these needs. As production and consumption are unadjusted, and monetary circulation is upset, nobody can sell, because nobody can buy. And cannot buy, because cannot sell. So, also, cannot consume and produce.

Beginning from the trough, free resources are gradually put into operation in those sectors, which extend in harmony with other sectors. But having reached peak, an expansion of production and consumption stops because of physical limitation and an exhaustion of free resources on the one hand, and because of consumer demand saturation - with another. These processes start firstly in some sectors. The final products in them are in poor demand, production is reduced. The integrity of economy is violated.⁶⁶ Disproportions between sectors are spread on chain reaction. Recession begins, which unlike to expansion, occurs sharply, and cannot stop until reaches a trough. And all repeats.

7. Finally, against the background of overall growth of production and consumption on the rise of economy, in production sector there take place an increasing of share of production investment and decreasing of share of withdrawn profits, but in consumption sector - decreasing of share of consumption in debt and increasing of share of saving. The opposing processes occur in a declining economy. But withdrawn profit and saving are outflows from the incomes of producers and consumers. And investment and consumption in debt are inflow in their spending. If the balance between inflows and outflows in incomes of producers and consumers is disturbed, the equilibrium in circulation of incomes and expenditures is disturbed too. It leads to an imbalance of supply and demand in the markets of products and resources. The prices begin to deviate from optimal prices. The optimal ratios between the prices of resources and products are disturbed. Just this is the reason for changing the phases of business cycles.

8. With increase of incomes the supply of labor at first grows, and then decreases. With growth of wage, there comes the moment when recreation becomes more valuable than the additional wage. In the conditions of a full employment the size of additional wage, necessary for attraction of additional unit of labor increases. But at the bottom point of cycle, falling of incomes and consumption restriction reach points when the further reduction of demand for labor, and hence of incomes, not only does not

⁶⁶ Origin of deficiencies and excesses, that is disbalance between utility and costs, is a sign of violation of integrity of an economic organism, i.e. violation of conformity between various parts of economic system, as single entity. It means violation of conformity between structure of production and structure of needs.

reduce the labor supply, but on the contrary, increases the labor supply. People are compelled to somehow fill a shortage of incomes for supporting at least a minimal level of habitual consumption. They agree to work even for very low wage. The prices for resources again begin to go down relative to products. Again the relative prices for resources and products start to deviate from the optimal prices in opposite direction, than they were in a recession. The supply curve of labor has such form:

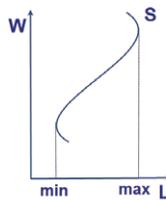


Figure 3. Supply curve of labor force

9. Market prices represent average magnitudes from set of individual prices on which individual transactions are done. These market prices as average economic parameters determine economic decisions and actions of individuals. They serve for them as reference points for making individual decisions. However, except market prices in each given transaction individual considers also those conditions in which he happens to function. Besides general economic conditions (expansion or recession, inflation, unemployment, expectations, public moods of optimism or pessimism, etc.) individuals considers also conditions unique for each of them. Each of them has different needs, production possibilities, comparative advantages; each of them in unusual way reacts to changes of same general conditions, etc. Therefore in each transaction individual prices in some extent deviate from average market prices. Accordingly, the set of individual prices which will be generated as a result of individual deviations from existing market prices in general will reflect the changes of social needs and production possibilities. Thus, it will differ from that set of individual prices, averages from which current market prices are.

Thus, the individual prices are formed on the basis of individual deviations from average market prices. But in aggregate these individual prices make that set on basis of which average market price is formed. That

is individual and market prices form each other. At that this process of mutual formation occurs simultaneously, in a parallel mode. But the problem is that individual deviations from market prices occur deliberately but formation of market prices as average magnitudes from individual prices occurs spontaneously. Because spontaneously is formed itself the set average from which the market price is. That is spontaneously formed the market prices from which, as result of parties' reasonable compromise, the individual prices deviate deliberately. It turns out that in competitive market deliberately formed individual prices depend on casual market prices. Just it is the reason of spontaneity and unpredictability of market economy.

10. Economic recession is accompanied, also, by complications in money turnover. As those who could not realize their product, do not receive incomes, they consequently, cannot pay off the debts either. Crisis in real sector of economy is deepened by crisis in monetary sector. Thus, in attempt to stop recession, the government often carries out anti-recessionary monetary and fiscal policy. However, artificially supporting the aggregate demand, economy is not given the chance to reach to the bottom of recession, as to the logical end of business cycle. By this are created obstacles for restoration of deformed proportions. But just the crisis restores the broken integrity of economy, by which it restores the ability of economy to expansion. The anti-recessionary policy in that kind in what it is performed at the present stage, actually preserves disproportions in economy and blocks ability of the market to self-regulation.

11. Business cycles are the evidence of ability of the market to self-regulation. In conditions of competition, the deviation of system from an optimal condition raises forces for its dissociation, which are proportional to the force of deviation. However, the nature of market's self-regulation is stipulated by the very nature of market relations. Economic agents make decisions independently and nobody knows in advance - what total resources society disposes, what are the total needs of society, where is the maximum of its production possibilities, where is a minimum of its consumer possibilities, and all the more, nobody knows where the «point of optimal functioning of economy» is. In such circumstances, market self-regulation of economic activity of society cannot be done except in the form of internal motion from one extreme to another.

The elemental laws of market are “blindly” operating laws. And the “blindness” is manifested in the fact that the uncontrolled self-excitation and self-locking of economy continues as long as there will be reached critical turning points - a maximum of production possibilities and minimum of consumer possibilities. The market economy is like a blind man walking down a winding corridor, for whom orienting point is that he occasionally comes across one wall, then another, because he does not know where the optimal trajectory is, where the middle of the corridor is.

Equilibrium itself, as well as economic equilibrium, is one of the major forms of manifestation of symmetry.⁶⁷ That is the economy operates optimally, when the laws of symmetry are kept. However not only equilibrium, but also the periodic deviation from it and return to it is a manifestation of «dynamic symmetry» in the economy.

12. The basic contradiction of market economy consists in the contradiction between the conscious, expedient economic activity of private subjects and spontaneous character of society’s economic activity. The private subject knows in advance his needs and opportunities of their satisfaction, that is why, also realizes his economic values. But the society does not realize its needs, opportunities and values. Therefore, it is not capable to consciously make rational decisions, to optimize its activity. The functioning of market economy is a result of “spontaneous order” (Hayek), the result of spontaneous interaction of conscious actions of private subjects, which however are not aware how is going on a coordination of individual actions between subjects.

13. Individual actors make their decisions in accordance with current market conditions, such as the prices, interest rates, rates of profit and saving, expansion and recession, expectations, mood of optimism and pessimism in society, etc. Based on these subjective decisions the subject operates. In this way are forming the individual sets of produced and consumed goods, individual supply and demand, individual investments in physical and human capital, individual profits and saving, sporadic prices of separate acts of selling and buying, etc. But the aggregated result of independent actions of individuals is a social production and consumption, market supply and demand, market prices, average rates of profit and

⁶⁷ Yet Aristotle wrote about symmetry as about such state, which is characterized by correlation of extremes.

saving, average interest rate, market trends of increase or decrease of all these parameters and based on them generated expectations, moods of optimism and pessimism, etc. That is the cumulative result of individual actions is that very market conditions based on which each of subjects made own decisions.

14. Thus, the market conditions, which stipulate subjective decisions of individuals, themselves are stipulated by their aggregate actions. The only difference is that individual actions are conscious, rational. But the aggregate results of individuals' actions are formed spontaneously. Nobody deliberately regulate them. Each of them knows - what and how much he produces and consumes, what he needs. But nobody knows - what and how much society produces or consumes? What is the structure of social needs? How are they changing? How do prices, interest rates change? When will the crisis, inflation or unemployment begin and when will they end? All these are market conditions on which depend the actions of subject, are for him a blind necessity, independent from him forces, which compel him to act in one or another way. Reasonable actions of millions of independent actors each of which acts in accordance with his selfish interests, leads to the spontaneous results, which nobody planned previously. Acting reasonably and adequately to current market conditions, individuals unwillingly form those very conditions, which stipulate their own actions. Changes of these market conditions, generated by the actions of society, for individuals are as difficult to predict, as changes of natural conditions.

15. But the point is not just that individuals are not always aware of the consequences of their actions. Even when they are aware of them, they are sometimes forced to do that for all of them will have undesirable overall consequences. Awareness of these consequences could have a positive result for society only in case of joint action of all individuals. But without this, the individual contributions to promoting the social interest is so small and so great is damage from such actions for the individual himself, that such actions are not rational from any point of view. In market conditions the actions of anybody taken separately are stipulated by actions of all others. This logic of interdependence compels all of them, acting in own interests, do not only that "promotes their common interests" (A. Smith), but, at times, also that contradicts them. And a problem is not in a stupidity or immorality of individuals, but in very nature of interaction between the

individual and society. Only society itself could create conditions in which, acting in their interests, individual promotes to the interests of all society. Just this is the “formula of liberty” and that about what Smith wrote. Free can be only society with regulated economy.

16. Regulation of commodity-money flows through various fiscal, monetary or institutional "stimulators and depressants" has long been an essential attribute of modern economy. But the regulation by such methods creates its «market failures». Therefore, the dispute between supporters and opponents of market regulation is not about whether or not to intervene in the market process, but about the extent to which interfere. The shortcomings of "free" market nobody denies. The dispute arises only over whether more or fewer defects regulation has. In other words, there is a contradiction between the knowledge that the regulation of market is necessary, and lack of knowledge how to do it.

Of course, to know how to regulate the market efficiently, you need to know how the self-regulation performs. However, the mainstream does not give a full explanation of this process. Because the market is self-regulated through the price system, then regulation too should be realized primarily through the price system, rather than external stimulators and depressants that block the self-regulatory mechanisms. The function of regulation is not the suppression of market self-regulation and its replacement by an external influence on the processes, but on the contrary, assistance to it by limiting the excessive spontaneous deviations from the normal course of this process. At this, price regulation should be in accordance with market laws of their formation. But how are they formed?

17. Market prices are the averages of set of individual prices at which concrete unit transactions happen. These market prices as average economic parameters, existing in one or another moment of time, stipulate individuals' economic decisions and actions. They serve as guidelines for them to make individual decisions. But in each given transaction, except the market price, individual takes into account the individual conditions under which he has to operate. In addition to general economic conditions (expansion or recession, inflation, unemployment, social moods of optimism or pessimism, etc.), individuals also take into account conditions unique to each of them. Each of them has different needs, production possibilities, comparative advantages, each of them in a specific way

responds to changes in the same general economic conditions, etc. Therefore, in each concrete transaction individual prices, more or less, deviate from the average market prices. Accordingly, the set of individual prices, which will be formed as a result of individual deviations from the existing market prices, generally will reflect the changing in needs and production possibilities of society. At that, it will be different from the set of individual prices, averages of which are the current market prices.

Thus, individual prices are formed as result of individual deviations from the average market prices. But together, these individual prices compose that set, on the basis of which the average market price is formed. That is, individual and market prices form each other. At that, this process of mutual formation occurs simultaneously in parallel regime. But the problem that the individual deviations from market prices occur consciously, but the formation of market prices as averages of individual prices, occurs spontaneously. For spontaneously is generated that set itself (of individual prices), the average of which is the market price. That is, spontaneously are formed the market prices from which, as a result of reasonable compromise of parties, are consciously deviated the individual prices. It turns out that in competitive market consciously formed individual prices depend on the random market prices. This is the reason of spontaneity and unpredictability of market economy.

18. Competition, over time, itself creates a monopoly and a competitive price, naturally, is transformed into a monopoly prices, that is, regulated price. The degree of sectors' monopolization and the number of monopoly prices is growing more and more. It is perfectly clear that this process will continue in the future, because is a logic consequence of both competition itself and of technological progress. This process is inevitable, just as the same as technological progress is. The market gradually loses its ability to self-regulation.

At a monopoly market the individual prices no longer deviate from monopoly prices. Accordingly, the monopoly prices themselves no longer are the average prices spontaneously formed from the set of individual prices. These already are the regulated prices. They are result of deliberated deviations from the equilibrium price. The individuals' reactions on the changes of monopoly prices and other market conditions are reflected not on the individual prices, but on the individual sets of

produced and consumed, bought and sold goods. Accordingly, supply itself forms both monopoly price and demand. That is unlike competitive price, monopoly price from a consequence turns to reason of change of market demand. Thus the monopolist, who regulates supply, regulates monopoly prices and demand, production and consumption, increase and decrease of economic activity, distribution of goods, relation to natural resources, regulates all economy.

19. The entire set of prices represents a mathematical group; each price is a function of all other prices. The prices of strategic goods, as components, are part of most other prices. So the whole system of prices depends on them in great degree. But even if this is not a strategic good, the prices of monopoly goods play a dominant role in the price system, because all the other prices must adjust to them. Monopoly prices contain profit rate above the average. In this is the interest of the monopolist.⁶⁸ But just this deviation from average profit rate is deviation from the optimal price of equilibrium. That is, the monopolist is interested in distortion of optimal prices⁶⁹. Thanks to monopolies the entire price system is distorted so that the goods are redistributed to those who regulate the monopoly prices. Regulation of market economy is in favor of one who regulates. But it is regulated by one, who regulates the strategic prices (monopoly prices). The problem is reduced to who regulates the monopoly prices - private owners for own interests or government for public interests? When prices are regulated by private monopolies, they impose nonequivalent exchange to society and redistribute the goods for own advantage proportionally to market power which each of them possesses. In such circumstances the government has to intervene in market processes and to protect the public, because monopolies interfere in it for self-interests and for detriment of society.

Replacement of spontaneous self-regulation of market economy with its deliberate regulation is a natural consequence of economic development and technological progress. That is why price regulation must happen, and it already happens for a long time. But meanwhile they are regulated by

⁶⁸ Unlike their competitors he get an opportunity to increase whole profit not at the expense of increase of output but at the expense of increase of price and profit rate.

⁶⁹ In their own interests the monopolists are doing the same as other subjects do. But because they have market power, they can do this more effectively, and because their products have strategic importance, the results of this deviation is reflected on the whole price system.

private monopolies in their interests. But if government regulates strategically important prices on the basis of adequate modeling of economic processes and calculation of optimum prices, the economy will begin to operate optimally. At that, monopoly prices are not decreasing prices, but regulated prices, which are prices generated by regulation of market supply. Therefore, in order to be able to regulate prices, the state itself must be the largest producer and monopolist on the market of strategic goods. At least, it should control most of the market⁷⁰. But to become a monopolist in some sector, it is just necessary to win private monopolists in equal competition by purely economic methods. Everything else should function on a competitive basis. At that, the process of optimization of regulated prices should be performed in parallel regime with market process of formation of competitive prices and to be performed in such a way that to maintain the optimal ratios between the resource and product prices, goods and money flows, to regulate propensities to produce, consume, saving and risk. This will allow to regulate fluctuations of economic activity.

20. Tremendous achievements are connected with market economy in the development of civilization. But it is obvious that it cannot cope with flaws organically inherent to it. At the time, spontaneous market mechanism has provided striking progress of a society, but over time it also became an obstacle to further progress. “Invisible hand” of Adam Smith has brought abundance, but it also imposed on society crises, unemployment, inflation, polarization of wealth and poverty, exploitation of man and nature, and derived from all these environmental, political, social and moral issues. And it is incorrect the statement that all defects of market economy are caused by its pursuit of profit, instead of pursuit to satisfy the needs of person. A problem is not a pursuit of profit, but in its nonoptimal use as it accumulates not in those hands, which could use them more reasonably and rightfully⁷¹.

⁷⁰ Just as today there is a monopoly of the state (central bank) to issue, regulation of supply and price (interest rate) of the most strategic resource - money.

⁷¹ Because of these huge social resources are spent for reckless excesses of ones, when millions of people cannot get education, live in poverty and illnesses. Though, modern technologies allow to get rid of most of acute problems with available resources in case of their rational using.

With globalization, national economies have become heavily dependent on each other, because they become parts of single world economic organism. Inflation, unemployment, financial crises spread by a chain reaction from one country to another. But regulation at the national level, cannot cope with the problems generated at international level. Because of excessive polarization of world on poor and rich countries and pumping of world resources from one to another, the development of both is constrained. Because of low resource prices and incomes of poor countries, these countries' ability to pay is insufficient to present demand to rich countries for their products, which would match to their production possibilities. The optimal balance between world prices for products and resources is violated. The optimal economic flows between countries, as the subjects of global economy, cannot be formed. The integrity of global economy as a single organism is violated. The gap between the economic flows from poor to rich countries and from rich - to poor, is filled by "paper". Only on FOREX market the daily turnover is 4 trillion dollars. The lack of demand is filled up with huge scales of consumer credits. Financial flows live by independent life and under the own laws. These are huge financial flows, characterized by extreme sensitivity, unpredictability and large-amplitude fluctuation. In the end, the current world economic crisis was also provoked by instability of financial sector. The lack of demand is filled also with expensive military programs. In circumstances, where the third of humanity lives in poverty, all this is not only immoral, but from purely economic point of view, such polarization, both on national, and at international level, has become an obstacle for economic progress. The optimal functioning of economy does not imply such polarization, but only maintenance of optimal proportions between economic flows. To solve these problems is impossible without effective regulation of economy.

21. Regulated economy – it's the same market economy in which the state becomes more and more major owner and producer. It increasingly hires qualified managers and gets profit⁷². Profit remains as criterion of economic efficiency. To supplement the budget, in pursuit of profit, the state itself is interested in realization of most profitable projects. In its decisions, it is also oriented on market prices, like all other economic

⁷² Historically, such trend has long existed, although it makes its way in a tough struggle between supporters of free and regulated market.

agents. On the same competitive base operate state-owned and private enterprises, banking system, insurance companies, and profit is the main stimulus of their activity, since the system of payment and bonuses depend on profitability. The market will generate incomes and expenses of all subjects. Profits of state enterprises, but not taxes, should be the main source of filling of state budget. Taxes should be only auxiliary means for filling the budget and regulation of economy, because they suppress the stimulus of economic activity and distort market signals.

22. The process of monopolization itself paves the way for the need to regulate economy and for gradual transformation of large monopolies into the state property.⁷³ In addition, monopolization process by itself reveals the strategically important production sectors, resources, and prices need to be regulated. Monopolies are similar to the state structures on management and functioning methods. Moreover in some sense monopolies are the small states or empires, and the state itself is a large monopoly. A difference between monopoly and state enterprise is in that in one case profit goes to the budget of private persons and in other - in to state budget. But such distribution of profit finally leads to inefficient use of limited social resources and loses economic meaning. For in conditions of competition the profit is a payment for risk and profit rate is a risk price. But the monopolistic profit ceases to be a payment for risk and takes the form of tax which the monopoly compulsory imposes on society as payment for its services. Just as the state taxes a society as a payment for public goods and those functions on performance of which it possesses monopoly. Therefore gradual transformation of private monopoly into state ownership is inevitability and is dictated by logic of economic development. Misunderstanding of this logic leads to illogical actions of government.

So the monopolies, monopolistic prices, losing by market of ability to self-regulation, necessity of state regulation, growth of public sector - all this is natural processes connected with economic development and

⁷³ In conditions of monopolization of markets the logic of stabilization policy pushes to redemption of property of monopolies. Especially it becomes apparent in times of crisis, when the state is forced to partially or fully buy out the monopoly in order to prevent its bankruptcy because of strategic value of its product.

technical progress. And it is impossible to resist for these processes and it is not necessary. On the contrary, it is necessary to operate according to it.

23. Fluctuations of business cycles, polarization of wealth and poverty, exploitation of nature - all this is not an inherent feature of economy's operating. This is a feature only of unregulated, so-called "free" market, where man himself is not free.⁷⁴ What kind of human freedom can there be if all economic agents are subject to spontaneous processes, which they cannot control and which brought so many disasters? Man is free, not when the economy is free from state interference, but when it is free from crisis, unemployment, inflation, poverty, social injustice, destruction of nature and other evils of a spontaneous market. But to release from these evils is possible by just regulated economy, regulated in accordance with natural laws of market. And it does this not by coercion, but by the same prices, thanks to which "for everyone in their own interests is profitable to do what is favorable for society". In such circumstances, the subject on his own will, based of free choice, makes decisions favorable for everybody. If strategic prices are optimal, subjects' decisions will be optimal too, and economy will develop along the optimal trajectory.⁷⁵

24. To get rid of business cycle fluctuations, it is necessary to know why they occur. To eliminate poverty amidst plenty, it is necessary to understand the reasons of its existence. The necessity, laws of nature and society are dominated over the man only when they appear spontaneously and are not under his control. But when a man knows these laws and carries out expedient activity in accordance with these laws, in accordance with necessity, then he frees from the power of "blind necessity". A man by his activity does not eliminate, and cannot eliminate the necessity. He just

⁷⁴ Proponents of free-market understand freedom as freedom from the state interference, from regulation. But such economy of "free market» brings to society not freedom, but arbitrariness. In conditions of arbitrariness only strong has "freedom", but the weak remains the "slave" of strong. Division into strong and weak is inevitable in conditions of arbitrariness as well as division into luxury and poverty - in conditions of "free" market.

⁷⁵ «... But as Barone pointed out, Paretian welfare economics demonstrates that efficient recourse allocation requires perfect competition and this is not the same thing as asserting the necessity of private ownership of the means of production. The price system as such is not the capitalist instrument but simply a set of "coefficients of transformation", which could serve the same functions in a centrally directed economy as in a capitalist economy. The state need only permit consumers and workers to maximize their own advantages and to order managers of enterprises to act as if they were private profit maximizers; ». (Mark Blaug. Economic Theory In Retrospect. Fourth edition. Cambridge. Cambridge University Press. 1985. p. 548. (In Russian)).

knows it and acts in accordance with it, by that displacing the spontaneity and finding freedom. The man penetrated into microcosm, has mastered the cosmos, reached the remarkable progress in development of technology, but could not reach a crisis-free economic development, because does not clearly understand how market operates. Of course, in such circumstances it is impossible to effectively regulate the economy, since it is impossible to remove spontaneity and associated with it randomness and unpredictability of economic processes. This is confirmed by crises, which as “blind necessity” periodically fall on society.

The conclusion

1. The methodological basis of modern economics is neopositivism. But in given article the dialectic analysis of some fundamental concepts which are in a mainstream analyzed from positions of neopositivism is offered. So, new point of vision of these concepts is offered. As a result of this these concepts which within the limits of a mainstream are isolated, motionless and lifeless, appear as "come to life", as passing one into another, internally interconnected concepts, that is as a system of concepts. That is by means of dialectic we tried to reveal and "see" (but not invent) those essential interrelations between economic phenomena which is impossible to "see" from positions of neopositivism. The target of given article is to pay attention of economists-theorists on necessity to transfer focus of researches on the problems of essence of economic activity instead of to be limited by research of economic phenomena in which this essence is only outwardly shown.

2. Reflective definitions are relative concepts, which as though are mirror reflected in each other, simultaneously are identical and opposite to each other. According to Hegel reflective determinations are “unity of itself and its other” and therefore “infinite self-relation”⁷⁶. But just such "patterned self-similarity" is symmetry.

⁷⁶ Hegel writes about reflection: “The determination of reflection, on the other hand, has taken its otherness back into itself. It is *positedness*, negation, which however bends back into itself the relation to other, and negation which is equal to itself, the unity of itself and its other, and only through this is an *essentiality*. It is, therefore, . . . infinite self-relation.” (Hegel G. 1999. *Science of Logic*. Moscow, “Misl”, (in Russian), p. 445.)

3. In the given paper reflective relations have been analyzed between economic concepts, such as production and consumption, selling and buying, product and resource, utility and cost, profit and saving, etc. So, is presented the theory of a relativity of economic phenomena. And just due to that each of concept defines itself through the opposition, they together make integrity - activity, exchange, good, value, etc. At that some reflective relations may be revealed only at the essence level but at the level of phenomena they aren't visible. For example at the level of the phenomenon profit and savings don't depend from each other. But at the level of essence both those and others are the same and represent a difference between the income and expenses; similarly supply and demand. Outwardly it seems that they are only the opposite phenomena. But at the level of essence both is exchange of goods seen from different points of view. Demand for goods is the supply of money and supply of goods is demand for money. The same relations take place between all other reflective concepts. As though, they are symmetric concepts.

Reflective relations between different concepts reflect internal symmetry, which is inherent to an economic reality the same as to all universe. Moreover, an economic equilibrium, as the necessary condition of optimality, is one of displays of symmetry. Comprehension of economic symmetry allows to penetrate more deeply into essence of economic processes and to see the mechanisms of self-regulation ensuring the settlement of periodically sharpening internal contradictions, causing violation of economic equilibrium. Besides on the basis of revealing these latent interrelations between fundamental concepts the "symmetric model" of general equilibrium is constructed.

4. Behind the outward manifestations of relationships between the private actors of market economy with their conflicting interests lies oppositely moving goods and financial flows which form the closed contour. These flows caused by objective economic laws, form "live" self-developing and self-regulated system. Though finally it bring to motion by energy of egoistical interests of millions independent private subjects, but, nevertheless, this system doesn't depend on a will of separate subjects. On the contrary, it structures this energy of egoism and forces private subjects to act in one way or another by causes theirs economic decisions. Just this system of interdependent economic flows generates that anonymous force

which binds them into a single economic organism and make them dependent from each other, though they not quite realize logic of this interdependence and think that operate only in own interests. This anonymous force and system of economic flows are outcome of market mechanism and division of labor due to which subjective egoism turns to assistance to satisfaction of all others.

5. These counter flows of resources (services of factors) and products on the one hand, and financial resources - on another, counterbalance each other and form single system in the limits of which occurs imputation of final products to production factors depending on a magnitude of their services in manufacturing of these products. It is purely "technical" problem which depends only on deficiency of production factors (their services), and also on production and consumer coefficients but does not depend on political, legal or moral components of distribution problem.

The given model just reflects formation logic of concrete parameters of resource allocation into various products' manufacturing and imputation of products to resources (to production factors). At that level of abstraction on which the model is constructed, important is only that in conditions of production factors' scarcity their services should be paid by corresponding quantity of products, but not important whether the subject pays for factors' services belonging to other subjects, or pays a payment to himself for services of his own factors. It is as though only "legal" side of problem.

In real economy not only various consumers own simultaneously various production factors and their services, but also various producers manufacturing simultaneously various kinds of products. Until there arise monopolies, for functioning of decentralized economic system is not important how production factors (and incomes from them) are distributed between millions of private owners or how manufactures of various goods (and incomes from them) are distributed between millions of private entrepreneurs. This distribution can be most different. So, from positions of this model it is important what shares of products to various production factors are amputated, but not how this production factors (together with products manufactured by them) between private subjects are distributed.

6. According to given model economic equilibrium exists when cost of various resources consumed in production of this or that product is equal to cost of this product consumed in reproduction of various resources. But

cost of various products consumed in reproduction of this or that resource is equal to cost of this resource consumed in production of various products. This is the "iron law" of general economic equilibrium. Self-regulation of market economy consists just in ability to provide this corresponding by means of market interactions of independent subjects forming single economic organism. According to this law inside of economic organism appropriate proportions of commodity and financial flows, which provide its integrity, are formed. Finally, just this law gives clear understanding of what parts of cost of manufactured products are imputed to various production factors (Labor, Land, Capital) by which these products are manufactured. The imputation theory, based on law of diminishing returns, doesn't give the satisfactory answer to this question. And how production factors themselves and together with them national product are distributed between economic actors - this is already a question which depends not only on economic, but also on social and political factors⁷⁷.

7. According to this model, like model of P. Sraffa, the economy is circular process of "production of commodities by means of commodities". In this sense this model, as well as model of P. Sraffa, is opposite to paradigm according to which the economy is the one-way process directed from primary resources to final products and in which the problem of how primary resources are reproduced isn't considered. However P.Sraffa considered production of production factors by means of final products in physical sense. For him there is no difference between production factors and final goods, "commodities are produced by means of commodities". For example, for him Labor is commodity which is produced by means of other commodities (foods, clothes etc.). But at such interpretation of manufacture of production factors it is impossible to answer a question, - what forces form a wage. For unlike early stages of capitalism when the salary consisted of consumer goods necessary for survival of workers, today there is no direct link between consumption of goods and reproduction of Labor. Ultimately, the consequence of this approach is that

⁷⁷ Struggle for the property, for redistribution of incomes, struggle for survival or economic ambitions of concrete people - all it generates energy of economic stimulus. Nevertheless, this problem is beyond the competence of only economic theory. Struggle for possession of the most scarce production factors (be it labor, land or capital) always was an epicenter of conflict of political interests and defined a historical development course.

from his model, it remains unclear how national product divided between profits, wages, etc.

Like model of Walras in this model, unlike model of P. Sraffa and many other modern models, production factors from their services are distinctly differentiated. Producers buy not production factors but the rights of temporally using of their services. Accordingly, costs for reproduction of primary resources are reduced to costs of final products expended for reproduction of life of production factors' owners (but not of factors themselves), as the legal owner, selling rights for use of factors' services. Due to such understanding, this model gives a fair idea about imputation of national income to various production factors depending on services rendered by them in its creation. Distribution of production factors between different owners (including - financial resources between entrepreneurs) in turn, stipulates the distribution of national income among the individuals.

8. The theory of marginal productivity assumes a full compensation of products' cost at a price of each production factor, and in this case for profit doesn't remain place. It is considered that in process of movement toward the equilibrium the economic profits of some producers are compensated by losses of another's, and as a whole the economy aspires to a condition of zero profit. But it doesn't correspond to a reality. According to this model profits of producers are compensated not by losses of other producers but by savings of consumers. Accordingly, the average profit rate is more than zero, and in conditions of equilibrium - is equal to saving rate. Profit and saving are the opposite magnitudes having an opposite sign, just as the prices of products and resources, and just as incomes and expenses formed on the basis of these prices. Just this is reflected in "symmetric model".

9. In neoclassical theory there is fixed a strong relationship between saving and investments, but is not aware existence of relationship between profit and saving, and hence between profit, saving and investments. Also, there is not explanation of the link between profit and consumption in debt, and consumption in debt is not perceived as the reverse side of investment in human capital. In the end, there is no understanding of a deep inner interdependence between profit, saving, investment and consumption in debt. But without this it is impossible to understand how a general

equilibrium is formed and can't be created an adequate mathematical model of a decentralized economic system.

But the reason of misunderstanding of significant interdependencies among the most important financial flows lies in the methodology of scientific analysis. Namely, the neoclassical paradigm does not consider the deep inner connection between production and consumption in general. But consumption and production is the opposite moments of the same process of economic activity. They are inextricably linked. Production of products is consumption of resources and consumption of products is the reproduction of resources. For primary resources are services of production factors. At that, in conditions of commodity production these resources exist as a specific commodity - as the right of temporary use of production factors' services sold by owners of these factors. Therefore, reproduction of primary resources is reduced to reproduction of life of owners of production factors, and hence reduced to consumption of final products by these owners.

Also profit and saving are intrinsically linked. Profit is "saving" of producers, and saving is "profit" of consumers, and they both occur in the process of production and consumption of goods in the same price system. After all the alternation of incomes and expenditures takes place in both sectors of production and consumption. Incomes of producers are expenditures of consumers, and expenditures of producers are incomes of consumers. Accordingly, the difference between incomes and expenditures takes for them the mirror opposite form - of profit and saving. But that's why profits and savings are internally interconnected. As long as incomes of some are expenditures of others and vice versa, the profits and saving can not be independent quantities. Since the incomes and expenditures of both producers and consumers depend on the prices of products and resources, the more the prices of products ahead of the prices of resources the greater are profits and the smaller are savings and vice versa. The more resources' price increase and products' prices decrease, the greater is saving and the less is profit. That is the change in ratios between prices of primary resources and final products in a market economy, in opposite way effect on the magnitude of gross profit and gross saving.

Also, in neoclassical theory is not taken into account that the demand for goods is supply of money and supply of goods - demand for money.

Sale of goods is purchase of money, and purchase of goods - is sale of money. Also, investments and consumption in debt is the opposite moments of the same process. For example, investments of primary resources in production of physical capital are the consumption of these resources in debt, and in consumption sector consumption of final products in debt is investment in human capital etc. Just these internal, essential interdependences between economic flows form an economic activity as integrity. The "Symmetric model" just reflects these essential interdependences in the result of which a closed economy is represented as a single system.

10. As Hegel thinks "in essence all is contradictory". Paraphrasing him, it is possible to say "in essence all is symmetric», including economy, as system, as essential unity of parts constituting it. Symmetry throughout penetrates essence of economy because the essence is a whole, and «the whole moves in contradictions»⁷⁸. (Hegel). Without understanding this truth it is impossible to breathe life into lifeless concepts and models of economics which "lead nowhere" (Kaldor) and remain "abstract games of little relevance" (Worswick).

11. A man has reached the big successes in sciences. He has entered into a microcosm, has overcome Space, has reached amazing successes in "gene engineering", in development of technologies, but could not reach the crisis-free development of economy because his knowledge of essence of economy is insufficient. There are many various concepts, but the economic theory by now cannot give the more exhaustively clear understanding of that, how the market operates. We investigate the economic phenomena, but we do not know well enough the essence of economy. Certainly, in such conditions effective regulation of economy is impossible. It is also proved by crisis, which as «blind necessity», periodically falls upon a society. But, as Hegel writes, "Necessity is blind only as long as it is not understood..."⁷⁹. "If on the contrary we consider teleological action, we have in the end of action a content which is already foreknown. This activity therefore is not blind but seeing."⁸⁰.

⁷⁸ Hegel G. 1990. *Philosophy of Right*. Moscow: "Misl", (in Russian), p. 416.

⁷⁹ Hegel G. 1974. *Encyclopedia of the Philosophical Sciences*. Volume 1, Moscow, "Misl", (in Russian), p. 323.

⁸⁰ Ibid.

12. To understand essence - means to understand the whole and its contradictions, its reflection, consequently, its internal symmetry⁸¹. And, this whole is closed and is steady. For example, economic activity as the unity of production and consumption is integrity, which comprises in itself all parts necessary for it. Therefore, it is the closed process to which symmetry is inherent - there produced is that and only that, which is consumed, and is consumed only that, which is produced. But if the feedback is lost between production and consumption for whatever reasons, then integrity of activity will collapse. The product which is not corresponding to solvent needs will be produced, so will not be reproduced the primary resources for industrial consumption, etc. This phenomenon is known from cybernetics - if there is no closure, the dynamic process loses its stability. So it is obvious that weakening of reflection reduces the efficiency of economic processes. If there is no locking, so there is no certainty, and hence, there is no optimality. In unlocked system there cannot be optimality⁸².

13. However, the economy has external relations with other spheres of expedient activity which cannot be carried out without economic activity, the same as economic activity - without them. They create conditions for each other. But it means that the economy is not absolutely closed, along with symmetry asymmetry is inherent in it also. After all, if the system is completely closed, it will not have external relations and therefore, cannot be a part of more wide system. Moreover, it cannot develop. Therefore, the real economic activity is simultaneously locked and opened, steady and unsteady, optimal and suboptimal, that is symmetric and asymmetric⁸³.

⁸¹ "Ontologically symmetry appears as property of system to coincide with itself by a number of signs. But such coincidence is a reflection, mediation itself by itself, short circuit". (Jatskevich V. 1990. *Dialectics of an optimum choice*. Kiev, «Naukova dumka», (in Russian), p.70). "Fundamental sense has the fact, that requirements lay claim by definitions of symmetry and dissymmetry to conditions of their realization, are so general, that they respond to all forms of movement, existence, variation, conservation, progress, action and all forms of the attitude of a matter - in a word, all reality - material and ideal, objective and subjective. This is confirmed by the most fundamental achievements of universal culture, first of all sciences and arts." (System. Symmetry. Harmony. 1988. Ed. of V. S. Tjuhtina, J. P. Urmantseva. Moscow, "Misl", (in Russian), p. 194.)

⁸² See: Jatskevich V. 1990. *Dialectics of an optimum choice*. Kiev, «Naukova dumka», (in Russian), pp. 83 - 84.

⁸³ See: *ibid.*, p 84. "Locking and definiteness – is one and the same. Contradictoriness of development consists in that the system each time redefines itself and its parts, but in this movement it removes definiteness, because it detects that belongs to it only in perspective, but

14. Symmetry and asymmetry suppose each other. But in this paper the attention is accented on symmetry and isolation of economic system. Problems of asymmetry can be investigated only after revealing symmetry. The problem of asymmetry becomes actual when dynamic models will be considered, and more attention will be accented on problems of development. But it is a problem of separate research.

is not yet mediated, detects the parts, which have not yet the attitudes to whole.” (Ibid., p 86.) Asymmetry itself is a sign of existence of any other latent symmetry within the limits of which considered violation turns around as conservation of symmetry. (Asseev V. A. Extreme principles in natural sciences and their philosophical maintenance. Leningrad, "LSU", 1977, (in Russian), p.199.)

References

1. Asseev, Vladimir. 1977. *Extrem principles in natural sciences and their philosophical maintenance*. Leningrad : "LSU", 1977, (in Russian).
2. Blaug, Mark. 1985. *Economic Theory In Retrospect*. Fourth edition. Cambridge. Cambridge University Press. (In Russian).
3. Blaug Mark. 1997. "Ugly Currents in Modern Economics". *Policy Options*. September. pp 3 - 8.
4. Hayek, Friedrich. 1992. *The Fatal Conceit. The Errors of Socialism. The collected works of Friedrich August Hayek*. [Ed.] III W. W. Bartley. London : "ROUTLEDGE", 1992. T. I.
5. Hegel, Georg, W. 1974. *Encyclopedia of the Philosophical Sciences*. Moscow: "Misl", Vol. 1, (in Russian).
6. Hegel, Georg, W. 1990. *Philosophy of Right*. Moscow: "Misl", (in Russian).
7. Hegel, Georg, W. 1999. *Science of Logic*. Moscow: "Misl", (in Russian).
8. Leishvily, Paata. 1990. *The Analysis of Economic Value*. Moscow: "Economika", (in Russian).
9. Leishvily, Paata. 1996. "Towards the teleological understanding of economic value". *International Journal of Social Economics*, V. 23. Number 9, pp. 4-14.
10. Leishvily, Paata. 2011. *The Economic Activity: Teleological Analysis*. Tbilisi: "Siakhle", (in Russian).
11. Marks, Karl. 1978. *Capital*. Moscow: "Politizdat", Vol. I, (in Russian).
12. Marx, Karl, and Engels, Friedrich. 1955. *Collected Works*. 2. Moscow: "Politizdat", Vol. 12,(in Russian).
13. Mises Ludwig. 1996. *Human Action. A Treatise on Economics*. Fourth Revised Addition. Sun Francisco : "Fox & Wilkes,
14. Robbins, Lionel. 1945. *An Essay on the Nature and Significance of Economic Science*. London: "Macmillan and Co.,
15. Schumpeter, Joseph. 1908-9 r., "On the Concept of Social Value". *Quarterly Journal of Economics*. Vol. 23, pp. 213-232.
16. *System. Symmetry.Harmony*. 1988. [Ed.] Tjuhtin, Viktor, and Urmantsev, Unir. Moscow: "Misl", (in Russian).
17. Uznadze, Dmitry. 2004. *The general psychology*. Moscow. "Smisl/SPb.:Piter", (in Russian).
18. Yatskevich, Vladislav. 1990. *Dialectics of an Optimal Choice*. Kiev: "Naukova dumka", (in Russian).

About Simple Economic Reproduction and Macroeconomic Indicators

The modern economy is unable to function normally without the government regulation, without development of effective economic policy. This requires the clear understanding of essence of economic processes, the necessary theoretical knowledge. But as was shown by the recent worldwide crisis the economic science still lacks sufficient knowledge for creating the adequate models, correct predicting economic processes and developing effective policy recommendations. Moreover, economic policy, based on a false understanding of processes, itself contributed to above-mentioned crisis. Just as Keynes (with J. Robinson, P. Sraffa, and other) laid the intellectual responsibility for the crisis of 1929 on the marginalist theory, today the responsibility for the crisis in 2008 should be put on the neoclassical theory. At the same time, it becomes increasingly clear that not only certain thesis, but the very paradigm of mainstream needs a fundamental rethinking. Economic science is facing a serious challenge.

One of the major problems of economics needing rethinking is the problem of economic reproduction or the problem of circular flow, as it is called in neoclassical tradition. Since the publication of "Economic Table" by F. Quesnay (1758), during the 250-year history of evolution of circular flow theory, to this problem paid much attention the scholars such as A. Smith, D. Ricardo, K. Marx, W. Bortkiewicz, J. Schumpeter, V. Leontief, P. Sraffa, P. Samuelson, M. Morishima, etc. At that, although the term "circular flow" figures among the concepts of mainstream, but it gradually lost its sense of scientific research program. It stayed only a means to illustrate the "model of circular flows", expounded in the textbooks in chapter on the national accounting. The impression remains that the problem of circular flow (reproduction), like a problem of value, with which it is closely related, not finding a satisfactory solution, is gradually

pushed to the periphery of scientific interests and is gradually "forgotten" by neoclassicists. But these are the fundamental problems of economic theory, without solution of which economics cannot overcome the deplorable state in which it is today. However, apart from the purely theoretical value, the problem of circular flow has practical importance and is associated with the construction of foundations of national accounting. Accordingly, the lack of a clear understanding of reproductive process causes serious deficiencies in the System of National Accounts.

In this paper, on the basis of dialectical analysis of production and consumption processes, a new interpretation of reproduction process is proposed. Attempt is made to use it to solve the so-called "Enigma of Smith", which will be discussed below, and which allows to reveal the theoretical failure of calculation methods of macroeconomic indicators GDP and GNI.

Enigma of Adam Smith

According to Smith the value of each individual product is equal to the sum of incomes consisting of wage, profit and rent. He did not acknowledge the capital expenditures as the fourth component of price because they match to the value of previously created products of labor, which in turn is divided into the same three elements as the final product is. Smith's position is quite reasonable: the inclusion of capital expenditures into the price of all goods would lead to the fact that one and the same product would enter the yearly product of society repeatedly. By this approach, Smith avoided double counting in a measurement of annual product. But Smith argued that if the value of each individual commodity falls into incomes, this should apply to the whole mass of commodities, composing the annual product of each country. Therefore, the value of national product should also be equal to the sum of incomes consisting of wage, profit and rent. But the core of the problem is that the part of annual product produced in the country is the capital goods required to replace depreciated capital. For society their value is the costs required for production of annual product. It turns out that the cost of each product individually consists only of incomes, but the value of entire national

product, which consists of these products, in addition to incomes includes also the value of depreciated capital. But after all within the prices of individual products the value of depreciated capital has already been decomposed into incomes. Why does it occur again in the national product? This enigma remains enigma and generates a number of problems. The value of final product turns out to be greater than the amount of incomes. It turns out that the aggregate supply is greater than the aggregate demand; that the entire product cannot be sold inside the country. But economic reproduction is possible only under the condition that all goods will be sold, all the means of production and consumption goods - recovered. Consequently, the crises are inevitable, etc.

A. Smith cut down this "Gordian knot" and just got rid of the problem by introduction of concepts of "gross" and "net" products. But from a purely theoretical standpoint - this is incorrect. Here clearly exists ambiguity which remains so up to this day. This is just reflected not only in theory, but also in the System of National Accounts. Here's what the authors wrote in the SNA 2008:

2.141 In principle, the concept of value added should exclude the allowance for consumption of fixed capital. The latter, in effect, is not newly created value, but a reduction in the value of previously created fixed assets when they are used up in the production process. Thus, theoretically, value added is a net concept. This conclusion applies to domestic product as well; theoretically, domestic product should be a net concept. Net domestic product (NDP) is obtained by deducting the consumption of fixed capital from GDP.

2.142 However, gross measures of product and income are commonly used for various reasons. ... So GDP is broadly used even if it is, on a conceptual basis, economically inferior to NDP.

2.144 The remarks above about the conceptual relevance of the net concept in case of product apply even more strongly to national income. (SNA 2008, p. 34)

So, division of national product and national income on "gross" and "net" cannot be considered as a solution. On the contrary, such division essentially hides the real problem, creates illusion of its solution and thus

conserves the problem. Smith deviated from the solving of problem and left this enigma unsolved. Since the days of Smith a large number of economic literature is devoted to this problem, but it still remained unsolved. (Marx 1992, Luxemburg 1968, Kalecki 1968, Moseley 1998, Trigg 2006). And it cannot be solved as long as economic theory reaches a clear understanding of how the economic reproduction performs.

Surplus product and surplus resource

1. In essence, the theory of reproduction also is a theory of equilibrium. But it is the theory of equilibrium not between the supply and demand, but between production and consumption. If all economic processes are considered only at the market level and not at the production and consumption level, the search for economic equilibrium loses a "pivot" and the connection with fundamental economic laws, which govern the functioning of economic organism as a whole. Reproduction theory explores the objective economic laws, ensuring the possibility of equilibrium, at a deeper level of economic performance. At the division of labor various branches of economy should bring into accordance their outputs with one another and exchange their products between one another. At that, not all these proportions of production, distribution, exchange and consumption are equally important for the normal functioning of the economy.⁸⁴ But there are some "necessary" proportions between departments of economy (i.e. the groups of economic branches), in case of violation of which, the integrity of economic organism will be violated. There will arise the deficits and surpluses; producers couldn't sell the product, obtain necessary resources; production will reduce or stop. These "necessary" proportions are caused by objective economic laws and are necessary for maintaining a macroeconomic equilibrium. If implemented, the economy as integrity consists only of its necessary parts and consists of nothing random and unnecessary. All of the resources are used, all products sold, all solvent needs met. And what is most important, as a result of this process all the necessary *preconditions* for continuation of economic

⁸⁴ Many of the products and resources are interchangeable, so discrepancy between production and consumption of some goods, within certain limits, can be compensated by opposite deviations in production and consumption of other goods, so that macroeconomic equilibrium will not be disturbed.

process in the previous regime of dynamic equilibrium are reproduced. It means that the theory of reproduction implies the reproduction not only of final products, but also of primary resources, as well as of solvent needs, which drive the entire economy. Therefore, the theory of economic reproduction is impossible without understanding of reproduction process of economic subject as a consumer, entrepreneur, owner, as a generator of economic needs and incentives.⁸⁵

2. To understand the problem of reproduction, you must first reveal the deep inner connection, which exists between production and consumption in general, and between production and consumption sectors of economy - in particular. Production and consumption are the opposites, inextricably linked with each other, are the unity of opposites.⁸⁶ The process of production itself is a process of resource consumption, and consumption of resources is production of goods. So it's not two different processes, but one and the same process, seen from different points of view. In fact, they are two different aspects of the same process of converting resources into products. In a market economy, where products and resources take the form of commodities, this process takes the form of transformation of some commodities into others or, if expressed in spirit of P. Sraffa, "the production of commodities by means of consumption of commodities." Due to this circumstance production sector and consumption sector are also inseparably linked.

3. The matter is that for production entrepreneurs buy from owners not the production factors (Labor, Land, Capital), but only the rights of temporary use of services of these production factors. Payments for them are wage, interest and rent. And entrepreneurs sell to them (and to each other) entrepreneurial services and make a profit. Primary economic resources for entrepreneurs are just the right of temporary use of the services of production factors, which they buy from their owners. But if

⁸⁵ At that, these proportions are necessary for harmonic operation not only of market economy, but of any economic system, whether natural, market or regulated economy. Although in all systems the forces, which ensure the preservation of these proportions, are the economic interests of interacting agents, but the specific mechanisms of restoration of "necessary" proportions in the case of deviations from them, differ from each other.

⁸⁶ "Production as directly identical with consumption, ... is termed by them productive consumption. ... Consumption is also immediately production, ... Consumptive production. ... Production, then, is also immediately consumption, consumption is also immediately production. Each is immediately its opposite." (Marx/Engels, 1975 - 2005, p. 27)

this is so, regardless of whether production factors themselves are reproducible or irreproducible, in all cases, the primary resources as commodities are reproducible goods. Reproduction of primary resources as commodities is reduced to reproduction of life of owners of production factors, only which have the right to sell these "rights of use". For the reproduction of property rights for production factors and their services, reduced to reproduction of subjects of these rights. They sell the services of production factors and keep them as a permanent source of incomes just because they do not sell the production factors themselves. This means that the reproduction of primary resources is reduced to consumption of consumer goods, i.e. of final products, needed for owners' life.⁸⁷ (See Leishvily, 1996, 2011, 2012)

Of course this is the reproduction of resources not in a physical, but in economic sense.⁸⁸ But after all economics is interested exactly in economic sense of economic processes. Also production of final products is of interest for economics not as a physical or technological process, but as an economic process. Namely it is interested in production process of final products **as commodities**, which belong to their owners, have social utility, destined for sale, etc. But the producers and owners of final products as goods are entrepreneurs. Therefore, the reproduction of final product is unthinkable not only without consumption of primary resources, but without the reproduction of entrepreneurs' life too. Reproduction of their life is as much a necessary condition for economic reproduction of final products, as reproduction of life of production factors' owners is for economic reproduction of primary resources.

4. It follows that the sphere of consumption of final products is the sphere of reproduction of primary resources and the sphere of production of final products is the sphere of consumption of primary resources. Each of these sectors produces goods that are consumed by the opposite sector. A "resource" of one side is a "product" for the other side. Just because of this

⁸⁷ "It is clear that in taking in food, for example, which is a form of consumption, the human being produces his own body. But this is also true of every kind of consumption which in one way or another produces human beings in some particular aspect. Consumptive production." (Marx/Engels, 1975-2005, p. 28)

⁸⁸ Of course, in the physical sense, the amount of reproduced resources (services of production factors) depends on the amount of production factors, but not on the amount of products consumed by its owner.

contradiction they become necessary for each other, becoming the necessary parts of wholeness. This wholeness, dissected inside into departments of economy, which in turn are composed of individual branches, just dictates the proportions of social production, consumption, distribution and exchange. This whole is a market economy "producing goods through the consumption of goods". And the relations between the production and consumption sectors as the parts of a whole, takes the form of market exchange.

As we see the "products" and "resources" are relative concepts. The economic goods simultaneously are products for their producers and resources for their consumers. Therefore, it is necessary to give a clear criterion for distinguishing these categories. For both production and consumption sectors "primary resource" is a good, which is consumed in given sector, but is produced - in another. The "final product", on the contrary, is produced in this sector, and consumed in another. "Intermediate product (resource)" is produced and consumed in one and the same sector.⁸⁹ This implies also that primary income of one sector is spending of opposite sector for the purchase of goods produced in the first sector. Accordingly, for production sector the primary incomes are incomes from the sale of final products, but for consumption sector - incomes from the sale of services of production factors.

5. As production and consumption, essentially, are one and the same transformation process of some goods into other goods, so production and consumption economic sectors exhibit many similar features. So, to consumption sector, as to the sector of reproduction of primary resources, are applicable many of the concepts that are used in the analysis of production sector. In production sector firms transform primary resources into the final products. Respectively, they buy primary resources and sell final products. Analogous, but opposite, role is carried out by households in consumption sector. They buy final products and sell primary resources and, consequently, in the economic sense, they transform final products into primary resources. As firms, producing the same product, form branches of economy, so households, reproducing the same resources, represent the branches, providing production factors' services to producers.

⁸⁹ Below in the text to avoid confusion, "resources" and "products" are used commonly called as resources and products for production.

So, all actors (firms and households) and all branches of economy transform some goods into others, sell them to each other, receive incomes and make expenditures, all they need fixed and working capitals for normal functioning, etc.

6. At that the exchange ratios (prices) in the market are set so that only part of final product is exchanged for primary resources needed to produce that product. That is, the value of resources, spent in branches of production sector, is equal to the value of only one part of produced product. That part of produced product, which is exchanged for resources necessary for reproduction of whole product, is a *necessary product*. The value of the rest part of created product is *surplus product*, sales of which makes a profit, and which is the reward for entrepreneurial risk.⁹⁰ Similarly, only a part of primary resources is exchanged for final products required for reproduction of these resources (that is, to satisfy the owners' current living needs). This is a *necessary resource*. Accordingly, only one part of resources is necessary for payment of owners' current consumption. The rest part of resources is the *surplus* or *saved resource*, the sale of which generates owners' saving and which is the reward for his abstention and frugality. The more the owners' abstention is the more resources are saved from their current consumption. Because the total amount of reproduced resources depends only on the amount of production factors, which are in owners' possession, but not on the volume of their consumption.

Thus, during the reproduction process the necessary product and necessary resources are exchanged for each other. And as a result of their consumption some branches of economy reproduce surplus product, but other branches reproduce surplus (saved) resources. Thus, in each branch of economy the value of produced commodities is greater than the value of commodities consumed for their production. Within each branch surplus value is created. (See, Leiashvily, 2012, 2011).

7. Surplus value is created both in the process of transformation of final products into the primary resources, and in the transformation of primary products into the final products. In the first case - through abstinence, in the

⁹⁰ "... Sraffa's work ... provided a basis for a definitive demonstration that the theoretical analysis of wages, profits, and prices, within a surplus approach, was entirely independent of any 'labour theory of value' and, indeed, that any labour theory is necessarily a barrier to the development of a surplus-based theory." (Steadman 1981, pp. 12-13). "... a surplus approach to profits and prices has absolutely no need of any 'labour theory of value'." (Ibid, p.16).

second - through entrepreneurship. Producer sells surplus products and makes profit, and the owner sells the surplus (saved) resources and makes saving. Respectively, both, income and saving are the net income of economic subjects, as the difference between incomes and expenditures, which they receive through entrepreneurship and abstinence. In its natural form the surplus product does not differ from the necessary product and it is sold in the market as well and at the same price as the necessary product is. If it had not been sold, it would not be a product at all, would not have value and would not bring a profit. Similarly, in its natural form surplus resource does not differ from a necessary resource. It is sold in the resource market as well and at the same price as a necessary resource is. Due to this saving are formed.

8. Proportions in which the product *prices* are divided into the costs and profit correspond to the proportions, in which the *amount* of produced products is divided into necessary and surplus products. And the proportions in which the resource *prices* are divided into consumption expenditure and saving correspond to the proportions in which *amount* of reproduced resources are divided into necessary and surplus resources.⁹¹ Ultimately, it appears that consumers pay for the final product more than producers spend for its production, and producers pay for the primary resource more than consumers (owners) spent for its reproduction. But where is the source of payment for surplus product and for surplus resource? Who is their buyer?

9. The source of payment for surplus product, from which the entrepreneurs' profit derives are the entrepreneurs profits themselves. Because entrepreneurs themselves are also the consumers, buying the final products from their incomes, just what their profits are. That is a part of their products they buy from each other as well as all other consumers buy products from them. And the sources of payment of surplus resource, from which the consumers' saving are formed, are their saving themselves. Because saving are those free money resources, which through money market are transformed into credit resources for production investments. And this is the source of payment for surplus resource. That is, surplus

⁹¹ Since profit is generated from the value of surplus product, the surplus value is a part of the value added. Another part of value added is the value of necessary product, which corresponds to wages, interest and rent.

resource is bought by entrepreneurs, but they buy them with borrowed monetary resources, which are formed from saving of just the owners of these resources. Thus, the saving themselves, transformed into credit resources for investment, additionally enter the resources market. And the profits of the whole class of entrepreneurs, consuming products, additionally enter the product market. In addition the government buys surplus products and surplus resources. That is, they are paid from the state budget and, consequently, from the taxes that are part of the same profits and saving.

Physical, human, natural and public capital

1. As we see, the necessary product and resource are directly involved in reproduction process of each other and their functions in this process are clear. But what is the function of surplus product and resource? To answer this question you first need to clarify some circumstances.

In the process of reproduction of final products, not only primary resources are consumed, and in the process of reproduction of primary resources not only final products are consumed. There are consumed also capital goods.⁹² The times, during which the various goods are consumed and reproduced, differ from each other. Depending on whether you need for consumption of goods more or less time than the conditional unit of time (usually a year), the goods are divided into *durable (capital) and nondurable goods*. This applies to all branches of economy either of production or consumption sector. Therefore, into durable and nondurable goods are divided the goods of both production and consumption use. Along with the increase or decrease of time unit, some of the durable goods become nondurables or vice versa. That is, the difference between them is conditional and depends on the length of the period considered as the time unit. Distinction criteria between them is only in the fact that during this period nondurable goods are consumed completely, but durable goods in the same period are consumed only partially. The total consumption and

⁹² Various kinds of capital are nothing else than the factors of production. (Walras, 2003, p. 212 - 213) Instead of traditional and vague notions of "Capital", "Labor", "Land", in modern literature are increasingly used the concepts "physical, human and natural capital".

wear of the durable goods takes place over a longer period, covering a lot of time periods. Naturally if during the period under consideration the good is not consumed completely and does not disappear along with consumption, we can only talk about its depreciation and services.

2. Broadly speaking capital is a good, use of which provides useful services, allows increase production of goods, generates incomes. As for production of products, also for reproduction of resources (in consumption sector) there are necessary physical, human, natural and public capitals. All of them are able to provide appropriate services of both production and consumption use. However, the durables are worn out during the using of them. They have to be restored. Consequently, the consumption of capital should be distinguished from the consumption of its services. Capital services are consumed and disappear entirely in consumption process, while the capital wears out only gradually over a long period of time. However, while the capital exists and functions, it is able to deliver the services. Therefore, not the services of capital but the capital itself needs physical reproduction. The capital services by themselves do not need the reproduction;⁹³ they are reproduced together with the operation of capital. Reproduction of services is reduced only to ensuring the normal operation of capital, which, in turn, needs certain costs. Another matter is a capital itself. For its restoration it is necessary to invest (as depreciation) the part of goods, produced by it, into its reproduction. It follows also that the costs for restoration the capital should be distinguished from the costs for its operation.⁹⁴ These differences between the durable and nondurable goods determine a number of significant features of economic activity.

3. Physical capital. As nondurable goods are consumed entirely within the year, then the reproduction of these goods also has to be performed annually. That is, they are reproduced in the same rhythm in which they are consumed. But since the physical capital is consumed during the year only partially, the reproduction and replacement of the old capital by the new one takes place only after full depreciation of the old capital. It should be noted that in *production sector*, as for primary resources, entrepreneur pays

⁹³ Only the right of use of these services needs reproduction which, as noted, is reduced to reproduction of subjects of law (owners).

⁹⁴ For the functioning of physical and natural capital expenditures of energy, lubricants, fertilizers, irrigation, etc. are required, and for the functioning of human capital consumption of final products, creation of conditions for labor, etc. are necessary.

only for capital services, but not for consumption of capital itself. But, as was already noted, not only services are consumed in production process, but also the capital itself in the form of depreciation. And entrepreneur has to compensate this depreciation to the owner at his own expense.⁹⁵ But it is not possible to determine exactly either what is the share of current depreciation of capital, or after how many years it will be depreciated completely. Therefore, no one compensates, and cannot compensate to the owners of capital the current expenditures of capital (but not the services). It is possible to compensate only entire capital after its complete depreciation. Replacing of depreciated capital by the new one is just the payment for the capital consumption. Therefore, consumption of capital in contrast to consumption of its services is not a current consumption, but the *consumption in debt*. And in parallel to this depreciation entrepreneurs accumulate money for future replacement of completely depreciated capital. These funds are invested in production of new physical capital. So it turns out that in equilibrium consumption of physical capital in debt should be accompanied by parallel investment in its reproduction.

In consumption sector consumers also, in addition to nondurables, consume durables (apartment, car, household appliances). If consumers and owners of these goods are different subjects, consumers pay for the services of these goods in accordance with market price, which covers the cost of depreciation. In this case, the restoration of capital is performed by its owner. But if the good belongs to consumer, even though he does not pay for its services (pays to himself), but parallel to consumption of this good he has to save and invest money for its replacement after its depreciation. But until the replacement of capital goods by the new one, he consumes it in debt to himself in the sense that if he does not cover the debt, then his property will decrease by the amount of the value of depreciated capital.

4. The human capital. For manufacturing of product is necessary not only physical, but also human capital. Human capital is the ability of man to intellectual and physical labor, the ability to perform different economic

⁹⁵ If the entrepreneur is the owner himself, he has to repay that depreciation to himself. Otherwise, his property will decrease.

functions (entrepreneurship, ownership, investment, etc.).⁹⁶ Due to realization of these abilities a person creates economic values. In other words, human capital is the stock of knowledge, skills, experience, training, health, social relations, etc., by which he is able to perform certain economic functions. All this is not only accumulated during the investment process, but also both morally and materially wears. That is, to the human capital can be applied usual conventional depreciation approach. It is formed by investment in improving the level and quality of human life, including - education, training, health, in development of entrepreneurial, creative and communication skills, as well as in science, culture and art, recreation, living conditions and other components of human capital. (Shultz 1971)

And all these features, knowledge and ability exist only in a living man, healthy, educated, working and living in a normal environment. This means that the existence and functioning of human capital means current consumption of final products for the maintenance of normal living conditions. But during the operation this very capital also wears out. The knowledge and experience become obsolete over time, people get sick, temporarily or permanently loses work capacity, when reaches retirement age withdraws from the labor force, etc. And, finally, just die, for a man is mortal. Accordingly, it is necessary to renew the knowledge and experience, to restore health, raise and educate the younger generation for the inflow of new workforce, raise the heirs of property, successors of business, etc. All this requires the economic costs and implies consumption of final products above the necessary costs for current consumption of owners of human capital.⁹⁷ It is necessary to accumulate funds for education, sickness, to create the insurance and pension funds, etc. This means - to make saving from incomes and, therefore, to limit the current consumption. Some of these savings are used as a kind of "depreciation

⁹⁶ Frugality, abstinence is a similar form of manifestation of human capital services as the entrepreneurship, physical and intellectual labor. Payment for labor is wage, for entrepreneurship - profit and for abstinence - saving. Human capital as well as physical capital is needed for the operation of both, sector of product reproduction and resource reproduction. Entrepreneurship creates a new value, and abstinence saves it. Only in this way the wealth accumulation and property increase is possible.

⁹⁷ i.e. excess of the cost for operation of human capital.

allowances" for recovery, and some for the net investment in human capital.

5. Public capital. Operation of economic subjects is impossible without production and consumption of public goods, such as security, justice, rule of law, health, education, transport and communication facilities, power and water supply, radio and television broadcasting, street lighting, etc. All this is public capital and its services. Public capital is a set of state assets. Public goods are non-excludable and non-rivalrous. So they cannot be paid by private actors, they have no market price. Public capital services are free for society, because the public capital belongs to whole society; the government only manages it on behalf of society and in its interest. Accordingly, in its economic sense taxes paid by economic subjects are not the prices or payment for public goods. Taxes - are forcibly withdrawn part of incomes, needed for reproduction and functioning of public capital. Taxes also serve for investment in public capital, as well as depreciation - for investment in physical capital. Taxes are paid by both producers and consumers, because they both use services of public capital. Thus, the public capital is the unity of those parts of physical and human capital, which are formed and operate due to forced investment by all members of society, and which is jointly and free of charge consumed by whole society.

6. Natural capital. Exceeding the permissible level of exploitation of nature has resulted in that the global economy consumes not only the services of natural capital, but also the natural capital itself. Destruction of nature has reached scales at which the nature cannot recover itself by natural processes and keep the ecological balance. But the costs for restoration of wear of natural capital are insufficient. The environmental crisis just is the intensified "wear" of natural capital. To put it in economic terms, depreciation allowances for investment in natural capital lagged behind the rate of wear of capital.⁹⁸ Like the restoration of physical, human and public capital, the natural capital also must be restored.⁹⁹ But no matter

⁹⁸ According to Hawken P. and others the next industrial revolution "depends on the . . . investing in natural capital, or restoring and sustaining natural resources." (See: Hawken, 1999), http://en.wikipedia.org/wiki/Natural_capital#cite_ref-nat_1-0.

⁹⁹ "Of greater concern for some countries is that standard depreciation measures have not taken into account the degradation in quality of the natural environment. There have been various attempts to widen the scope of depreciation to reflect environmental degradation (or improvements, if such is the case), but without much success." (Stiglitz 2009, p.24).

from where is funded this process (from the state budget or from international funds), in any case, the economic sense of this process also reduces to investment of some portion of the surplus product and resource in restoration of capital.

Rent, which entrepreneurs pay to the owners of natural capital, is the payment for services of this capital, but not the depreciation on its restoration. Restoration of natural capital is a problem that cannot be solved at the level of individual owner. It requires a coordinated effort at the state and international level. This means that the depreciation expense for restoration of natural capital is mainly made from government or international funds. This, in turn, means that eventually, these funds are generated from the same taxes as the public capital is. Therefore, further in the text, referring to public capital and taxes, we mean also natural capital and investment in its restoration.

Profit, saving, investment and consumption in debt

1. In the reproduction of both products and resources, except of nondurable goods the physical, human and public capital is consumed. But consumption of capital goods, as opposed to consumption of nondurables, is consumption in debt, in which capital wears. For restoration of worn and for net increase of capital, in parallel to consumption, is necessary to set aside from incomes the means for investment in production of new capital. But to put off these means is possible only from that part of income, which is not consumed. Thus, the only source of investment in physical, human and public capital for producers is the gross profit, and for consumers - gross saving. But because they are formed from surplus product and surplus resource, in reality there are invested the surplus product and surplus resources.

2. However, this investment is veiled. The surplus products and resources are bought and sold on the market as well as all the other products. As a result of their sales, profits and saving are generated. But profit and saving, as monetary resources, free from current expenditure, is the formation source for all monetary funds (private, municipal and state budgets, depreciation, insurance, pension funds, etc.). But, in the end, from these funds are bought again the surplus resources and products, just from

which are produced the physical, human and public capital.¹⁰⁰ Money itself cannot produce the capital goods. It requires products and resources. Investing just means that part of the products and resources is used not for production and consumption of nondurable goods, but for production and subsequent consumption of capital goods.

3. Just as production and consumption of nondurable goods is mediated by their exchange for money, also production and consumption of capital goods is mediated by the formation and use of funds. But if you ignore the "monetary veil", there are invested namely surplus resources and products as goods free from current consumption. So, from reproduction viewpoint it turns out that some subjects sold surplus products and resources on the market (while creating money assets) and others buy them (spending money assets). That is, in the end, there is a usual exchange of goods in the market. Therefore, a simple reproduction implies equilibrium between production and consumption not just of necessary, but also of surplus products and resources.

As we see, investment of profits and saving in physical, human and public capital is only a monetary reflection of real investment of surplus resources and products. In this case, for an adequate understanding of reproduction process, it is crucial to realize the intrinsic relationships between gross profit and gross saving, as well as between gross investment and gross consumption in debt.

4. **Profit and saving.** In a market economy the transformation of some products into another takes place. As a result of these transformations and further exchange of goods in production sector remains the profit, and in consumption sector remains the saving. But since the production and consumption sectors are interconnected through market exchange, then also internally interconnected are profit and saving. In fact the alternation of incomes and expenditures takes place in both production and consumption spheres. Producers' incomes are consumers' expenditures, and producers' expenditures are consumers' incomes. Accordingly, the difference between incomes and expenditures takes for them the mirror opposite forms of profit and saving. But that is why the gross profit and saving are internally interconnected. As soon as incomes of some are expenditures of other and

¹⁰⁰ or are bought directly capital goods. But before we buy them, someone has to produce them. But they may be produced only from surplus products and saved resources.

vice versa, the profit and saving cannot be independent variables. Changing of exchange proportions between the final products and primary resources (i.e. their relative prices) has effect on the profits and saving in opposite way. Naturally, in conditions of equilibrium prices gross profit and gross saving should match. (See, Leishvily, 2011, 2012).

5. It should be emphasized that the depreciation is a part of profit, but not a part of cost of product, which is slowly included into finished products. Depreciation allowance is a purely financial procedure that has very little relevance to real loss of value by fixed capital. The choice of norms and methods of depreciation depends on the economic policy of government, and not on the actual depreciation of capital. In understanding of depreciation there always were disputes. There are two substantial descriptions of depreciation - (1) wearing of property and (2) building of the fund of its renovation. Uniform distribution of amortization during the different periods does not correspond to the actual processes of wear, because the older object is, the faster it wears out. But to determine the adequacy of real wear to depreciation rates is impossible. In addition, any depreciation rate implies the possibility of exploitation of object after its complete normative wear. Setting the depreciation rate, useful life or procedure for calculating depreciation, government regulates the pace and nature of reproduction in the industry. Thus, the depreciation is a part of profit, which is not subject to tax, and from which no dividends are paid, but is not the extended writing off previously incurred expenditures.

6. To be able to carry on business entrepreneurs should not only buy the primary resources, but also invest in their personal consumption. These investments are investments in their own human capital. These are entrepreneurial skills, realization of which is just a service of this capital. Society pays him for entrepreneurial services. Profit is this payment and, at the same time, confirmation of social utility of this services. From an entrepreneur's viewpoint his activity is for him a use of belonging to him human capital, which brings him an income in the form of profit. But the human capital exists only in a living person, living and acting in normal conditions. Therefore, the current consumption of final products for supporting conditions of living and activity is a necessary condition for the existence and functioning of this capital. At that, unlike consumption of owners, entrepreneurs' consumption is consumption in debt. For in contrast

to owners, who pay for their current consumption out of the previously obtained incomes, entrepreneurs only invest funds from their monetary assets without knowing in advance whether its consumption expenditure will be compensated by the results of his activity.¹⁰¹ In this regard the thought of Smith is interesting:

"His profit, besides, is his revenue, the proper fund of his subsistence. As, while he is preparing and bringing the goods to market, he advances to his workmen their wages, or their subsistence; so he advances to himself, in the same manner, his own subsistence, which is generally suitable to the profit which he may reasonably expect from the sale of his goods. Unless they yield him this profit, therefore, they do not repay him what they may very properly be said to have really cost him." (Smith, 1977, p.56).

An advance, Smith writes about, is, rather, investment in human capital of entrepreneur.

7. Investment and consumption in debt. Investment is this transformation of income into capital.¹⁰² But naturally, in capital only that part of income can be transformed, which is not consumed, i.e. saving or profit. Marx believed that investments are made only out of profits, and Keynes - that only from saving. But actually investments are made from both, that is, from net income of economic agents. However, profits and saving are money. But money cannot produce real capital goods (whether physical, human or public capital). Money can create only money capital. Production of real capital goods requires real goods (products and resources). But in relation to real goods the same logic remains valid. As it has already been mentioned, to transform into capital goods (use to produce the capital goods) is possible only those products and resources, which are not used in current consumption. And such are only surplus products and

¹⁰¹ In its economic sense, consumption of final products, necessary both for operation and for reproduction of entrepreneurs' human capital, is consumption in debt. Whereas, consumption in debt for owners implies only the reproduction of human capital, and its operation (through which the primary resources are reproduced) implies a current consumption.

¹⁰² ". . . broadly speaking, new investment, . . . , means the purchase of a capital asset of any kind out of income." (Keynes, 1977).
(<http://www.marxists.org/reference/subject/economics/keynes/general-theory/ch07.htm>).

resources. Thus, investment - is an investment of surplus products and resources into production of capital goods. Accordingly, the investor is one, who invests products and resources free from current consumption into production of capital goods. But one, who produces capital goods, consumes these products and resources in debt. Producer of capital goods and investor may be different subjects or the same subject, but in any case production of capital goods and investments - are different, but closely interrelated economic functions. One thing is clear that the reverse side of investment is consumption in debt.¹⁰³

8. In a barter economy investment and consumption in debt are linked with each other as inextricably as selling and buying. In a barter exchange buying and selling of goods are fused into a single process. When money appears as a mediator, buying and selling are disconnected in time and space as two separate acts. However, since the sale is made possible without buying and buying without selling, the delay or acceleration in trade is connected with removal or involvement of money in circulation. Accordingly, the monetary assets increase or decrease. Similar changes occur in the process of investment and consumption in debt of surplus product and resources. With appearing of money the process of investment and consumption in debt also separate from each other. Between them arise additional processes of investment and consumption in debt of money capital. The surplus products and resources first should be sold in the market and get money form of profit and saving. From profits and saving a money capital is formed. That is, part of money income is invested in a money capital, which will then be invested in production of real capital. That is, surplus product and resources will again be purchased for production of capital. Thus, investment in real capital is related to the divestment of money capital.

But between formation of money capital and its transformation into a real capital there is a gap in time during which the money capital can provide a variety of financial services and earn interest. Money capital earns money income and begins an independent life. Moreover, with the development of market economy these processes grow in a complicated

¹⁰³ The economic sense of this process is that the investor provides his resources in credit to producer of capital, but the producer consumes these resources in debt. As debt is the reverse side of credit, consumption in debt is the reverse side of investment as well.

world of finance, which functions according to its own laws. (Toporowski 2002, Hudson 2010). There appear the various intermediary financial institutions (banks, credit unions, insurance companies, pension funds, stock exchanges, etc.) with their financial instruments (currency, securities, bonds, futures, options, etc.). And though this world of finance acquires enormous power over the economic life of society, it is based on the processes of real economy. The real and money sectors of economy are a single system. Therefore, if equilibrium is disturbed in one sector between investment and consumption in debt, the equilibrium will be disturbed in other sector too.

9. As well as the reverse side of current production is current consumption the reverse side of investment is consumption in debt. (See, Leishvily, 2011, 2012). They are inextricably linked to each other. If what is invested is not consumed in debt (and therefore capital is not produced), then such investment is not investment. If consumption in debt serves only to increasing of current consumption without creation of capital, it means that in future there will be divestment. For, after the expiration, the debt should be returned with interest. This means that in the future agent will have to withdraw funds from the existing capital. So, investment and consumption in debt are two aspects of one and the same process of reallocation of production and consumption possibilities among economic actors. This redistribution of opportunities *between the subjects* for the subjects themselves is a means of *redistribution in time* of production and consumption possibilities in order to optimize their activity. But in a market economy, each subject produces commodities for others and he consumes commodities produced by others. In conditions, when ones produce commodities and others consume them, an imbalance is possible between production and consumption. The same can be said about investment and consumption in debt. In a market economy, some invest commodities (surplus product and resources), and others - consume them in debt. So, imbalance between them is possible, which leads to the disorder of economy.

10. The whole sense of investment is that investment of part of the income in capital allows to increase the capital. But the greater capital is, the greater income it generates, which, in turn, allows to more save and invest and even more increase capital, etc. That is capital is a self-

expanding value (Marx). But if this process is not regulated and occurs spontaneously, then on the macro level disparities are inevitable between economic flows, such as profit, saving, investment and consumption in debt. This just causes a disturbance of macroeconomic equilibrium and generates business cycles.

11. But the colorful variety of manifestation of turbulent financial life should not be misleading and hinder the identification of intrinsic relationship between the real processes of economic reproduction - production and consumption, distribution and exchange, investment and consumption in debt. It is clear that investment and consumption in debt involves withdrawal of excess economic goods (opportunities) from one time interval and from one subject and bringing them to another time interval and another subject. But society's capacity is limited by available resources and technologies. Therefore, to maintain equilibrium in economy, if one consumes more, then someone else should consume less; if someone consumes in debt, someone else should invest in order to compensate it. If a private subject or a society today invests more than it consumes in debt, then tomorrow it will be able to increase consumption. Conversely, if it consumes more in debt than invests (eats through capital), tomorrow it will have to reduce consumption. That is the waves of economic activity are generated.

12. Below is given a diagram of distribution of gross profit and gross saving:

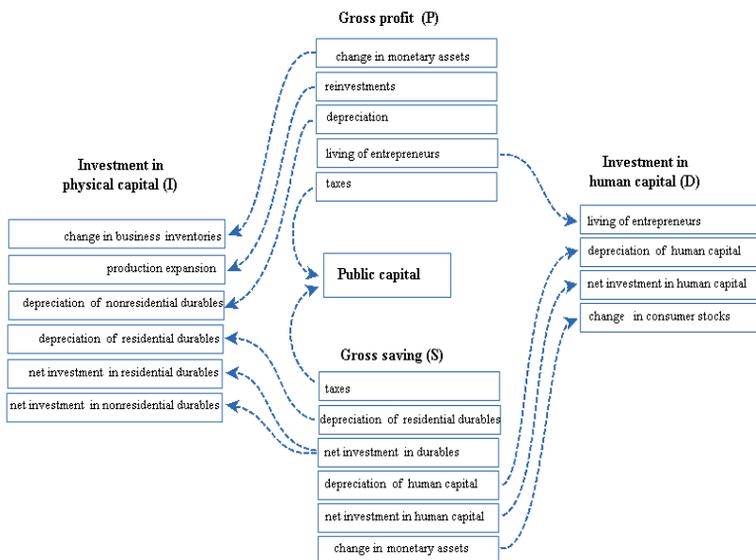


Fig. 1. Scheme of allocation of gross profit and gross saving for investment in physical, human and public capital.

The model of economic reproduction

1. Below is shown a diagram of formation and distribution of economic flows in condition of a simple economic reproduction.¹⁰⁴ We consider a closed economic system. Here is represented the matrix consisting of four quadrants: I - production sector, II - market of final products, III - market of primary resources, IV - consumption sector (reproduction of primary resources). The rows of matrix represent different sectors of reproduction of products, resources, and capital goods, and the columns show their allocation and consumption in various sectors. For example, sector 1 simultaneously shows the transformation process of primary products into final products, and the imputation process of final products to primary resources. The elements of this sector simultaneously reflect the value of

¹⁰⁴ For more details this diagram is considered in Leishvily P. (2012) Economic Activity: Teleological Analysis. NY, Nova Publisher Inc., p. 121.

services through which the products are produced, and the value of those parts of final product, by which these services are remunerated. Therefore, each element simultaneously shows as value expressed in final products as well the value expressed in amount of income, received by some agent of production. I.e. show the imputation of final products to production factors according to their contribution to the production process.

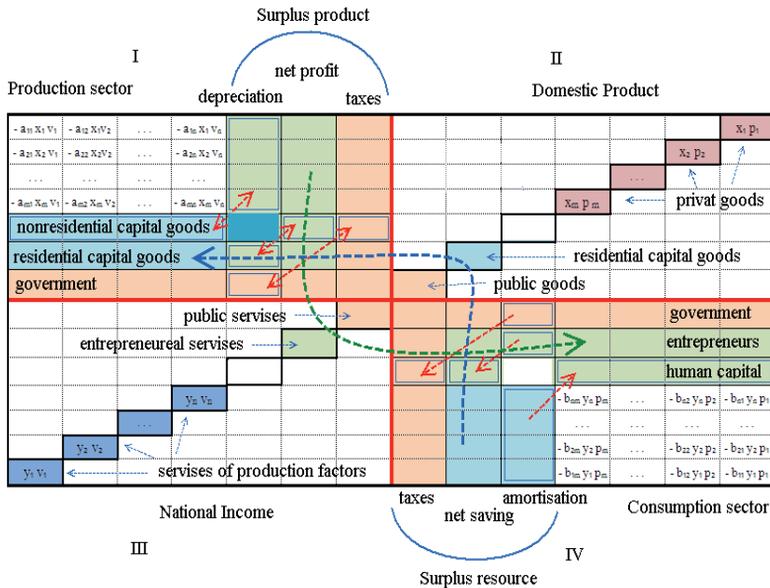


Fig. 2. "Symmetric matrix" of economic flows in closed decentralized economy

During the transformation of primary resources into final products the surplus product is created. The total value of final products (i.e. necessary plus surplus products) is Domestic Product (DP), which is shown in Sector 2. At the same time, the value of this final product equal to incomes that have been created during its production. Sector 3 shows the allocation of value of final product between primary resources, entrepreneurial income and taxes, which add up to National Income (NI). There are empty cells in the diagonals of sectors 2 and 3. In sector 2 this cell indicates that in composition of DP are not considered capital goods, by which has been replaced worn capital because they are not intended for final consumption and are not a final product. And in Sector 3 an empty cell indicates that in

We write out the values of parameters in a compact form, as shown in Fig. 4.

| | A | B | C | D | | | | | DP 9000 | | | |
|------------|--------|-------|--------|-------|-----|------|-------|-------|------------|-------|--------|------|
| I | 5300 a | 800 b | 1000 c | 200 d | | | | | 7300 | | | |
| II | 800 a | 100 b | 170 c | 30 d | | | | | 0 | | | |
| III | 1000 a | 170 b | 190 c | 50 d | | | | | 1410 | | | |
| IV | 200 a | 30 b | 50 c | 10 d | 290 | | | | | | | |
| | | | | | 290 | 10 e | 50 f | 30 g | 200 h | V | | |
| | | | | | | 50 e | 190 f | 170 g | 1000 h | VI | | |
| | | | | | | 30 e | 170 f | 0 g | 800 h | VII | | |
| | 7300 | 0 | 1410 | | | | | 200 e | 1000 f | 800 g | 5300 h | VIII |
| NI 9000 | | | | | E | F | G | H | | | | |

Figure 4. The matrix of numerical values of economic flows

Indications of lines:

Reproduction of products (resource consumption):

- I - reproduction of consumer products;
- II - reproduction of nonresidential durables;
- III - reproduction of residential durables;
- IV - reproduction of public goods.

Reproduction of resources (consumption of products):

- V - reproduction of public services;
- VI - reproduction of entrepreneurial services;
- VII - reproduction of human capital;
- VIII - reproduction of primary resources - services of Labor, Capital, and Land

Indicate the columns:

Productive consumption (reproduction cost of final product):

- A - consumption of services of production factors (of Labor, Capital and Land).
- B - consumption of nonresidential durables (depreciation);
- C - consumption of entrepreneurial services;
- D - consumption of public services.

Consumption as such (reproduction cost of primary resources)

- E - consumption of public goods;
- F - consumption of residential durables (amortization);
- G - incomes of production factors in the process of reproduction of nonresidential durables;
- H - consumption of consumer goods.

To each element of diagonal corresponds row and column. As we see, diagonals of sectors 2 and 3 are symmetrical to each other, as well as sectors 1 and 4 (except disparity of cells II B and VII G, the cause of which will become clearer below). The symmetry is also found in sectors 1 and 4.

The simple reproduction assumes that the following conditions are met:

1) $I = A = VIII = H$. This means that reproduction of consumer products and primary resources (services of labor, land and capital) equals to their consumption.

2) $II = B = (G - 100) = (VII - 100)$. In conditions of simple reproduction as many nonresidential durables (II) are reproduced, as are consumed (B). Value of products consumed in debt (VII) is equal to the value of incomes received during production of nonresidential durables (G).

3) $III = C = VI = F$. Reproduction of residential durables (III) equals to their depreciation (F), and the personal consumption of entrepreneurs (VI) is equal to the value of entrepreneurial services¹⁰⁵ (C).

4) $IV = D = V = E$. The public goods and services are produced as many as are consumed.

In simple reproduction the changes in production and consumption of stocks and the changes of monetary assets of producers and consumers equal to zero. Also, a net increase of all kinds of capital is absent. There is only a compensation of consumed capital. Therefore, the value of product of department II is equal to wearing of nonresidential durables in the production sector (B):

$$II (800 a + 100 b + 170 c + 30 d) = B (800 b + 100 b + 170 b + 30 b) = 1100; \quad (1)$$

The elements of rows of matrix indicate from what components the value of that or another final product is composed. If the value of these components is expressed through the share of final product, we find that at compensating the worn capital the different fractions of product of department II are exchanged for different fractions of surplus product of

¹⁰⁵ i.e. the value of goods, by which society paid for entrepreneurial services .

departments I, III and IV. Thus, there are kept the following proportions of the value of exchanged products:

$$800 \text{ IIa} = 800 \text{ Ib}; \quad (2)$$

100 IIb - остается в подразделении II;

$$170 \text{ IIc} = 170 \text{ IIb}; \quad (3)$$

$$30 \text{ IId} = 30 \text{ IVb}; \quad (4)$$

Although produced nonresidential durables are fully exchanged for the products of other producers and do not enter into the consumption sector, but the products, for which they are exchanged, are intended for consumption. Therefore, in consumption sector is reflected the redistribution of only residential goods (durables and nondurables). Accordingly, parallel with transposition of lines II into column B in the first quadrant of matrix (as a result of replacing the depreciated capital), column G is transposed into the line VII in consumption sector. Column G represents that part of owners' incomes (800 VIIIg), entrepreneurs (170 VIg) and government (30 Vg), which they receive as payment for their services in production of nonresidential durables. This part of incomes corresponds to the value of final products spent in restoration of human capital. In the end, we find that the final product produced in departments I (7300), III (1410) and IV (290) is completely consumed by all consumers (owners, entrepreneurs and government). Also, all services, provided by the owners (7300), entrepreneurs (1410) and government (290), are completely consumed by all producers. And all that is produced in department II (1100) is used by all producers in departments I, II, III and IV. At that the following conditions are satisfied: $NP (9000) = NI (9000)$. That is, the system is in equilibrium and all necessary conditions of simple reproduction are met.

According to the earlier given definition, capital, produced to replace the worn capital, is intermediate product. Because this product is not sold beyond production sector, it is not intended for final consumption of society and is not the final product of society.¹⁰⁶ So it is not included in

¹⁰⁶ In SNA 2008 is pointed "Intermediate consumption does not cover the progressive wear and tear of fixed capital. The latter is recorded as a separate transaction (consumption of fixed capital)". (SNA 2008, p. 24) But this is wrong, because consumption of fixed capital just is "the using up of goods and services when producing this output (intermediate consumption)". But it

composition of DP. On the other hand, since the depreciation allowances do not go beyond production sector either,¹⁰⁷ then, in accordance with definition given above, they are not the primary incomes. Therefore, depreciation in composition of gross profit is not a part of NI.

3. According to this reproduction pattern, in indicator GDP, in that form in which it is calculated in SNA, the value of consumed capital is calculated twice. Once, as the value of capital goods, by which was replaced depreciated capital and, the second time, in composition of value added of all other goods. When calculating according to the value added method, the indicator DP contains the value of depreciation fund, as a part of gross profit and, therefore, as a part of the value added. Accordingly, into the indicator DP should not be additionally introduced the value of those capital goods, which are paid from this fund. All the more, these goods do not represent the final product. GDP indicator distorts the real value of final product of society and overstates it by the amount of consumed capital. The true indicator of final product of society is an indicator that in SNA is calculated as NDP. However, it should be named simply Domestic Product and opt out of division this index on "gross" and "net". In economic sense, there exists only one parameter of Domestic Product, which is equal to National Income.¹⁰⁸

4. Incomes, received in reproduction of depreciated nonresidential durables, are paid from the depreciation fund, therefore, from the profit of all other producers. In natural form these incomes consist of surplus product of all other branches producing residential goods (durables and nondurables). These are those final products, which society sacrifices to those, who were engaged in reproduction of worn-out capital. Value of these products has a dual nature. It is perceived as expenditure for producers of consumer goods, and - as income for those, who reproduces worn out capital. But from the viewpoint of society, this is only a redistribution of value added between producers of different industries.

should be clarify that this intermediate consumption is *consumption in debt*. So the production of capital goods for replacing depreciated capital is the compensation of this consumption in debt by equivalent investments. Accordingly, in contrast to the net investment, the capital goods, replacing depreciated capital, are not the final product of society.

¹⁰⁷ They are transformed into the incomes of agents producing capital goods for replacement of worn-out capital, and only as their income are derived into the consumption sector.

¹⁰⁸ Accordingly, no "problem of realization" in the economic theory arises.

Accordingly, the cost of depreciation is taken into account in DP in the form of depreciation fund, and in NI in the form of income of those producers, who produce the capital goods for recovering the depreciated capital. And as incomes of mentioned producers, ultimately are formed from depreciation funds, the indicators of DP and NI are equal. Therefore, it appears that the DP and NI indicators, calculated by the value added method, simultaneously take into account also a consumed capital without violating the very principle of formation of these indicators.

5. As for the depreciation fund of the department itself, which produces nonresidential capital goods, it does not need special accounting in NI or DP. For the branches, belonging to this department, produce and sell to each other capital goods for replacing worn-out capital. It's like an exchange by parts of surplus products between the branches of this department. So, this part of surplus product does not go beyond this department, do not present a demand for the products of other departments and itself does not become the object of demand of other departments of economy. That is, this is an intermediate product produced and consumed completely within the same department.

6. We studied the conditions of simple economic reproduction. But from the matrix it is easy to understand how to maintain equilibrium in conditions of expanded reproduction. This requires observing of all those proportions between the elements of the matrix, which do not violate the conditions of the internal symmetry between the rows and columns of the matrix.¹⁰⁹ Exactly this symmetry is a condition of economic harmony and sustainable development of economy, toward which the market economy always tends. But, because of the spontaneity of market relations, it achieves it only by chance and cannot stay long in it.

Conclusion

1. According to SNA the value of final product is formed on the basis of value added principle. This means that the indicator DP should not include a value of worn-out capital, because "the concept of added value should exclude charges for consumption of fixed capital. ... Last is the

¹⁰⁹ This process is easily modeled in Excel.

newly created value". (SNA 2008, p. 34). On the other hand, during the year the capital goods were produced, by which worn out capital was replaced. If their value is additionally introduced into the indicator DP, it turns out that the value of National Product is greater than of National Income and besides it contains the value of depreciated capital. Accordingly, there arises a discrepancy between the amount of incomes generated during production of final product and the value of that final product, which must be purchased in the markets by these incomes. It turns out that aggregate supply is greater than aggregate demand, therefore, there is inevitable crises, etc. Here are clearly some unresolved theoretical problems. Despite this, division of indicators DP and NI on the "gross" and "net" takes place both in neoclassical theory and in all versions of SNA (including the SNA 2008).

2. Smith has got round this problem by introducing the concepts of "gross" and "net" national products. From a theoretical point of view it's a mistake. A. Smith spread out on incomes the capital expenditures inside the values of separate products in order to avoid a double counting. By this, within the national product and national income, he did not ignore the expenditures of consumed capital, but only expressed them in a different form. This is fully justified from a scientific point of view. But then, not understanding fully the logic of reproductive process, he spread out the mentioned indicators on the "gross" and "net." That is to the mentioned figures, calculated through using a value added method, and which he called as "net", he once again added the value of consumed capital, receiving "gross" figures. But by this, he once again brought into the "gross" indicators the double counting, which he wanted to get rid of.

Today many articles are devoted to shortcomings of GDP, but not enough attention is paid to its main fault, the fact that it contains a double counting and is logically incompatible with the principle of value added. That is, from a purely theoretical viewpoint GDP as a measure of final product of society is nonsense.

3. The value of produced capital goods, replacing depreciated capital, is contained both in DP and in NI. But it is contained in different forms. In DP, it is contained in the form of depreciation allowances included in the value of final products. At the same, time in composition of DP are not the capital goods themselves, which replace the worn capital, because they do

not apply to the final products and are not intended for the final consumption. In NI, on the contrary, it is included in the form of incomes generated during the production of capital goods replacing depreciated capital. At that, in composition of NI is not included a depreciation fund, because it is not a primary income. And since the incomes, generated during the production of capital for replacing the depreciated capital, eventually are formed just from the depreciation fund, the values of DP and NI are equal. All this is due to the fact that there has been an exchange of capital goods, replacing depreciated capital, on the part of surplus product of other branches relevant to their depreciation allowances. Thus, both Domestic Product and National Income, each according to its nature and without violating the value added principle, reflect the value of capital goods produced for replacement of depreciated capital.

4. SNA is based on this or that understanding of reproduction process. But the conceptual basis of the 2008 SNA (as well as all previous versions), is a neoclassical theory, which does not adequately understand the reproduction process. Therefore, the 2008 SNA gives a distorted view of real parameters of economic processes. The very division of the main macroeconomic indicators of GDP, NDP, GNI and NNI to "gross" and "net" is fundamentally wrong. It follows that classification and formation methods of many other indicators of the SNA also require appropriate adjustments.

5. The reproduction model shows the "necessary" macroeconomic proportions between the volume of production and consumption of goods produced by various departments (i.e. groups of branches) of economy. Macroeconomic equilibrium is not disturbed as long as these proportions are respected. But within each of departments the relatively small deviations from equilibrium in some branches are compensated by opposite deviations - in others. Such deviations are not reflected on the macrolevel, demonstrating the range of stability of macroeconomic equilibrium toward the microeconomic imbalances. "Necessary" proportions of reproduction assume that at the macroeconomic level in economy is produced only what is consumed and is consumed only what is produced.

In a market economy the real proportions of reproduction constantly fluctuate relative to the "necessary" proportions. Behind these fluctuations of market economy it is difficult to see the "necessary" macroeconomic

proportions, which provide full harmony and consistency of economic processes. Nevertheless, these "necessary" proportions exist. They are caused by objective laws. At that they are necessary not only for the market, but also for any economic system. Although the mechanisms to maintain these proportions are different in natural, market and regulated economy. If economic policies would be able to ensure the preservation of these proportions between departments of economy, the economy will be able to completely get rid of cyclical fluctuations and to achieve sustainable growth.

6. In the focus of neoclassical theory is the process of production, but not of reproduction. Reproduction is infinitely renewable, continuous production process. This means that as a result of such production its *premises*, the conditions for continuing production are also reproduced. Therefore, without an understanding of this process it is impossible to explain functioning of economy as integrity, as a living organism.

One of the main conditions, without which production cannot continue, is reproduction of economic subject itself. This already means that it is important to analyze not only production of products, but also their consumption. For consumption of products is reproduction of economic subject and, together with it, is reproduction of economic needs and incentives, which drive the entire economy. It is also important that in the "*consumption of final products*" the theory could recognize the "*reproduction of primary resources*", reproduction of property rights and other necessary conditions of production. For in a market economy, the primary resources are the rights to use the services of production factors, which exist as goods and only owners of production factors can sell them. Therefore, the reproduction of primary resources in a market economy is reduced to the reproduction of property rights on production factors, therefore, to reproduction of subjects of property.

7. The sector of production of final products is the sector of consumption of primary resources and the sector of consumption of final products is the sector of reproduction of primary resources. Each of these sectors produces goods that are consumed by the opposite sector. Therefore, production and consumption sectors are inextricably linked to each other through the exchange of products and resources. Just because of this they are necessary to each other, are necessary parts of a whole. This

whole just dictates the proportions of social production, consumption, distribution and exchange. This whole is a market economy "producing commodities by means of commodities" (P. Sraffa).

8. From the viewpoint of reproduction, as a permanently renewable process, profit is the same surplus of incomes over expenditures for current consumption in production sector, as saving is - in consumption sector. Both of them is a leak from the circulation of "incomes and expenditures" of consumers and producers. But for maintaining a balance in circulation it is necessary that income leakage from each of these two sectors should be offset by inflows of invested funds from the opposite sector. Macroeconomic equilibrium condition is the equality of gross profit and gross saving that are fully invested in physical, human, natural and public capitals.

9. In the process of economic reproduction, in addition to the necessary products and resources, in production sector are reproduced surplus products, and in consumption sector - surplus (saved) resources. However, these sectors do not exchange them on each other like a necessary product and resources. They invest them into each other. This means that each of this sectors, not only provides its goods to other sector for consumption in debt, but also itself consumes in debt the goods from the opposite sector. Income and saving are only money equivalent of surplus product and saved resource. In reality, depreciation and net growth of all types of capital are made by surplus product and surplus resource. Hence, it is clear that the economic equilibrium implies equality of such economic flows, as profits, saving, investment and consumption in debt.

10. If society consumes in debt more than invests in production of capital, it means that it ineffectively use the stocks of resources and products. Ultimately, this means that the investment is made not through abstaining from current needs, but through the restricting of future needs. That is, the burden of investment is shifted to future. But when the future becomes the present, it would appear that either production capacities are reduced or the rate of their growth reduces. The consequence of this is the slowing growth or recession in all economy.

Artificial stimulation of consumer demand allows avoiding the depression. But in doing so, it only postpones depression over time, by this inevitably increasing future depression. This policy does not allow the

market mechanism to dispose of disproportions in economy. Result is an implicit accumulation of internal disproportions. But sooner or later, they appear as a deep and prolonged crisis, during which just happens a restoration of damaged proportions.¹¹⁰

11. By the inability to know the essence of economic processes is caused the fact that the neo-classical theory, though fixes the relationship between saving and investment, but is not aware of relationship between saving and profit as well, between investment and consumption in debt. So, it does not realize connections between all of the above mentioned categories (profit, saving, investment and consumption in debt), which exist within a closed economic system. But without this it is impossible to understand how reproduction performs, how a general equilibrium is formed and how economic cycles arise. Consequently, without an understanding of these processes it is impossible to develop an effective economic policy. (See, Leishvily, 2011, 2012).

References

1. Hawken, P., Lovins, A., Lovins H. (1999). *Natural Capitalism: Creating the Next Industrial Revolution* Little, Brown and Company.
2. Hudson, M. "From Marx to Goldman Sachs: The Fictions of Fictitious Capital, and the Financialization of Industry". *Critique. A journal of socialist theory*, Vol. 38, No. 3, August 2010, pp. 419-444
3. Kalecki, M. (1968). 'The Marxian equations of reproduction and modern economics', in J. Osiatynski (ed.) *Collected Works of Michal Kalecki*, (eds) Vol. II, *Capitalist Economic Dynamics*, Clarendon, Oxford, 1991, pp. 459-466.
4. Keynes, J. (1977). *The General Theory of Employment, Interest and Money*. Moscow, "Progress".
5. Leishvily, P. (2012). *Economic Activity: Teleological Analysis*. NY, Nova Publisher Inc.

¹¹⁰ Something similar happened in the world economy, which just provoked a global economic crisis of 2008. Unrestrained growth of consumption in debt in the last decades in developed countries has led to a violation of proportions between economic flows - profit, saving, investment and consumption in debt. It is in this sense we can say that the blame for the global crisis of 2008 should be assigned to the neoclassical theory, which has long served as the conceptual basis for policies of demand stimulation.

6. Leishvily, P. "The dialectics of economic activity. (In searching of symmetry in economy)," *Georgian International Journal of Science and Technology*, V.3, Issue 3, 2011.
7. Leishvily, P., "Towards the teleological understanding of economic value." *International Journal of Social Economics*. Volume 23, Number 9, 1996, pp. 4 - 14.
8. Leishvily, P. (1990). *The Analysis of Economic Value*. Moscow, "Economika", (in Russian).
9. Luxemburg, R. 1968. *The Accumulation of Capital*. New York and London: Modern Reader Paperbacks.
10. Marx, K. (1992). *Capital*, Volume II. Penguin Classics.
11. Marx/Engels Collected Works (MECW), Progress Publishers, Lawrence & Wishart (London), International Publishers (New York), 1975 - 2005. Vol. 28.
<http://www.marxists.org/archive/marx/works/1857/grundrisse/ch01.htm#2>
12. Moseley, F. (1998). 'Marx's reproduction schemes and Smith's dogma'. In Arthur, C.J. and Reuten, G. (eds), *The Circulation of Capital: Essays on Volume Two of Marx's Capital*, Macmillan, Basingstoke, pp. 159-186.
13. Shultz, T. (1971). *Investment in Human Capital*. N.Y., London.
14. Steadman, I. (1981). 'Ricardo, Marx, Sraffa.' in Steadman, I., Sweezy, P. & others, *The Value Controversy*, London, Verso Editions and NLB, pp. 11-19.
15. Smith, A. (1977). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Moscow, "Sotsecgiz".
16. Stiglitz, J., Sen, A., Fitoussi, J.P., (2009). Report by the Commission on the Measurement of Economic Performance and Social Progress. (www.stiglitz-sen-fitoussi.fr)
17. System of National Accounts 2008. European Commission, International Monetary Fund, Organization for Economic Co-operation and Development, United Nations and World Bank, New York. 2009.
18. Toporowski, Jan. (2002). *The End of Finance: Capital Market Inflation, Financial Derivatives and Pension Fund Capitalism*. Routledge.
19. Trigg, A. (2006). *Marxian Reproduction Schema*. Routledge.
20. Walras, L. (2003). *Elements of Pure Economics*. London, Routledge.

The relativity theory of general economic equilibrium¹¹¹

It is the harmony of the diverse parts, their symmetry, their happy balance; in a word it is all that introduces order, all that gives unity, that permits us to see clearly and to comprehend at once both the ensemble and the details.

Henri Poincare

Symmetry in nature underlies one of the most fundamental concepts of beauty. It connotes balance, order, and thus, to some, a type of divine principle.

Encyclopedia Britannica

When Einstein was working on building up his theory of gravitation ... [he] was guided only by the requirement that his theory should have the beauty and the elegance which one would expect to be provided by any fundamental description of nature.

Paul Dirac

1. Introduction

The modern economy is unable to function normally without the government regulation, without development of effective economic policy. This requires the clear understanding of essence of economic processes, that is requires theoretical knowledge. But the recent worldwide crisis has shown that the economic science still lacks of sufficient knowledge for creation of adequate models, making correct economic predictions and development of effective policy recommendations.

One of the main components of current economic paradigm is the theory of general economic equilibrium and, in particular, the Arrow-Debreu's model, as a modern version of Adam Smith's "invisible hand". It

¹¹¹ Reprinted from *American Journal of Economics* 2017, 7(5): 216-229. DOI: 10.5923/j.economics.20170705.03, with permission from Scientific & Academic Publishing.

has the same value in neoclassical theory, as the labor theory of value in Marx's economic doctrine. As a result of the global economic crisis of 2008-2010, the applied economic models, more or less inspired by the ideas of the Arrow-Debreu model, including DSGE model, have been completely discredited. Moreover, this crisis has revealed not only the ineffectiveness of these models, but the deep crisis itself of neoclassical theory, on ideas of which these models are built.

In spite of the fact that more than century efforts (since Walras) of theorist economists to create an adequate mathematical model of decentralized economic system have not been yet crowned with desirable results, the idea of general equilibrium is so attractive that seemingly economists will not refuse it in the nearest future. This article presents another attempt to clarify this very important scientific problem.

Unlike the natural sciences the theories in social sciences are able to change the way of systems' functioning. An economic reality is formed by collective social actions. However, these actions depend on the knowledge obtained from the cognition of economic reality. "Social sciences like economics differ from the hard sciences in that beliefs affect reality: beliefs about how atoms behave don't affect how atoms actually behave, but beliefs about how the economic system functions affect how it actually functions." [1, p.91] It turns out that, on the one hand, the collective actions depend on the cognition and on the other hand cognition is determined by the collective actions. As long as neo-classics not aware of this circular causality, in their theory, it takes the form of a logical "vicious circle". Therefore, they can neither develop an adequate economic theory nor evolve effective policies. The above mentioned "vicious circle" is brought about by the false methodology of neoclassical theory, according to which it studies only the economic facts, phenomena, but cannot get at the essence, because it does not recognize its existence and does not own the methods of its knowledge. Thus, what happens in the economic reality at the level of empirical facts, a great deal is brought about by the very theories. Clear evidence of this is the crisis of 2008-2010.

However, only the processes occurring at the empirical level (that is, something that is studied by the neoclassical thought) depend on the actions of economic agents. But, the essence of market economy is not determined by these actions. Rather, they themselves are caused by this essence.

Therefore, it is necessary to investigate the essence of economic processes. However, such investigation is possible only by the dialectical method of research, which is radically different from the methods of neoclassical economists.

In result of investigation of the essence, the market economy appears as an operationally closed complex nonlinear system. Like all such systems, it has a number of unique properties, which are studied by second-order cybernetics, constructivism and chaos theory. The study of these properties allows us to give answers to many questions, to create effective mathematical models and to develop adequate economic policy.

2. Dialectics of economic categories

Economic functions, phenomena and categories that express them are closely interrelated and both relative and inseparable as positive and negative: consumption and production, selling and buying, supply and demand, income and spending, profit and saving, utility and costs, investment and consumption in debt, credit and debt, etc. Opposites can confront each other only because they are in relation forming a whole in which one moment is just as necessary as the other. These functions cannot exist without each other. They make a single whole, closed structure, where everything is relative, where one cannot exist without the other, as positive and negative cannot exist without each other.

It follows from the foregoing that for the analysis of market economy it should be presented in the form of an operationally closed complex system. But to identify this operational closeness, first must be identified the dialectical relationships between the fundamental economic categories, which cannot be detected by traditional methods of neoclassical theory. Dialectical analysis of these categories as a necessary precondition for building a “symmetric model” of operationally closed decentralized economic system is given below.

2.1. Production and consumption

1. To identify the essence of market economy you must first reveal the deep inner connection, which exists between production and consumption

in general, and between production and consumption sectors of economy - in particular. The process of production itself is a process of resource consumption, and consumption of resources is production of products.

“Production, then, is also immediately consumption, consumption is also immediately production. Each is immediately its opposite” [2, p.717]. “ ... each of them, apart from being immediately the other, and apart from mediating the other, in addition to this creates the other in completing itself, and creates itself as the other. ... Thereupon, nothing simpler for a Hegelian than to posit production and consumption as identical. [2, p. 719 -720].

So, it's not two different processes, but one and the same process, seen from different points of view, or two different but dialectically connected functions which performed in the process of converting resources into products.

In a market economy, where products and resources take the form of commodities, this process takes the form of transformation of some commodities into others or, if expressed in the sense of P. Sraffa, “the production of commodities by means of consumption of commodities.” Due to this circumstance the production sector and consumption sector are also inseparably linked. Although they are “in the external relation to each other” (Marx), each of them by itself is a unity of production and consumption. In this sense, they are identical. But since each of them consumes what the other produces, then in this sense, they are also opposed. They are identical and opposite simultaneously and form a dialectical contradiction, just that which drives the economy.

2. The matter is that for production entrepreneurs buy from owners not the production factors (Labor, Land, Capital), but only the rights of temporary use of services of these production factors. Payments for them are wage, interest and rent. And entrepreneurs sell to them (and to each other) entrepreneurial services and make a profit. Primary economic resources for entrepreneurs are just the right of temporary use of the services of production factors, which they buy from their owners.¹¹² But if

¹¹² The separation of production factors and their services was particularly important for Walras. He believed that without this it is impossible to understand neither pricing, nor capital markets or problem of

this is so, regardless of whether production factors themselves are reproducible or irreproducible, in all cases, the primary resources *as commodities* are *reproducible goods*. Reproduction of primary resources as commodities is reduced to reproduction of life of owners of production factors, only which have the right to sell these “rights of use.” The owners sell the services of production factors and keep them (production factors) as a permanent source of incomes just because they do not sell the production factors themselves. Thus, the approach of Marx to the question of buying the right to use the labor force in the market economy should be extended to other production factors.

The difference between the reproduction of owners of labor force and of owners of other production factors is only that in the former case a labor force, as the ability to work, is reproduced too. For it is the ability of the owner. But in case of owner of other production factors, reproduction of owner does not mean the physical reproduction of the Capital or of the Earth. In this case, the property exists separately from the owner. Therefore, the reproduction of owner means the reproduction of rights, but does not mean the reproduction of those useful properties of production factors for which these rights are purchased. (It should also be noted that, of course, nothing prevents producer to buy the title of property too. But in this case he acts not as a producer but as an owner. This is just another function that can be combined with the function of producer.) This means that the reproduction of primary resources is reduced to consumption of consumer goods, i.e. of final products, needed for owners' life. [5], [6], [7], [8]. This is the reproduction of resources not in a physical, but in economic sense. Of course, in the physical sense, the amount of reproduced resources (services of production factors) depends on the amount of production factors, but not on the amount of products consumed by its owner. But, after all, economics is interested exactly in economic sense of economic processes. Also, production of final products is of interest for economics

interest. [3]. Similar is Marx's position regarding the delimitation of labor force as a production factor, and a labor as its service. He writes: „He must constantly look upon his labour-power as his own property, his own commodity, and this he can only do by placing it at the disposal of the buyer temporarily, for a definite period of time. By this means alone can he avoid renouncing his rights of ownership over it” [4, p.178]. “Therefore the labour-time requisite for the production of labour-power reduces itself to that necessary for the production of those means of subsistence; in other words, the value of labour-power is the value of the means of subsistence necessary for the maintenance of the labourer” [4, p.181].

not as a physical or technological process, but as an economic process. Namely, it is interested in production process of final products *as commodities*, which belong to their owners, have social utility, are destined for sale, etc.

3. It follows that the sphere of consumption of final products is the sphere of reproduction of primary resources and the sphere of production of final products is the sphere of consumption of primary resources. Each of these sectors produces goods that are consumed by the opposite sector. A “resource” of one side is a “product” for the other side.¹¹³ Just because of this contradiction they become necessary for each other, becoming the necessary parts of wholeness. This wholeness, dissected inside into separate branches, just dictates the proportions of social production, consumption, distribution and exchange. This whole is a market economy “producing goods through the consumption of goods.” And the relations between the production and consumption sectors, as the parts of a whole, take the form of market exchange.

2.2. Surplus product and surplus resource

4. The exchange ratios (prices) in the market are set so that only part of final product is exchanged for primary resources needed to produce that product. That is, the value of resources, spent in production sector, is equal to the value of only one part of manufactured product. That part of this product, which is exchanged for resources necessary for reproduction of whole product, is a *necessary product*. The value of the rest part of created product is *surplus product*, sales of which makes a profit and is the reward for entrepreneurial risk.¹¹⁴

¹¹³ As we see the “products” and “resources” are relative concepts. The economic goods simultaneously are the products for their producers and the resources for their consumers. Therefore, it is necessary to give a clear criterion for distinguishing these categories. For both production and consumption sectors “primary resource” is a good, which is consumed in given sector, but is produced - in another. The “final product,” on the contrary, is produced in this sector and consumed in another. “Intermediate product (resource)” is produced and consumed in one and the same sector. This also implies that primary income of one sector is the spending of opposite sector for the purchase of goods produced in the former sector. Accordingly, for production sector the primary incomes are incomes from the sale of final products, but for consumption sector - incomes from the sale of services of production factors (i.e. salary, interest, rent and profit).

¹¹⁴ “... Sraffa’s work ... provided a basis for a definitive demonstration that the theoretical analysis of wages, profits, and prices, within a surplus approach, was entirely independent of any ‘labour theory of value’ and, indeed, that any labour theory is necessarily a barrier to the development of a surplus-based

Similarly, only a part of primary resources is exchanged for final products required for reproduction of these resources (that is, to satisfy the owners' current living needs). This is the *necessary resource*. The rest part of resources is the *surplus* or *saved resource*, the sale of which generates owners' saving and which is the reward for his abstention and frugality. The more the owners' abstention is the more resources are saved from their current consumption. The total amount of reproduced resources depends only on the amount of production factors, which are in owners' possession, but not on the volume of their consumption. [5], [6].

5. Surplus value is created both in the process of transformation of final products into the primary resources and in the transformation of primary products into the final products. In the first case it is done through abstinence, in the second - through entrepreneurship. Producer sells surplus products and makes profit and the owner sells the surplus (saved) resources and makes saving. Respectively, income and saving are the net income of economic subjects, the difference between incomes and expenditures which they received through entrepreneurship and abstinence.¹¹⁵

6. Unlike the consumption of usual goods, consumption of capital goods is the consumption in debt, during which the capital wears out. For restoration of worn and for net increase of capital, in parallel to consumption, it is necessary to set aside from incomes the means for investment in production of new capital. The only source of investment in physical and human capital for producers is the gross profit, and for consumers - gross saving. But as the gross profit and gross saving are generated from surplus product and surplus resource, in reality the surplus product and surplus resources are invested. Money itself cannot produce the capital goods. It requires products and resources. Investing just means that part of the products and resources is used not for production and consumption of current consumer goods, but for production and subsequent consumption of capital goods. Investment of profits and savings in physical

theory" [9, p.12-13]. "... a surplus approach to profits and prices has absolutely no need of any 'labour theory of value'" [9, p.16].

¹¹⁵ At that, since the primary resources exist only in the form of production factors' services, i.e. in the form of a process, which occurs over time (which is irreversible), the saving of these resources is possible only in the form of money obtained by selling them or in materialized form (work in process, finished products). In other words, saving of primary resources means abstaining not from their use at all, but from their use to meet current needs and, therefore, implies their use for investing them in one form or another.

and human capital is only a monetary expression of real investment of surplus products and surplus resources.

2.2. Profit and saving

1. The transformation of some goods into another in market economy takes place. In result of these transformations and further exchange of goods the profit remains in production sector, and the saving remains in consumption sector. But since the production and consumption sectors are interconnected through market exchange, then profit and saving are also internally interconnected. In fact, the alternation of incomes and expenditures takes place in both production and consumption spheres. Producers' incomes are consumers' expenditures and producers' expenditures are consumers' incomes. Accordingly, the difference between incomes and expenditures takes for them the mirror opposite forms of profit and saving. That is why the gross profit and gross saving are internally interconnected. As soon as incomes of some are expenditures of others and vice versa, the profit and saving cannot be independent variables. Changing of exchange proportions between the final products and primary resources (i.e. their relative prices) has effect on the profits and saving in opposite way. Naturally, in conditions of equilibrium prices the gross profit and gross saving should match. [5], [6], [7].

2. Unlike consumption of owners, entrepreneurs' consumption is consumption in debt. From economic point of view the entrepreneurs invest funds from their monetary assets for his own subsistence without knowing in advance whether its consumption expenditure will be compensated by the results of his activity. That is, he consumes in debt from future income.

3. Producer, thanks to expenditures, receives incomes and the consumer - thanks to incomes carries expenditures. Producers first carry expenditures, then receive incomes. Consumers – vice versa. A producer makes economic decisions regarding expenditures depending on the incomes expected in future, but a consumer - depending on the previously received incomes. Therefore, the profit making is associated with entrepreneurial risk and the making of saving - with thriftiness.

4. Society as a whole, as well as each economic subject simultaneously is producer and consumer. Therefore, in both capacities it simultaneously is both entrepreneur, and saver. Producer is not only an entrepreneur, but also a “saver,” because he does not spend received income entirely for the continuation of production but saves a part of income. Just this «saving» is withdrawn profit. And making decision about spending, producer calculates not only profit expected from future incomes, but also - what

“saving” will remain from previous incomes. Also, consumers are not only saver, but also “entrepreneur.” For taking decision regarding the current expenditures he takes into account not only which saving will remain from the past income at the end of the current period, but also whether there will be excess of future income above the current expenditure, i.e. whether will be “profit.”

Therefore, all economic actors make each decision regarding expenditures taking into account both received and expected income. Consequently, the decision is taken from the position of both savers and entrepreneurs. Since in general case the excess of expected income above current expenditure is his profit, then excess of already received income above the current expenditures is saving. And in the alternation of incomes and expenditures from subject’s position depends whether the difference between incomes and expenditures will be considered as profit, or - as saving. That is “entrepreneur” and “saver,” “profit” and “saving” are the same reflective concepts as the concept of “producer” and “consumer” [6, p.98-99].

2.3. Investment and consumption in debt

Generally investment means the transformation of income into capital. But naturally, only that part of income can be transformed in capital, which is not consumed, i.e. saving or profit. But money cannot produce real capital goods (whether physical or human capital). Production of real capital goods requires real goods (products and resources). It is possible to transform into capital goods only those goods, which are not used in current consumption. Such are only surplus products and surplus (saved) resources. Investment as a function implies the transfer of surplus goods *on a credit basis* to the direct producer for production of (physical or human) capital in the hope of obtaining benefits in the future. Accordingly, the production of capital implies the *consumption* of surplus goods *in debt*. These functions of investment and production of capital are different functions and can be performed by either different, or the same actor. But in any case, *investment implies consumption in debt* and one is impossible without another. The economic sense of this process is that the investor provides his resources in credit to producer of capital, but the producer consumes these resources in debt. [6], [7].

2.4. Needs, utilities and costs

1. Economic needs are only "solvent" needs. If the needs cannot be satisfied because of lack of resources, we cannot regard them as economic needs, as the real incentives of economic activity. Economic utility is the ability of limited resources to satisfy the solvent needs of people. Economic utility and needs are correlated concepts. In the process of satisfying needs, these resources are consumed, i.e. they disappear as a utility. But the subject perceives disappeared utility as costs. Consequently, the utility of limited resources is the ability of those resources to be spent usefully, the ability to be transformed into costs. The more deficient the resources are the more carefully man regards them, the more economic utility they represent before satisfaction of his needs, and the more economic costs - after satisfaction. The costs, as well as the utilities, are not the objects. Economic needs, utilities and costs are the specific economic attitudes of subject to objects. These concepts imply each other, but without each other they lose any sense. However, because they imply each other internally, and each transforms into the other in the process of economic activity, so it is clear that there exists something else behind them, that they are different forms of manifestation of some third concept, general for both of them, which integrates them into itself as the different sections of a single whole. This third concept, which synthesizes them, is "economic value". Since economic values are a unity of utility and costs, the market prices in which they are manifested also reflect the unity of goods and the costs of their production.

2. On the systemic level, both resources and products are essentially the same limited goods, and utility and costs are their economic values, as man's specific attitude to these goods. But on the level of separate acts of activity, the limited goods inevitably appear in the form either of a resource or of a product, and man regards them either as utilities, or as costs. So, the value of one and the same scarce good appears before the consumer in the form of economic utility and before the producer of this good in the form of economic costs. However, people are consumers and producers simultaneously. This is stipulated by the logic of economic activity. And the products themselves are resources for producing other products and so on. Accordingly, utilities are destined to be transformed

into the costs, and the costs are destined to create utilities. Because of this, not only does the value of resources (including the primary resources) stipulate the value of products (including the final products), but, conversely, the value of products also stipulates the value of resources.

If you collect together all above reasoning and recognize the dialectics of economic processes in the context of the integrity of a decentralized economic system, we inevitably come to the understanding that the economy is a closed, self-organized system of recursive processes. Due to the circular organization of economic processes such systems have a number of unique properties that have been well studied in chaos theory, constructivism and second-order cybernetics. This allows to appeal those unique studies for explaining economic processes in the format of interdisciplinary analysis. That's why the interdisciplinary analysis of these processes can give us the answer to many unanswered questions in economics.

The operational closeness of market economy becomes particularly evident through mathematical modeling.

3. “Symmetric model” of economic equilibrium

3.1. Circular organization of economic processes

1. This model is a model of an ideal equilibrium state of the economy, which shows how the economic forces arise, where directed and how they interact in such a way, that they provide the homeostasis of the economic system. So it is a model of the attractor of economic system, the state to which the system always aspires, but never reaches it because of the deviating influence of external and internal factors. Today, the very idea of economic equilibrium is increasingly being attacked by economists and more and more attention is being paid to disequilibrium models. But imbalance as such in any case implies equilibrium as a potential state, only relative to which it can exist. Economic equilibrium does not exist in fact, but potentially exists always, as an attractor, without which the system will lose integrity and fall apart. We cannot understand how a real disequilibrium economy functions if we do not understand how the forces

that constantly push it to equilibrium arise and ensure order in the organization of economic life of society. But to create an adequate equilibrium model, it is necessary to present the market economy as a complex, non-linear, functionally closed and causally open system of economic actions. The self-organization of a market economy is carried out through the positive and negative feedbacks, the circular organization of economic flows and recursive processes. Recursive processes in the economic system, as well as in other complex nonlinear dynamical systems, generate "eigenvalues" ("fixed points"). These "eigenvalues" are the equilibrium prices and quantities to which through the recursive processes tend the actual market prices and quantities, thus providing a tendency of the system to the general equilibrium.

2. Here is considered a decentralized closed economic system in which final products (m) are produced through consumption of primary resources (n) and primary resources are reproduced through consumption of final products. In order to simplify the model, the intermediate products aren't considered. The market economy is represented as a system in which "production of commodities by means [of consumption] of commodities" takes place (P. Sraffa). Division of goods into products and resources is conditional. Therefore, all goods are the products for their producers and resources - for their consumers. The sector 1 produces products that are resources for the sector 4. In result of consumption of these resources, the sector 4 produces products that are resources for the sector 1. Exchange of goods happens in the markets (sectors 2 and 3). All goods are produced by ones and consumed by others, some sell and others buy. Therefore, all agents are both – producers and consumers, sellers and buyers. Each of them receives incomes and bears expenditures, and the difference between revenues and expenditures is used for investment in physical and human capital.

| Sector 1 | | | | 2 Sector | | | |
|-----------------|-----------------|------|-----------------|----------------|-----|------------------|------------------|
| $-a_{11}x_1v_1$ | $-a_{12}x_2v_2$ | ... | $-\alpha_1 A_1$ | | | | x_1p_1 |
| $-a_{21}x_2v_1$ | $-a_{22}x_2v_2$ | ... | $-\alpha_2 A_2$ | | | x_2p_2 | |
| ... | ... | ... | ... | ... | | | |
| $-a_{m1}x_mv_1$ | $-a_{m2}x_mv_2$ | ... | $-\alpha_m A_m$ | $x_m p_m$ | | | |
| | | | P' | $I = S$ | | | |
| | | | $P = Q$ | S' | | | |
| | | | $y_n v_n$ | $-\beta_n B_n$ | ... | $-b_{n2}y_2 v_n$ | $-b_{n1}y_1 v_n$ |
| | | | | ... | ... | ... | ... |
| | $y_2 v_2$ | | | $-\beta_2 B_2$ | ... | $-b_{22}y_2 p_2$ | $-b_{21}y_2 p_1$ |
| $y_1 v_1$ | | | | $-\beta_1 B_1$ | ... | $-b_{12}y_1 p_2$ | $-b_{11}y_1 p_1$ |

Sector 3

Sector 4

Table 1. Matrix of closed economic system

- x_i - goods produced in sector 1 (consumed in sector 4), $i = 1, 2, \dots, m$;
- p_i - value of goods x_i (equilibrium price), $i = 1, 2, \dots, m$;
- y_j - goods produced in sector 4 (consumed in the sector 1), $j = 1, 2, \dots, n$;
- v_j - value of the goods y_j (equilibrium price), $j = 1, 2, \dots, n$;
- a_{ij} - consumption of recourse j for production of unit of product i ;
- b_{ji} - consumption of product i for reproduction of unit of recourse j ;
- α_i - the rate of surplus product (save resources) in the production of good i ;
- β_j - the rate of surplus product (save resources) in the production of good j ;
- P** - gross surplus product (save resources) in the sector 1;
- S** - gross surplus product (save resources) in the sector 4;
- Q** - gross consumption in debt;
- I** - gross investment;
- S'** - saving from consumption in debt;
- P'** - surplus product (save resources) in the production of investment goods.

The price of the purchased goods for consumers is monetary expenditures caused by the purchase of one good. Therefore, in this model, the incomes and prices paid from these incomes have opposite signs. This reflects the fact that in result of buying, the prices of goods “neutralize” incomes, at the same time, the utility “neutralizes” (satisfies) the need as a result of its consumption. The elements of diagonal of matrix simultaneously show production value of goods as well as their consumption value. As production value it is extensive magnitude and is composed from (objective and subjective) cost elements, which are shown in the rows of matrix. But as a consumption value (utility), it is intensive magnitude and as such it does not **composed** by any elements, but itself **decomposed** on the elements of matrix’ columns. Since the elements of matrix simultaneously are the elements of both rows and columns, they simultaneously reflect both costs and utility. Lines show the elements of

the cost of production of goods, and the columns - the distribution and consumption of the same goods in the production processes of other goods. Therefore by horizontal summation we get the social cost of products, supplied in the market. By vertical summation we get the amount of money that society has paid for their buying and that expresses the social utility of the total output of industry.

In the matrix the resources clockwise are transformed into products, which in turn are consumed as resources for the production of other products, etc. The money incomes are transformed counterclockwise into money expenditures, which in turn are themselves the incomes and then again are transformed into expenditures, etc.

Each element of the diagonal aligns the rows and columns of the matrix. Sum of elements in each row of the sector 1 is equal to the sum of elements of corresponding columns of sector 4, and the sum of elements in each row of the sector 4 is equal to the sum of elements of corresponding columns of sector 1. That is, in a closed economic system under equilibrium conditions, is produced only what is consumed and is consumed only what is produced. This correspondence between production and consumption means that for each commodity (products and resources), demand and supply, selling and buying fully correspond to each other.

2. Description of the model: Constants: a_{ij} , b_{ji} . Variables: x_i , y_j , p_i , v_j , α_i , β_j .

1) If all the agents are presented as producers, then:

$$A_i = \sum a_{ij} x_i v_j; \quad i = 1, 2 \dots m; \quad j = 1, 2 \dots (n - 1); \quad (1)$$

$$B_j = \sum b_{ji} y_j p_i; \quad i = 1, 2 \dots (m - 1); \quad j = 1, 2 \dots n; \quad (2)$$

$$p_i = (1 + \alpha) \sum a_{ij} v_j; \quad i = 1, 2 \dots m; \quad j = 1, 2 \dots (n - 1); \quad (3)$$

$$v_j = (1 + \beta) \sum b_{ji} p_i; \quad i = 1, 2 \dots (m - 1); \quad j = 1, 2 \dots n; \quad (4)$$

$$y_j = \sum a_{ij} x_i; \quad j = 1, 2 \dots (n - 1); \quad i = 1, 2 \dots m; \quad (5)$$

$$x_i = \sum b_{ji} y_j; \quad i = 1, 2 \dots (m - 1); \quad i = 1, 2 \dots m; \quad (6)$$

$$\alpha_0 = \frac{\sum_i \alpha_i A_i}{\sum_i A_i}; \quad i = 1, 2, \dots, m; \quad (7)$$

$$\beta_0 = \frac{\sum_j \beta_j B_j}{\sum_j B_j}; \quad j = 1, 2, \dots, n; \quad (8)$$

$$x_i \geq x_{\min}; \quad i = 1, 2, \dots, m; \quad y_j \leq y_{\max}; \quad j = 1, 2, \dots, n. \quad (9)$$

2) If all the agents are presented as consumers, then:

$$A_i = x_i p_i; \quad i = 1, 2, \dots, m; \quad (10)$$

$$B_j = y_j v_j; \quad j = 1, 2, \dots, n; \quad (11)$$

$$p_i = \sum a_{ij} v_j / (1 - \alpha_i); \quad i = 1, 2, \dots, m; \quad j = 1, 2, \dots, (n - 1); \quad (12)$$

$$v_j = \sum b_{ji} p_i / (1 - \beta_j); \quad i = 1, 2, \dots, (m - 1); \quad j = 1, 2, \dots, n; \quad (13)$$

$$y_j = \sum a_{ij} x_i; \quad j = 1, 2, \dots, (n - 1); \quad i = 1, 2, \dots, m; \quad (14)$$

$$x_i = \sum b_{ji} y_j; \quad i = 1, 2, \dots, (m - 1); \quad i = 1, 2, \dots, m; \quad (15)$$

$$\alpha_0 = \frac{\sum_i \alpha_i x_i p_i}{\sum_i x_i p_i}; \quad i = 1, 2, \dots, m; \quad (16)$$

$$\beta_0 = \frac{\sum_j \beta_j y_j v_j}{\sum_j y_j v_j}; \quad j = 1, 2, \dots, n; \quad (17)$$

$$x_i \geq x_{\min}; \quad i = 1, 2, \dots, m; \quad y_j \leq y_{\max}; \quad j = 1, 2, \dots, n; \quad (18)$$

As we see, according to these formulas in both cases, the equilibrium price and the equilibrium quantity of goods are formed on the basis of recursive processes, and the equilibrium condition is equality: $P = Q = I = S$, and hence equality of average rate of profit α_0 and the average rate of saving β_0 . Under competitive conditions α_0 and β_0 strive for equality and thereby cause a tendency toward equality $P = Q = I = S$ and thus to equilibrium of entire system. (Below, sector 1 is denoted as the *production sector*, and the sector 2 as the *consumption sector*. Consequently, the value embodied in surplus product (column n in 1 sector) in monetary terms takes the form of *gross profit*. But the value embodied in saving resources (column m in 4 sector) in monetary terms takes the form of *gross savings*.)

Formulas 3-6 and 12-15 are obtained by summing the elements of the rows and columns of the matrix. The sum of production spending and profits compose the product price and the sum of consumer spending and savings compose the price of resource. Quantity of goods sold in the market equal to the total quantity of invested and consumed goods. At that, the minimal level of products' output is determined by the minimally acceptable level of society's consumption. Similarly, the maximum level of reproduction and realization of resources is determined by the total amount of production factors (respectively, their services) existing in society.

Technological coefficients are the coefficients of transformation of primary resources into final products, and consumer coefficients – of final products into the primary resources. Prices are coefficients of exchange of money for goods and, accordingly, transformation coefficients of income into expenditures and expenditures - into incomes.

Changes in the technological and consumption coefficients are caused by non-systemic factors such as development of technologies, science and education, changes in consumption preferences, in propensities to save and propensities to entrepreneurial risk, etc. But the prices and quantities of goods, the rates of profit, saving and interest are changed due to intra-system processes. Self-regulation of these prices, quantities and rates are caused by operational closeness of economic system and by recursive processes occurring in it. It provides a general tendency of system to the equilibrium. But environment causally effects on the processes of production and consumption. Changes in technological and consumption coefficients, caused by exposure of environment, determine the permanent deviation of the system from equilibrium. That is, the economic system is operationally closed but causally open, which causes many of its specific properties. All the above mentioned parameters are interrelated. Accordingly, production, consumption, exchange and distribution are also organically interconnected within a system.

3. Under the conditions of equilibrium the gross profit is equal to gross consumption in debt ($P = Q$), and gross savings - to gross investment ($S = I$). Under equilibrium conditions, the leakage from producers' incomes in the form of withdrawn profits P , must be compensated by the inflow of funds in the form of loans for productive investments I . But leakage of funds from consumers' incomes in the form of savings S must be offset by

inflows of funds for the financing of consumption in debt Q . That is, in the market of resources the condition of maintenance of demand at the appropriate level is the equality $P = I$, but on the market of products such condition is the equality $S = Q$. Otherwise, the balance between supply and demand (at current prices) is violated in the resource market as well as on the product market. But what is leaked from the sector 4 in the form of savings S under equilibrium conditions must be equal to that, which through the money market inflows into the sector 1 in the form of productive investments I . And what is in the form of withdrawn profits P outflows from the sector 1, should be equal to that which in the form of consumption in debt (consumer investment) Q inflows into the sector 4. This is reflected in the model, according to which production investments (investments in physical capital) I and gross savings S correspond to the same element of diagonal of the sector 2. Therefore, under equilibrium conditions $I = S$. Similarly, the consumer investment (investment in human capital, or consumption in debt) Q and gross profit P correspond to the same element of diagonal of the sector 3. Therefore, $P = Q$.

The equilibrium condition is the equality $P = S = I = Q$. So it must have equality $\alpha_0 = \beta_0 = r_0$, where α_0 , β_0 and r_0 , respectively, represent the average rate of profit, saving and interest. However, it should be noted that in contrast to all other commodity and money flows, transforming of P into Q , and transforming of S into I occurs not on the basis of equivalent exchange of goods, but on the basis of credit relations, in which the interest rate r_0 performs the balancing function.

Violation of equilibrium conditions in a system violates the equality between the sum of the elements of rows and corresponding columns. This leads to a bifurcation of the elements of diagonal. Discrepancies appear between production and consumption, supply and demand, cost and utility, production and consumption values. Deficient and surplus goods appear. In the markets of various goods will appear the unsold goods or idle money. Some get additional profit at the expense of losses of others or lost profits. This creates incentives to restore equilibrium in the markets. At the same time, the imbalance between any one pair of row and column, inevitably gives rise to an imbalance between other pairs of rows and columns. General economic equilibrium will not be achieved until reaching equality $P = S = I = Q$, which means that $\alpha_0 = \beta_0 = r_0$.

It is also noteworthy that the macro-economic parameters in the model are formed directly on the basis of microeconomic processes. There is no break between the micro and macro processes. The system has infinitely many solutions.

4. Circular organization of economic processes

4.1. Decentralized economy as a cybernetic system

1. The "Symmetric model" is based on a dialectical analysis of the fundamental economic categories. This analysis has revealed such hidden relationships between economic phenomena and processes that are not visible at the empirical level. From the "symmetric model" reflecting these relationships, it is clear that economic processes form a closed system, and the functions performed by these processes are interdependent and have a circular organization.

From a purely scientific point of view it is essential that the model of an economic system, built on the basis of half-forgotten and completely ignored by economists dialectical analysis and conclusions, drawn from the analysis of this model, correspond to the provisions and principles of second-order cybernetics. Below are a few quotes regarding the circular processes from the book «Understanding Understanding» of the founder of second-order cybernetics H. von Foerster:

"It seems that cybernetics is many different things to many different people. But this is because of the richness of its conceptual base; and I believe that this is very good, otherwise cybernetics would become a somewhat boring exercise. However, all of those perspectives arise from one central theme; that of circularity. When, perhaps a half century ago, the fecundity of this concept was seen, it was sheer euphoria to philosophize, epistemologize, and theorize about its unifying power and its consequences and ramification on various fields" [10, p.288].

The formulas of "symmetric model" show that the intra-system processes in the economy have the recursive nature. The equilibrium prices and equilibrium quantities in this model represent a closed system and are

set by recursive operations. In this regard, very interesting is H. von Foerster's idea. In the above-mentioned book, he cites the following equations: $x' = D(x, u)$, $u' = S(u, x)$, $x_{t+1} = D(x_t, u)$, and $u_{t+1} = S(u_t, x)$, and then writes:

“Those of you who are occupied with chaos theory and with recursive functions will recognize at once that these are the fundamental equations of recursive function theory. Those are the conceptual mechanisms with which chaos research is conducted; it is always the same equations over and over again. And they give rise to completely astonishing, unforeseen operational properties. Viewed historically, even early on one noticed a convergence to some stable values. An example: if you recursively take the square root of any random initial value (most calculators have a square root button), then you will very soon arrive at the stable value 1.0000. . . . No wonder, for the root of 1 is 1. The mathematicians at the turn of the century called these values the “Eigen values” of the corresponding functions.” [10, p.315].

In the "Symmetric model" such "Eigenvalues" are the equilibrium prices and the equilibrium quantities of goods, to which the actual prices and quantities tend. Mathematicians call the "eigenvalues" also "fixed points", which are used in the Arrow-Debreu model, game theory, etc.

„Through this recursive closure and only through this recursive closure do stabilities arise that could never be discovered through input/output analysis. What is fascinating is that while one can observe these stabilities it is in principle impossible to find out what generates these stabilities. One cannot analytically determine how this system operates, although we see that it does operate in a way that permits us to make predictions.” [10, p.317].

From the analysis of “Symmetric model” it may be concluded that the system tends to equilibrium in accordance with its internal nature. However, it is impossible to know exactly in which way this equilibrium has been achieved, which specific processes lead to it in a particular case,

since one and the same state of equilibrium can be achieved by an infinite number of ways.

As we can see, the mechanism of self-regulation of market economy is based on a recursive process in a operationally closed system. To find out this has become possible only after the market economy has been presented as a operationally closed system of economic processes. But to present it in this form has become possible only in result of dialectical analysis of economic phenomena. This fact once again confirms the importance of the dialectic method for understanding how a decentralized economy operates.

2. After the beginning of the 50s, when K. Arrow and J. Debreu published their model of general economic equilibrium, it has become an integral part of the neoclassical paradigm. But critics of this model correctly point out that it is very abstract and does not reflect the reality. Indeed, the assumption underlying the model, and the conclusions reached are absolutely unacceptable for unbiased scientific analysis.

“The Arrow-Debreu paper provided a rigorous proof of the existence of multimarket equilibrium in a decentralized economy, This proof was rigorous by mathematical standards but it required some assumptions that clearly violated economic reality; for example, that there are forward markets for every commodity in all future periods and for all conceivable ... In short, the Arrow-Debreu proof had more to do with mathematical logic than with economics.” [11, p.3].

At that, the model does not display how the system approaches to equilibrium. Moreover the model implies the possibility of existence of equilibrium in a certain moment of physical time. In the Arrow-Debreu model „... time is treated in a way analogous to one aspect of its treatment in Newtonian physics. In classical mechanics, we say that time has been geometrized or spatialized in that the time coordinate is treated just like one of the other coordinates.“ [12, p.19]. Therefore it has become necessary to know the initial state, from which the system starts to move toward equilibrium; to know the products, that will be produced in the future, and resources for their production; to know the consumers’ future needs, casual

circumstances in the future, etc. That is, it became necessary of absurd assumptions.

As R. Heilbroner rights: „The Arrow-Debreu formulation fails to deal with the need to enumerate all such contingent markets – for example, the preference map for umbrellas next Tuesday. Without such a complete enumeration, the general equilibrium specification cannot be complete, and there can be no assurance that even minute omissions may not give rise to considerable variations in the overall ordering.“ [13, p.128]. In addition, adds R. Heilbroner, there is another conceptual key problem, which concerns the circularity: „The array of prices and quantities that emerges from the interaction of monads arises from the tastes and capacities of the actors. These in turn reflect their initial endowments of income and preference. Circularity enters insofar as the division of income into wages and profits, which certainly shapes the propensities of the actors, is itself the consequence of the functional division of income in the preceding period. This endless regress deprives the array of simultaneous equations of the very thing needed to establish order – namely, a knowable, objective starting point or premise.“ [13, p.129].

3. These problems do not occur in the "Symmetric model" as the understanding of equilibrium in it differs from its understanding in the Arrow-Debreu model. The equilibrium is understood as a state in which the system only tends from any actual state due to an immanent logic of intra-system processes, but never reaches it because of destabilizing factors of the environment. These factors can be: natural conditions, social processes, new technologies, changes in consumer preferences, etc., the influence of which in the model is reflected in the changes of technological and consumption coefficients. Therefore, it is not necessary to know the initial conditions in the past or what will be in the future technologies, preferences, environmental conditions and other unforeseen circumstances that cannot be known in advance. Thus, the aforementioned "completeness", about which R. Heilbroner writes and which is necessary for identifying the "fixed points" (equilibrium prices) initially is already meant by "Symmetric model", because due to the operational closeness it already implies in itself all possible sets of equilibrium prices and quantities at the given restrictions. As for circularity (according to which the distribution of current incomes depends on their distribution in the

previous periods, and which, as R. Heilbroner writes, "deprives the array of simultaneous equations of the very thing needed to establish order – namely, a knowable, objective starting point or premise."), according to a recursive models in general this fact is not a flaw, but a significant advantage of "Symmetric model". Regarding a circularly organized processes Foerster writes:

“First of all, the idea of closed circular causality has the pleasant characteristic that the cause for an effect in the present can be found in the past if one cuts the circle at one spot, and that the cause lies in the future if one does the cutting at the diametrically opposed spot. Closed circular causality, thus, bridges the gap between effective and final cause, between motive and purpose. Secondly, by closing the causal chain one also appears to have gained the advantage of having gotten rid of a degree of uncertainty: no longer does one have to concern oneself with the starting conditions—as they are automatically supplied by the end conditions. ... What also causes complication is that now the suspicion will be raised that the whole matter of circular causality might be mere logical mischief. We already know this from the theory of logical inference—the infamous vicious cycle: cause becomes effect and effect becomes cause. It is my intent not only to liberate the “circulus vitiosus” from its bad reputation, but to raise it to the honorable position of a “circulus creativus”, a creative cycle.” [10, p.230].

Therefore, although the "symmetric model of" is a static model, but the dynamics implicitly imply in it, because, as was noted, recursive processes lead the system to an equilibrium (as to its "attractor") from any initial state. But because of the permanent impact of random external factors the technological and consumption coefficients are constantly changing. So the general equilibrium is never achieved. This unceasing movement toward equilibrium, which cannot be reached, just is that "dynamics", which is implicitly assumed in this seemingly static model.

4.2. Problems caused by violation of feedbacks

1. This model allows us to understand the reason for the slowdown in economic growth. Competition itself generates monopolies that block the self-regulation of market prices at the micro level, and the polarization of incomes, which distorts feedbacks and blocks self-regulation at the macro level.¹¹⁶ It is evident from the model that in the process of production of goods the incomes are created, by which these goods must be realized. "Production creates its own demand" (Say). But if these incomes are distributed very unevenly, then a part of the incomes flows out of the circulation of money-commodity flows of real sector into the financial sector because of high propensity to save of rich minority. For the rest of the society is not left enough income to support the demand needed for realizing of manufactured goods. In conditions of sharp polarization of income distribution, the aggregate demand is lower than in the conditions of equal distribution. [1]. Since weak demand slows economic growth, it becomes necessary to sustain demand artificially.

2. After the "Great Depression", the stimulation of demand by fiscal methods led to the stagflation of the 1980s. But the replacement of fiscal methods by monetary methods through economic liberalizing led to the "Great Recession" 2008-2010. That is, artificial stimulation of demand inevitably ends in a natural collapse. This does not solve the problem, because the reason lies much deeper.

On the one hand, incomes naturally generated in the real sector for the realization of goods produced in it, flow away from the real sector to the financial sector and weaken demand. On the other hand, for the artificial support of demand, the banking sector credit consumption, while creating and injecting uncovered money into the real sector.¹¹⁷ Therefore, formation of demand and clearing markets is less dependent on self-regulation of real sector, and increasingly - on the unstable financial sector and on the balance of cash flows between the real and financial sectors. If before

¹¹⁶ In the USA by 2007 "the top 1 percent get in one week 40 percent more than the bottom fifth receive in a year; the top 0.1 percent received in a day and a half about what the bottom 90 percent received in a year; and the richest 20 percent of income earners earn in total *after tax* more than the bottom 80 percent combined." [1, p. 15]. "... over the last three decades those with low wages (in the bottom 90 percent) have seen a growth of only around 15 percent in their wages, while those in the top 1 percent have seen an increase of almost 150 percent and the top 0.1 percent of more than 300 percent." [1, p. 17].

¹¹⁷ In a certain sense "bad money drives good money out of circulation"

financial sector served to increase efficiency of real sector, over time it acquired independence, began to dominate over real sector and prevent its stable growth.

3. Commercial banks that create uncovered credits and money, instead of productive investment begin to credit consumption, mortgages and speculative transactions. [14]. The financial sector is rapidly growing in a liberal policy environment. To maintain economic growth rate of GDP requires an advancing growth rates of credit and consumption in debt. The ratio of credits to GDP sharply increases.¹¹⁸ But credit expansion cannot last forever.¹¹⁹ Sooner or later, loans will have to be paid back from future incomes. Therefore, aggregate demand and nominal GDP will inevitably decline in future. There comes the "Minsky Moment" and the financial bubble bursts causing an economic crisis. [17]. Financial instability is inherent to the very mechanism of such method of maintaining demand.

4. Similar processes are generated at the global level.¹²⁰ With globalization, the national economies have become heavily dependent on each other, because they become parts of single world economic organism. In such conditions, due to the excessive polarization of the world on poor and rich countries and pumping of world resources from one to another, the development of both is constrained. Because of low resource prices and low incomes of poor countries, these countries' ability to pay is insufficient to present demand to rich countries for their products, which would match to their production possibilities. The optimum balance between world prices for products and resources is violated. The optimal commodity-money flows and feedbacks between national economies, as the parts of global economy as a single organism are violated. In circumstances, where

¹¹⁸ On average across advanced economies private-sector debt increased from 50% of national income in 1950 to 170% in 2006. [15].

¹¹⁹ "For 50 years, private-sector leverage—credit divided by GDP—grew rapidly in all advanced economies; between 1950 and 2006 it more than tripled. Leverage increased because credit grew faster than nominal GDP. In the two decades before 2008 the typical picture in most advanced economies was that credit grew at about 10–15% per year versus 5% annual growth in nominal national income. And it seemed at the time that such credit growth was required to ensure adequate economic growth. ... We seem to need credit to grow faster than GDP to keep economies growing at a reasonable rate, but that leads inevitably to crisis, debt overhang, and post-crisis recession." [16, p. 7]

¹²⁰ "The wealth of the world is divided in two: almost half going to the richest one percent; the other half to the remaining 99 percent. "[18, p.1]. "Almost half of the world's wealth is now owned by just one percent of the population. The wealth of the one percent richest people in the world amounts to \$110 trillion. That's 65 times the total wealth of the bottom half of the world's population... The bottom half of the world's population owns the same as the richest 85 people in the world." [18, p.2] "Around 80 percent of the world's people have just 6 percent of global wealth. Indeed, just 80 individuals together have as much wealth as the world's poorest 3.5 billion people. Such inequality has become a serious problem— both for economic efficiency and for social stability." [19, p.65].

a third of humanity lives in poverty, such polarization on national as well as on international level is not only immoral, but from a purely economic point of view, has become an obstacle for economic progress. The optimal functioning of economy does not imply such polarization, but only supporting of optimal proportions and feedbacks between the economic flows.

As we see the laws of cybernetics confirm Marx's prediction. The capitalist economy is experiencing systemic problems. But this happens due to the self-destruction of feedbacks. The market economy cannot eliminate economic inequality which generates itself. Spontaneous market self-regulation becomes impossible, and its replacement by regulated economy - inevitable. Future economy is an economy of social justice.

4.3. Symmetry and relativity

1. One and the same phenomenon is perceived differently by different persons and even by the same person, depending on his needs and the ends. Also, one and the same object or process performs different functions at the same time, simultaneously exists in different relations to different subjects and objects. To be a producer, consumer, product, resource, etc. - all this is not inseparable real properties of objects or subjects, but the functions that they perform. It is impossible to be a producer of goods, not being a consumer of other goods and it is impossible to be a consumer, not being a producer, and it is impossible to be either one or the other, without being the seller of the goods and the buyer of other goods, and it is impossible to be either the seller or the buyer of the goods not being a buyer and seller of money. And in conditions of division of labor, each of these functions he can perform each of these functions only as one party, in collaboration with other economic actors. So, in a market economy, he can be producer only because someone else is a consumer; can be a seller - because someone else is buyer; lender - because someone else is debtor, etc. [5], [6]. In the end, we find that all the functions performed by different actors are also interrelated as the actions, which perform these functions. All of them generate each other. Each action creates "its other" action and itself is generated by others. Through this they form and reproduce the structure of system. A functionally closed structure of a system or operational

closeness, that is a circular organization of intersystem functions, is reproduced by the sequence of performed actions. The “symmetric model,” considered above, which reflects the functional closeness of economic system, reflects the *essential relationship* of a market economy and, thus, reflects in itself the *essence* of economic system in which everything is relative and all are in reflective relationships to each other.

2. In this model is reflected the essence of economic equilibrium. That is, the model shows that ideal state of decentralized economic system in which the mutually opposing economic incentives completely balance each other. The "Symmetrical model" reflects only the relative values (relative prices and relative quantities) of produced, consumed and traded goods. The price and quantity of each good is a function of all other prices and quantities. In other words, the model shows the relationship between the intra-system parameters in case when all that is produced is consumed, and all that is consumed is produced. Therefore, goods are exchanged in such proportions that in the market are not remained unsold goods or idle money (unsatisfied demand). In short, this is the *relativity theory of general economic equilibrium*.

3. According to dialectics the cognition of essence implies the cognition of wholeness and its inner contradictions, hidden reflexivity (and, consequently, of implicit symmetry) of subject. This whole is closed and stable. For example, the economy as a system of production and consumption is the wholeness which contains all the necessary parts. This is closed process which possesses an inner symmetry - only that is consumed which is produced, and only that is produced which is consumed. But if for some reason the feedback between production and consumption (mediated by market) will be disturbed, it will disturb the wholeness and inner symmetry of the system. Will be produced products for which will not be solvent demand, the products will not be sold, production will be stopped, will not be demand for resources, and etc. This phenomenon is known from cybernetics - if there is no closeness the dynamic process loses stability. So it is clear that the weakening of reflexion reduces the effectiveness of economic processes. If there is no closeness there will be no definiteness and therefore will not be optimality. Open systems cannot be optimal. [20].

4. Usually the term "symmetry" is used in two meanings. Symmetric means something proportional; it shows the way of integrating of different parts into a single whole. The second meaning of the word is equilibrium. The economic system exhibits property of symmetry in both meanings. The various economic flows are mutually coordinated, complement and balance each other and form the wholeness as a self-regulating system with "feedback". The famous German mathematician, physicist and philosopher Hermann Weyl wrote in his "Symmetry":

".... we had to understand that the general organization of nature possesses that symmetry. But one will not expect that any special object of nature shows it to perfection. Even so, it is surprising to what extent it prevails. There must be a reason for this, and it is not far to seek: a state of equilibrium is likely to be symmetric. More precisely, under conditions which determine a unique state of equilibrium the symmetry of the conditions must carry over to the state of equilibrium." [21, p.25].

A man and his activity is a part of nature, and therefore human activity as well manifests symmetry, as other forms of nature.

"There is no law of physics that does not lend itself to most economical derivation from a symmetry principle. However, a symmetry principle hides from view any sight of the deeper structure that underpins that law and therefore also prevents any immediate sight of how in each case that mutability comes about." [22, p. 4].

Famous physicist Paul Dirac in his memoirs about Einstein wrote that Einstein believed that the space-time of our world has such symmetry, and to this space it is necessary to attribute all physical laws. Einstein believed that his four-dimensional symmetry is mathematically so beautiful that it just must be right. Einstein was firmly convinced that the laws of nature must be written in the form of beautiful equations. He considered it essential. Just the search for beauty formed the basis of Einsteinian working method. [23].

“Symmetry is so integral to the way the universe works that Albert Einstein used it as a guiding principle when he devised his General Theory of Relativity. ... Many scientists suspect that there may be more natural symmetries waiting to be discovered. Some think that the so-far elusive "Theory of Everything," which physicists have spent decades searching for, will contain some type of universal symmetry that fully explains and knits all the known laws of physics together.” [24].

I also deeply believe that the model of economic equilibrium which adequately reflects the economic reality should be symmetric.

Conclusions

1. The market economy is a complex, nonlinear, operationally closed (but causally open) system of economic actions. On the basis of dialectical analysis of decentralized economic system we get an entirely new interpretation of economic categories and relations between them; we obtain a new understanding of economic equilibrium.

The main contradiction that drives the economic system is that each subject consumes something that others produce and produces what others consume. Therefore, one wants to buy something that belongs to another person and sells something that other people lack, but belongs to him. That is, the satisfaction of one's own needs is mediated by the satisfaction of others' needs. Thanks to this, all subjects are attached to each other by their action, forming a single whole, a system in which all that is produced is consumed and all that is consumed - is produced. In such conditions, each economic action generates another action. That is, there arise recursive processes, owing to which the economic system becomes closed self-reproducible system generating its own elements.

From the very beginning of its existence, from the 1940-1950s (the concept of N. Wiener, U. Ross Ashby, X. von Foerster), one of its central concepts is the idea of circular causality. Here, the effect caused by some reason, itself becomes the reason causing the effect. Action generates the action, the cause generates the cause and they both generate each other. Cause and effect are merged into one. This is an activity that has become

the cause of itself, or self-generation activities. Formally, this process can be expressed in general form as: $x = F(x)$, where x - is the interaction between any elements of a system, and F - is the form of the relationship between these processes. Systems, in which such circular processes are carried out, are called self-referential systems, which are studied by second-order cybernetics and constructivism. Such systems are autonomous, operationally closed and have unique properties.

In result of this approach, we find that the self-organization of a market economy is carried out thanks to a recursive processes (commodities are produced by commodities, prices are formed on the basis of prices, actions generate actions, satisfied needs create new unsatisfied needs, etc.). Recursive processes in the economic system as well as in other complex nonlinear dynamical systems generate the “eigenvalues” (“fixed points” - in the terminology of mathematics). The equilibrium prices and quantities are just such “eigenvalues” to which the actual market prices and quantities strive because of recursive processes, providing a system striving toward the general equilibrium.

2. The “Symmetric model” of general economic equilibrium is the model of the attractor - a relatively stable, latent structure of that state of the economic system, towards which the decentralized economy always strives by virtue of the immanent logic of the development of intra-system processes (but never reaches it due to the permanent impact of random external factors – changes in natural and social environment). Mathematical models of nonlinear complex systems show that such systems “hide” a certain form of organization of intra-processes that are caused solely by their own non-linear properties. That is, structure-attractors can be interpreted as teleological structures, which determine the main trends in the system’s evolution. But they do not exist in a physical space and time. Their detection is possible only by means of scientific analysis.

3. The dialectical analysis of the essence of economic phenomena and a model developed on its basis reveal the hidden relationships between economic parameters, which cannot be detected by other methods of research. Although neoclassical theory fixes the relationship between gross saving and gross investment, nevertheless, it is not aware of the interdependence between gross saving and gross profits, also between gross

investment and gross consumption in debt as well. Consequently it ignores the links between the all aforementioned macro-parameters (i.e. saving, profits, investment and consumption in debt), which exist within a closed economic system. But without all this, it is impossible to understand how the reproduction is performed, how the general equilibrium is formed, how business cycles occur. Therefore, without understanding of these processes it is not possible to create an adequate mathematical model of a decentralized economic system and develop an effective economic policy.

4. Operational closeness of a market economy allows a deeper penetration into pricing mechanism. To understand the anatomy of the decentralized economy is necessary to mentally abstract from the “monetary veil” and trace the logic of barter relations. From the perspective of barter a price is the exchange proportion between goods. At that, prices show in which proportions the goods are exchanged not only between individual actors, but also between the various branches. Moreover, the exchange ratios between branches, but not between individuals, are just the adequate average market prices. But individual exchange proportions, individual prices in individual bargains fluctuate around these average market prices. In the system of prices, hence, in a system of exchange proportions, the sectoral structure of economy is reflected.

The point is that the economy is differentiated integrity in itself. This means that under equilibrium conditions, each of its branches produces for other branches as many goods as to fully meet the needs of all other branches. And it itself consumes the products from all other branches to the extent necessary for such production.¹²¹ But in this case, when all sectors produce for others and consume only what is produced by others, creates a situation, where as a result of the exchange of goods of own production, a system of prices or exchange proportions, through which all that is supplied for sale is purchased, i.e. every effective demand is satisfied. For means of payment for any demand from the sector, are the goods, which are produced in it and are offered in return. That is, under equilibrium conditions inter-sectoral proportions of production cause the

¹²¹ This implies total costs necessary for the functioning of the branch, including the consumption of consumer products by the actors involved in these branches. After all, branches cannot function without actors. In the end it turns out that for the production of any goods, the goods of almost all other branches are needed.

proportion of inter-sectoral exchange of goods. This exchange proportion actually is a closed system of equilibrium market prices. After all, it is all the same how to express these exchange proportions as $x_A = y_B$ (in case of inter-sectoral exchange) or $A = y/x B$, or as $B = x/y A$ (if the price is expressed as the prices of one good, or through the A or through B). The main thing is that in conditions of differentiated integrity, when all that is produced in the system is consumed within the system and all that is produced - is consumed, in such conditions for all industries a system of exchange proportions of type $x_A = y_B$ is formed, which provides full clearing of markets. But the totality of all exchange proportions precisely is a system of relative prices, which actually regulates the economic processes, but which is hidden behind the "money veil" in the form of absolute (nominal) prices.

It turns out that the prices depend on the sectoral proportions. But the sectoral proportions themselves are formed as a spontaneous result of production and consumption of individual subjects, which depend on the system of market prices. Once again the circular causality turns out - the system of market prices forms the sectoral proportions, but sectoral proportions form a system of market prices. But in this case, the circular causality is not a logically "vicious circle," but is a revealed and quite understandable interaction of micro and macro- economic processes.

5. It follows from this model that under equilibrium conditions the total value of goods of some branch consumed in other branches, equals the total value of goods of other branches consumed in this branch, and the gross profit, saving, investment and consumption in debt equal each other. This can be termed the "Iron law" of general equilibrium. It provides formation of optimal proportions of commodity and financial flows within the economic organism, which provide its integrity. Self-regulation of market economy consists just of the ability to provide these proportions by means of market interactions of independent subjects. Finally, just this law gives clear understanding of what parts of cost of manufactured products are imputed to various production factors (Labor, Land, Capital, Entrepreneurship) by which these products are manufactured. The theory of imputation, based on law of diminishing returns, doesn't give the satisfactory answer to this question. According to this model, like model of Piero Sraffa, the

economy is a circular process of “production of commodities by means of commodities.” In this sense this model, as well as model of P. Sraffa, is opposite to paradigm according to which the economy is the one-way process directed from “production factors” to consumer products and in which the problem of how primary resources are reproduced isn't considered.¹²² [25, p.134].

6. Dialectical analysis of essence is, first of all, comprehension of reflective definitions and internal contradictions inherent in it. Reflected definitions are definitions, which are mirror reflected in each other. Though reflective relations between various concepts are not always obvious, but having found out a reflection, in such a “mirror self-reflection” it is impossible not to see the phenomenon of symmetry. Symmetry is always associated with order and opposes to chaos. It is one of essential properties of the entire universe. That is why the displays of symmetry of world surrounding us are incalculable. It is not only flowers, architecture or human body. As well, it is elementary particles, Galilee’s principle of relativity, laws of conservation of energy and many other fundamental phenomena of physics, biology, society and so on. The dialectic analysis of essence of economic processes allows us to find out in them surprising integrity and symmetry. The comprehension of that symmetry (as well as its accompanying asymmetry) are inherent in economy, as well as to the all other nature, allows us to deeper understand the essence of economy and opens absolutely new possibilities of modeling of economic processes.

¹²² However P. Sraffa considers production of production factors by means of final products in physical sense. For him there is no difference between production factors and final goods, “commodities are produced by means of commodities.” For example, for him Labor is commodity produced by means of other commodities (foods, clothes etc.). But with such interpretation of manufacture of production factors it is impossible to answer a question, - what forces form a wage. Unlike early stages of capitalism, when the salary consisted of consumer goods necessary for survival of workers, today there is no direct link between consumption of goods and reproduction of Labor. Ultimately, the consequence of this approach is that from his model remains unclear how national product is divided between profits, wages, etc.

References

- [1] Stiglitz, J. The Price of Inequality: How Today's Divided Society Endangers Our Future. W. W. Norton & Company, 2012.
- [2] Marx, K. and Engels, F. Works. V.12. Second edition. Moscow. Politizdat, 1955. (in Russian).
- [3] Walras, L. Elements of Pure Economics. Moscow, "Izograf", 2000, (in Russian).
- [4] Marx, K. Capital. Moscow. Politizdat, 1978. (in Russian).
- [5] Leishvily, P., Self-regulation of Market Economy: Interdisciplinary Analysis. NY. NOVA SCIENCE PUBLISHERS INC. P. 142. 2015.
- [6] Leishvily, P. Economic Activity: Teleological Analysis. New York, Nova Science Publishers, 2012.
- [7] Leishvily, P. "The Dialectics of Economic Activity (In Searching of Symmetry in Economy)," *Georgian International Journal of Science and Technology*, V.3, Issue 3, 2011.
- [8] Leishvily, P. "Towards the teleological understanding of economic value." // *International Journal of Social Economics*. Vol. 23, N 9, 1996, p. 4 - 14.
- [9] Steedman, I. 'Ricardo, Marx, Sraffa.'. In: I. Steedman, P. Sweezy and others, *The Value Controversy*. London. Verso Editions and NLB, 1981, pp. 11-19.
- [10] Foerster, H. *Understanding Understanding: essays on cybernetics and cognition*. Springer-Verlag, New York, Inc. 2003.
- [11] Blaug, M., 1997, "Ugly Currents in Modern Economics". *Policy Options*. September, 1997.(p.3-8).
- [12] Smolin, L. "Time and symmetry in models of economic markets," Perimeter Institute for Theoretical Physics. Canada, February 25, 2009. <http://arxiv.org/pdf/0902.4274v1.pdf>
- [13] Heilbroner, R. *Behind The Veil of Economics. Essays in the Worldly Philosophy*. W.W. Norton & Company Ltd., 1989.
- [14] Werner, R., *New Paradigm in Macroeconomics. Solving the Riddle of Japanese Macroeconomic Performance*, PALGRAVE MACMILLAN, 2005.
- [15] Reinhart C., Rogoff K. 2013. *Financial and Sovereign Debt Crises: Some Lessons and Those Forgotten*. IMF Working Paper, Research Department, 2013, December.)
- [16] Turner, A., *Between Debt and the Devil: Money, Credit, and Fixing Global Finance*. Princeton University Press, 2015.
- [17] Minsky, H., *Stabilizing an Unstable Economy*. McGraw-Hill Professional, New York, 2008.
- [18] OXFAM Briefing paper, *Working for the Few*, 20 January, 2014. www.oxfam.org
- [19] *Human Development Report 2015*. (UNDP).
- [20] Yatskevich, V. *Dialectics of an optimum choice*. Kiev. Naukova dumka, 1990. (In Russian).

- [21] Weyl, H. *Symmetry*. Princeton, N.J.: Princeton University Press, 1952.
- [22] Wheeler, J. *Genesis and Observership*. In: *Foudational Problems in the Special Sciences*. Edited by R.E.Butts and J.Hintikka. Dordrecht-Holland/Boston-USA. D.Reidel Publishing Company, 1975.
- [23] Dirac, P., 1981, *Einstein and Development of Physics. Commemoration of Einstein*. – Dordrecht, Holland D. Reidel,
- [24] Than, K. “Symmetry in Nature: Fundamental Fact or Human Bias?” *Livescience*. Dec 21, 2005.
<http://www.livescience.com/4002-symmetry-nature-fundamental-fact-human-bias.html>
- [25] Sraffa P. *Production of Commodities by Means of Commodities*. Moscow, UNITY, 1999. (In Russian).

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