
СИСТЕМНЫЙ ПОДХОД К КЕЙНСИАНСКОЙ ТЕОРИИ*

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В данной статье теория Дж. М. Кейнса рассматривается на основе системного подхода, а именно, синергетики, кибернетики, гомеостатики и общей теории систем. Исследование представляет собой попытку классификации системы методов Кейнса, выделение предпосылок, основных положений и следствий теории Кейнса, а также анализ модели национальной экономики с позиций системного подхода.

Ключевые слова: теория Кейнса; системный подход; методы; предпосылки; следствия; модель.

SYSTEMS APPROACH TO THE KEYNESIAN THEORY*

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In this paper, the theory of John Maynard Keynes is considered on the basis of the systems approach, in particular Synergetics and Cybernetics, General System Theory and Theory of Homeostasis. This study is an attempt to classify the methods of Keynes, to distinguish backgrounds, main positions and consequences of Keynesian theory, as well as analysis of the model of the national economy from the position of the systems approach.

Keywords: Keynesian theory; systems approach; methods; backgrounds; consequences; model.

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1. Introduction

In this paper, the theory of John Maynard Keynes is considered on the basis of the systems approach, in particular Synergetics and Cybernetics, General System Theory and Theory of Homeostasis.

In Synergetics the general patterns of the self-organization, development of the system are considered (*Haken, 1988; 1993; Prigogine, 1984; 1997*). Cybernetics considers the mechanisms of the system functioning and adaptation (*Wiener, 1950*). Also General System Theory (*Bertalanffy, 1976*) and Theory of Homeostasis (*Cannon, 1932; Gorsky, 1990*) are used in this paper in addition to the Cybernetics and Synergetics.

This study is an attempt to classify the methods of Keynes, to distinguish backgrounds, main positions and consequences of Keynes's theory, as well as analysis of

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the model of the national economy from the position of the systems approach.

2. Methods used by Keynes

First of all, let's turn to the system of methods of John M. Keynes, as it's a basis of the theory.

We can distinguish the following methods used by Keynes:

logical method;
macroeconomic approach;
method of causal analysis;
method of marginal analysis;
method of psychological analysis.

All the above mentioned methods are used by Keynes in a complex. Let's consider them in more detail.

The logical method

The logical method is the basis of Keynes's methodology. Even the concept of probability is considered by Keynes as a logical relation.

The logical method is connected with Keynesian macroeconomic approach; it's used to identify the dependencies between macroeconomic indicators.

Keynes uses the logical method to prove the need of government intervention in the economy as well as for a critical analysis of the classical theory.

For example, according to Keynes, the classical theory not merely neglects the influence of changes in the level of income, but involves formal error (*Keynes, 1947. P. 179*).

Macroeconomic approach

Keynes analyzes the relationships between macroeconomic indicators (such as national income, aggregate demand, aggregate supply, employment, savings, investments, etc.) to describe the functioning of the national economy.

The General Theory of Employment, Interest and Money of Keynes is constructed as a logical analysis of the relationships between macroeconomic indicators.

Keynes points out that our present object is to discover what determines at any time the national income of a given economic system and (what is almost the same thing) the amount of its employment (*Keynes, 1947. P. 247*).

Method of causal analysis

Keynesian method of causal analysis is a return to the methods of the classical theory, when dependent and independent economic categories are determined. In contrast to the causal analysis the functional method, which has spread during the "marginal revolution", represents all elements of the economic system as equal and interdependent. The functional analysis assumes the rejection of the search of the fundamental factors that are the causes of economic processes.

For the analysis of macroeconomic indicators Keynes uses causal analysis, which corresponds to the theory of cybernetics. In the cybernetic model the regulatory body (the government) determines, which commands should be given at the input of the "black box" (the national economy) to get the ideal, planned output results and to ensure the sustainability of the system.

Our final task might be to select those variables which can be deliberately controlled or managed by central authority in the kind of system in which we actually live (*Keynes, 1947. P. 247*).

According to this approach the national economy is considered as a "black box". Attention is paid to its input and output parameters, the determination of cause-effect relationships between the input and output parameters.

To begin with, it may be useful to make clear which elements in the economic system we usually take as given, which are the independent variables of our system and which are the dependent variables (*Keynes, 1947. P. 245*).

Our independent variables are, in the first instance, the propensity to consume, the schedule of the marginal efficiency of capital and the rate of the interest. Our

dependent variables are the volume of employment and the national income (or national dividend), measured in wage-units (*Keynes, 1947. P. 245*).

Keynesian construction of cause-effect relationships between macroeconomic indicators is based mostly on a logical approach than on the analysis of the real statistical data.

Keynes writes about his method the following: It should not be difficult to compile a chart of the marginal propensity to consume at each stage of a trade cycle from the statistics (if they were available) of aggregate income and aggregate investment at successive dates. At presents, however, our statistics are not accurate enough (or complied sufficiently with this specific object in view) to allow us to infer more than highly approximate estimates (*Keynes, 1947. P. 127*).

Although Keynes uses some statistical data, mainly S. Kuznets and Clark, for example, to check the Multiplier, but basically he uses a logical approach to determine the macroeconomic dependencies.

Method of marginal analysis

Keynes uses a method of marginal analysis of macroeconomic indicators. Keynes uses the theory of Marginalism together with the logical method and macroeconomic approach. For example, Keynes explores such macroeconomic indicators as the marginal propensity to consume, the marginal efficiency of capital.

Method of psychological analysis

Keynes also uses the method of psychological analysis.

Keynes's theory is based on the mass psychology, not on the individual psychology. The mass psychology may have priority for several reasons. First, the methodological individualism is denied in the theory of Keynes, and secondly, the psychological analysis is mainly used for the analysis of macroeconomic variables.

Keynes considers such macroeconomic indicators as saving, consumption, the rate of interest on the basis of the psychological approach.

The method of psychological analysis is implemented in "psychological law" of Keynes: The outline of our theory can be expressed as follows. When employment increases, aggregate real income is increased. The psychology of the community is such that when aggregate real income is increased aggregate consumption is increased, but not so much as income (*Keynes, 1947. P. 27*).

Keynes distinguishes the three fundamental psychological factors, namely, the psychological propensity to consume, the psychological attitude to liquidity and the psychological expectation of future yield from capital-assets (*Keynes, 1947. P. 247*).

So we have considered the system of methods of Keynes, which is based on the logical method. Keynes's methodology is the complex of methods, which do not contradict, but complement each other.

3. Backgrounds, main positions and consequences

Below is presented the analysis of Keynesian theory as a set of backgrounds, main positions and consequences.

Backgrounds:

The denial of methodological individualism and the assertion of holism.

Main positions:

The denial of the self-organization of national economy.

The denial of possibility to achieve the optimum by the national economy through the actions of individuals.

Consequences:

The need of government intervention in the national economy.

The expansion of the national economy should be a function of the State that is realized through the maintenance of quasi-boom.

The mechanism of the adaptation and expansion of the national economy is realized through the multiplier and accelerator stimulated by the State (Keynesian

theory and Neo-Keynesian theory).

The backgrounds

The denial of methodological individualism and the assertion of holism.

The holism has priority over the methodological individualism concerning the national economy in Keynesian theory.

According to the methodological individualism, the individual is the foundation and the driving force of economic processes. Keynes argues that the actions of individuals in their interests do not always match, and sometimes contrary to the interests of society.

According to the principle of holism, the whole object is more important than its parts, and the interests of society are over the interests of individuals.

Thus, Keynes stands for "purified" (controlled by the State) individualism, that is, the holism. In other words, it is the methodological individualism for the elite (mainly for those who are in the regulatory body, in the government) and holism for all others.

But, above all, individualism, if it can be purged of its defects and its abuses, is the best safeguard of personal liberty in the sense that, compared with any other system, it greatly widens the field for the exercise of personal choice (*Keynes, 1947. P. 380*).

Whilst, therefore, the enlargement of the functions of government, involved in the task of adjusting to one another the propensity to consume and the inducement to invest, would seem to a nineteenth-century publicist or to a contemporary American financier to be a terrific encroachment on individualism, I defend it, on the contrary, both as the only practicable means of avoiding the destruction of existing economic forms in their entirety and as the condition of the successful functioning of individual initiative (*Keynes, 1947. P. 380*).

The authoritarian state systems of today seem to solve the problem of unemployment at the expense of efficiency and of the freedom. It is certain that the world will not much longer tolerate the unemployment which, apart from brief intervals of excitement, is associated – and, in my opinion, inevitably associated – with present-day capitalistic individualism. But it may be possible by a right analysis of the problem to cure the disease whilst preserving efficiency and freedom (*Keynes, 1947. P. 381*).

According to the systems approach, the principle of holism represents the block of direct links of the system (the impact of the regulatory body, rules, and institutions on individuals and economic agents). The principle of holism is the condition of the system existence. The principle of methodological individualism represents the block of feedbacks (relations of individuals and economic agents for the formation and changing of rules, institutions). The principle of methodological individualism is the condition of the adaptation and self-organization of the system.

Denial of the methodological individualism corresponds to the cybernetic concept of the national economy, in which the elements of a cybernetic system (individuals, economic agents) are only executive mechanisms subordinated to the regulatory body (to the State).

The principle of holism corresponds also to the cybernetic hierarchical model of corporation. This model became common in the late 19th and first half of 20th centuries.

Main positions (theorems)

1. The denial of the self-organization of national economy.

Denial of the self-organization of the national economy follows from denial of the methodological individualism.

But the elements of a self-organizing system and the individuals in a society provide a process of self-organization and self-regulation. The denial of the methodological individualism means that individuals don't have the opportunity to take part actively in creation and changing of the rules, institutions of the national

economy. This leads to the denial of the self-organization and self-regulation of the national economy.

The assertion of holism means that the regulatory body (the State, but not individuals) becomes the main structural element for the stable functioning of the economy.

Keynes criticizes the classical theory in his logical description of saving, investment and the rate of interest as follows: and, further, that this is a self-regulatory process of adjustment which takes place without the necessity for any special intervention or grandmotherly care on the part of the monetary authority. ... This account of the matter must be erroneous (*Keynes, 1947. P. 177*).

For the Classical Theory has been accustomed to rest the supposedly self-adjusting character of the economic system on an assumed fluidity of money-wages; and, when there is rigidity, to lay on this rigidity the blame of maladjustment (*Keynes, 1947. P. 257*).

There is, therefore, no ground for the belief that a flexible wage policy is capable of maintaining a state of continuous full employment; - any more than for the belief than an open-market monetary policy is capable, unaided, of achieving this result. The economic system cannot be made self-adjusting along these lines (*Keynes, 1947. P. 267*).

Thus, Keynes denies the self-organization of the national economy and argues that the national economy should be the same vertical (cybernetic) control system, as corporations, where the elements obey the commands of the regulatory body.

2. *The denial of possibility to achieve the optimum by the national economy through the actions of individuals.*

The denial of methodological individualism and the assertion of holism means not only that the purpose of the whole system (the national economy) may be different from the private purposes of the system elements (individuals, firms), but also the fact that the purposes of the system as a whole are more important than private purposes of its elements.

Therefore, Keynes denies the possibility to achieve the optimum by the national economy only through the actions of individuals, firms (elements of the system) without the intervention of the State (regulatory body). This proves also the need of government intervention.

For example, Keynes notes the negative impact of the stock exchange speculation on the optimization processes in the real economy.

Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of laissez-faire capitalism (*Keynes, 1947. P. 159*).

Keynes considers the crises, unemployment, and inequitable distribution of income as evidence that the actions of individuals do not lead the economy to the optimum.

The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes (*Keynes, 1947. 372*).

The denial of the optimum of the national economy as a result of the actions of its elements (individuals and firms) is implemented in the psychological law of Keynes.

When employment increases, D1 (expected to spend on consumption) will increase, but not by so much as D (effective demand); since when our income increases our consumption increases also, but not so much. The key to our practical problem is to be found in this psychological law (*Keynes, 1947. P. 29*).

Consequences

First consequence from 1st and 2nd theorems (the denial of the self-organization of national economy and the denial of possibility to achieve the optimum by the national economy through the actions of individuals) *is the need of the government intervention in the national economy.*

Since in Keynesian theory the national economy isn't a self-organizing system and it can't achieve the optimum by itself, therefore, the economic system can't cope with the crises and unemployment. Therefore, the central regulatory body of the national economy is needed, i.e. the government.

The central controls necessary to ensure full employment will, of course, involve a large extension of the traditional functions of government (*Keynes, 1947. P. 379*).

From the point of view of the systems approach to the theory of Keynes, the function of the State as the regulatory body consists, first of all, in establishing and changing the rules of the economic life, and not in the ownership of the means of production.

But beyond this no obvious case is made out for a system of State Socialism which would embrace most the economic life of the community. It is not the ownership of the instruments of production which it is important for the State to assume (*Keynes, 1947. P. 378*).

For whilst it indicates the vital importance of establishing certain central controls in matters which are now left in the main to individual initiative (*Keynes, 1947. P. 378*).

Second consequence from 1st and 2nd theorems (the denial of the self-organization of national economy and the denial of possibility to achieve the optimum by the national economy through the actions of individuals): *the expansion of the national economy should be a function of the State that is realized through the maintenance of quasi-boom.*

Keynes considers the equilibrium and the economic cycles but only in the short term.

But in the long run is there not some simpler relationship? This is a question for historical generalization rather than for the pure theory (*Keynes, 1947. P. 306*).

Keynes argues that the national economy tends to equilibrium. Principle of equilibrium is accepted by Keynes from the classical theory.

According to Keynes, the equilibrium can be established under the conditions of full employment and underemployment, in contrast to the classical theory.

Keynes doesn't deny the cyclicity of the national economy.

By a *cyclical* movement we mean that as the system progresses in, e.g., the upward direction, the forces propelling it upwards at first gather force and have a cumulative effect on one another but gradually lose their strength until at a certain point they tend to be replaced by forces operating in the opposite direction (*Keynes, 1947. P. 313-314*).

We do not, however, merely mean by a *cyclical* movement that upward and downward tendencies, once started, do not persist for ever in the same direction but are ultimately reversed. We mean also that there is some recognizable degree of regularity in the time-sequence and duration of the upward and downward movements (*Keynes, 1947. P. 314*).

According to the systems approach, the oscillatory processes (including cyclic processes) are more unwanted for a cybernetic system than for self-organizing system, because the cybernetic system has fewer capabilities to adaptation than the self-organizing system.

Keynes offers the cybernetic vertical model of the national economy, controlled by the regulatory body, the State. According to the systems approach, a cybernetic system strives to achieve a sustainable equilibrium, to minimize internal and external

vibrations. That corresponds mostly to the zero economic growth, to the stage of depression. According to Schumpeter, it is acceptable if the economy has reached a sufficiently high level (*Schumpeter, 1946*).

But Keynes was strongly against the depression and crisis, because his theory was aimed against the Great Depression.

Keynes denies the self-organization of the national economy and the possibility to achieve the optimum by the national economy independently. Thus, Keynes offers to give a function of adaptation of the national economy to the regulatory body, the State.

Keynes offers to solve the problem of economic cyclicality, namely to direct the efforts of the State on maintaining a *quasi-boom* and to prevent a crisis and depression. The quasi-boom, in fact, means a permanent progress of the national economy, an increase of the national income and employment through the investment growth.

Thus the remedy for the boom is not a higher rate of interest but a lower rate of interest! For that may enable the so-called boom to last. The right remedy for the trade cycle is not to be found in abolishing booms and thus keeping us permanently in a semi-slump; but in abolishing slumps and thus keeping us permanently in a quasi-boom (*Keynes, 1947. P. 322*).

But according to the systems approach, the functioning of a complex system requires a cyclical movement. So, if we maintain the quasi-boom we can only delay the recession.

The price of a quasi-boom is a need to stimulate the consumption and investment by the State, a formation of mass consumption society, a state budget deficit and an increase of the national debt, an increase of the dependence of the developing countries, a growing influence of the financial markets on the real goods markets, a formation of the bubble economy, growing prices for resources, and also a sharp and long crisis at the time when the State can not support a quasi-boom.

Third consequence from 1st and 2nd theorems (the denial of the self-organization of national economy and the denial of possibility to achieve the optimum by the national economy through the actions of individuals): *the mechanism of the adaptation and expansion of the national economy is realized through the multiplier and accelerator stimulated by the State (Keynesian theory and Neo-Keynesian theory)*.

One of the mechanisms for the maintenance of a quasi-boom is a multiplier of J. M. Keynes.

The Multiplier can be established between income and investment and, subject to certain simplification, between the total employment and the employment directly employed on investment (*Keynes, 1947. P. 113*).

According to Keynes, the Multiplier is activated by the new investments, which lead to the growth of the national income.

Also the growth of consumption stimulates the growth of national income. The growth of government consumption expenditures and gross investment is the Keynesian way to stimulate the growth of national income.

Keynes' followers consider an accelerator as a mechanism of expansion in addition to the multiplier. A. Hansen calls the system of interaction of multiplier and accelerator "the system of super multiplier" (*Hansen, 1951*).

Thus, the multiplier and accelerator are the external mechanisms of adaptation of the national economy, and they lead to a cyclicality of its functioning. The use of the mechanism of super multiplier requires systematic state intervention in the economy (to start the mechanism, to smooth its operation, to launch a new wave, etc.).

Keynes and his followers offer to create a system of the national economy, which is close to the cybernetic model. They suggest a special kind of control action on the system of the national economy through the multiplier and accelerator.

The mechanism of the super multiplier is an external source of adaptation of the system of the national economy.

So the State should stimulate and regulate the mechanism of the super

multiplier.

So, we have considered the backgrounds, the main positions and consequences of the Keynesian theory. Let's move on to the analysis of the Keynesian model of the national economy on the basis of the systems approach.

4. The Keynesian model of the national economy

The model of national economy, proposed by Keynes, is a cybernetic model of management (see figure 1).

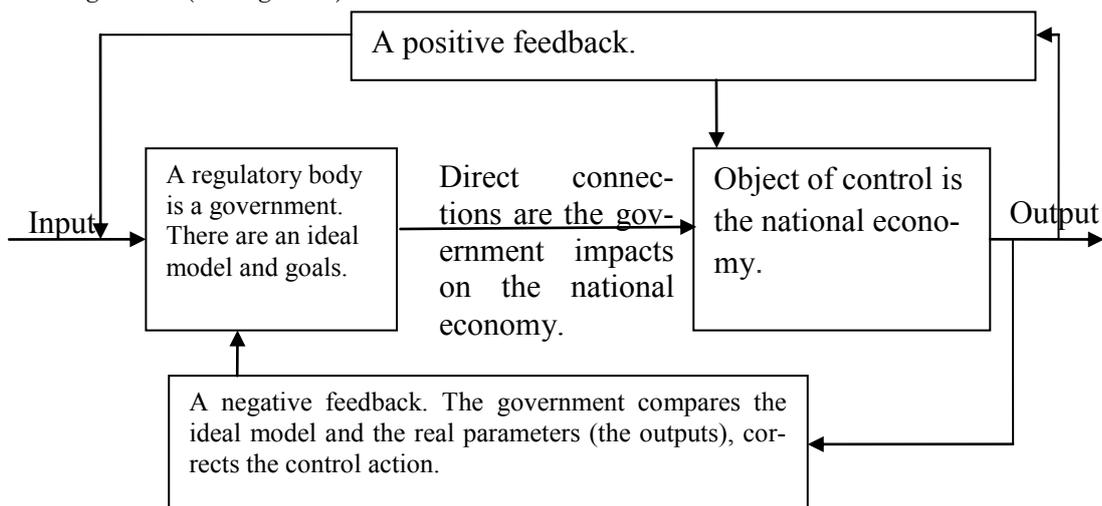


Figure 1. The Keynesian cybernetic model of the national economy on the basis of the systems approach

According to Keynes, the government is a regulatory body of the national economy. The government sets the system goals or standards in the Keynesian model. The ideal economic parameters are determined on the basis of the goals of the system.

The objectives of the national economy in Keynes's theory are the following: the functioning of the national economy without crises and the maintenance of a quasi-boom; effective demand; national income which provides full employment; the optimal distribution of wealth and income, etc.

Object of control is the national economy. Essentially, Keynes considers the national economy as a black box, that is, he does not consider the internal structure and functions of its elements. In this case, the main issue for the regulatory body (the government) is following: what control action should be done to provide the ideal output parameters of the national economy.

Direct connections are the direct control actions of the regulatory body (the State) on the control object (the national economy) in order to get the ideal output (macroeconomic indicators). In the Keynesian model a direct impact of the State on the national economy is achieved by changing the following macroeconomic parameters:

Investment parameters (related to the investment demand) including the government investment in the national economy, the amount of money in circulation, the interest rate, the inflation.

Consumer parameters (related to the consumer demand) including the level of the distribution of the national income, the amount of government consumption expenditures.

The output parameters are the real parameters of the national economy, which may deviate from the ideal parameters. The output parameters, which are considered by Keynes, include the national income, employment, unemployment rate, investment, saving and consumption, etc.

The input parameters of the national economy can be simultaneously viewed as

the output parameters of the previous period.

The functions of the negative feedback in the cybernetic model are performed by the State. The government compares the current output parameters of the national economy with the ideal parameters. The government corrects the control action to bring the output parameters to the ideal value. The State changes the interest rate, the money supply, the volume of government investment, the level of taxation, grants and subsidies in order to achieve the ideal outputs.

The State performs the functions of the current negative feedback, providing the current functioning of the system, and the functions of the strategic negative feedback to adapt the system of the national economy.

Positive feedback is not considered in the theory of Keynes. This is the flow of previously uncorrected external and internal deviations that lead to the destruction of the system. These deviations include the growth of the public debt, budget deficits, inflation, etc. Only in the self-organizing system the positive feedback can lead to the development of the system.

5. Conclusions

In this paper we considered the theory of John Maynard Keynes, including methods, backgrounds, main positions, consequences, and model on the basis of the systems approach. We identified the main and secondary assertions of the theory of Keynes.

Thus, from the position of the systems approach Keynes considers only the mechanisms of the functioning and adaptation of the national economy. Keynes's theory does not include the mechanisms of development. An ideal cybernetic system can't develop, it can only adapt.

But according to the systems theory, only the self-organizing system of the national economy can include the mechanism of self-development. The condition of the self-organization of the whole system (national economy) is the self-organization of its elements (economic agents). But Keynesian theory denies the self-organization of the national economy and economic agents.

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