CHAPTER 1
CURRENT TRENDS IN ECONOMIC DEVELOPMENT

SUSTAINABLE BUSINESS DEVELOPMENT IN THE CONTEXT OF THE CONTEMPORARY RISKS AND CHALLENGES

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Abstract. *The direction of our research is based on the problem of sustainable business development in the context of the global risks and contemporary challenges. In the article, the authors emphasize the need to find new ways of business development in the conditions of contemporary crises and challenges, among which a key place is given to the COVID-19 and Russian military aggression in Ukraine. Accordingly, the research hypothesis consists in the assumption that the effective management of the economic development of business should be based on a deep understanding of contemporary challenges and global risks affecting the development of each specific country currently in the medium and long term. The main goal of the research is to develop a model of the process of smart business regulation, taking into account consumer behavior in conditions of contemporary risks and challenges. The article notes that the basis of the proposed model of smart regulation in the conditions of modern challenges lies in decision-making theories based on uncertainty. In conclusion, the authors note that the development and implementation of smart regulation, focused on risks and challenges proportional to them, is an important approach to increasing efficiency, strengthening effectiveness and reducing the overall burden on the economy. The article finds that the COVID-19 crisis and Russia's military aggression in Ukraine have demonstrated the obstacles that regulation can create for crisis response when it is disproportionate to the risk or when the trade-offs between different risks are not adequately anticipated. It also demonstrates the importance of regulatory flexibility and emergency management, as well as the use of new technologies. The use of the proposed model is especially relevant in the context of the impact of future risks - threats to the ecosystem, epidemiology threats, security threats, threats of digital rights violations, and threats to economic stability.*

Keywords: *sustainable business development, smart regulation, resilience, tourism and hospitality, Russian invasion in Ukraine*

JEL Classification: D01, E30, E71

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Introduction. The upheavals of recent years – primarily the pandemic and Russia's military invasion of Ukraine – reflected and accelerated epochal changes in the world order. The risks that are seen as more serious in the short term are related to structural changes in the economic and geopolitical landscape that are accelerating other global threats that the world community will have to face in the coming years.

The concentration of world economies on returning to normal functioning after curbing COVID-19 was disrupted by the outbreak of war on the territory of Ukraine due to the aggressive invasion of Russia. Accordingly, a new series of crises has begun, among which the key elements today are the food and energy crises, inflation, the cost of living crisis, trade wars, social unrest, large-scale forced migration, the renewal of geopolitical confrontation on a scale comparable to the Cold War period, and the return of the threat of outbreak nuclear war.

In general, it is worth noting that contemporary challenges and crises can both restrain and promote the sustainable economic development of business structures separately and the economy as a whole. Accordingly, the research hypothesis consists in the assumption that the effective management of the economic development of business should be based on a deep understanding of contemporary challenges and global risks affecting the development of each specific country currently in the medium and long term. The purpose of the research is to develop a model of the process of smart business regulation, taking into account consumer behavior in conditions of contemporary risks and challenges.

Literature review. Not a single economic school, starting with the classics of economic theory, has ignored the issue of risks. As an independent science, risk theory developed relatively recently, although it existed earlier as part of separate sciences. Thus, the classic theory of risk is represented by the works of J. Mill (1824), according to which entrepreneurial income was determined, among other factors, by the risk fee, which is related to the compensation of a possible loss. The neoclassical theory of risk, developed in the first third of the 19th century by A. Marshall (1997) and A. Pigu (1909), is based on the fact that an entrepreneur who works in conditions of uncertainty is guided by two criteria when making decisions: the size of the expected profit and the size of his possible deviations. In this theory, the concept of marginal utility is introduced, and the amount of risk corresponds to fluctuations in the amount of expected profit. In parallel with the theory of economic risk, the development of the theory of risk assessment took place in various fields of scientific research of the 18th and 20th centuries, and by the end of the 18th century, almost all risk measurement tools that are used today were developed.

Of particular note is the innovative global model for forecasting currency crises (Alaminos et al., 2019), which has significant potential to adapt macroeconomic policies to risks associated with falling currency values, providing tools that help ensure financial stability at the global level. D. Backus, A. Ferriere and S. Zin (Backus et al., 2015) explore the role of risk and ambiguity in business cycle models. At the same time, in economic science, considerable attention is also paid to the study of the effects of uncertainty shocks in the 21st century (Bloom, 2009). In turn, the influence of political risks on economic development was studied by B. Born and J. Pfeifer (Born, & Pfeifer, 2014).

In the studies of the 20th and 21st centuries, among the risks that have a significant impact on the development of society in general and the business environment in particular, climatic and epidemiological risks began to be highlighted. Thus, S. Butorov (2020) notes that the scale of the epidemic, the rapidity of its spread, the number of victims and infected, its ability to cause irreparable damage to the world economy indicate that humanity has entered an era of global catastrophes, new threats and challenges. In turn, the concept of "challenge" was introduced into scientific circulation by the English historian A. Toynbee (Toynbee, 2019). A. Toynbee singles out the following types of challenges: the challenge of a harsh climate; the challenge of new lands; call for sudden blows from neighboring societies; the challenge of constant external pressure and the challenge of limitation, when society, having lost something vitally important, directs its energy to the development of properties that compensate for the loss.

Among recent studies, P. Peduzzi (Peduzzi, 2019) emphasizes that some aspects of disaster risk related to global environmental changes still don't have a clear meaning for the main stakeholders (governments, businesses, insurance companies or agencies). In turn, there are studies of the impact of the global pandemic examine the impact of the global COVID-19 pandemic on the relationship between corporate social responsibility (CSR) and firm sustainability (Kim et al., 2022). The authors argue that firms that are more active in CSR do not reduce the market risk associated with the global COVID-19 pandemic compared to their counterparts that are less active in CSR, that is, CSR doesn't provide a significant improving the company's market risks.

In the aspect of research on the risks caused by COVID-19, it was found that the business sector most affected by epidemiological risks is tourism and hospitality (Kostynets et al., 2021).

The analysis of the theoretical background shows that despite the presence of a sufficient number of scientific works that relate to the functioning of business in conditions of risks of various nature, today the topic of forecasting economic development is relevant and it is expedient to develop a model of smart regulation based on the study of the sustainable functioning of business in conditions of epidemiological threats, military conflicts and wars, as well as accompanying political collapses and economic crises in Europe and the world.

Aims. The purpose of the article is to find new ways of business development in the conditions of contemporary crises and challenges, among which a key place is given to the COVID-19 and Russian military aggression in Ukraine.

Methodology. The methodological approach to the formation of the smart regulation model in the conditions of modern challenges, which is able to take into account the maximum number of risks and predict their development, is based on the application of a combination of time series forecasting methods and neural network construction methods. In fact, the proposed model of smart regulation under the conditions of contemporary challenges is based on the theories of decision-making based on uncertainty (Goodwin, Wright, 2004; Clemen, 1996; Raiffa, 1997), which, in turn, are the basis for building smart regulation neural networks.

Neural networks, which are approximators of non-linear functions, can be used in conditions of uncertainty and risk, if the linear form of traditional models is replaced by a non-linear one (Jinu, 2019). To use a neural network forecasting model, it is necessary: first, to determine the type and architecture of the network; secondly, the parameters of the neural network using the training sample, which is built on the basis of the values of the original time series. As a rule, either recurrent networks or forward propagation networks are used for forecasting tasks (Bandara et al., 2020).

A genetic algorithm is often used to determine the structure of a neural network. The same algorithm can also be used to form the composition of input variables, but this approach requires significant computational costs.

To model management processes in conditions of uncertainty of modern challenges and risks, it is advisable to use the neural network method of direct propagation. In such a network, connections between nodes do not form a cycle. A feed-forward neural network is the first and simplest type of neural network. In a network of this type, information moves in a forward direction from input nodes and through hidden nodes (if any) to output nodes. At the same time, the input nodes are time series of the main indicators that affect the development of business, both exogenous and endogenous.

For smart regulation modeling, it will be more appropriate to use the techniques used in building a traditional linear predictive model, namely: autocorrelation functions and partial autocorrelation functions, to determine the composition of the input variables of the neural network. A non-stationary time series is reduced to a stationary time series with the help of simple transformations. One such method is, for example, taking finite differences. Based on the analysis of autocorrelation functions and partially autocorrelation functions, the parameters of the model $ARIMA(p,\ d,\ q)$ or the model $SARIMA(p,\ d,\ q)(Ps\ ,Ds\ ,Qs)$ are determined, respectively, in the absence or presence of a seasonal component. The obtained values of the parameters (orders) of the classic time series models determine the number of past values of the time series that are used in the neural network model.

Results. The nature of the functioning of various business spheres implies the presence of large economic ties between entities that are influenced by a large number of objective and subjective factors of both a positive and negative nature. A risk can arise at any time under the influence of factors of various origins. A vivid example of the manifestation of such global risks and contemporary challenges and business response to them is the field of tourism and hospitality. Thus, previous studies have shown that it is the tourism and hospitality around the world that has reacted very negatively to the pandemic due to the nature of the business, which is always associated with people's travels. The tourism sector has become one of the most affected by the outbreak of the COVID-19, which has affected both demand and supply, which has become additional risks for the industry in the context of a weakened global economy, geopolitical, social and trade tensions, as well as uneven opportunities among the main outbound travel markets (Kostynets et al., 2020).

The influence of Russian aggression in Ukraine on tourism and hospitality became no less serious. Thus, experts of the world tourism market claim that Russian aggression not only creates significant obstacles to the recovery of the continent's

tourism industry after the pandemic, but also encourages tourists to consider alternative tourist destinations to other countries. A big problem in this situation was also the fact that all international logistics routes that pass through the territory of Ukraine are not functioning now. However, the Ukrainian market is not the only one affected by this war: on certain European destinations, a drop in the number of flights is observed after February 24, compared to the same period in 2021. So, for example, the number of flights in Moldova fell by 69%, in Slovenia by 42%, in Latvia by 38%, and in Finland by 36% (UNWTO, 2022).

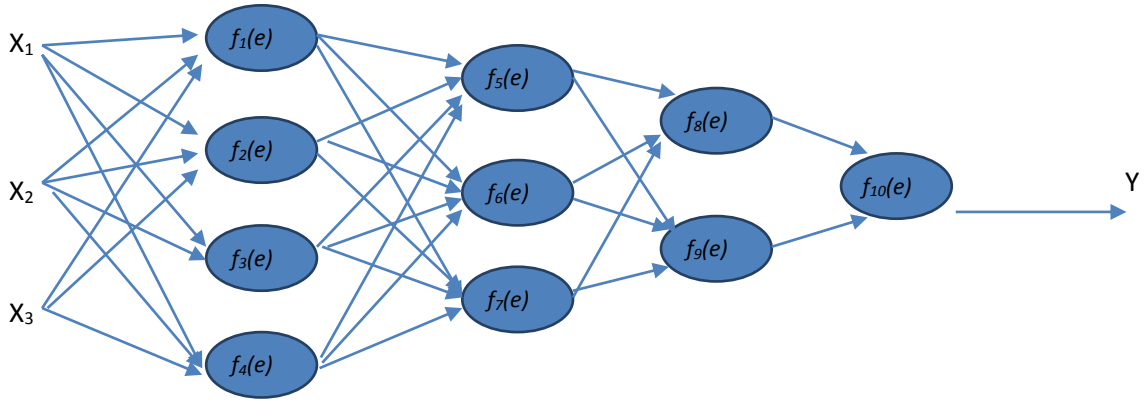
It is worth noting that the Russian invasion of Ukraine had a significant impact not only on the tourism industry, but also on all other spheres of Ukrainian business. Thus, surveys of business representatives in the field of real estate and construction, service, IT/Software, retail/e-commerce, and production conducted in August 2022 (Kyivstar Business Hub, 2022) show that it was the largest that adapted to the crisis most easily compared to others business: 49% work as before the war, and 31% - with restrictions. At the same time, the smaller company, the more difficult it was for entrepreneurs to continue their work. Among the industries, IT/Software feels the best: 40% of companies work without changes, 46% — with restrictions. In other areas, mostly only a quarter of companies were able to continue their work without changes, e.g., in the service sector, 28% are operating as before the war, and 48% have introduced restrictions. As for financial losses, it was found that 25% of companies from the real estate and construction sector, 25% - manufacturing, 24% - retail/e-commerce, 23% - IT/Software and 21% estimated their losses at $10,000-50,000. In addition, 26% of real estate and construction companies and 24% of manufacturing companies experienced losses of $50,000 to $200,000. The main causes of losses for most companies of all sizes and industries are increased fuel prices, disruptions in logistics and supply problems, loss of partners, loss of customers due to relocation, and business shutdowns.

On a global scale, business also experienced certain shocks due to the war in Ukraine. Thus, military actions during the Russian invasion of Ukraine affected global operations in many sectors of the economy due to the disruption of the global supply chain. The ban on Russian exports and the retaliatory ban on foreign imports by Russia, including Russia's refusal to allow foreign cargo through its waterways and airspace during the conflict, forced European countries to make urgent changes to the global supply chain.

As a result of the Russian invasion of Ukraine, most European countries faced the problem of the rising cost of living. So, in Great Britain, for example, inflation is already 5.5%, which means that consumers are already spending more money on fewer goods. Thus, military actions on the territory of Ukraine lead to further travel of energy carriers, food products and food ingredients. The overall negative effect for developed and developing countries is that it can lead to global inflation and high cost of living (Ozili, 2022).

Of course, the interconnectedness and velocity of risks has increased in recent years, and different approaches are now needed to see and address them. Increasing adaptation to risks will further contribute to the overall stability of each specific enterprise, business and the economy as a whole. With the right view, business and

the economy as a whole will be able to mitigate any future changes and prepare for them, because thanks to increased resilience, the business will have a strategic advantage and will be better able to respond to certain challenges in a seamless, coordinated and efficient way. All this is possible thanks to a system of intelligent regulation based on risk forecasting by combining time series and neural networks. The scheme of the forward propagation neural network for modeling intelligent regulation can be depicted as follows (fig. 1).



Note: input nodes: X1 – time series of consumer incomes, X2 – time series of consumer expenses, X3 – time series of population savings; fi(e) distribution nodes: inflation index, average salary in the country, speed of money circulation, budget deficit in the country, income level of the population, average rate on deposits; source node Y is the level of business risk as a target indicator.

Figure 1. Smart regulation model in the form of a neural network with three input neurons

Source: create by authors

The number of input neurons in the smart regulation model, which is built on the basis of a neural network for making managerial decisions based on the assessment of the level of general risk, can be increased according to the number of uncertainty factors affecting the functioning of various business areas. The neural network model preserves the proportionality of risks and challenges of the micro- and macro-environment of business, which makes them the most adaptable to modern conditions.

It is the development and implementation of reasonable risk-oriented regulation and challenges proportional to them that is an important approach to increasing efficiency, strengthening effectiveness and reducing the overall burden on the economy. Thus, risk assessment can serve to prioritize regulatory efforts and adapt the choice and structure of regulatory instruments both within and outside regulatory domains. It is not only about understanding the level of risk, but also about the characteristics of each risk in order to develop adequate regulatory measures. In particular, the COVID-19 crisis and Russia's military aggression in Ukraine have demonstrated the obstacles that regulation can pose to crisis response when it is disproportionate to the risk or when the trade-offs between different risks are not adequately anticipated. It also demonstrates the importance of regulatory flexibility and emergency management, as well as the use of new technologies.

Discussion and conclusion. Current trends in the development of the world economy indicate the presence of five groups of risks that can become "catastrophes of tomorrow":

1. Ecosystem threats. Biodiversity is declining faster than at any time in history. Over the next 10 years, biodiversity loss, environmental pollution, consumption of natural resources, climate change and socio-economic factors will create a dangerous combination. The consequences could be increased zoonotic diseases, reduced crop yields, potable water shortages that potentially contribute to increased violence and conflict, loss of incomes dependent on food systems, and more severe natural disasters.

2. Epidemiological threats. The expansion of disease sources will be accompanied by increasing disease severity. The key consequence will be an increase in disability, not mortality: people live longer, but with poor health - medical advances allow people to live with multiple co-morbidities, but treating them is still difficult and expensive. As the pandemic fades, health care systems are facing burnout and understaffing amid mounting financial pressures—reduced funding and rising costs and labor costs—as inflation continues, economies stagnate, and governments reallocate spending in favor of geopolitical security. This will reduce the quality of medical care and access to it even in prosperous countries. Geopolitical tensions can limit the joint development of medicines and the exchange of new scientific achievements.

3. Security threats. The past decades were characterized by the non-deployment of humanity's most powerful weapons and the absence of direct clashes between world powers. By 2022, militarization was declining in all regions of the world. A reversal of this trend has raised the risk of conflict on a potentially more destructive scale. The strengthening of the military power of many countries of the world can lead to a global arms race. While global norms limit the use of nuclear weapons, the pursuit of lower-power weapons and stronger defensive military technologies may undermine the perceived security provided by nuclear weapons: unlike the Cold War-era balance of power, which was defined by deterrence weapons, the next decade may become a period of devastating attacks and extended conflicts.

New technologies will change the nature of threats to national and international security in cyberspace and outer space. Over the next decade, directed energy weapons will make significant advances capable of disabling satellites, electronics, communications systems, and quantum computing can be used in increasingly sophisticated military technologies, from disinformation campaigns to hacking nuclear defense systems.

4. Threat of violation of digital rights. The proliferation of data-gathering devices and artificial intelligence technologies could open the way to new forms of control over individual autonomy and privacy. As more data is collected over the next decade and the power of new technologies grows, people will be subject to harassment and surveillance by the public and private sectors on an unprecedented scale, often without adequate anonymity or consent. Recognizing the potential risks to privacy and freedom of movement, some companies are independently regulating

the sale of facial recognition systems to law enforcement agencies, and the EU is set to ban the use of the technology in public places.

5. Threat to economic stability. Prolonged inflation could lead to more painful interest rate hikes even as economic growth slows, which in turn would lead to a tighter landing and a more widespread debt crisis. But even a relatively orderly fiscal consolidation will affect spending on human capital and development, ultimately jeopardizing the resilience of the economy and society to the next global shock, whatever form it takes. Countries with developed economies will have more opportunities to invest in economic development, the gap between them and developing countries will grow. However, in an era of low growth, even advanced economies will have to make trade-offs. Prioritizing security considerations may mean that the budget has fewer resources to finance social needs and support the environment. This can become a key factor for the realization of other global risks.

Deterring and counteracting the specified risks is possible only at the expense of intelligent regulation systems, which will allow to manage the flexibility of regulation and response to contemporary risks and challenges.

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