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**Fundamentals of the Real Sector of Economy and Main
Ways of Modernization of Georgian Economy**

ABSTRACT

Of the Thesis Submitted for the Academic Degree of Doctor of Economics

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Tbilisi

2024

The work performed at the Department of Theoretical Economics of Ivane Javakhishvili Tbilisi State University

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Thesis defense will take place: on June 28 , 2024 at 15:00 pm at the meeting of the Dissertation Council of the Faculty of Economics and Business, Ivane Javakhishvili Tbilisi State University.

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Contents

General Description of the Thesis.....	4
Topicality	4
State of the research problem.....	4
Goals and Objectives of the research	4
Theoretical and methodological foundations of the research	5
Scientific novelty of the Research.....	5
Practical significance of the Research	8
Approbation and Publication of Research Results.....	8
Structure of the Research.	8
Content of the Thesis.....	9
Chapter 1. Theory and Mechanisms of Development of the Real Sector of the Economy.....	9
Chapter 2: Global Patterns of the Real Sector of Economy Development and Post-Soviet Georgia's Experience.....	10
Chapter 3: Prospects of the Real Sector Development in Georgia	12
The major results of the paper	13
Publications	17

General Description of the Thesis

Topicality. At the post-industrial stage of human development, when a continuous and irreversible transformation of the global economy with the largest share of the service sector poses a threat of creation of “financial bubbles” that largely prevents the healthy and real development of the world economy, the study of problems of the real sector of the economy is unequivocally relevant.

The processes occurring in the global economy and the gravest Soviet legacy inherited by Georgia make the scientific study of the problems of the real economy and the practical application of the results of research even more relevant.

In the scientific study of real economy problems, it is important to identify the theoretical foundations of the development of the real economy, which is one of the fundamental prerequisites for the creation of a real economic vision and its theoretical and applied nature.

The second important scientific problem posed in the Thesis is the precise definition of the Soviet legacy and the possibility of developing real mechanisms through which we can actually modernize the Georgian economy.

The two main scientific problems discussed in the Thesis are relevant in their essence and nature, because without correctly identifying these scientific problems and developing appropriate mechanisms for their solution, the perfect healthy development of the Georgian economy and its full integration into the global economy will not be possible.

State of the research problem. There are many monographs and scientific articles written by academic economists on the scientific problem discussed in this Thesis. The available scientific literature is somewhat chaotically presented, and in fact, there is no monograph or article where this problem has been systematically studied, and the conclusions drawn would be of a systematic and applied nature. The situation is aggravated by the fact that the results of research by academic economists are not taken into account in the process of formation of economic policy of countries.

There is practically no organized and systematized scientific literature on the scientific problem posed in this Thesis, which makes it even more difficult to study the problem which is so complex by itself.

Goals and Objectives of the research . The goal of this dissertation thesis is to define fundamentals for the development of the real economy, because without this it is impossible to

conduct a scientific study of the mentioned problem and draw appropriate conclusions and recommendations.

Without elaboration of theoretical foundations of the real economy development it is impossible to create the real economic vision, which will be of applied nature. It is also impossible to create the relevant economic policy. Therefore, the main goals of the thesis work are:

- to create a systemic theoretical model of real economy development;
- to create a general theoretical framework for the real economy on the basis of the system theoretical model of the real economy;
- to develop a modern economic policy of applied nature based on the fundamentals of the real economy;
- to develop the basic economic mechanisms through which we will be able to continuously modernize the economy of Georgia.

The primary objectives for achieving the goals set in the Thesis are:

- creation of a systematic theoretical model for development of the real sector of the economy and its implementation within 3-5 years;
- business and professional communication with companies, firms, corporations, joint-stock companies, etc. in the spheres of the real economy is necessary;
- effective mechanisms of development of the real sector of the economy must result in a transition of the Georgian economy to a process of continuous modernization.

Theoretical and methodological foundations of the research. To study the scientific problem posed in the Thesis, we used the following research methods:

- method of comparative analysis;
- method of inductive analysis;
- method of deductive analysis;
- method of system analysis;
- method of abstraction and generalization.

As a result of the integrated and synthesized use of the above research methods, we solved the main scientific problems posed in the Thesis. Therefore, we can say that the synthesized-integrated model of theoretical and methodological foundations of research have been used in our work.

Scientific novelty of the Research

We have developed the sectoral-economic criteria for the main components of the real sector of the economy.

It is known that the general criterion of the real economy is productive capacity, in particular:

- The sectoral criteria of the agrarian sector are: production of vital products; high dependence on natural resources and ecological conditions;
- The economic criteria of the agrarian sector are: agro-corporate production; land ownership and management; quasi-corporate firms; seasonal labor; cyclical production; value chain efficiency; science-intensive, high-tech production; capital-intensive, labor-intensive production; highly skilled human capital; relatively excessive population; weak synergy; perfect competition; strong price volatility; declining returns;
- The sectoral criteria of the mining and processing industry are: science-intensive, knowledge-intensive, innovative, high-tech production process; high dependence on natural resources; exhaustible underground resources; instability and threats to the ecosystem;
- The economic criteria of the mining and processing industry are: international specialization; division of labor in complex patterns; stable and dynamic production; stable prices; growing returns; dynamic imperfect competition; creation of a sustainable and growing balance of payments; creation of results-oriented synergies;
- The sectoral criteria of the energy sector are: high dependence on natural resources; environmental and climatic threats; science-intensive, innovative, high-tech production process; use and realization of clean energy sources;
- The economic criteria of the energy sector are: technological and economic sustainability; a high degree of synergy; value chain efficiency; dynamic, imperfect competition; high returns; and stable prices;
- The main sectoral criteria of the water supply sector are: high dependence on natural resources; exhaustibility of natural resources; knowledge-intensive, science-intensive, innovative, high-tech production;
- The economic criteria of the water supply sector are: division of labor; skilled human capital; a high degree of synergy; intensive implementation and execution of infrastructure projects;
- The sectoral criteria of the construction industry are: high dependence on natural resources and raw materials; knowledge-intensive, science-intensive, innovative, high-tech activities;
- The economic criteria of the construction industry are: highly skilled human capital; specialization according to global market requirements; increasing returns; dynamic imperfect competition; high and increasing degrees of synergy.

As a result of the study of the scientific problem posed in the Thesis, using appropriate scientific and methodological methods, we have developed the following scientific innovation:

A three-level framework model of real economy development based on the hierarchical principle.

The technological mechanisms for the development of the real economy according to the hierarchical principle are:

- Industrial technologies;
- Agrarian technologies;
- Mining and processing industrial technologies;
- Energy industrial technologies;
- Construction industrial technologies;
- Water supply technologies.

The modern economic mechanisms for the development of the real economy based on the hierarchical principle are:

- Microeconomic mechanisms - circular economy model; market forces of supply and demand; function of production; elasticity; manufacturer's savings; public goods; common resources; production costs; free global market; competitive market; input markets; inclusive growth; investment; leasing; taxes; venture capital and funds; synergy models; industrialization and reindustrialization;
- Macroeconomic mechanisms - national income; production and economic growth; savings; investment; inclusive growth; finance and monetary system; taxes; venture capital and funds; leasing; synergy models; industrialization and reindustrialization; open economy;
- Meso-economic mechanisms - innovative mesoeconomy; concentration of production; structure of modern meso-enterprise; stability and consolidation; efficiency of meso-enterprises; agrarian complexes; industrial complexes; large industrial corporations; free global market; synergy models; industrialization and reindustrialization;
- Mega-economic mechanisms - transnational capital, transnational corporations, transnational banks; big cities and metropolises; blocs of countries; international organizations; free global market; synergy models; industrialization and reindustrialization; offshores;
- Synthesized framework model of modern techno-economic mechanisms of development of the real sector of the economy based on the hierarchical principle that takes into account the synthesis of technological and economic mechanisms.

Consideration of the three-level framework model of development of the real sector of the economy on the basis of the hierarchical principle in the theory of economic mechanisms will make the said theory more complete and focused on the problems of the real sector of the economy. Thus, the applied side of this theory will increase. It is also possible to create a modern econometric model of the real economy on the basis of the mentioned framework model, which

will largely contribute to a comprehensive solution of existing problems, as well as growing and dynamic development of the real economy.

The said scientific innovations largely determine the study of problems of modern economic topology and their effective solution.

Practical significance of the Research. The practical significance of the Thesis can be presented as follows:

- The work is the basis for establishing a framework for theoretical forecasting of the real economy at the first stage, which will facilitate students of economics and business administration at universities, especially at the master's level, to better understand the problems in the economy;
- The work is the basis for those interested in the topic to use in their research and to base their research on real economy problems;
- The outline of economic policies required for the development of the real economy can be created on the basis of this work.
- The issues of applied nature from the said work can be used by firms, companies as well as entrepreneurs and farmers working in the real economy sector, both in the production and management direction.

Approbation and Publication of Research Results. The results of the research were published in three peer-reviewed scientific journals, in Georgia as well as abroad.

The results of the research were discussed at 7 international scientific conferences.

On December 8, 2023, at the Department of Theoretical Economics at the Faculty of Economics and Business of Ivane Javakhishvili Tbilisi State University, the approbation was conducted and the thesis was approved.

Structure of the Research. The Thesis consists of 170 computer typed pages (not including the table of contents and references).

The structure of the work consists of the following parts:

- Introduction;
- Three chapters and 9 paragraphs;
- Conclusions and recommendations;
- List of references;
- 7 framework models.

Content of the Thesis

Chapter 1. Theory and Mechanisms of Development of the Real Sector of the Economy

In the First Chapter of the Thesis, devoted to the theory and mechanisms of development of the real sector of economy, all important components of this issue are reviewed and analyzed in a thorough and comprehensive manner.

The first paragraph of the First Chapter defines the concept of real economy, its sectoral-economic criteria and main regularities of development.

The second and third paragraphs of the First Chapter analyze in detail the existing modern theories about the development of the real economy and defines the basic and modern mechanisms of development of the real economy.

The First Chapter of the Thesis analyzes in detail all the main economic theories conceptually related to the development of the real economy.

In the second paragraph of the First Chapter of the Thesis the Schumpeterian hierarchical model of production is considered. Also the main features of Joseph Schumpeter's process of creative destruction are considered, based on which we developed the following thesis - knowledge-intensive industries have the highest innovation effect.

In the said paragraph we discussed the most significant issues of Joseph Schumpeter's theory of economic development, namely that it is possible to create new combinations even in the presence of old ones. As a result of the analysis of these theories, we derived the following principle: economic development is based on the principle of coexistence.

We reviewed the role and functions of innovators in Joseph Schumpeter's evolutionary theory, according to which the "innovators" are the main agents of "creative destruction".

We have analyzed in detail the two main groups of Joseph Schumpeter's theory of innovation. The first group includes those innovations that affect the production process, and the second group directly affects products. We have also analyzed in detail Joseph Schumpeter's concepts of innovative entrepreneurs. As a result of the study, we determined that according to the Joseph Schumpeter's important theoretical assumptions, economic activity should be led by an innovative entrepreneur, and the creation of an innovative product should be considered the main benchmark of production.

We have reviewed the main theses from Karl Marx's "Capital", which apply to the real sector of the economy. Of Karl Marx's theses, we have highlighted the most significant one, which relates to capitalist industry. According to Karl Marx's theory, one of the main components of industry is cooperation, which takes its classical form in the sphere of industry, namely in the process of the division of labor. Through industrial capitalism large amounts of wealth are produced and distributed unequally throughout society.

We also reviewed Max Weber's "The Protestant Ethic and the Spirit of Capitalism", where Max Weber pays particular attention to capitalist enterprise.

We reviewed the main theses of John Maynard Keynes, which deal with the real economy.

We also reviewed the main concepts from the theories of Frank Knight, Carlotta Perez, Klaus Schwab, Eric Reinert, which concern the real sector of the economy.

As a result of studying the mentioned theories by the method of critical analysis we have drawn the following conclusion. Using the rational-optimal method from the above theories, we should distinguish the most basic components and synthesize them.

In the third paragraph of the First Chapter of the Thesis we developed modern technological and economic mechanisms, necessary for the development of the real sector of the economy, based on the principle of hierarchy.

As a result of the research we have developed modern technological mechanisms, modern economic mechanisms, synthesized model of modern techno-economic mechanisms, which are presented in the form of framework models in the third paragraph of the First Chapter of the Thesis.

Chapter 2: Global Patterns of the Real Sector of Economy Development and Post-Soviet Georgia's Experience

The Second Chapter of the Thesis deals with global patterns of the real sector of economy development and the experience of post-Soviet Georgia.

The first paragraph of the Second Chapter describes in detail main regularities of transition to knowledge-based economy, reindustrialization and development of the real sector of the economy globally.

The second paragraph of the Second Chapter examines in detail the phenomenon of necroeconomics and post-Soviet post-industrialism.

The third paragraph of the Second Chapter precisely defines the peculiarities of the development of the real economy of Georgia in the post-Soviet period.

In the first paragraph of the Second Chapter of the Thesis we reviewed in detail the reindustrialization, the transition to a knowledge-based economy and the main regularities of the development of the real sector of the world economy. In the Thesis we have considered many existing scientific definitions of reindustrialization. Among them we single out the most significant one, according to which reindustrialization is the integration of efforts of the government business and the education system to develop and implement a coordinated industrial policy, focused on the restoration of the country's industrial potential. It is worth noting the fact that almost all scientists and researchers share the opinion that in the process of reindustrialization the state intervention and development of the innovative component of production is necessary.

In this paragraph we emphasize that in the process of reindustrialization it is necessary to introduce and implement the model of smart industrialization.

In the Thesis we emphasize that the continuous process of reindustrialization is mainly based on human capital, namely on the pace of scientific and technological development.

In the first paragraph of the Second Chapter of the Thesis we consider in detail the essence, role and functions of the knowledge-based economy. We emphasize that in the modern economy the added value of increasing nature is created when a commodity contains a set of specific knowledge, determining its knowledge-intensive and science-intensive character.

The thesis analyzes the global knowledge index (GKI), knowledge index (KI), knowledge economy index (KEI) developed in the economics.

In the said paragraph we developed a system-functional framework model of transition to the knowledge-based economy in the real sector of economy.

The main regularities of development of the real sector of the world economy are determined by transnational capital.

The world order, formed as a result of economic evolution, has sharply divided the modern world into a rich center and a poor periphery.

In the second paragraph of the Second Chapter of the Thesis we analyzed in detail the necroeconomics and the phenomenon of post-Soviet post-industrialism.

The theory of necroeconomy was introduced into the scientific literature by Academician Vladimer Papava. Necroeconomy is a matter of phenomenal measurement of complex value. The basis of necroeconomics is the impact of the legacy of the Soviet command economic system.

According to Academician Vladimer Papava, the necroeconomy of the post-Soviet post-industrialism has formed the consumer model of poor country's economic development.

The final part of this paragraph talks about the need to completely and finally overcome the syndrome of necroeconomic post-Soviet post-industrialism as soon as possible.

In the format of public policy, with the participation of qualified specialists and scientists, a modern concept of industrial development must be created, which will be harmonized with the relevant framework document of international importance.

The third paragraph of the Second Chapter of the Thesis deals with the peculiarities of the development of the real sector of Georgia's economy in the post-Soviet period.

As a result of the research in the said paragraph we have developed the following conclusions:

- In the post-Soviet period in Georgia until 1989-1996 the real sector of the economy was in a necrosis state. Accordingly, this period can be called a period of deep stagnation and regressive development;
- Including the years 1996-2000, the real sector of economy slowly and gradually emerged from its necrosis state and started to produce a certain volume of goods. Accordingly, this period can be called a period of less stagnant and less regressive development;
- Since 1996, out of the real economy, the energy sector has seen the most development in accordance with international standards;
- From 2000 to the present, except for the pandemic 2020 year, the situation in the real economy has been developing slowly but still improving. This period can be called a stable development, in which there are still signs of stagnation and regression.

Chapter 3: Prospects of the Real Sector Development in Georgia

The Third Chapter of the Thesis considers in detail the main and realistic prospects of developing the real sector of the Georgian economy.

The first paragraph of the Third Chapter identifies real opportunities for the innovative development of the Georgian economy.

The second paragraph of the Third Chapter fundamentally analyses the role and mechanisms of the knowledge-based economy and modernization in the improvement and development of the real economy of Georgia.

The third paragraph of the Third Chapter precisely defines the main ways of development of the real economy.

As a result of the research, we have identified the main factors of economic development: human capital; science; inventions; innovation; technology and technological knowledge; natural resource potential; and institutions.

We have developed a two-level framework model of innovation creation.

Based on the research conducted we propose the following conclusion:

Georgia potentially possesses human capital capable of creating and producing innovative technologies.

In the second paragraph of the Third Chapter of the Thesis we considered the knowledge-based economy, the role of modernization and mechanisms in the improvement of the real sector of the Georgian economy.

An innovative knowledge-based economy is in the process of continuous modernization, which leads to the perfect development of the real sector of the economy.

In the third paragraph of the Third Chapter of the Thesis, we considered the main ways of development of the real sector of the Georgian economy.

Our main thesis is as follows: ***it is necessary to make quick and dynamic optimal use of available human capital and to implement digital transformation of the economy as a whole, including the real sector of the economy.***

The major results of the paper. There is developed the sectoral-economic criteria of the main sectors that make up the real sector of the economy, which has both theoretical and practical significance.

There is developed a three-level scheme-model of real economy development based on the hierarchical principle. There is introduced the principle of hierarchy in economic science, will fix the problems of coordination and make the management of enterprises and firms more effective.

Conclusions and Recommendations

Defining the theoretical foundations for the development of the real sector of economy is a prerequisite for designing a modern, results-oriented economic policy.

Accurately defining the main ways of modernizing Georgia's economy is the basis for the economy to gradually move to a modern model of development and become a full-fledged player in the global economy.

The theory of real economy development includes the Joseph Schumpeter's concept of "creative destruction", business cycles, economic development theory, "innovators" in evolutionary theory as the main agents of "creative destruction", entrepreneurship, which involves creating an innovative product. The development of the banking system plays an important role in the creation of an innovative product. The entrepreneur has to create new values and establish a new innovative product on the market.

The most important theoretical assumption of Josef Schumpeter is that economic activity should be led by an innovative entrepreneur, and that the creation of an innovative product should be considered the main direction of production.

According to Karl Marx's theory, one of the main components of industry is cooperation. Through industrial capitalism large amounts of wealth are produced and distributed unequally in society.

Based on the comparative analysis of the concepts of Joseph Schumpeter, Karl Marx, Max Weber, John Maynard Keynes, Frank Knight, Carlota Perez and Klaus Schwab we can offer the following conclusions:

- A system theoretical model needs to be created based on existing concepts;
- The essential components should be selected from the existing theories on the development of the real sector of economy, using the rational-optimal method, and synthesized;
- The theoretical model resulting from the synthesis of existing theories should be highly adaptable, both conceptually and functionally;
- Theoretical models synthesized according to the evolutionary theory of economic changes, reflecting the main characteristics of the real economy, can develop the real economy;
- Based on the existing theoretical framework, a system analysis can be carried out, which will result in a system-pragmatic model for the development of the real sector of the economy, highly adaptable to changes in general and especially to changes of a technological nature;
- The formation of developed specialized clusters and the use of appropriate technological platforms will enable efficient production and management;
- The conceptual basis of the innovative economy is the evolutionary theory, on the basis of which it is possible to create a paradigm of innovative development of the real sector of economy;

- The basic mechanism for development of the real sector of economy is the techno-economic paradigm based on the hierarchical principle;
- The global patterns of real economy development are based mainly on dialectical laws;
- Scientific and technological innovations are the basis for the growth of modern production and the main guarantor of competitiveness;
- In the post-Soviet period, the real sector of the economy of Georgia was equally influenced by both endogenous and exogenous factors;
- Post-Soviet period in Georgia from 1989 to 1996 can be considered as a period of deep stagnation and regressive development;
- The period 1996-2000 can be considered as less stagnant and less regressive;
- From 1996 onwards, of the real economy, the energy sector has seen the most development in line with international standards;
- From 2000 to the present, the situation in the real economy has been developing at a slower pace, but still towards an improvement. This period can be classified as stable development, which still includes signs of stagnation and regression;
- Georgia has the potential to have human capital capable of creating and producing innovative technologies;
- The efficiency of the knowledge economy and modernization mechanisms will be possible if priority is given to the development of entrepreneurship;
- A knowledge-based economy and its continuous modernization is a solid foundation for the development of the real economy;
- As a result of digital transformation, real economy sectors need to adopt a digital mode of operation at an accelerated pace;
- In addition to mining and processing industries, other sectors of the real economy can undergo digital transformation and take their rightful place in the structure of the global value chain;
- The main development paths of the real sector of economy envisage a transition to a knowledge-based economy as a result of a continuous process of modernization and digital transformation of all sectors of the real economy in line with international standards.

Based on the above conclusions, the following recommendations can be offered:

1. Modern economic policy making.

The Ministry of Economy and Sustainable Development of Georgia needs to create a modern results-oriented economic policy platform for the development of the real sector of the economy.

2. Creation of modern legal framework for the development of the real sector of the economy.

The Parliament of Georgia must be guided by the legal achievements of developed countries and create sectoral legal framework on the national level that meet modern requirements of the real sector development.

3. Amendments to the Law on the State Budget.

The Ministry of Education and Science of Georgia must address the authorities with substantiated proposals to include in the Law on the State Budget a paragraph providing solid budgetary funding for the National Academy of Sciences of Georgia, the Academy of Agricultural Sciences of Georgia, state universities and research institutes.

4. Creation of a modern industrial development concept.

Concept of modern industrial development, action plan and strategic plan must be elaborated by a group of independent scientific experts.

Modern industrial companies and cooperatives must be established in the real sector of the economy under modern legal framework and state investments.

5. Establishment of practical platforms for innovative entrepreneurship.

As a result of effective use of human capital, practical purpose platforms for innovative entrepreneurship should be created with active government support in all sectors of the real economy.

6. Transformation of the "Produce in Georgia" program and focus of the production process.

The goals and functions of the LEPL "Produce in Georgia" Agency should be focused on the development of the most problematic sectors of the real economy. Business development, investment, export support should be based mainly on the growing and continuous development of the real sector. At the first stage, all available resources should be directed towards agricultural spheres and the creation of small and medium technological enterprises processing agricultural products.

7. Modernization of the Agency of Innovation and Technology of Georgia.

The mission of the Agency of Innovation and Technology of Georgia must be to offer a large and growing number of grant projects to those startups that can do business in the real sector of economy with the help of modern technologies.

8. Modernization of state institutions.

The Ministry of Environment Protection and Agriculture of Georgia, together with the Academy of Agricultural Sciences and the Agricultural Research Institute, should develop a medium- and long-term strategic plan for agricultural development that is results-oriented and practical.

The Ministry of Economy and Sustainable Development of Georgia should create an economic policy in line with new modern requirements, with the active involvement of the scientific community. In the new economic policy, the central place should be given to the development of real sector of the economy.

The existing structure of the Ministry of Economy and Sustainable Development of Georgia must be changed and relevant departments and agencies must be established for the development of the real sector of the economy.

9. Modernization of monetary policy.

The existing monetary policy of the National Bank of Georgia should be changed. A new monetary policy must be developed with the active participation of academic economists. Their aim should be to maximize financial support for the real economy through modern monetary mechanisms.

The consideration of the above conclusions and recommendations will make it possible to shift the sectors of the real economy into a mode of gradual and continuous development, which will ultimately lead to a strengthening of the national economy and an increase in the vital micro- and macroeconomic parameters, on which the sustainable economic development of the state depends.

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