

The Role of Financial and Investment Potential in Achieving Economical Equilibrium in Construction



Inna Miniailenko , Volodymyr Byba , Elshad Yusifov ,
and Anna Pavelieva 

Abstract The article considers the categories of “equilibrium” and its main types, “economical equilibrium”, equilibrium macroeconomic models. It is proved that equilibrium can be achieved through economy crises, which serve as specific tool for rebalancing and overcoming disequilibrium.

There have been formed the main directions of the state economic policy for overcoming system contradictions of economic destabilization in Ukraine. The article stresses the key role of construction in creating economical equilibrium and identifies the ways to build Ukraine’s development potential. The authors of the article have analyzed indicators of construction development of Ukraine, determined the main tendencies of changes and carried out modeling of the equilibrium position of the Ukrainian construction industry. The author’s approach to modeling the coefficient of economic equilibrium in construction has been worked out in this scientific study.

Keywords Equilibrium · Economical equilibrium · Principles · Construction · Investments · Potential

1 Introduction

The problem of using the existing potential is closely related to the most important aspect of the economic performance—achieving economical equilibrium, which is a strategic goal of national development.

It is common knowledge that the economy of any country develops cyclically, there are periodic fluctuations in economic and business activities. Economic growth is replaced by a sharp drop in gross domestic product (the GDP), economic upturn

I. Miniailenko · V. Byba (✉) · A. Pavelieva
National University “Yuri Kondratyuk Poltava Polytechnic”, Pershotravnevyj Avenue 24, Poltava,
Ukraine
e-mail: bibav1@ukr.net

E. Yusifov
Azerbaijan University of Architecture and Construction, 5 Ayna Sultanova, Baku, Azerbaijan

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is occasionally punctuated with the crisis and recession. Such changes are common to each state, with the same consecution and regularity. But it should be noted that in different countries, the growth and crisis cycles (or economic cycles or boom-bust cycles) differ in regularity, duration and causes of occurrence.

For a long time, macroeconomics has paid attention to the study of business cycles of the economy upon certain statistical factors, but it did not take into account the problem of economical equilibrium.

The general equilibrium theory is the basis of scientific research of many Western European scientists. The founder of the importance of economical equilibrium and its relationship to crises is Karl Marx, who formulated the ultimate principle according to which economic slowdowns are considered as departures from equilibrium position. The fundamental premise of this study is the fact that the constant tendency of certain industries or economic activities to equilibrium is the reaction to its constant violation.

But before proceeding to the methodological study of this category, it is necessary to analyze the very concept of equilibrium and to determine its types and classification features.

Thus, according to the economic encyclopedia, equilibrium is physical system state in which its characteristics do not change over time [1]. Despite the fact that equilibrium is a constant, there are statistical and dynamical equilibrium.

Statistical equilibrium is peculiar to the systems in which the particle motion ceases. Dynamic equilibrium is characterized by the motion of the system at certain constant characteristics.

The state of equilibrium is characteristic of any science. Let us consider its certain types and determine their defining characteristics (Table 1) [1].

According to the considered types of equilibrium, it becomes possible to determine their main characteristic, namely the constancy of values and a certain balance that ensures their proper functioning. But the question arises as to whether the constancy of certain indicators is good for the economy or it implies the state of stagnation, depression that is setback in production.

2 Main Body

Economical equilibrium is the state of the economic system in which the proportions in the national economy provide the best possible reconciliation of objectives of economic development and available resources, supply and demand, commodity and cash flows, accumulation and consumption, savings and accumulation and other elements and indicators of the system, and as a result—no economic crises. The two sides of economical equilibrium are the action of the forces of equilibrium and disequilibrium, in the process of which equilibrium is ensured through disequilibrium. This means that equilibrium is optimal dynamic imbalance which plays both positive and negative roles in the economy.

Table 1 Types of equilibrium

Types	The content
1. Chemical equilibrium	It is the state in which the chemical reaction proceeds at the same rate as the counter reaction, resulting in no change in the amount of each component
2. Thermodynamic equilibrium	It is the system condition in which its internal processes do not lead to changes in macroscopic parameters, in particular, such as pressure
3. Thermal balance	It is the condition of material objects that are in thermal contact, characterized by complete absence of heat exchange between them, which clearly means the equality of their temperatures
4. Mechanical equilibrium	It is the state of a body at rest or moving uniformly, in which the sum of forces and moments acting on the body equals to zero
5. Biological equilibrium	It is the balance of people and animals
6. Ecological equilibrium	This is the relative balance of stability of the species composition of living organisms, their number and productivity, spatial distribution, seasonal changes, biotic circuit of substance and other biological processes in natural or man-made ecological systems
7. Economical equilibrium	It is the situation in which all factors influencing the economy fully balance each other in such a way that the variable does not change as a result
8. Nash equilibrium in the game theory	It is the optimal policy for all game players aimed to ensure that no player will make a profit by changing his/her strategy until everyone else changes his/her strategies
9. Market equilibrium	It is the market situation in which the quantity of supply is equal to the quantity of demand

The disequilibrium arises objectively due to the continuous development of STP (scientific-technological progress), due to differences in time, in quantitative, qualitative and structural aspects of certain macroeconomic indicators. The accumulation of disequilibrium forces leads the economy to stress and crisis. At the same time, disequilibrium is necessary because it means that the economy is not overloaded or stretched to the limit, but there are still reserves for manoeuvres and restructuring of the economy.

The disequilibrium increases during the uncertainty period in the economy, due to foolish economic policy or the wrong socio-economic course.

Forms of economical equilibrium are the presence of optimal correspondence between the interests of economic subjects (economic entities), on the one hand, and unbalanced development (milk-bar economy), disagreement, strife—on the other hand.

There are statistical and dynamical, partial and complete, microeconomic and macroeconomic equilibrium, and so on.

Partial equilibrium is quantitative and qualitative correspondence of two related parties of the economy (for example, correspondence of production and consumption), general equilibrium is concerted, planned and proportional development of all areas, economic realms, markets and branches of economy and so on.

The condition of partial equilibrium is equilibrium in individual markets, while the condition of general equilibrium is equilibrium in all markets. When there exists a market self-equilibrating apparatus, state and supranational regulation, its equilibrium is achieved mainly through the mechanism of price fluctuations, and the equilibrium of the whole economic system is achieved primarily due to state and supranational regulation, which involves the use of price mechanism.

The conditions of partial equilibrium were studied by A. Marshall, market equilibrium in conditions of imperfect competition was studied by J. Robinson and E. Chamberlin, general economic equilibrium was examined by L. Walras.

In general, the dialectical method of research contradicts the general equilibrium theory, as it lays emphasis on the action of the law of the unity and struggle of opposites in the process of development, within which the unity of the two sides of the contradiction in numerical terms is relative (as it is carried out through modifications of quantity within single quality, without violating the measure, that is without a leap), while in qualitative terms the unity of the two sides of the contradiction and the struggle of opposites occur through mutual transition from quantity to quality, qualitative transformations within the single entity, through the formation of a new quantitative force of development through new quality etc., that is through the operation of the law of quantitative and qualitative changes. The concept of “economical equilibrium” largely coincides with the concept of “economic optimum”.

There is a sound approach to the definition of equilibrium as a balanced and proportional economy: aggregate demand and aggregate supply, aggregate production and aggregate consumption. It is possible to achieve macroeconomic equilibrium, but only temporarily, as it is of dynamic nature and operates more on the principle of “equilibrium-disequilibrium”. However, it is of interest for society that departures from equilibriums be minimal and short-dated. Therefore, the society arrived at the conclusion that it is necessary to regulate macroeconomic equilibrium in the process of implementing appropriate economic policy. To assess such equilibrium, it is recommended to use the final figures of macroeconomic development: the gross domestic product (the GDP).

The general macroeconomic equilibrium is sustainable development of all economic realms, concurrent compliance with the market as a whole.

Macroeconomic equilibrium presupposes the achievement of proportionality as expediency, orderliness and conformity of reproducible relations, parties and phases. In this case, local, individual proportions are interconnected, they complement each other and motivate equilibrium or balanced development of the entire economic system.

There is a close relationship between equilibrium, proportionality and robustness. If equilibrium is the desired goal of macroeconomic development, then proportionality and robustness are the elements of the mechanism used for achieving it.

Ignoring any of these concepts always leads to one-sided results, to contradictions and imbalances of economy and social life.

The following prerequisites are required for the general economic equilibrium:

- compliance of aggregate demand with aggregate supply in all types of market (merchandise market, labor market, capital market);
- efficient use of all economic resources, which means the absence of large scale unemployment, high inflation rate, non-distributed stocks and their deficit;
- compliance of the national agenda with the existing economic opportunities;
- reconciliation of production and consumption with the orientation of their development in the interest of consumers;
- compliance of income with expenses.

The research of the problems of economical equilibrium, creation of concepts, theories, models has lasted for already two centuries.

There are the following models of economical equilibrium (Table 2) [2].

The theory of general equilibrium also promotes the research of economic welfare. That is, any departure from the equilibrium state, which occurred under the influence of both external and internal factors, involves the forces that tend to equilibrium.

As noted, the achievement of equilibrium position is carried out through economic crises, which are a specific tool for overcoming imbalances of economy and restoration of equilibrium.

If one looks at the crisis impartially, it will become clear that the crisis is as necessary for a developing system as the stable state. The crisis should be seen as a defining moment in the development of the system, which gives more space for a new round of economic changes.

A crisis is the critical stage in the functioning of any system, when it falls under the influence from the outside or inside, which requires a qualitatively new response from the system. The main feature of the crisis is that it threatens to destroy the system (partially or completely) [3].

The crisis is one of the forms of economic development, during which there appears space for the growth and establishment of something new, and out-of-fashion machinery and technologies, setup for production and job arrangement are eliminated [4]. Simultaneously with overcoming the obsolete, there is inevitably a setback in production, rise in unemployment, decline in personal income, which negatively affects people's living conditions.

Ukraine, as an independent state for more than thirteen years of its history, has been in various crises. The country has already weathered one debt crisis in 1998–1999 and, starting in the second half of 2008, another financial and economic crisis, accompanied by a fall of living standards as a result of severe economic free fall.

Considering current crisis developments in Ukraine, we can identify such key factors as the bank crisis, incoherent fiscal and monetary policy of the state, as well as the political situation in the country. The basis for the growth of macro-financial unsteadiness in Ukraine was primarily the implemented ill-considered economic policy, which did not serve the strategic objectives and opportunities for the development of the national economy [5].

Table 2 The models of macroeconomical equilibrium

Models	Representatives	Principle
1. The classical model	François Quesnay (1694–1774), Jean-Baptiste Say (1767–1832)	<p>François Quesnay in his work “Tableau économique” (1758) made the first attempt to create a model of equilibrium in the form of schematic representation of the process of reproduction on a simple scale and circulation of gross national product, and its implementation between representatives of three classes: manufacturing one, land holders and industrialists. He substantiated the concept proceeding from the development of the economy on the basis of laissez-faire, spontaneous market pricing, equivalence of trading-off and governmental non-interference with business</p> <p>In his “A Treatise on Political Economy” (1803), J. B. Say created the model of economical equilibrium “demand is supply”. According to this model, the production of goods and their supply (merchandise offering) create their own demand. Under these conditions, supply and demand in the economy are always balanced, and imbalances in the form of commodity deficiency or production overage are impossible</p>

(continued)

Table 2 (continued)

Models	Representatives	Principle
2. Marxian economic model	Karl Marx (1818–1883)	The creation of a Marxian model of macroeconomical equilibrium is associated with the research of Karl Marx (1818–1883), who in the second volume of “Capital: The Process of Circulation of Capital” substantiated the general conditions for the proportional development of reproduction on a simple scale and extended reproduction, explained the essence of reproduction of productive forces and production relations, and all its phases: production, distribution, trading-off and consumption. When the conditions of proportionality are violated, disproportion and imbalance arise
3. Neoclassical model	Marie-Esprit-Léon Walras (1834–1910)	Leon Walras developed a model of general economical equilibrium, which shows how market-driven economy ensures equality between aggregate demand and aggregate supply. According to the “Walras law”, economic agents have no receipt of funds from abroad, as well as no “put-up demand”. Therefore, when at constant prices supply and demand coincide in all markets, then supply and demand automatically coincide even in the single market due to budgetary restrictions of economic agents. L. Walras showed that the balance of households and consumer goods markets is congruent with the balance of firms and production factors

(continued)

Table 2 (continued)

Models	Representatives	Principle
4. Keynesian model	John Maynard Keynes (1883–1946)	The Keynesian model of general equilibrium is based on the priority of aggregate demand, on the regulatory role of the quantity traded and on the ability to ensure equilibrium in the presence of unemployment, inflation or setback in production. The state must pursue an active policy of expansion, influencing the level of aggregate demand by cutting taxes, increasing government spendings and interest rate reduction. J. M. Keynes discovered the income multiplier effect—when the overall rise in national income exceeds government expenditures for the encouragement of aggregate demand, which leads to expansion of production volume and higher level of employment
5. The monetarist model	Milton Friedman (mid-twentieth century)	The founder of modern monetary economics proposed to take into account in the model of equilibrium instead of the state policy of expansion the policy of restricting the personal income, the level of aggregate demand, monetary benefits to the population, government spendings, money supply growth. At the same time, there may be rise in unemployment and decline in inflation. In such state of the economy, the state must pursue a policy of deregulation, that is giving greater freedom to develop exchange relations (market relations)

Thus, based on the above, we can say that the basis of economic destabilization in Ukraine were the following long-term system contradictions:

- a) excessive customer share and insufficient profit accumulation under the conditions of underdeveloped internal market, which led to the need to cover surplus of domestic demand due to proactive import growth, and thus to a steady decrease in balance of foreign trade and risks of currency destabilization;
- b) institutional underdevelopment of the financial system and tightness of refinancing mechanisms of the banking system, which led to the active entry of commercial banks into outer loan facilities markets, where the use of consumer credits focused primarily on the purchase of foreign ware and on the mortgage fraction of market;
- c) unfavorable conditions for long-term investing, which led to the predominant investment attractiveness of the sectors with high volume of transactions and the quickest return of capital, priority rates of investment in the sectors that redistribute the national output (the output aggregate), over manufacturing investment, which increased the risks of instability, inflation and failing financial health;
- d) the concentration of export specialization of Ukraine on a small number of family groups of goods with the growth of economic publicity, which formed high dependence of economic dynamics and financial position on overseas markets [5].

The considered contradictions are shown in Fig. 1.

In recent years, not only have there been no systematic actions to overcome these contradictions, but also a number of miscalculations in economic policy have been made, due to the orientation of economic policy to gain the loyalty with the voters under the conditions of accelerated repetition of the political cycle and negligence of the development and structural modernization goals:

- the high level of fiscal exaction of resources for consumption needs was maintained;
- there was a delay in the introduction of effective measures for the regulation of external borrowings of the national economic agent market participants;
- decisions on the ways of effective spending of surplus fiscal revenues over the planned ones were not made in time, so a significant part of funds in the single treasury account was frozen, which led to current demonetization of the economy during the formation of risky inflationary “money overhang”.

The growing political crisis was another active negative factor that contributed to destabilization of the economic situation. While the manifestations of the crisis required prompt coordinated professional decisions of the branches of government, the political crisis reduced the efficiency of the latter, increased the pessimism of market participants in assessing the prospects of crisis phenomena development, disorganized their actions in the framework of antirecession policy (turnaround programme), increased inflation expectations, led to further decline in investment attractiveness of the economy.



Fig. 1 System contradictions of economic destabilization in Ukraine

Thus, it can be said that intensification of the internal political crisis in Ukraine caused marked aggravation of structural maladjustments in the national economy, exposed to the light of the day the incapacity of the economic growth model, which had been established in the previous years [5].

That is, the antirecession policy of any state must be implemented at three levels:

- a) maintaining the competitiveness of the key economic realms;
- b) prevention and avoidance of crises in economically and socially significant areas;
- c) reduction of the negative outcomes of business failures, the fullest satisfaction of the interests of their employees and creditors [6].

Sustainable economic development, economic growth should be the main goal of anti-cyclical measures. In view of this, anti-cyclical measures should be assumed taking into account the country's economic development strategies. Based on this, according to our reckoning, approaches to anti-cyclical measures for the economy should be focused not only on overcoming the effects of the crisis, but, above all, on ensuring transformational changes in the economy and on overcoming structural maladjustments.

In international practice, the development of construction infrastructure projects is considered as an important stimulator of economic activity. In particular, new construction infrastructure projects provide for the modernization of transport infrastructure, power industry, including alternative sources of energy.

Thus, in the United States, The American Recovery and Reinvestment Act of 2009 (Recovery Act) was signed in order to overcome the financial crisis of 2008 and to provide two-year funding of construction, maintenance and modernization of schools and hospitals, environmental projects, health information technologies, construction and reconstruction of roads and bridges, projects aimed at landscape gardening of America, investment in rail transit, energy efficiency of public buildings at the federal, state and local levels.

Two bailout and stimulus packages were adopted in Germany. They provide additional financing for community infrastructure projects, performance improvement programs, innovative and investment programs in the transport sector.

The government of the Republic of China has provided priority support for such industries as construction, transport (control augmentation, service safety, staff training and preparation of information systems), energetics (performance improvement of power stations and nuclear power plants, technologies for remote electricity supply of objects), fuel energy industry, and infrastructure development of the areas affected by earthquakes.

The material and technical basis for overcoming all types of crises and passing cycles is overcoming structural maladjustments in the economy; as well as academic and technological improvement of production, its transition to a new stage of progress, so these are the determinative factors for both overcoming the crisis and reaching the forefront of economic and social development.

The nature of the crisis determines not so much the support of industries and enterprises with obsolete technologies, as the advanced search, justification of upcoming sectors and industries that meet the requirements and needs of innovative development. The actual practice of many countries confirms that structural changes are achieved through the priority development of industries that use high technologies [7].

In the current crisis resolution, along with scientific and technological factors, economic and financial resources are of great importance. Among them, undoubtedly, one of the leading roles is played by the market (Fig. 2).

All this proves that crisis resolution is associated primarily with systematic interaction of public and private regulation and management of economical equilibrium.

The article uses the concept of “equilibrium” and it is interpreted as a momentary characteristic of individual systems and is considered to be the main concept in determining the directions of the state’s economic advance as a whole.

The correctly chosen ratios of the components of the potential will allow to determine, plan and forecast the main macroeconomic indicators.

Equilibrium of the economy as a system is such a state when the output of products is formed in accordance with the supply-and-demand equilibrium, which operates at the macrolevel.

The basic principles of the equilibrium of economics include:

- demand is balanced by supply;
- interrelation of commodity prices and factor prices (or input prices);

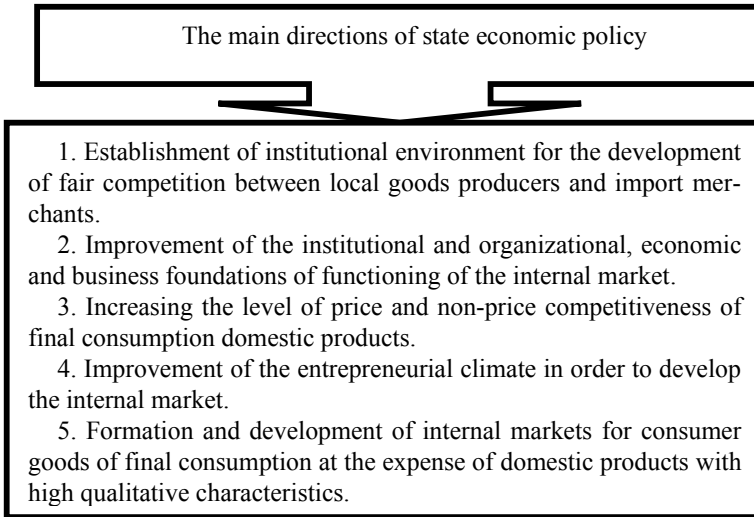


Fig. 2 The main directions of state economic policy

- the existence of equilibrium prices, when demand is balanced by supply;
- consideration of equilibrium as a basis for studying economic growth and building the system of intersectoral linkages.

Let us consider the author's methodological approach to determining the economical equilibrium in construction. We have chosen this very area, because economic recovery in the construction sector of the economy implies surmounting the crisis.

Construction is the economic activity cost line that plays a significant role in creating conditions for local development and for the dynamic development of the nation's economy. The enterprises of Ukraine's construction sector provide other branches of the national economy with new capital funds and carry out construction and installation works, render capital improvements, carry out repairs, technical reequipment and maintenance of facilities in operation.

The dramatic economic environment in today's Ukraine has had a negative impact not only on the development of the country's construction industry, but also on certain industries.

The study [8] analyzed the state of the Hungarian construction industry, noted its leading role in ensuring the economic development of the state. There have been identified the causes of occurrence of crisis phenomena in this area, in particular, insufficient provision with experienced labor forces and fluctuations in prices for construction materials. The analysis of trends in the construction industry, which suffered the most during the crisis of 2008, showed that in order to improve the situation it is advisable to implement large-scale innovation and investment infrastructural construction projects in terms of public private partnership (public-private collaboration).

The research work [9], which indicates the impact factors influencing the level of construction activity and the spheres of interaction between the state and the market, is representative of the abovementioned theses on the importance of the development of the construction industry for surmounting the crisis.

The potential for development of the construction industry and influence of construction development potential on resource efficiency were also analyzed in the research paper [10, 11], which showed that all the regions of China have certain specific nature of capacity building in this area and identified their peculiarities and differences.

The growth of the construction industry will cause the country's economic advance as a whole. Therefore, it is very important to assess the state of the construction industry and development trends in Ukraine (Table 3).

The operating analysis of the indicators of construction enterprises in Ukraine points to the growth of volume of construction products sold over the researched period. The growth of key performance indicators in the construction sphere implies the beginning of overcoming the economy crisis. Thus, cost effectiveness of operative businesses in the construction field in 2019 amounted to 4.7%, which is 1.7% less than in 2018. In 2010, this criterion was 1.5% and it indicates unprofitableness of the industry, which had been growing until 2015 (Fig. 3).

Table 3 The analysis of construction development indicators in Ukraine for 2010–2019

Indicators	Years				
	2010	2015	2017	2018	2019
Construction output of operative businesses in construction fields, %	-1,5	-7,6	1,6	3	4,7
Financial result of construction, UAH million	4418,2	-25,074,1	-3535,8	6433,9	16,106,5
The ratio of construction companies that suffer damages, %	37,5	23,9	24,8	22,8	22,8
The construction output sold, UAH million	101,991,1	150,540,5	236,497,2	308,805,9	362,772,2
The amount of man-power employed in construction, K people	524	282,5	293,7	310,4	331,3
The ratio of employees in construction companies, %	90,1	87,8	87,8	87,1	87,0
The ratio of employees in private entities, %	9,9	12,2	12,2	12,9	13
Structure of construction output sold according to types of enterprises, %:	100	100	100	100	100
- enterprises;	94,8	94,9	93,6	93,7	93,3
- private entities	5,8	5,1	6,4	6,3	6,7
Indices of construction output, % against the previous year	94,6	87,5	126,4	108,6	123,6

The source compiled by the authors according to the State Statistics Committee of Ukraine.



Fig. 3 Dynamics of cost effectiveness of construction operative businesses in Ukraine for 2010–2019

It should be noted that in 2018–2019, only 22.8% of construction companies made losses, and in 2010 37.5% of construction companies were unprofitable. It is also important to note that the least profitable year for construction companies was 2010, although, in general, the cost effectiveness (profitability) of the industry was 4.7%.

It is noteworthy that the share of the volume of products sold, belonging to enterprises and private entities (respective individuals), which work in construction, has been increasing slightly.

The largest number of employed workers is at the enterprises, their share is about 87%. The ratio of employees in private entities (respective individuals) for the study period increased from 9.9% in 2010 to 13% in 2019.

Construction companies are characterized by fluctuations in the index of construction output from 94.6% in 2010 to 123.6% in 2019 (Fig. 4).

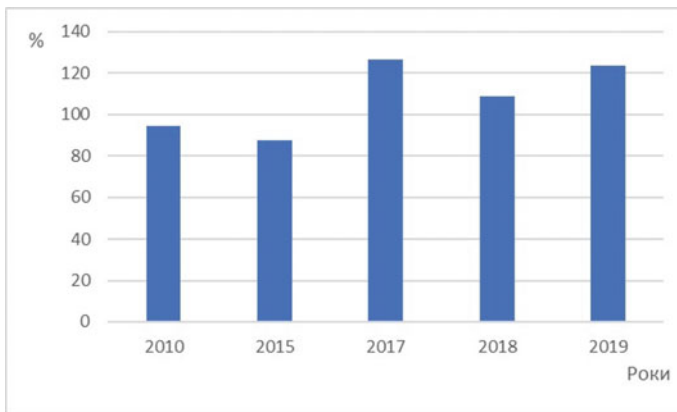


Fig. 4 Indices of construction output in Ukraine for 2010–2019

Table 4 The models of macroeconomical equilibrium

Construction output according to types	2010	2015	2016	2017	2018	2019
1. Buildings	45,6	50,3	51,7	50	47,3	46
1.1 residential buildings	16,1	24,2	243,4	22,5	20,8	18,3
1.2 non-residential (nondomestic) buildings	29,5	26,1	27,3	27,5	26,5	27,7
2. Engineering constructions	54,4	49,7	48,3	50	52,7	54
Total	100	100	100	100	100	100

It should be noted that for the studied period of 2010–2019, construction of engineering structures has the largest share in the structure of construction output—about 54%. The decrease in the share of engineering structures is observed in 2015–2016, which is due to the slowdown in economic development of Ukraine.

In order to predict the country's economic crisis and to determine the optimal structure of the country's economy, it is necessary to improve the method of determining the equilibrium in any sector of the national economy.

Let us specificate the structure of construction output according to types (Table 4).

According to the above-mentioned principal features and parameters, we will model the equilibrium position of Ukraine's construction, taking into account the equilibrium supply and demand for the sector of the national economy.

Let us illustrate the function by an example. Based on the data of the State Statistics Committee of Ukraine, we define a strictly determined descriptive model of the equilibrium state of the economy, using the following Keynesian demand function:

$$C = a + b * Y, \quad (1)$$

where C is the innovative demand, which in our case is equated to the nominal capital (basic stock) in construction;

a—autonomous consumption, we take this value equal to the investment potential (investment in construction);

Y—supply equal to Gross Domestic Product (GDP), which provides a type of economic activity, including construction;

b—is the equilibrium coefficient that characterizes the relationship between equilibrium production and demand.

Application of the descriptive approach in modeling is explained by the need to empirically identify various dependencies in the economy, to find out statistical regularities of economic behavior of indices, to study the probable evolution of economic processes. Examples of descriptive models are production functions (resource-production ratios), in particular the Cobb-Douglas function and the buying interest function, that was used in this study.

When plotting the curve of resource-production ratio of the country's economy, Gross Domestic Product (GDP) according to types of economic activity is often

taken for the value of annual output of products. Certain types of potential in value terms are considered as resources. The above mentioned function is as follows:

$$P = a_0 P_1^{a_1} P_2^{a_2}, \quad (2)$$

P_1, P_2 —certain types of potential (ultimate potential resources, capital resources, innovation potential, investment potential);

a_0 —coefficient of production function (resource-production ratio);

a_1, a_2 —power indicators, $a_1 + a_2 = 1$.

The demand function in its dialectical nature is quite close to the production function (resource-production ratio). The properties of production functions (resource-production ratios) include the following characteristics:

- there is no production without input requirements;
- the output of products leaps with the growth of cost outcome of at least one resource.

The demand functions of Fischer, Modigliani, Friedman, Keynes can be used in scientific and practical work. Common to these functions is the existence of such values as the size of public production, which is expressed through the production function (resource-production ratio).

The demand function has the same properties as the production function (resource-production ratio). Therefore, they are used simultaneously, in combination.

The authors have identified the methodology and have developed the methodology for unlocking the existing potential, which provides economical equilibrium, with the aim of ensuring the country's sustainable development. The algorithm for achieving the determined goal is shown in Fig. 5.

According to the developed method, the equilibrium coefficient (b) is determined by the following formula:

$$b = (c - a) / Y, \quad (3)$$

c —demand (nominal capital);

a —finance and investment potential;

Y —the volume of gross domestic product according to the types of economic activity.

But this function requires certain limitations, without which it is impossible to say that it will help to characterize the equilibrium of the economic system.

Firstly, all changes introduced into the function must be measured in actual prices, bearing in mind that the equilibrium coefficient is a relative number. That is, the impact of inflation factors will be neutralized. Thus, we can compare the obtained indicators, analyze and predict their value for the future.

Secondly, we assume that the national economy is resilient and self-regulatory, including the elements of state planning.

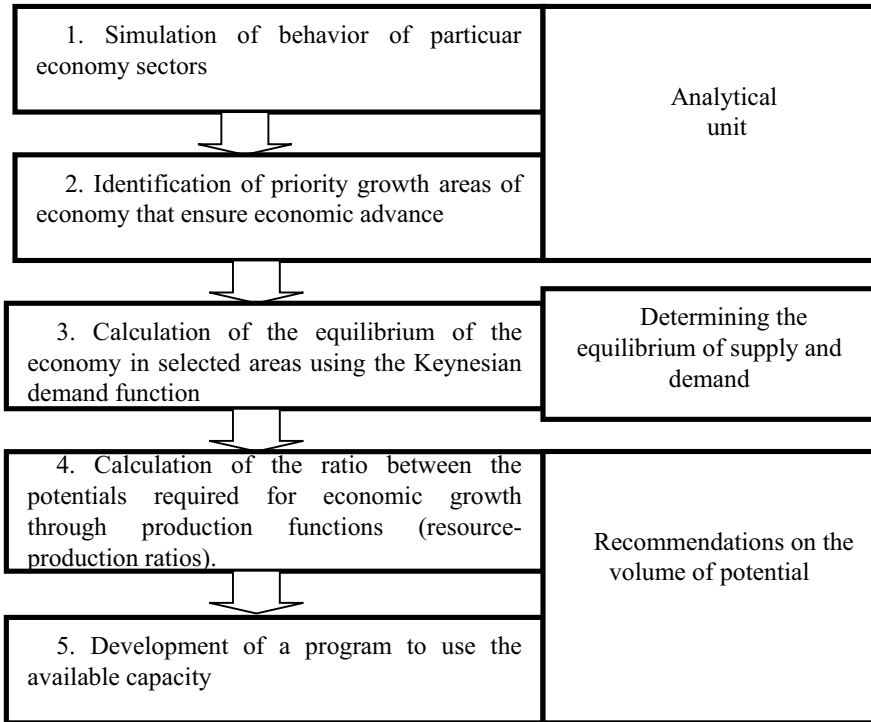


Fig. 5 Algorithm for determining economical equilibrium for increasing the use of existing potential for development

Thirdly, when determining the economical equilibrium of the construction industry, it is necessary to take into account that construction itself is a crucial sector in the structural and investment restructuring of the national and regional economy. The authors of this work note that the result of modeling the economy of the state as a whole was identification of the highest priority areas for its further development, which will improve macroeconomic indicators, ease and overcome crises.

Our task is to find the equilibrium coefficient “b”. Therefore, using the methodological approaches mentioned above, we will calculate the equilibrium coefficients of construction in Ukraine according to the data of State Statistics Committee of Ukraine (Table 5).

During the period under study, there is an increase in financial and investment potential and the result of functioning—gross domestic product. According to the calculation of the equilibrium coefficient, it is necessary to state the fluctuations of this indicator.

The dynamic study of the equilibrium coefficient value has been undertaken using a graph that characterizes the quantitative and qualitative equilibrium position of the permanent buildings and facilities construction industry (Fig. 6).

Table 5 Modeling the equilibrium position of the construction industry in Ukraine for 2012–2019

Indices	2012	2013	2014	2015	2016	2017	2018	2019
GDP, UAH million	1,459,096	1,522,657	1,586,915	1,988,544	2,385,367	2,983,882	3,560,596	3,974,564
GDP for foreign business operations (construction), UAH mln	184,751	174,158	162,551	188,595	240,327	326,496	428,010	437,202
Investments, UAH million	293,692	267,728	219,420	273,116	359,216	448,462	578,726	623,979
Investments in construction, UAH mln	44,895	46,318	36,057	43,464	44,444	52,176	55,994	62,347
Fixed assets, UAH million	11,410,035,6	10,401,324	13,752,117	7,641,357	8,177,408	7,733,905	9,610,000	9,574,186
Fixed assets in construction, UAH million	80,107	82,646	64,352	62,090	72,810	78,704	91,715	117,057
Equilibrium coefficient for construction (b)	0,1906	0,2086	0,1741	0,0988	0,1180	0,0813	0,0835	0,1251
Average value (b_{aver})								0,1350
Deviation ($b_i - b_{aver}$)	0,0556	0,0736	0,0391	-0,0362	-0,0170	-0,0537	-0,0515	-0,0098

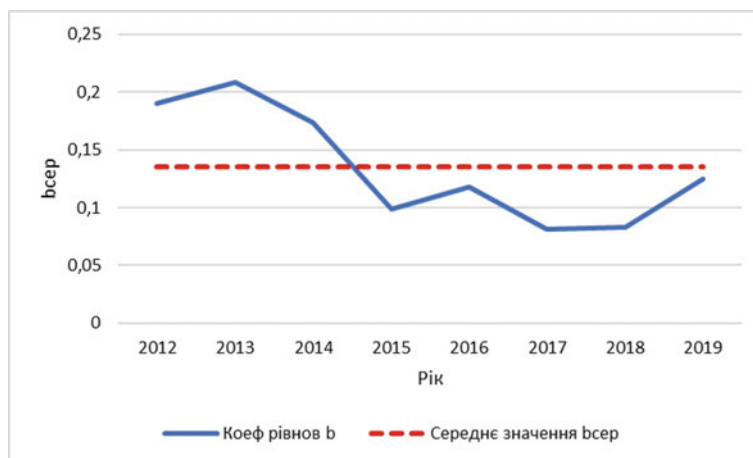


Fig. 6 Dynamics of the equilibrium coefficient of construction in Ukraine for 2010–2019

Dynamics is characterized by business cycle fluctuations, which can be explained by the general economic situation in the country. Thus, in particular, in 2012–2013 we observed an increase in the equilibrium coefficient, which can be explained by some stability in the capital construction market. The 2013–2014 cycle is characterized by a decrease in the equilibrium coefficient, which is the consequence of troubled political circumstances and volatile economic environment in Ukraine, although this value is still above average. However, a rather negative trend was observed in 2015, then there was a gradual increase in 2016 and another decrease in 2017–2018.

2019 is a year of gradual capacity building of the country's development potential. But this ratio, judging by the cyclical nature observed in retrospective, may reduce again, even without reaching the average level. Therefore, it is necessary to develop a plan of anti-recessionary measures for the development of this industry. In particular, the draft of the provision of the law "On Prevention of the Impact of the Crisis on the Development of the Construction Industry and Residential Construction", aimed at supporting the construction industry, infrastructure projects, stimulation of residential construction under recessional conditions and at enforcement of the rights of the citizens, who need the state support.

3 Conclusion

The developed method of determining the economical equilibrium should be used to predict the optimal structure of the region's economy and the national economy as a whole and the formation of priorities for sustainable development.

Further analysis should be made, as mentioned above, using production functions, the calculation methodology of which is expanded in the study [11–15]. This would

enable identifying the optimal amount of financial and investment potential needed to ensure immediate-action equilibrium and gradual economic growth.

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