

Review Paper

# The Strategic Role of the State in Stimulating and Supporting Economic Growth: Tools, Policies and Influence on the Modern Economic Paradigm

Vitalii Kruhlov<sup>1\*</sup>, Olha Dzhyhora<sup>2</sup>, Yevhen Trubakov<sup>3</sup>, Vitalii Kotsur<sup>4</sup> and Zoriana Buryk<sup>5</sup>

<sup>1</sup>Department of Sociology and Public Administration, National Technical University "Kharkiv Polytechnic Institute", Kyiv, Ukraine

<sup>2</sup>Department of National Security, Public Management and Administration, Faculty of National Security, Law and International Relations, Zhytomyr Polytechnic State University, Zhytomyr, Ukraine

<sup>3</sup>Department of Law, Interregional Academy of Personnel Management, Kyiv, Ukraine

<sup>4</sup>Hryhorii Skovoroda University in Pereiaslav, Pereiaslav, Ukraine

<sup>5</sup>Department of Public Management and Administration, Hryhorii Skovoroda University in Pereiaslav, Pereiaslav, Koretsky Institute of State and Law of National Academy of Science of Ukraine, Kyiv, Ukraine

\*Corresponding author: virt197@gmail.com (ORCID ID: 0000-0002-7228-8635)

Received: 18-08-2023

Revised: 26-11-2023

Accepted: 04-12-2023

## ABSTRACT

The article examines issues related to the state's role in economic growth stimulation in the context of the dynamics of global economic and technological development. Even though measures for state regulation of the economy are intended to create favourable conditions for accelerating economic growth, this process is closely related to numerous factors that can have both positive and negative effects on the results of stimulating and supporting economic growth. Also, the article touches on international models in the field of government regulation of the national economy, examines their main features, as well attempts to outline the peculiarities and uniqueness of economic development and the government's role in the economy in the era of information society.

## HIGHLIGHTS

- The role of the state in economic growth depends on various factors, including the level of economic development, economic activity, and national characteristics. It is necessary to find an optimal balance between state incentives and market forces. Different approaches to state investment policy and their impact on different stages of economic development are discussed, the importance of adapting strategies to historical and institutional contexts is emphasized.

**Keywords:** Economic growth, regulation, stimulation, information society, economic policy, digital economy

In recent years, researchers and practitioners have shown a strong interest in the importance of an effective regulatory framework in supporting economic growth and development. Most economists involved in the study of the role of the state in stimulating the development of national economies of various countries argue that the scale of economic stimulation depends on many factors of both the

economic order (level of economic development, level of economic activity) and national specifics (the traditional role of the state in society, social mentality). It is impossible to accurately determine

**How to cite this article:** Kruhlov, V., Dzhyhora, O., Trubakov, Y., Kotsur, V. and Buryk, Z. (2023). The Strategic Role of the State in Stimulating and Supporting Economic Growth: Tools, Policies and Influence on the Modern Economic Paradigm. *Econ. Aff.*, 68(04): 2289-2304.

**Source of Support:** None; **Conflict of Interest:** None 

the acceptability of one or the other. One can say with confidence that the process of state stimulation of a market economy must be economically justified and acceptable on a scale that helps improve economic efficiency. However, in any case, state stimulation of economic life development must be reasonable, and, therefore, one of the main tasks of a market economy is to achieve an optimum relationship between the process of state stimulation and market forces.

## LITERATURE REVIEW

Among the economists of the 20<sup>th</sup> century and contemporaries who made a significant contribution to the development of the theory of economic growth and crisis studies, it is necessary to note J. Galbraith, R. Dornbusch, D. Keynes, P. Krugman, N. Kondratiev, V. Leontiev, R. Lucas, G. Menkiw, W. Mitchell, P. Romer, R. Solow, J. Soros, J. Stiglitz, S. Fischer, R. Hall, J. Schumpeter, and many other scientists. Issues of the causes, typology, and specifics of the development of economic cycles were raised in their works by N. Kondratiev, E. Hansen, E. Lindahl, and others. Scientific works in these areas touch on various topical problems of management and financial support of economic growth in modern conditions but do not reduce the range of issues regarding the development of a new paradigm for ensuring economic growth and require additional research.

The question of the role of the state in stimulating economic growth is one of the central and most controversial in both economic theory and economic policy. Dominant approaches replaced each other, and along with them, the strategy of many developing countries changed radically.

In the 1950s-1960s, most governments, when pursuing their policies, proceeded from the decisive role of the state in ensuring effective catch-up development. After the debt crises of the 1980s, this concept was heavily criticized, and a minimalist view of the role of the state came to the fore: it should ensure property rights, conduct responsible monetary policy, provide a minimum of social guarantees and partially finance infrastructure, but at the same time abandon attempts to stimulate economic growth through subsidies, preferential loans, government investment in production, etc. (Auty, 1995). The minimalist approach dominated

the development of institutional reforms in Latin American and African countries and transition strategies in former socialist countries in the late 1980s and early 1990s. It must be emphasized that rational economic policy cannot be universal, since it should correspond to the level of economic and social development of the country since a rational economic management strategy is a function of the economic, institutional, and cultural parameters of the system. One could argue that the activities of the new regulatory state necessitate research, particularly in the context of emerging countries, which have unique economic and social challenges as well as institutional peculiarities. Furthermore, the effectiveness of regulatory institutions is an essential aspect in determining market efficiency. The quality of regulation influences outcomes, which, in turn, can influence economic growth (Broughel, 2017). Taking into account the matrix approach to risks in the management of national security with the selection of the optimal decision-making strategy (Salnikova, O., Rodchenko, L., Bielialov, T., Skrypnyk, M., Ivanchenkova, L., Slobodianiuk, O., 2019), and a feature of economic security management in foreign economic activity (Prokopenko, O.V., Domashenko, M.D., & Shkola, V.Y., 2014).

At the same time, along with moving from one stage of modernization to another, the very content of rational policy changes. In particular, there is a very fruitful hypothesis that measures such as lowering tariffs, eliminating the accumulation of foreign exchange reserves, liberalizing capital flows, deregulating financial markets, relaxing government controls and encouraging competition can lead to different (positive or negative) results, depending on the stage of economic development (Samuels, 1989). The theory of stages of growth, which is one of the first concepts of the theory of economic development, was proposed by W. Rostow in 1960. According to this theory, stages are characterized by a certain level of technological development, and the transition from one stage to another is a natural, spontaneous process based on the mobilization of savings and technology improvement (Samuels, 1989). "Innovation is created by reforming existing management systems, technologies and processes" (Prokopenko *et al.* 2020, p. 4).

Since the mid-1990s, dominant views have begun to change again. Various examples of situations where market forces have failed to achieve effective development have been studied. A standard example is externalities in high-tech industries, as a result of which the return on investment in their development is only partially appropriated by investors; as a result, the benefits of such investments for the entire society are greater than for individual firms. Therefore, society benefits from such investments even when it is unprofitable for firms to make them. Moreover, in the presence of externalities or increasing returns to scale, a market system can appear on a fast or slow growth trajectory depending on initial conditions or random disturbances. Thus, if many firms in a country are engaged in intensive research activities, and their results complement each other, the economy grows rapidly, the firms' profits are high, and they can continue research that ensures high growth. If scientific developments are not carried out, then the growth rate is low, which means that the profits of firms are small, and the expected return from the developments of an individual company is insufficient to initiate them, which forces them to continue deferring R&D expenses.

The transition from a slow growth trajectory to a more efficient one necessitates collecting information about the entire system and coordinating the efforts of many economic agents; a competitive market provides neither one nor the other. At the same time, both information and coordination externalities are especially pronounced in post-crisis periods, when a large-scale update of the production apparatus is required and, therefore, coordination of long-term strategies of firms belonging to different industries is needed.

Along with the "failures" of the market, there are equally numerous examples of "failures" of the state. Government intervention often only worsens the situation due to the intensification of rent-seeking processes (lobbying, corruption), low qualifications of officials, and lack of information for making effective decisions. The experience of the countries of the former socialist bloc and the unsuccessful attempts to regulate the economy in Africa and Latin America make considering the position of radical dirigisme even more vulnerable than the point of view of the minimalists. Having

recognized the existence of "failures" of both types, it is necessary to identify the conditions under which a particular type of government intervention appears effective.

## METHODS

The main method of cognition was the dialectical method, within which methods of analysis, synthesis, abstraction, ascent from the concrete to the abstract, systemic-structural, classification, etc. were used to explain individual aspects of the development of the phenomenon under study. In addition, macroeconomic, civilizational-comparative, functional, and synergetic methods were reflected.

## RESULTS AND DISCUSSION

It should be noted that government stimulation of economic growth is often associated with investment policy. Currently, there are four approaches to solving the problem of accelerated economic development and determining the role of the state in this process (Tanzi, 2011). Firstly, this is the statist model, according to which the state is the main economic entity, and only it can take responsibility for the investment process. This assumes the maximum concentration of financial resources in the hands of the state (primarily rent and export earnings) and their redistribution by national priorities. No less important in this model is protectionism as a way to protect domestic producers from competition from stronger foreign firms. Thus, this model assumes an active "industrial policy" in the traditional (sectoral) meaning of the word. Secondly, this is increasing the investment (and generally organizational) role of conglomerates of the largest firms - financial and industrial groups or integrated companies (business groups). It is assumed that such entities provide a concentration of resources (financial, intellectual), as well as a reduction in transaction costs due to the combination of financial, production, and research organizations (Balleisen & Moss, 2012).

Thirdly, there is an approach that involves a sharp reduction in the budget burden on the economy, bringing it into line with the parameters characteristic of countries of a similar level of economic development, in particular, reducing the budget burden from 36-38 to 20-22% of GDP in the

general government. Fourthly, one should mention growth based on stimulating entrepreneurial activity, on active government policies to create favourable conditions for investors, both domestic and foreign (Allernan *et al.* 2020). This requires the formation of an adequate system of institutions, including appropriate legislation and an effective law enforcement system.

The first two approaches can be united in essence as dirigiste, and the second two - as liberal. These pairs are internally closely interconnected. From the point of view of criteria for solving problems of economic development, liberal approaches are more responsive to the challenges of the post-industrial era. However, in modern conditions, there is an acute struggle between both main lines of state regulation of economic life and, in particular, business activity. At the same time, authors studying investment policy come to contradictory conclusions, largely because they consider the problem of economic growth outside of historical and institutional contexts (Dowrick *et al.* 2004). At different stages of modernization of economics (and depending on the institutional and cultural environment), various tools and methods of stimulating it are effective. It is advisable to distinguish four stages: the initial stage of modernization (industrialization); the stage of initiation of export-oriented growth; the stage of stimulating accelerated development; developed market stage.

The staged nature of modernization and the corresponding stages of economic policy are most clearly expressed in the case of the “economic miracle” countries - Japan, South Korea, and Taiwan, i.e., those few that over the past 50 years have managed to transform from developing countries into developed ones. Less noticeable are the stages in the economic history of Europe and the former English colonies, most of which for two centuries did not lag too far behind the leaders. Other countries did not go through all the stages, and many of them failed to modernize due to economic policy choices that were not commensurate with their level of development (Srinivasan, 2013).

At the initial stage of modernization, the country sets itself the task of re-equipping domestic production. For this purpose, machines and equipment are purchased abroad. Imports have strong externalities, contributing to the accumulation of knowledge and

skills needed to improve national heavy industries. Technologies are actively borrowed. Importers create domestic enterprises and their scale increases (Xu & Zhao, 2020; Beisengaliyev, B., Khishauyeva, Z., Lesbayeva, G., Rakisheva A., Tasbulatova, D., Turekulova, D., 2018). At this stage, rational policy would encourage the import of capital goods and hence provide low tariffs on their imports, subsidies to equipment importers, high levels of borrowing, and perhaps an overvalued real exchange rate to help importers. At the same time, it is advisable to limit the import of final industrial products.

As domestic industry develops, imported externalities cease to play a significant role, and young domestic production, even protected by customs duties, is faced with a limited domestic market, which hinders the improvement of its efficiency and the approximation of quality standards to international ones. The second stage begins - the stage of initiation of export-oriented growth. The priority is to enter the foreign market. Firms engaged in export are forced to compete with manufacturers from advanced countries, so they have to introduce new technologies and management methods, follow high-quality standards, and learn marketing. The knowledge accumulated by exporters influences the situation in other sectors of production. At this stage, export externalities play an important role (Allernan *et al.* 2020). This stage is typically characterized by the weakness of market institutions and a relatively low level of human capital and technological progress. Those countries that achieved a rapid growth trajectory effectively used both selective and non-selective industrial policy instruments to promote exports and limit imports: government technical reconstruction programs; large enterprise support; direct subsidies; and strict market regulation. The development of a market infrastructure and the progressive decentralization of the economy were important goals.

The stimulating accelerated development stage is distinguished by a decline in direct government interference in the economy, the replacement of selected instruments with non-selective ones, and a gradual relaxation in import and export barriers, support for small enterprises, deregulation of the capital market and an emphasis on attracting investment.

At the stage of a developed market, most selective investment policy instruments lose their significance or are used only in extraordinary situations. Typically, governments in developed countries follow the “countercyclical principle”, increasing their intervention in the economy during a recession and weakening it during periods of favourable conditions.

State investment policy always has a fairly strong influence on the development of the economy, and the nature of such influence at various historical stages in its consequences can be both positive and negative. To achieve the goals of investment policy, it is necessary to have no less number of appropriate instruments by Tinbergen’s principles, and the content of the investment policy measure must correspond to the chosen goal (R. Mundell’s principle of effective market classification) (Tanzi, 2011).

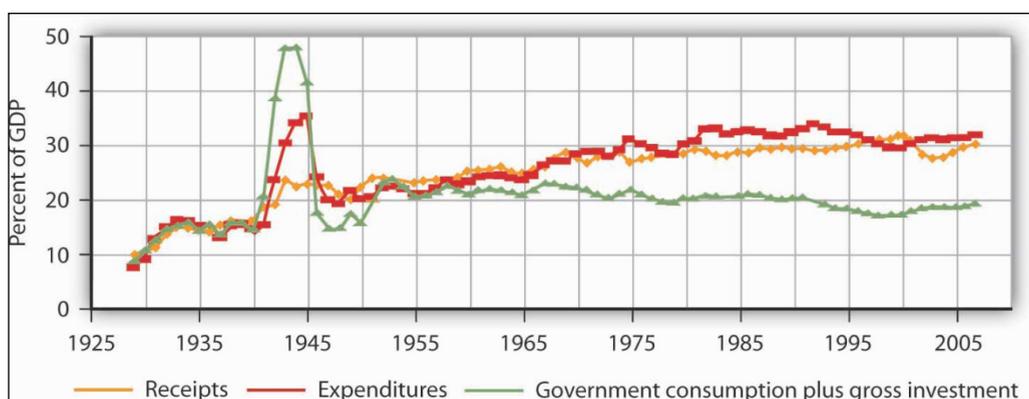
Fig. 1 below shows the evolution of state policy concerning the influence on economic growth in the 20<sup>th</sup>- early 21<sup>st</sup> centuries.

As it is evident from the figure, as a percentage of GDP, the most generally used indicator of economic activity, government spending and income have risen considerably.

The investment system is a transmission mechanism in the implementation of a unified state investment policy. At the same time, the investment system about investment policy plays a dual role: on the one hand, the investment system is the transmitting link of the monetary strategy, on the other hand, the liquidity and financial stability of the objects of investment relations often act as one of the goals

of such a policy. Thus, the development of the national investment system ensures the stability of the national economy. In this regard, the main task of implementing investment policy is to optimize the institutional and functional structure of the investment system, which will increase the impact of investment policy on economic development. Thus, a necessary and sufficient criterion for the implementation of state investment policy is to prevent the emergence of a dysfunctional state of the subject of management and objects of the influence system (Balleisen & Moss, 2012).

Many attempts to calculate the “optimal” share of state property are known. In particular, according to US economists, there is, for example, a special graph in the form of an inverted u-curve, it is called the “Armey curve” (named after the American politician and economist Richard Armey). It follows from it that too small a volume of the public sector in the economy is bad, as it means a low level of protection of property rights, low level of law enforcement, lack of basic infrastructure, etc., that is, there is no incentive for investment and savings. In turn, too much of the public sector means very high taxes, which also suppresses entrepreneurship. Taking into account a variety of factors - for example, the geographical location of the country, the degree of openness and globalization of its economy, the demand of society itself for social protection, the share of pensioners in it and other factors - a certain “optimal” share of the public sector in the economy is determined. Let us say, for the USA, according to rough estimates, it is approximately 20% of GDP, for European countries - from 36% to 42%. It was concluded that every 10% deviation



Source: (Tanzi, 2011).

Fig. 1: Government Expenditures and Revenues, as a Percentage of GDP

from this “optimal” level leads to a slowdown in the country’s economic growth rate by about 2% per year (Broughel, 2017). This is a huge amount.

The law of monetary circulation determines the amount of money necessary for the circulation and functioning of the economy. A crisis is caused by an imbalance in supply and demand, as well as an imbalance in the amount of money in circulation and the number of opposing assets. Realizing this, the governments of many countries during the last global financial crisis used all available methods to saturate the economy with money. Discount rates of the Central Banks of countries with developed economies have dropped to almost zero values: in the USA - 0-0.25%; EU – 0.5%; in the UK - 0.75%; Japan - 0.1% (Allernan *et al.* 2020; Spence, 2012).

QE (quantitative easing) was initially intended to be used as a one-time, non-systemic method of mitigating the situation in the economy and financial sector by replenishing funds to fill the lack of liquidity. QE was also called post-crisis unconventional monetarism. The goal here is to bring the economy out of the financial crisis by issuing money in significant volumes through the stock market - repurchasing government bonds and derivatives (mortgages). Future challenges, however, include the possibility of new financial bubbles, the collapse of the US dollar, and the transformation of the global monetary system.

The main reasons for the transition to a new paradigm were (Spence, 2021):

1. The impossibility of regulating the economy by changing discount rates (the price of money);
2. The need to attract significant amounts of money into the economy, which could only be ensured by the emission method of generating resources for economic growth;
3. Changes in the direction of cash flows when affecting the economy. The economy is saturated with cash due to additional money emission in significant volumes through the stock market via the purchase of financial assets;
4. The main interest of the Central Bank has changed - it is no longer only interest income, but mainly seigniorage.

Short-term lending rates at zero have led central banks to pursue unorthodox policies that allow them to dramatically boost their monetary base to stimulate their economies through “quantitative easing”. Some of these unconventional policies entail direct financing into specific, distressed short-term credit markets, while others entail the purchase of long-term assets to lower the real, long-term interest rate. Many economists express concerns that “the bicycle moves while the pedals are turned,” that is, economic recovery is possible only if the economy is constantly saturated with cash. As soon as this process stops, the opposite effect is possible. The announcement of a reduction or termination of the quantitative easing program could lead to a devastating stock market crash (Allernan *et al.* 2020). An increased money supply and low-interest rates encourage consumers and businesses to borrow more. Rising debt overhang could further exacerbate the fragile balance of the economy. In addition, quantitative easing may lead to an increase in government budget deficits (for example - the United States or Japan). Quantitative easing programs can fuel the economy, but at the same time, they can also plunge the country into a debt crisis.

South Korea is frequently hailed as a successful example of dirigisme. In terms of economic growth, South Korea is a one-of-a-kind country. GDP per capita at purchasing power parity climbed 25 times between 1960 and 2010, reaching \$36.6 thousand today. Korea is now a highly developed country, a member of the G20, and the world’s 11<sup>th</sup>-largest economy (Kwon, 2019). Such enormous and long-term expansion piqued the curiosity of economists. This may appear weird to the general public, but there is currently no agreement in the economic environment as to what exactly contributed to Korea’s success. The Korean economy is typically classified into three stages: import substitution, export orientation, and industrialisation. There is no agreement on whether government intervention measures boosted economic growth. Most economists agree that the intervention had a negative impact during the import substitution stage, as indicated by slow GDP growth despite large external financial aid (Kwon, 2019). Import restrictions imposed by the government had little direct effect on decreasing the

foreign trade deficit or stimulating major industrial growth. Only a shift toward foreign expansion transformed the situation.

However, as the Asian crisis of 1997 revealed, the country still has enormous structural imbalances. The financial system is still dealing with enormous volumes of loans made under government pressure to large firms, some of which have gone bankrupt (for example, Daewoo). In recent years, the chaebol leadership has been accused of bribery, financial fraud, tax evasion, and political influence; similarly, the presidents of major firms like as Samsung, SK, Hyundai, Hangwa, and Lotte have received comparable court sentences. At the same time, the heads of prominent chaebols, such as Lee Kun-hee (Samsung) or Chong Mong-koo (Hyundai), are granted amnesty after conviction. Park Geun-hye, South Korea's first female president, was impeached on corruption charges at the end of 2016.

In the 1970s and 1980s, many Western economists believed that the "Eastern economic miracles" were the consequence of a repeat of the Western road, i.e. a rise in efficiency. However, as Japan's economic growth stagnated and Korea's financial issues emerged in the 1990s, the mainstream opinion became that their success was due to advantageous (including political) circumstances for foreign commerce, along with significant resource mobilization. As in the previous Soviet Union, such mobilization enables temporarily significant rates of economic development simply by raising production components (Jia *et al.* 2023).

South Korea, in turn, in the country's development strategy from 2018 to 2022, relied on the development of a platform economy. This is a new type of economy based on digital technologies and global digital platforms. To achieve this, the government concentrates on the implementation of four programs:

- ♦ Development of blockchain technologies and artificial intelligence for processing large amounts of data (Big Data);
- ♦ Encouraging businesses to use digital trading platforms;
- ♦ Logistically built supply chains for hydrogen fuel;
- ♦ Training of 10,000 specialists in future technologies. In parallel, a special

Manufacturing Innovation 3.0 Strategy is also being implemented, with an emphasis on the Internet of Things, 3D printing technologies, and Big Data.

The second half of the 20<sup>th</sup> century was characterized by a significant accumulation of new knowledge, while the speed of dissemination of information increased significantly, the diffusion of innovations and the multidisciplinary of technologies were actively carried out. Innovative methods and tools for knowledge dissemination, formed in developed countries and tested in the context of the functioning of national innovation systems, create conditions for progressive economic growth, bringing its elements to an optimal state (adequacy to existing realities), increasing the level and quality of life of the population (Jiang & Cao, 2021).

The formation and sustainable development of an innovative economy is significantly influenced by fundamental prerequisites (this is directly indicated by numerous studies and the experience of developed countries) (Solodovnik *et al.* 2021). In particular, Broughel includes among such prerequisites the current economic regime that ensures the development of the economy, intellectual entrepreneurship, the creation of a favourable innovation climate, as well as the role of the state in the development of the innovation environment (regulatory support, administrative resources, patenting, etc.) (Broughel, 2017).

The main features of an innovative type economy include:

- ♦ Informatization of the national economy. Economic growth is ensured through high-tech production and the expansion of knowledge-intensive sectors, which ultimately leads to an increase in the share of innovative products in the total volume.
- ♦ Innovation continuity ensures the inexhaustibility of an inventive economy's most significant economic resources, information and knowledge. The process of innovation movement is determined by innovation continuity, which shortens its life cycle owing to the entry of other innovations and updated items to the market.

- ♦ The economic dominance of intangible assets, accompanied by a concomitant qualitative shift of material production. The use of intangible assets as a mechanism for assessing the commercial value of the results of innovation, intellectual work and intellectual property enables economic entities to increase the knowledge intensity of new goods and services (which increases their competitive advantages).

The most important (fundamental) support of an innovation-type economy implies the following key elements: science, the education system and the skills/abilities of workers. The optimal combination of these components is aimed at the formation, distribution, and targeted consumption of intellectual resources.

Developed countries have accumulated significant experience in the formation of an innovative economy and its infrastructure, taking into account the development of market economic conditions, opportunities to meet demand and priority areas of interaction between science, production, and management. Currently, each country is implementing its innovation strategy. For example, the US innovation development strategy is aimed at creating an innovation environment favourable for the creation and commercialization of innovations, the main instrument of which is the mechanism for stimulating the business sector.

Modern models of economic growth address two key issues. This is the question of the endogenous mechanisms of growth that are formed during its cyclical fluctuations, and the question of removing the key limitations of early growth models. Perhaps the only significant difference between Keynesian and neoclassical theories of growth from the standpoint of today can be considered their original paradigmatic foundations associated with different ideas about the role of the state in the economy. In neo-Keynesian models, the conclusion is recommendations on the need for state participation in the economy and the implementation of industrial policy; in neoclassical models, it is implied to rely on the action of the free market, which itself will bring the system to equilibrium.

In this regard, the original neoclassical model, or more precisely, the disclosure of the content of

Solow's "unexplained residual" is of great interest. The "Solow residual" in the original model is not a factor of production; its consideration only made it possible to take into account qualitative changes in capital and labour in the process of economic growth. But in reality, namely the structure of the "remainder" contains the factors of economic growth, the mechanism of action of which economic science has yet to explain. Therefore, the Solow model gave scope for further research into the role of scientific and technological progress in models with endogenous scientific and technical progress, the role of human capital in economic growth, and for taking into account other internal reasons for changes in the final level of output.

Dynamic general stochastic equilibrium (DGSE) models are currently popular in economics (Balleisen & Moss, 2012). The concept of real business cycles (Kydland and Nobel Prize 2004) grew out of criticism of Keynesianism. Keynesianism (Keynes) believed that the decisions of economic agents are disordered, based on "animal instinct" and unpredictable, therefore the demand is stochastic and gives rise to the economic cycle as an unpredictable phenomenon (Auty, 1995). Prescott and Kydland (1990) tried to explain all economic fluctuations as an equilibrium phenomenon, which is why they also became known as the "new classicists." Models of real business cycles are based on simple assumptions. First, they assume that firms maximize their profits and make investment decisions based on expectations of future demand for their product and technological developments (Kydland, 2018).

Thus, innovations in models of the real economic cycle turn out to be an external, exogenous factor of development. Second, these models assume that households behave optimally, that is, their consumption depends on how much income they expect to receive in the future. The permanent income hypothesis applies here: people spend exactly what they expect to receive in the future. In the theory of real business cycles, the source of economic fluctuations is a change in labour productivity or other "real" factors, such as international oil prices. Namely, uneven changes in these variables lead to unstable economic growth. Otherwise, the economy is in stable equilibrium, and it eliminates any deviations from it, using market mechanisms. These models also consider

recessions, in contrast to models of endogenous economic growth, but these recessions are not seen as a natural phenomenon - they are each time explained by the action of random factors, shocks that generate fluctuations.

However, even when considering fluctuations, representatives of the theory of real business cycles consider the bottom of the economic cycle also as an equilibrium phenomenon in which the same laws of market self-organization manifest (Balleisen & Moss, 2012). Accordingly, the practical recommendations of Kydland and Prescott for the authorities are to minimize government intervention in the economy, they assume that innovations themselves are introduced into the economy at the right time and are external to the economic system. Models of real business cycles are imperfect (Tanzi, 2011). They describe only a certain medium-term perspective in which everything naturally returns to normal. An important aspect is also that equilibrium theories of the business cycle are unable to predict crisis processes in the future. In evolutionary theory, on the contrary, there is the possibility of predicting crises, as well as other phases of the economic cycle, of course, not with an accuracy of a quarter or even a year, but with a certain probabilistic characteristic. In addition, stochastic models of real business cycles are grounded on the idea of perfect rationality of economic agents, this is a basic assumption, but it is unrealistic, which makes the model vulnerable. Moreover, these models consider only the shortest economic cycle, most likely the Kitchin cycle; longer fluctuations, which make the economic “weather,” are not taken into account in these studies, which negatively affects the forecast characteristics of the theory. In addition, this theory is international - it is assumed that in any economic system the cycle, based on the rational behaviour of economic entities, is the same behaviour, while other research has shown that cycles in different countries have different heights and amplitudes, and can even develop in antiphase.

While the theory of the real business cycle shows how innovation is exogenously integrated into the production function, in theories of structural changes in the economy, innovation is considered as part of the economic system, introduced during periods of structural changes. This is an alternative paradigm. It is necessary to monitor structural

changes in the economy as a complex open system and introduce innovations during these periods. While in the theory of the real business cycle and P. Romer’s model it is believed that innovations will be introduced themselves in the process of market self-regulation, in the theory of structural changes the need for government regulation is accepted, including the creation of corporate incentives for innovation. This could be commercial regulation - for example, consulting companies specially created for these purposes monitor periods of structural changes and recommend to companies how and at what time they should introduce innovations. In particular, G. Mensch, founder of Mensch Media LLC, was the head of a consulting company that offers businesses a so-called “happy meal” — a ready-made package of innovative solutions with clear instructions on how to use it. These may also be special programs created at the government level to stimulate nationally important innovations. Mensch suggested the concept of the “window of opportunity” - the time of structural restructuring, when the logistic curves of the life cycles of innovations and the economic growth models based on them change. At this time, a “window of opportunity” arises — the economy becomes structurally ready to accept innovation (Mensch, 1979).

In particular, for the German economy, Mensch showed that namely, the structural instability that took place in 1971–1974 caused a severe crisis in production and employment in 1975-1976. Structural analysis by Mensch also showed that for other developed countries there was structural instability in 1971-1974. Mensch also sees a similar structural instability in further moments, when the s-shaped curves of the life cycles of the old and new technological paradigms are superimposed.

Within the life cycle of a technological structure, as a self-organizing system, it is necessary to carry out regulation, for example, to support the development and implementation of basic innovation before the start of the upward phase of the Kondratiev cycle or the Kuznets rhythm (Broughel, 2017).

At the same time, the self-organization of the economy, adopted in the theory of complex systems and evolutionary economics, has nothing in common with relying on the action of purely market forces according to the logic of *laissez-faire*.

Innovations cluster at a certain point in economic history, but this does not mean that in a particular economic system, they will themselves generate a growth trajectory. This is where competition between countries in the global economy begins: some gain an innovative technological advantage, while others bring the country to bankruptcy. Therefore, it is impossible to rely on the actions of market forces, as in the DGSE models or the Paul Romer model, but an active industrial policy is required, because during this period there is fierce competition between countries for global scientific and technological leadership, and the country that uses the potential of their national innovation systems at full capacity will win.

The difference between economic development and economic growth should also be clearly defined. This issue continues to be relevant because in many scientific studies the concept of “development” was still often equated with economic development, and economic development, in turn, with economic growth, or simply with growth (Balleisen & Moss, 2012). We believe that economic growth does not automatically guarantee economic development. An economy can grow in terms of GDP even with minor improvements in citizen well-being or structural changes. So, for example, a country may experience short-term GDP growth due to increased resource extraction, but if this growth does not lead to long-term benefits for its citizens, such as improved education, health care and employment opportunities, then it can be considered growth without development. Consequently, although economic growth is an important aspect of economic development when stimulating it, it is necessary to direct efforts not only to achieve growth but also to improve the standard of living of citizens and introduce qualitative structural changes. Without this kind of change, economic growth will also slow down.

Proponents of neoclassical theory put forward the thesis that economic growth is directly dependent on maximizing allocative efficiency in the economy. Allocative efficiency refers to a market situation in which resources are distributed in such a way that their productivity cannot be increased when redistributed between economic agents. Therefore, the role of the state within this economic paradigm is reduced to the function of ensuring allocative

efficiency with minimal distortion of the “laissez-faire” situation, which is the most important condition for achieving economic growth. Any disruption of market forces and the conditions of allocative efficiency, according to the concept of neoclassicism, can cause “loss of dead weight”. In particular, speaking about government stimulation of innovation, from the perspective of neoclassical, this mechanism violates the principle of operation of market forces: since the policy of stimulating innovative industries distorts the distribution of forces in the market, minimizing government participation is preferable (Spence, 2012).

Within the framework of neoclassical theory, the economy is considered a universal system of market dominance and the laws of supply and demand, and the very fact of the formation of the information economy with its specific features and characteristics remains without attention. Because neo-Keynesians think that government intervention is essential to support economic growth, economic policy within this paradigm is largely concerned with creating and then maintaining aggregate demand. The function of innovation in this process is secondary and can only be justified as a necessary connection in the creation of creative items and addressing consumer demand.

Furthermore, the idea of neo-Keynesianism places a high value on the equitable distribution of income throughout society. Because additional income obtained by the lowest strata of society is turned into the formation of consumer demand to a greater extent, the idea of a more fair distribution of income within society is encouraged. Thus, neo-Keynesianism holds that the purpose of government policy is to boost the private sector and convert government benefits into increased consumer demand, which is a determinant of economic growth in neo-Keynesian theory.

This concept is highly contradictory within the context of the “new” economy because one of the primary purposes of government policy should be to encourage firms to increase their investment in innovation.

Also, neo-Keynesian theory operates in terms of a short-term period, while long-term economic trends are relegated to the background. As a result, neo-Keynesian policies tend to increase government

spending to achieve short-term economic results in the form of increased aggregate demand, while the function of supporting innovation, which in modern conditions is a direct attribute of long-term economic growth, fades into the background.

The neo-Schumpeterian direction emphasizes that the progress of recent decades is not associated with the accumulation of capital, as follows from neoclassical theory, and not with the expansion of demand through government intervention in the economy, as neo-Keynesians talk about, but it happened in connection with the dynamically developing innovation process and the way how accumulated capital is used.

Secondly, proponents of neo-Schumpeterianism note that economic growth is possible when production and adaptation efficiency are achieved, even in the absence of allocative efficiency. Third, a neo-Schumpeterian economy is an economy of imbalance rather than an economy striving for equilibrium. Even though in some markets a state of equilibrium may be reached at certain periods, this is rather an exception to the general rule, since the emergence of innovative goods acts against the achievement of market equilibrium.

Finally, a significant role in the neo-Schumpeterian paradigm is given to the institutional structure of society. While in neoclassical theory the economy functions based on undistorted price signals, in neo-Schumpeterian theory, on the contrary, the conditions in which the economy operates are recognized as far from the ideal world of neoclassics and are characterized by significant asymmetry of information and the presence of market “failures”. This, in turn, predetermines the significant role of government stimulation of innovation.

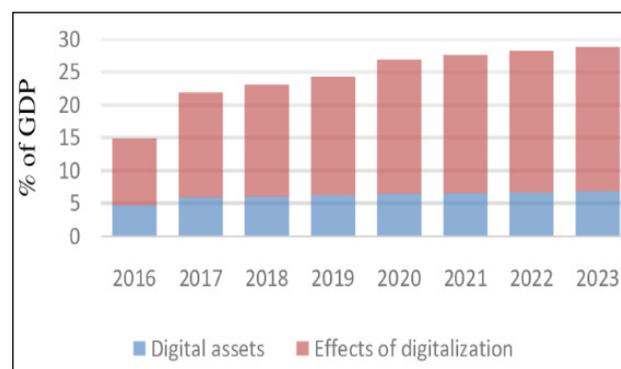
It is important to realize that the production of innovative goods is often subject to “market failure” associated with the “spillover” of knowledge, the difficulty of cutting off third parties from using the results of research activities and the excess of social benefits from production over private benefits, and therefore the state, at least, should “help the market” cope with this failure, contrary to the neoclassical principle of minimizing government participation.

Dubai, for example, seeks to establish an inventive environment for the growth of the “future economy”. To this end, the emirate is implementing several

programs to promote the growth of the private and public sectors. The UAE Centennial 2071 strategy envisions the UAE becoming a leading country in the world by its 100<sup>th</sup> anniversary. To achieve this, the state will invest in four main areas: education, economy, public administration, and public life. The Gulf Cooperation Council countries have positioned themselves as low-tax economies, using the absence of personal income taxes and low corporate tax rates as a means of attracting investment and international expertise to the subregion. The UAE leadership aims to achieve a marked acceleration in economic growth over the medium term through reforms that will stimulate private sector activity, and attract skilled foreign labour and foreign direct investment into the country.

The latest digital technologies play an essential role in stimulating the economic growth of countries and integrated macroregions, with the digital economy increasing at a rate several times that of the traditional economy. Modern technologies, notably fast-increasing information and telecommunications technologies (ICT) are at the heart of most of this progress. The information and communications technology industry, for example, accounts for over 5% of the EU economy and a fifth of all company spending. ICT investment contributes to half of the total productivity increase in Europe (Bulturbayevich & Jurayevich, 2020). Today’s high-speed broadband networks have as big an impact on manufacturing as electricity and transportation networks did a century ago. They are paving the way for innovative services such as e-health, smart city manufacturing, etc. (Jiang & Cao, 2021).

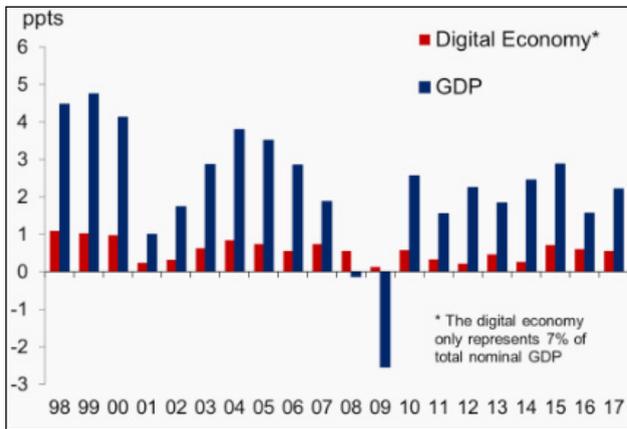
The growth of the digital economy in the world is shown in Fig. 2.



Source: (Jia et al. 2023).

Fig. 2: Growth of digital economy

The real digital economy accounted for close to 30% of the overall U.S. expansion in 2017 (see Fig. 3).



Source: (Boussour, 2019).

Fig. 3: Digital economy contribution to growth, USA, 2017

Creating a digital, technology-driven economy could be the engine of economic growth that most countries in the world need. The potential economic benefits from the digitalization of production and economic activities are great – this is, first of all, the formation of new sources of income and expanding the boundaries of the country’s economic opportunities. This economic rise leads to increased global competitiveness and improved living conditions for the population.

Digitalization is essentially one of the most important drivers of economic progress, as a process that determines the possibilities of increasing the real volume of production, enhancing efficiency and quality. However, economic growth invariably appears as a result of the action of economic and non-economic factors.

We believe that to identify the highest priority forms of government regulation, the method of regression analysis can be used, according to which factor and resultant characteristics are selected, and then a correlation dependence is built to establish the form, direction, and closeness of the connection between the characteristics. The form of the connection in this case can be expressed by a general equation:

$$Y = f(X) \quad \dots(1)$$

where  $X$  - factor sign (argument);  $Y$  - resultant sign (function of the independent variable  $X$ , or dependent variable).

Using statistical data, it is possible to conduct a correlation analysis of the dependence of the volume of gross domestic product, investment in fixed capital, and production indices. Pearson correlation coefficients can be calculated using the formula:

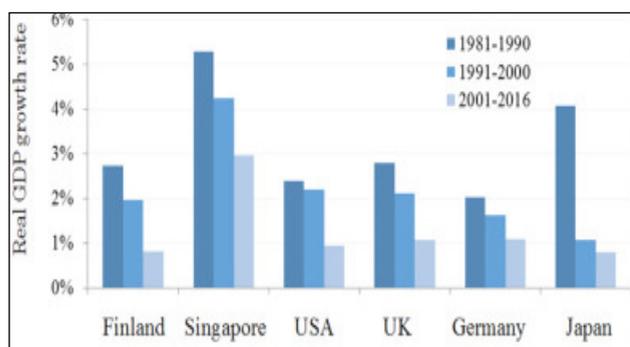
$$r = \frac{\sum(x_i - x_{av})(y_i - y_{av})}{\sqrt{\sum(x_i - x_{av})^2 \sum(y_i - y_{av})^2}} \quad \dots(2)$$

Meanwhile, “the influence of economic factors may not manifest itself immediately” (Shpak *et al.* 2022a, p. 820).

The digital economy has several distinguishing characteristics that are not found in other forms of economies. Data and the ability to produce value from data have become variables of production in the digital economy. This can involve algorithms or the ability to evaluate large amounts of data to generate value in a variety of scenarios. Although these factors are an important class of intangible assets, correctly measuring the value of intangible assets beyond detecting their presence is difficult. However, studies on public market valuations indicate that intangible assets are becoming an increasingly essential component of pricing. There are various firms in the United States with a trillion-dollar valuation, whereas JP Morgan is the largest and most powerful bank in the United States, with a market value of USD 200 billion. Belo *et al.* (2019) develop a generalized neoclassical model of investment that includes physical capital, quasi-fixed labour, and two types of intangible capital as inputs: knowledge and brand capital. They discovered that the importance of physical capital for company value has declined in recent decades, while intellectual capital has expanded, particularly in high-tech industries, from 24.9% of total asset value in 1970 to 44.8% in 2010. This growing importance indicates that we must make strides in assessing intangible assets. Moreover, as Shpak *et al.* (2022b, p. 1) note, “energy independence and economic competitiveness are closely linked”, and this fact has a direct relation to digital and technological progress. “Ecologization is one of the main innovative competitive advantages of logistics activity and has to cohere with it” (Hrechyn *et al.* 2021, p. 1). Thus, the very essence and structure of

factors determining a country's competitiveness and economic growth in a new economy are changing. We presently have a market measure of intangible assets, which is based on the present worth of this data and digital-related assets in terms of generating net revenue. There is no doubt, however, that this metric may be improved. Furthermore, intangible assets extend much beyond what we generally think of as intellectual property (IP). To put it another way, many people understand how to evaluate data and create value from it, but they lack access to a critical element in value creation without the data. According to Veldkamp and Chung's (2019) producer model, only when data elements are coupled with the labour force can they raise returns to scale and hence improve productivity. Thus, human capital, intellectual property, and data are far more valuable when combined than when considered separately.

Watanabe *et al.* (2018) emphasize increasing dependence on uncaptured GDP in the digital economy (see Fig. 4).



Source: (Watanabe *et al.* 2018).

Fig. 4: Real GDP growth rate dynamics

Now, in the digital age, we should remember that there are times when the distributional features of market-led dynamics are rather benign, and other times when they are not. When distributional issues get severe enough, the social contract can break down, resulting in tensions, violence, the inability to make logical public sector decisions, and other serious market issues. As a result, the *laissez-faire* strategy will fail in the digital economy (Spence, 2021). Instead, in less favourable times, the government must interfere in the name of equality and fairness, as well as socio-political and social cohesiveness. Aside from distributional issues, there are numerous other issues that the

market would not handle on its own without government action, such as externality issues and informational gaps. Although technology is now doing a reasonably excellent job of resolving the detrimental consequences of big informational gaps, this ability is dependent on access to very large batches of digital data, as we have already mentioned. The conversion of information to digital form has cut the cost of obtaining and using information significantly.

Lin *et al.* (2011) distinguish between two types of government initiatives. The first type of policy encourages structural change by addressing the information, coordination, and externality challenges that come with industry upgrading and diversification. Such interventions seek to provide information, compensate for externalities, and coordinate improvements in the "hard" and "soft" infrastructure required for the private sector to grow alongside the economy's dynamic change in comparative advantage. Second, there are policies in place to protect specific enterprises and industries that defy the comparative advantage determined by the current endowment structure, whether in developing sectors that are overly advanced or in ancient sectors that have lost comparative advantage.

The construction and development of the information society within a national framework is accompanied by the formation of a global information space and the "drawing" into this global process of not only the most developed but also less developed countries. This process generally contributes to innovative development and increased competitiveness of the national economy but also has negative consequences. That is why the process of building an information society needs to be regulated by the state to stimulate positive and reduce negative effects, and a multidisciplinary approach to studying the theory of information society and building strategies for its development is relevant. Increasing the positive effects and creating competitive advantages of the information society presupposes, in particular, strict adherence to the balance between the material and information components of the economy of the information society (between tangible information and communication technologies, communication lines, data networks, etc. and intangible information

resource); shifting the focus of public policy from the traditional concentration on developing infrastructure to an emphasis on the crucial role of people and the designing of fundamentally breakthrough tactics.

An innovative economy is fundamentally a knowledge economy. Intangible assets are becoming more prominent, requiring large-scale investments in intellectual capital: human capital (the competencies of workers, the system of their professional training and working conditions), social capital (the interaction of all economic actors - people and institutions), organizational capital (new technologies and new institutions), consumer capital (trademarks and brands). The world experience of advanced countries shows that namely on such investments the model of sustainable economic growth is based. Shaping an optimal set of competitive strategies is aimed at maintaining traditional and creating new factors of competitiveness (key competencies, brand values, consumer assets).

In particular, the leading countries of the Asia-Pacific region (APR) are among the countries in which the construction of the information society has contributed to the development of competitive advantages, and their implementation - to becoming the richest countries in the world. The East Asian countries of the Asia-Pacific region are economies that, in a historically short period, managed to transform from developing countries into highly developed countries with high per capita income. These countries have made sound strides in building an information society and are recognized by the world community as the most competitive economies in the East Asian region (Farboodi & Veldkamp, 2021). Thirdly, the Asia-Pacific countries demonstrate sustainable growth rates even in the face of deteriorating global conditions. As development priorities shift from increasing key industries' global competitiveness to solving problems of sustainable development, the experience of these countries in achieving sustainable development appears highly relevant and should become an important area of further research. In particular, as Halkiv *et al.* (2020, p. 70) rightly note, "the indicated range of problems at the level of countries with developed scientific and innovative potential and unstable economic situation... has a particular interest."

Among the priorities in the competitive strategies of the countries of the Asia-Pacific region in the 2000s (that is, in the modern period of developed information society), the following should be mentioned: prevailing government support for their own breakthrough innovations; green strategies; "investment in the future" (in infrastructure + capabilities, talent, education + research and development); improving the education system in the direction of identifying "innovators"; promoting "cultural and creative industries"; support for small and medium-sized innovative businesses and promotion of their products abroad; joint development of development strategies on the principles of science-government-business partnership; building a national innovation ecosystem. It is also possible to outline a mechanism for financing the transition to industries of a higher technological level - from funds received from the development of industries of the previous technological level: (a) income received in the labour-intensive light industry was directed to the development of capital-intensive and technology-intensive industries; (b) income received in the capital-intensive and technology-intensive metallurgy, shipbuilding, and chemical industries was used to finance the development of the high-tech automotive industry; (c) income received from the automotive industry - to finance highly knowledge-intensive industries. Export orientation is provided to all industries that have earned a competitive advantage (leading positions in the globe or region) (Zhang *et al.* 2022).

In general, two main approaches to the role of the state in digital transformations and the implementation of socio-economic policy can be distinguished:

Market (self-regulation) - this approach assumes that the state only creates optimal conditions, a favourable innovation and investment climate for the functioning of the digital economy, which contributes to the activation of business activity in this new sector of the economy (for example, the USA);

Administrative and managerial - this approach is based on the gradual development of the infrastructure of the digital economy under the leadership of the state and the targeted "filling"

of the digital sector with economic entities (for example, China).

It is worth noting that currently, the strategies of most countries in the development of the digital economy represent a synthesis of these approaches (joint regulation). The choice of approach depends on the characteristics of the country's economic development, the nature of the political regime, sociocultural factors, strategic goals and objectives.

## CONCLUSION

To summarize, let us note that the actual process of state economic growth in practice largely depends on the chosen economic paradigm. Taking into account the specifics of the information economy, the transition which is perceived as the next stage of development after the industrial society, a rethinking of the theoretical basis for making government decisions is required. And, perhaps, the neo-Schumpeterian theory, in which innovation is considered the main source of economic development, and the role of public policy is largely reduced to stimulating innovation activity, maybe the most suitable in the current conditions.

## REFERENCES

- Allernan, J., Rappoport, P. and Hamoudia, M. 2020. *Applied economics in the digital era: Essays in honor of Gary Madden*. Palgrave Macmillan.
- Auty, R. 1995. *Patterns of development: Resources, policy and economic growth*. Edward Arnold.
- Balleisen, E. and Moss, D. (Eds.). 2012. *Government and markets: Toward a new theory of regulation*. Cambridge University Press.
- Beisengaliyev, B., Khishauyeva, Z., Lesbayeva, G., Rakisheva A., Tasbulatova, D. and Turekulova, D. 2018. Impact of small and medium enterprises on the economy. *J. of Appl. Econ. Sci.*, **13**: 2437-2445.
- Belo, F., Gala, V., Salomao, J. and Vitorino, M.A. 2019. Decomposing firm value. *NBER Working Paper, No. 26112*.
- Boussour, L. 2019. The digital economy is boosting productivity — but official measures aren't capturing the benefits. *MarshMcLennan*. Available at: <https://www.brinknews.com/the-digital-economy-is-boosting-productivity-but-official-measures-arent-capturing-the-benefits/>
- Broughel, J. 2017. *Regulation and economic growth: Applying economic theory to public policy*. Mercatus Center at George Mason University.
- Bulturbayevich, M.B. and Jurayevich, M.B. 2020. The impact of the digital economy on economic growth. *Int. J. of Business, Law, and Edu.*, **1**(1): 4-7.
- Dowrick, S., Pitchford, R. and Turnovsky, S. (Eds.). 2004. *Economic growth and macroeconomic dynamics: Recent developments in economic theory*. Cambridge University Press.
- Farboodi, M. and Veldkamp, L.L. 2021. A growth model of the data economy. *SSRN Electronic Journal*. NBER Working Paper 28427. Available at: [https://www.nber.org/system/files/working\\_papers/w28427/w28427.pdf](https://www.nber.org/system/files/working_papers/w28427/w28427.pdf)
- Halkiv, L., Karyy, O., Kulyniak, I. and Ohinok, S. 2020. Modeling and Forecasting of Innovative, Scientific and Technical Activity Indicators Under Unstable Economic Situation in the Country: Case of Ukraine. *In: Babichev, S., Peleshko, D., Vynokurova, O. (eds) Data Stream Mining & Processing*. DSMP 2020. Communications in Computer and Information Science, vol 1158. Springer, Cham. Available at: [https://doi.org/10.1007/978-3-030-61656-4\\_5](https://doi.org/10.1007/978-3-030-61656-4_5)
- Hrechyn, B., Krykavskyy, Y. and Binda, J. 2021. The development of a model of economic and ecological evaluation of wooden biomass supply chains. *Energies*, **14**(24): 8574.
- Jia, W., Collins, A. and Liu, W. (2023). Digitalization and economic growth in the new classical and new structural economics perspectives. *Digital Econ. and Sustain. Dev.*, **1**: 5.
- Jiang, H. and Cao, Y. 2021. Research on strategic emerging industries boosting high quality economic. *E3S Web of Conferences*, **235**: 02011. Available at: <https://doi.org/10.1051/e3sconf/202123502011>
- Kwon, S.-H. 2019. *The role of government in economic growth and development: The cases of Korea and Vietnam*. Nova Science Pub.
- Kydland, F.E. 2018. Does policy consistency affect economic growth?. *In: Berger-Vachon, C., Gil Lafuente, A., Kacprzyk, J., Kondratenko, Y., Merigó, J., Morabito, C. (eds) Complex systems: Solutions and challenges in economics, management and engineering*. *Studies in Systems, Decision and Control*, vol 125. Springer, Cham. Available at: [https://doi.org/10.1007/978-3-319-69989-9\\_1](https://doi.org/10.1007/978-3-319-69989-9_1)
- Lin, J., te Velde, D., Monga, C. and Tendulkar, S. 2011. DPR debate: Growth identification and facilitation: The role of the state in the dynamics of structural change. *Dev. Pol. Rev.*, **29**(3): 259-310.
- Mensch, G. 1979. *Stalemate in technology – innovations overcame the depression*. New York: Ballinger Publishing Company.
- Prescott, C. and Kydland, F. 1990. Business cycles: Real facts and a monetary myth. *Federal Reserve Bank of Minneapolis Quarterly Review*, **4**: 3-18.
- Prokopenko, O., Shmorgun, L., Kushniruk, V., Prokopenko, M., Slatvinska, M. and Huliaieva, L. 2020. Business process efficiency in a digital economy. *Int. J. of Manage.*, **11**(3): 122-132.
- Prokopenko, O.V., Domashenko, M.D. and Shkola, V.Y. 2014. Management features of economic security in foreign economic activity of Ukrainian machine-building enterprises. *Actual Problems of Econ.*, **160**(1): 188-194.

- Salnikova, O., Rodchenko, L., Bielialov, T., Skrypnyk, M., Ivanchenkova, L. and Slobodianiuk, O. 2019. Matrix approach to risk management in the national security system, highlighting the criteria for choosing the optimal strategy for decision making. *Int. J. of Engineering and Adv. Technol.*, **8**(5): 2407–2411.
- Samuels, W. 1989. *Fundamentals of the economic role of government*. Praeger.
- Shpak, N., Ohinok, S., Kulyniak, I., Sroka, W. and Androniceanu, A. 2022a. Macroeconomic indicators and CO<sub>2</sub> emissions in the EU region. *Amfiteatru Econ.*, **24**(61): 817-830.
- Shpak, N., Ohinok, S., Kulyniak, I., Sroka, W., Fedun, Y., Ginevičius, R. and Cygler, J. 2022b. CO<sub>2</sub> emissions and macroeconomic indicators: Analysis of the most polluted regions in the world. *Energies*, **15**(8): 2928.
- Solodovnik, O., Zhemoyda, O., Soroka, A., Matsola, S., Tytarchuk, I. and Bielialov, T. 2021. Innovative development of the foreign economic activity of the enterprise. *Estudios de Economía Aplicada*, **39**(3).
- Spence, M. 2012. *The next convergence: The future of economic growth in a multispeed world*. Picador.
- Spence, M. 2021. Government and economics in the digital economy. *J. of Govern. and Econ.*, **3**: 100020.
- Srinivasan, P. 2013. Causality between public expenditure and economic growth: The Indian case. *Int. J. of Econ. and Manage.*, **7**: 335-347.
- Tanzi, V. 2011. *Government versus markets: The changing economic role of the state*. Cambridge University Press.
- Veldkamp, L. and Chung, C. 2019. Data and the aggregate economy. *J. of Econ. Lit.*, **40**.
- Watanabe, C., Naveed, K., Tou, Y. and Neittaanmäki, P. 2018. Measuring GDP in the digital economy: Increasing dependence on uncaptured GDP. *Technological Forecasting and Social Change*, **137**: 226-240.
- Xu, X. and Zhao, M. 2020. Data capital and economic growth path. *Econ. Res. J.*, **55**(10): 38-54.
- Zhang, J., Zhao, W., Cheng, B., Li, A., Wang, Y., Yang, N. and Tian, Y. 2022. The impact of digital economy on the economic growth and the development strategies in the post-COVID-19 era: Evidence from countries along the "Belt and Road". *Frontiers of Public Health*, **10**.