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SUSTAINABLE INVESTING: WORLD PRACTICE AND PERSPECTIVES FOR NATIONAL ECONOMY OF UKRAINE

The article is devoted to investigating the basics and trends of the development of sustainable investing in the global economy and the practice in Ukraine. Sustainable investing is defined as an investment approach referring to environmental, social, and governance (ESG) factors in selecting and managing investments. A comparison of responsible and sustainable investments is made. Sustainable investing is shown to be much more extensive than the responsible one and includes not only ESG strategies of the companies but as well introducing and performing some (or all) of UN principles of sustainable development in their businesses. The following basic sustainable investment strategies are defined: Negative/exclusionary screening, Integration of ESG factors, Corporate engagement&shareholder action, Norms-based screening, Best-in-class/positive screening, Negative/exclusionary screening, and Sustainability themed/thematic investing. Current trends based on statistical data analysis are shown in implementing sustainable investment strategies. The author proves the appearance of a new paradigm of development and interrelations in national investment ecosystems through forming new factors in investment environments and definitely other interaction models, as well as the regulative principles to be introduced and policies to be developed. The sum-up of existing practices in implementing sustainable investment strategies in Ukraine is made. It is stated that the institution of corporate social responsibility, the implementation of the principles of sustainable development in the activities of economic entities at all levels, and the development and implementation of sustainable investment strategies in Ukraine are currently in their infancy. Also, suggestions about profitable products in the Ukrainian investment ecosystem in the post-war renovation are made.

Keywords: responsible investing, sustainable investments, sustainable investment strategy, ESG strategy, ESG financial ecosystem, investment ecosystem.

Introduction. Beyond the top line growth in sustainable investment assets, this is an industry that is in transition, with rapid developments across regions that are reshaping sustainable investment to increasingly focus on moving the industry towards best standards of practice. Increasingly, there are expectations that sustainable investment is defined not just by the strategies involved but by the short- and long-term impacts that investors are having from their sustainable investment approach [1]. This transition is playing out differently in different regions. It is essential to investigate the global, and regional trends that provide deep insights into the different paths that various regions are now taking and the distinct drivers behind these changes. Also, in this relation, it is necessary to estimate Ukraine's temporary state of implementation of sustainable investment strategies, future possibilities of its development, and the way these strategies could be used and widened in the post-war investment ecosystem in Ukraine.

The global investment management sector has an important role to play. It is a channel for finding sound savings investments for households and securing the effective management of assets through stewardship. It thus helps households carry their wealth through their lifetime and across generations. The investment chain from the household to the final asset can be a long one and includes asset owners (such as pension funds and insurance companies), invest managers, fund-of-funds managers, private equity investors, investment consultants, independent financial advisors and others [2]. Especially these trends will be of high importance in the now changing world and global markets interrelation.

The **aim of this article** is to highlight the main sustainable investment strategies, investigate its implementation trends in global regional perspective, and analyze the state of sustainable investing in Ukraine with the purpose of making proposals for its future development and role in the post-war rebuild of Ukraine.

Literature review. Issues connected with the development and implementation of ESG strategies, responsible and sustainable investing are relatively new in theoretical studies: they appeared firstly in practice, and

their investigation and further theorization were due to the need to explain the processes and patterns of real economic development and the emergence of new formats of interaction, values, and corporate cultures, national priorities. So the first publications in this area were made by the UN by adopting The Sustainable Development Goals [3–5]. Issues connected with ESG strategies and their implementation were primarily studied in research by OECD [6, 7] and by Sustainable Stock Exchanges Initiative [8–12]; responsible investing is investigated by the Principles of Responsible Investment Initiative [13–16] supported by UN and also reflected in states' annual reports on SDGs [17–19]. But the fact that all those publications are really fragmented and concern separate topics in this really new field of study mostly based on statistical data analysis creates many obstacles and difficulties in the study of these problems.

Methodology. This article provides a snapshot of sustainable investing across Europe, the United States, Japan, and Canada based on the regional and national reports as well as from secondary industry data.

The data encompass several strategies previously covered by compiling the assets under management (AUM) of institutions that exercise environmental, social, and governance (ESG) integration, exclusions, and engagement. The methodology followed in preparing this paper included a desk review, market data analysis, a survey, and an in-depth analysis of the results. Desk research included references to many articles, reports, news articles, and books.

The content and comparative analyses of existing sustainable investment strategies were also used to generalize their key points.

Results. Sustainable investing is an investment approach referencing environmental, social, and governance (ESG) factors in selecting and managing investments. Sustainable themed investing is investments in areas or assets related to sustainable development goals (for example, alternative energy, environmental technologies, sustainable agriculture, carbon-free production, gender equality, green securities, etc.). In essence and practice, sustainable investing involves the development of such investment strategies based on environmental, social, and governance factors

(ESG), which belong to the three key groups of factors assessing sustainable development and financial performance of companies and are related to responsible or socially responsible investment, which is gaining more and more weight and impact since the climate and social change continues to have a substantial effect on the dynamics of global markets [1, 7, 13, 14, 20].

There are five basic sustainable investment strategies. However, it should be noted that under the challenges of the modern investment environment and the innovative nature of economic development, they are subject to certain modifications [1, 21]. Considering that, we may generalize and present seven modern core approaches to sustainable investment (table 1).

Table 1. Sustainable Investment Strategies

APPROACH	EXPLANATION
Integration of ESG factors	The systematic and explicit inclusion by investment managers of environmental, social, and governance factors in financial analysis.
Corporate engagement & shareholder action	Employing shareholder power to influence corporate behavior, including through direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting guided by comprehensive ESG guidelines.
Norms-based screening	Screening of investments against minimum standards of business or issuer practice based on international norms such as those issued by the UN, ILO, OECD and NGOs (e.g. Transparency International).
Negative/exclusionary screening	The exclusion from a fund or portfolio of certain sectors, companies, countries, or other issuers based on activities considered not investable. Exclusion criteria (based on norms and values) can refer, for example, to product categories (e.g., weapons, tobacco), company practices (e.g., animal testing, violation of human rights, corruption), or controversies.
Best-in-class/positive screening	Investment in sectors, companies or projects selected for positive ESG performance relative to industry peers, and that achieve a rating above a defined threshold.
Sustainability-themed /thematic investing	Investing in themes or assets specifically contributing to sustainable solutions – environmental and social – (e.g., sustainable agriculture, green buildings, lower carbon tilted portfolio, gender equity, diversity).
Impact investing and community investing	Impact investing Investing to achieve positive, social and environmental impacts – requires measuring and reporting against these impacts, demonstrating the intentionality of the investor and underlying asset/investee, and the investor contribution. Community investing Where capital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to businesses with a clear social or environmental purpose. Some community investing is impact investing, but community investing is broader and considers other forms of investing and targeted lending activities.

Source: compiled by the author on the basis of [1, 21].

This raises the question of defining the difference between sustainable and responsible investing, as these two concepts are now used in global investment markets and form a new paradigm for the investment environment.

Accordingly to PRI [13], responsible investment is an approach to investment that explicitly acknowledges the relevance to the investor of environmental, social, and governance factors and of the long-term health and stability of the market as a whole. It recognizes that the generation of long-term sustainable returns depends on stable, well-functioning, and well-governed social, environmental, and economic systems [2].

The following Figure 1 very clear demonstrate the described relation. As we can see, the sustainable investing is much wider than responsible one and includes not only ESG strategies of the companies, but as well introducing

and performing some (or all) of UN principles of sustainable development in their businesses. But still, responsible investments are really important indicator we have to analyze because of the point that exactly they were the primary step in transforming markets and developing of new market paradigm. Some countries, nevertheless, stay only at the very beginning of adopting the sustainable investment strategies and cope only with their initial forms, so in this case we can only talk about responsible investments and its possible types and models.

The dynamics and volume of responsible investments, the models are used by national economies in its introduction allow to understand the future trends in this market and to know how to develop the companies' general strategies, how and where to invest for investors and the national economies and have to regulate it all.

INVESTMENT PROFILE	FINANCIAL ONLY	RESPONSIBLE	SUSTAINABLE	IMPACT			IMPACT-ONLY		
	Delivering competitive financial returns								
	Limited or no regard for ESG practices	Mitigating ESG risks							
		Mitigate risky ESG practices in order to protect value	Pursuing ESG opportunities						
			Adopt progressive ESG practices that may enhance value	Focusing on measurable high-impact solutions					
				Competitive financial returns					
				Below market financial returns					
			Address societal challenges that generate competitive financial returns for investors	Address societal challenges which may generate a below market return for investors	Address societal challenges that require a below market return for investors	Address societal challenges that cannot generate a financial return for investors			

Figure 1. Comparison of definitions of responsible and sustainable investment

Source: compiled by the author on the basis of [2, 13, 16, 17].

The following statistics clearly show the active development of this area: in 2006, when the responsible investment initiative was launched, it involved less than 250 entities at various levels with total assets under management of about 60 trillion USD, and in 2018 these figures amounted to 2,300 entities with total assets under management of 89.7 trillion USD [1, 16]. At the beginning of 2020, global sustainable investments reached 35.3 trillion USD in five developed markets, showing a 15 % increase over the last two years (2018–2020) and a 55 % increase over the last four years (2016–2020). The total amount of assets under management at the end of 2020 increased to 98.4 trillion USD (which is a total of 35.9 % of total assets under management) [1].

If analyzing the statistics in terms of our above mentioned sustainable investment strategies, today the

most common strategy of sustainable investment in the world economy is the strategy of integrating ESG factors with total assets under management of 25.2 trillion USD (growth rate during 2016–2020 was 143 %), the second position belongs to the strategy of negative / exclusive screening (15.9 trillion USD), and the third position is occupied by corporate involvement and interaction / influence of shareholders (10.5 trillion USD, growth rates during 2016–2020 – 25 %) [1].

This, in turn, reflects in new paradigm of development and interrelations in national investment ecosystems (Figure 2) through forming new factors in investment environments and definitely other interaction models, as well the regulative principles to be introduced and policies to be developed.

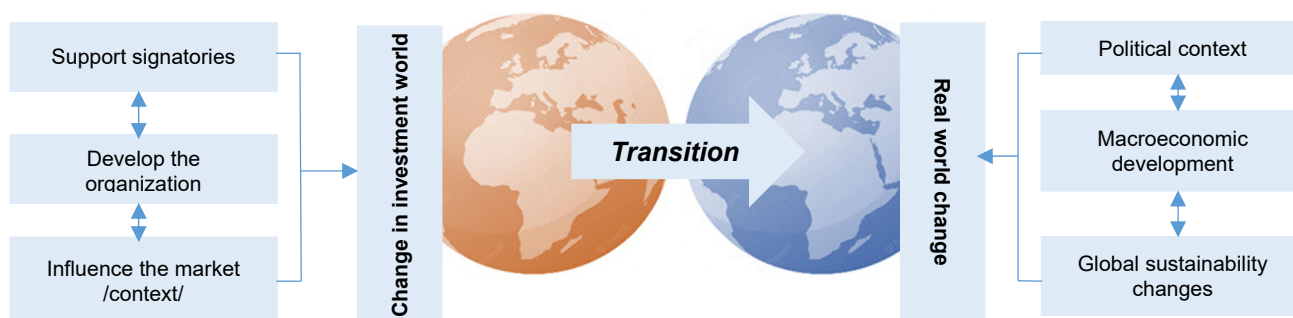


Figure 2. Theory of change of transformation vectors

Source: generalized by author according to [1, 2, 14, 21, 22].

The other transformation process we can observe is forming of new investment markets, financial instruments and assets with another characteristics and definitely new type of impact-element in national investment ecosystems. This is reflected in the shift from "red" to "blue oceans" in investment markets and trading/investing techniques. Because of these reasons and because of the postulate that investment markets provide the entire global economy with financial liquidity, it is important to understand the basis how new investment markets will work and the principles of its intra- and extra interaction.

A national or regional sustainable investing market is defined by GSIA [1, 13, 21] as a national market by the country where the sustainable investing assets are managed (i.e. where the sustainable investing asset management team is located). As a consequence, it is reasonable to measure the size of the sustainable investing asset management market in each region, rather than the

sustainable investing market (the supply not the demand). Assets under management can be assigned to specific national markets based on where: (1) the asset owner or manager is located, (2) the investment solutions are distributed/sold (3) the solutions are domiciled legally and (4) the assets are invested. In today's global asset management industry, sustainable investment funds can be domiciled in one country, managed in a second and registered for sale in several jurisdictions. As a result, defining national sustainable investing markets is not straightforward. While fund managers are rather easy to locate, the ultimate investors are not.

Taking into account all above conclusions we can definitely say about the institutionalization of the ESG financial ecosystem. This ecosystem, as illustrated in the figure 3, includes issuers and investors who disclose and use information related to environmental, social and governance issues.

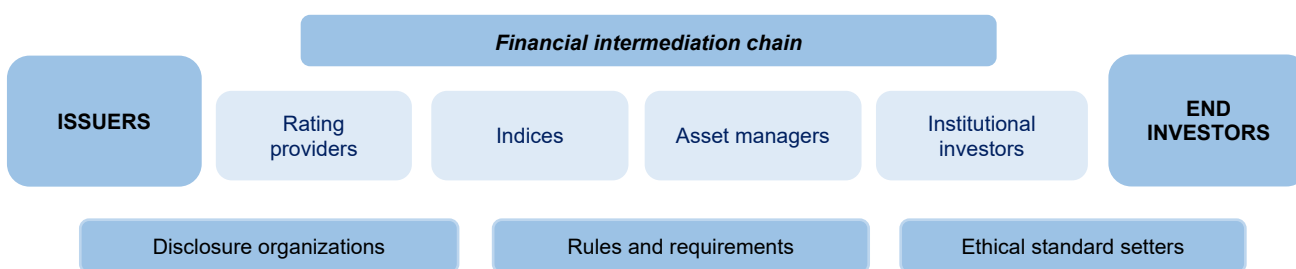


Figure 3. ESG Financial Ecosystem

Source: compiled by the author on the basis of [6].

According to figure 3, to **Issuers** belong all of them who receive ESG rating; **Rating providers** are those firms that rate ESG issuers; **Indices** considered to be built of those firms that introduced ESG strategies; under **Asset managers** we mean those firms that construct and market ESG funds, ETFs, etc.; **Institutional investors** are entities with fiduciary responsibilities to manage assets, and to the **End investors** belong owners who bear the ultimate reward and risk. Disclosure organizations determine information to disclose the relevant to ESG and materiality, including climate-specific disclosure. Bodies that develop and/or implement formal **rules and requirements** include market regulators and supervisors of financial institutions, and also exchanges and self-regulating bodies. Lastly, there are **standard setters** for ethical and responsible conduct, including international organizations that set standards and guidelines regarding responsible investing and sustainability goals [6].

The growing interest in responsible investment by market participants is explained, firstly, by the recognition of the fact that the consideration of ESG factors in financial activities significantly affects the level of risk and return; second, the awareness that taking ESGs into account should be an integral part of fulfilling investors' obligations to their clients and final beneficiaries; third, the existence of legal norms that protect the long-term interests of beneficiaries and expand the capabilities of the financial

system; fourth, the pressure of competitors seeking to strengthen their own competitive position by introducing the concept of responsible investment, seeing it as a new element of competitive advantage; fifth, the growing role and impact of reputational risks at the global level of economic activities related to climate change, environmental pollution, working conditions, diversity of employees, corruption and aggressive tax strategies [7].

This research shows that beyond the top line growth in sustainable investment assets, this is an industry that is in transition, with rapid developments across regions that are reshaping sustainable investment to increasingly focus on moving the industry towards best standards of practice. Increasingly, there are expectations that sustainable investment is defined not just by the strategies involved, but by the short- and long-term impacts that investors are having from their sustainable investment approach.

This transition is playing out differently in different regions: many regions continue to see strong growth in sustainable investment assets under management – most notably Canada, the United States and Japan; other regions are slowing down their rate of growth or have seen a reported reversal – in particular Europe and Australasia. In both cases, this is largely due to changes in how sustainable investment is defined, either by law as in the case of the EU or by new industry standards as is the case in Australasia.

Table 2. Global sustainable investing assets, selected years, USD billions

Region	2016	2018	2020
Europe	12.040	14.075	12.017
United States	8.723	11.995	17.018
Canada	1.086	1.699	2.423
Australia	516	734	906
Japan	474	2.180	2.874
Total	22.839	30.683	35.301

Source: compiled by the author on the basis of [1].

Sustainable investment assets are continuing to climb globally, with the exception of Europe which appears to indicate a decline, however this is due to significant changes

in the way sustainable investment is defined in this region under EU legislation, making comparisons with previous data very difficult.

Table 3. Growth of sustainable investing assets by region in local currency (billions), 2014–2020

Region	2014	2016	2018	2020	Growth 2014–2016, %	Growth 2016–2018, %	Growth 2018–2020, %	CAGR 2014–2020, %
Europe (EUR)	9.885	11.045	12.306	10.730	12	11	-13	1
United States (USD)	6.572	8.723	11.995	17.081	33	38	42	17
Canada (CAD)	1.011	1.505	2.132	3.166	49	42	48	21
Australia (AUD)	203	707	1.033	1.295	248	46	25	36
Japan (JPY)	840	57.056	231.952	310.039	6.692	307	34	168

Source: compiled by the author on the basis of [1].

As shown in table 3, the largest increase over the past two years was in Canada, where sustainably managed assets grew over 48 %. The United States closely followed Canada with a growth of 42 %, followed by Japan at 34 % from 2018 to 2020. In Australasia, sustainable assets continued to rise, but at a slower pace than between 2016 and 2018 with a growth of 25 % from 2018 to 2020 compared with 46 % from 2016 to 2018. This slow down reflects an industry transition whereby industry standards on what

constitutes sustainable investment, as defined and measured by RIAA, have tightened. Europe reported a 13 % decline in the growth of sustainable investment assets in 2018 to 2020 due to a changed measurement methodology from which European data is drawn for this year's report. This reflects a period of transition associated with revised definitions of sustainable investment that have become embedded into legislation in the European Union as part of the European Sustainable Finance Action Plan [1].

Table 4. Proportion of sustainable investing assets relative to total managed assets, %, 2014–2020

Region	2014	2016	2018	2020
Europe	58.8	52.6	48.8	41.6
United States	17.9	21.6	25.7	33.2
Canada	31.3	37.8	50.6	61.8
Australia	16.6	50.6	63.2	37.9
Japan		3.4	18.3	24.3

Source: compiled by the author on the basis of [1].

It should be mentioned, that the share of sustainable investments in total AUM of regions through 2016 till 2020 grew from 27.9 % to 35.9 %. The proportion of sustainable investing relative to total managed assets continued to grow

strongly in Canada, the United States and Japan. In contrast, Australasia and Europe both reported a lower proportion of sustainable investing assets relative to total managed assets for 2018 to 2020.

Table 5. Regional shares (%), by asset weight, in global use of sustainable investing strategies 2020

Sustainable Investing Strategy	Europe	USA	Canada	Australia/ New Zealand	Japan
<i>Impact/community investing</i>	30	60	4	5	0
<i>Best-in-class/positive screening</i>	41	48	1	0	10
<i>Sustainability themed investing</i>	7	86	2	0	4
<i>Norms-based screening</i>	74	-	19	-	6
<i>Corporate engagement & shareholder action</i>	45	19	19	-	17
<i>Negative/exclusionary screening</i>	61	23	7	1	8
ESG Integration	16	64	9	3	8

Source: compiled by the author on the basis of [1].

Regional differences in the prevalence of sustainable investing strategies can be explained due to a number of factors, some of which are regionally specific. For example, Australasia combines positive, negative and norms-based screening into one bucket and does not track corporate engagement as a stand-alone strategy. The United States does not track norms-based screening, and for the purposes of producing an overall tally of sustainable investing assets, counts only the portion of corporate engagement assets that are deployed in filing shareholder resolutions on ESG issues. Historically Europe made up the majority of assets with norms-based and negative/exclusionary screening strategies. As the recent European Union Sustainable Finance Disclosure Regulation sets out requirements for investment managers to incorporate sustainability risks in their investments, this means that negative/exclusionary screening, norms-based screening and ESG integration have become part of the expected practice of all financial products in the region. As such, segregating these strategies may not be representative of the holistic trends facing the sustainable investment industry globally.

Obviously, the development of such global trends has not escaped Ukraine. However, the institution of social corporate responsibility, the implementation of the principles of sustainable development in the activities of economic entities at all levels, the development and implementation of sustainable investment strategies in our country is currently in its infancy.

Ukraine has joined to achieve global goals and adapted the Sustainable Development Goals (SDGs) to Ukrainian realities. As a result, in 2017 the National Report "Sustainable Development Goals: Ukraine" (2017) was published, in which 17 global SDGs were adapted taking into account the specifics of national development. In 2020, the Decree of the President of Ukraine "On the Sustainable Development Goals of Ukraine until 2030" was adopted and a Voluntary Report on their achievement was prepared. The result of the inclusive process of adaptation of the SDG for Ukraine, taking into

account the specifics of national development, was the SDG system, which consists of 86 tasks with 183 indicators for monitoring [18, 19, 23, 24].

Therefore, we can make some generalizations about the results and challenges separately for the representatives of domestic business and evaluate the effects achieved at the national level.

For business:

- Priority was given to Goal 4 "Quality Education", Goal 8 "Decent Work and Economic Growth" and Goal 3 "Good Health and Well-being".

- Ukrainian enterprises have launched a significant number of initiatives and projects within the framework of the implementation of corporate social responsibility (CSR) strategies. However, domestic companies have not modified their CSR strategies and do not have corporate goals for achieving the Sustainable Development Goals and the practice of measuring their results (preference is given to the use of quantitative indicators).

- Domestic business does not pay much attention to the development of partnerships and is more focused on cooperation with non-governmental organizations (including charitable foundations) and educational institutions than on cooperation with authorities and other business structures [24].

State:

- In 2019 there were progress in 15 of the 17 goals: the main achievement is the reduction of poverty: from 58.3 % in 2015 to 43.2 % in 2018.

- Ukraine is implementing the concept of educational reform "New Ukrainian School" and has joined the international study on the quality of education PISA-2018.

- Since 2019, Ukraine has introduced a retail electricity market and a full-scale electricity market.

- Due to the improvement of conditions for the development of small and medium-sized businesses in 2016–2019, the positive balance of foreign trade in ICT services increased 2.5 times.

- Since 2015, 1,029 united territorial communities have been created in Ukraine, and state support for local and regional development has increased 41.5 times.

- The main obstacles to development remain the temporary occupation of the Autonomous Republic of Crimea and parts of Donetsk and Luhansk oblasts, deteriorated infrastructure, inefficient public administration, insufficient resources and limited funding, and challenges related to COVID-19 [18].

- The new restrictive challenge Ukraine has faced in 2022 is war invasion of Russia: military action led to large-scale destruction of infrastructure and peaceful facilities, the suspension of enterprises, as well as an increase in the public debt deficit, a reduction in state budget revenues and a decline in macroeconomic indicators.

It is obvious that in order to achieve the SDG, it is necessary to ensure effective interaction between the state, business, educational and informal institutions on the basis of partnership and the development of sustainable investment. In this respect, the global practice of attracting stock exchanges, which are an important platform for interaction between companies and investors, is indicative: exchanges can directly influence the implementation of the principles of responsible investment by companies that are or seek to be listed, not even that composition of basic stock indices.

Such partnerships should be based on three basic principles: reconciliation of interests, technical assistance and research.

Thus, exchanges (a) must themselves report on the implementation of their sustainable development strategies; (b) develop guidelines for sustainable development reporting for other entities; (c) establish listing rules for companies with ESG strategies; (d) conduct trainings for their partners; (e) create and publish ESG-indices on which investors can make decisions about investing in the company's "steel" and finally, provide a list of stable securities – exchanges must have a separate platform and tools for listing bonds so that investors can quick access to stable markets for fixed income instruments [9].

Also, we must take into account that after the end of the war, Ukraine will need investment to rebuild its infrastructure, business environment and economy. And such a restructuring can already take place on the basis of new models of interaction between economic entities and the state – within the development of new investment ecosystem of the national economy, from the very beginning including tools and strategies for sustainable development.

Conclusions. The research made in this article allows generalizing that there appear strong shift in global investment infrastructure to a sustainable investing and introducing ESG and sustainable strategies in business activities. Moreover, there appear not only new sustainable investment facilities, but as well, new forms and frames in such interactions within the national economies – investment ecosystems and ESG Financial Ecosystems.

This shift is proved by statistical data that at the start of 2020, global sustainable investment reached USD35.3 trillion in five major markets demonstrating an increase of 15 % during 2018–2020. Sustainable investment assets under management make up a total of 35.9 % of total assets under management, up from 33.4 % in 2018. Sustainable investment assets are continuing to grow in most regions, with Canada experiencing the largest increase in absolute terms over the past two years (48 % growth), followed by the United States (42 % growth), Japan (34 % growth) and

Australasia (25 % growth) from 2018 to 2020. Europe reported a 13 % decline in the growth of sustainable investment assets in 2018 to 2020 due to a changed measurement methodology from which European data is drawn for this year's report. This reflects a period of transition associated with revised definitions of sustainable investment that have become embedded into legislation in the European Union as part of the European Sustainable Finance Action Plan.

Canada is now the market with the highest proportion of sustainable investment assets at 62 %, followed by Europe (42 %), Australasia (38 %), the United States (33 %) and Japan (24 %). The United States and Europe continue to represent more than 80 % of global sustainable investing assets during 2018 to 2020.

According to the Decree of the President of Ukraine of September 30, 2019 № 722 Sustainable Development Goals of Ukraine until 2030 are guidelines for developing draft program documents, draft regulations to ensure balanced economic, social and environmental dimensions of sustainable development of Ukraine. At the same time, an effective model of state regulation of inter-entity cooperation, which is able to ensure the implementation of sustainable development goals, ESG and sustainable strategies including business activities based on responsible investment in Ukraine, has not yet been developed. The share of companies that are implementing ESG and sustainable strategies or ready to do it is very low and taking into account war will decrease in next years.

Discussion. Despite the relevance of issues related to sustainable development for all countries of the world, a review of international practice and experience of selected countries and regions suggests that there is a lack of universal approaches and models for sustainable development. The international reports on this issue emphasizes on fixing the most acute problems and defining the targets that need to be achieved to stop undesirable trends in certain areas of public life. At the same time, none of the adopted documents describe unified practical mechanisms, the use of which would provide states with better opportunities for operational monitoring, consideration and response to changes in economic conditions in order to ensure and maintain balanced socio-economic development throughout the country.

However, the further exacerbation of environmental and social problems in the world shows that the current model of development management, which is based on increasing value added in production, does not take into account the damage done to the environment and the actual participation of employees in the creation of this added value. That is why the continued practice of focusing on economic feasibility and growth of economic indicators with insufficient objective consideration of social and environmental aspects and consequences of production activities today is one of the main causes of excessive, and in many cases irreversible, environmental degradation and ineffectiveness aimed at combating poverty and ensuring social justice.

Against the background of the interplay between innovation, prevention and scaling up activities on the one hand, and effectiveness and efficiency in the statutorily financed area on the other hand, the careful selection of suitable areas and the finely tailored integration of ESG and sustainable investing strategies into proven structures of social-service provision and financing is an essential factor for success. In short, the use of ESG and sustainable investing strategies should fundamentally complement existing resources, and should not prompt a debate over

expenditures and spending cuts. Rather, it should broaden and strengthen the existing financing and investment systems in the social sector. Through state-supported ESG and sustainable investing funds, possibly with a regional focus, new incentives for the implementation of prevention, innovation and scaling up activities in selected areas of the social sector can be created. In addition, there are currently legal uncertainties for socially motivated organizations that want to be able to pursue social impact alongside their usual economic goals [25].

Through state-supported ESG and sustainable investing funds, possibly with a regional focus, new incentives for the implementation of prevention, innovation and scaling up activities in selected areas of the social sector can be created. In addition, there are currently legal uncertainties for socially motivated organizations that want to be able to pursue social impact alongside their usual economic goals. Other interesting direction could be impact investing [26] that can be made in several ways; through a traditional model aligned with the theory of change, the concept of additionally and purpose-driven companies, to a more mainstream approach that focuses on medium and large businesses that deliver products or services to benefit society and the environment.

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О. Булкот, канд. екон. наук, доц.

Київський національний університет імені Тараса Шевченка, Київ, Україна

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СТАЛІ ІНВЕСТИЦІЇ:

СВІТОВА ПРАКТИКА ТА ПЕРСПЕКТИВИ ДЛЯ НАЦІОНАЛЬНОЇ ЕКОНОМІКИ УКРАЇНИ

Досліджено основи і тенденції розвитку сталого інвестування у світовій економіці та механізмам його впровадження в Україні. З'ясовано, що стійке інвестування – це інвестиційний підхід, який урахує екологічні, соціальні й управлінські фактори (ESG) під час вибору інвестиційної стратегії та моделі управління інвестиціями. Проведено порівняння відповідальних і стійких інвестицій. Доведено, що стійке інвестування набагато ширше, ніж відповідальне, й охоплює не тільки стратегії ESG компаній, але й також упровадження та дотримання деяких (або всіх) принципів сталого розвитку ООН у їхній діяльності. Узагальнено основні стратегії сталого інвестування. Доведено появу нової парадигми розвитку та взаємозв'язків у національних інвестиційних екосистемах через формування нових факторів інвестиційного середовища, а також інших моделей взаємодії та регулятивних принципів. Зроблено висновки щодо наявної практики впровадження стратегій сталого інвестування в Україні. Зазначено, що інститут соціальної корпоративної відповідальності, упровадження принципів сталого розвитку в діяльність суб'єктів господарювання усіх рівнів, розроблення та впровадження стратегій сталого інвестування в нашій країні нині перебувають на стадії становлення. Також розроблено пропозиції щодо успішного розвитку української інвестиційної екосистеми в умовах післявоєнного відновлення.

Ключові слова: відповідальне інвестування, стійкі інвестиції, стратегія сталого інвестування, стратегія ESG, ESG фінансова еко-

Ключові слова: відповідальне інвестування, стійкі інвестиції, стратегія сталого інвестування, стратегія ESG, ESG фінансова екосистема, інвестиційна екосистема.

B. Zasadnyi, Doctor of Economics, Associate Prof.

ORCID ID 0000-0002-5308-7248,

O. Mykhalska, PhD of Economics, Associate Prof.

ORCID ID 0000-0003-1921-6293,

Y. Feshchenko, PhD of Economics, Associate Prof.

ORCID ID 0000-0002-5673-7672

Taras Shevchenko National University of Kyiv, Kyiv, Ukraine,

A. Shapoval, Chartered Certified Accountant (ACCA)

Internal Auditor, Goldman Sachs

THE ROLE OF A PUBLIC SECTOR ACCOUNTANT IN THE MODERN SOCIETY

The article identifies the role of public sector accountants in creating value for the state and society and suggests ways to improve skills in making professional judgments. Public accountants should provide the necessary information for decision-making and check the current activities of public organizations. The accountant of the public sector institution informs the population and allows assessing the efficiency and cost-effectiveness of the institutions that provide public services. Thus, for an accountant working in public administration, it is essential to provide information primarily to meet the information needs of citizens, NGOs, and society in general, to determine the cost of maintaining these bodies – how much taxpayers work for civil servants. At the same time, despite the existing problems and troubles, the accountant profession is constantly evolving in response to the constant development of socio-economic relations, the introduction of new innovative technologies, and the integration of society, which leads to growth, and organization in solving problems and advocating. Despite this key role of accounting in the public sector, it is underestimated compared to scientific and professional accounting in the corporate sector. The role of higher education institutions is to provide students with the skills necessary not only to enter the profession but also to solve environmental, economic, and social problems. The role of professional accounting organizations is to develop the profession as a whole – both in the private and public sectors. The factors of unfavorable influence on the development of the accounting profession in the public sector are identified, and directions for increasing its prestige are proposed. The acquisition of new knowledge and practical skills and the identification of barriers to the acquisition of relevant skills in accordance with international best practices and standards contribute to the role of accountants in the public sector and increase their social value, especially in the context of international practices.

Keywords: accountant; International Public Sector Accounting Standards; accrual method; public value; financial reporting.

Introduction. The role of the accounting profession in modern society is highly significant. Representatives of this profession provide proper control over the legality of business transactions, and efficient use of funds and provide management information to the users to make management decisions. Therefore, no public sector institution can exist without highly competent accounting specialists. This is especially important today when in Ukraine, against the background of the economic crisis, the constant lack of funds in the state budget, and confusion in the legislation, there are complex processes of reforming the accounting system in the public sector. The importance of an accountant in this period is growing since the representatives of this profession must provide accounting services at a high professional standard under constantly changing legislation. Thus, every society that seeks stable economic growth and a high standard of living should create optimal conditions for the development of the accounting profession, because it is the accountant of a public sector institution who is the key link without which effective and legal use of public resources and maximization of public goods are not possible.

Literature review. The problem of accountability and ethics in public sector organizations is in constant focus of attention of the international standard setters of the accounting profession, such as the International Federation of Accountants (IFAC), Association of Chartered Certified Accountants (ACCA) etc. The research survey of ACCA (2011) witnessed the pivotal importance of the accounting profession in delivering public value. As such, 38 % of participants asked to rate a sector or a profession in terms of their public significance, gave accountancy profession a "very high" rating, placing it second to the medical profession [1]. Hence, the relevance of the research topic remains high. All researchers emphasize the high professional requirements for the professional competence of accountants.

Ionescu L., (2012) [2] reveals in an article that the role of management in public sector accounting has become more critical than ever, helping to reduce corruption and bureaucracy risk in public sector. Financial statements must be timely and accurate to be centralized at national and European levels.

Feschian D., (2013) [3] believes that statistical information at the Central European level depends on the quality of accounting and information on public finances. The role of management in accounting in the public sector is to focus on ensuring compliance with fiscal and financial discipline, and on providing accurate information to the managers. This, in turn, will enable access to timely, accurate, and transparent financial statements for all government agencies.

Shvets V. (2014) [4] in his article Accounting and Control as a Science and Discipline in Accounting and Analytical Education considers current areas of improving the training of accounting and control specialists and ways to strengthen the accounting and analytical education of economists and further improve the system of accounting training that would meet modern requirements of public administration and development of business information system.

In their articles, Todericiu R., Stanit A. (2016) [5] presented the ideas and mechanisms of management in public sector accounting and new challenges for civil servants in recent decades. All European countries have introduced a new model of public administration, involved in the modernization of the public system around the world, and critical changes have taken place since then in the field of public administration.

Zaman G., Ionescu L. (2016) [6] explore public sector management and accounting in central and local administrations, which are closely related. Furthermore, the accounting methods are essential as an effective

tool for public administration and anti-corruption efforts in the public sector.

The research report of Dr. Jens Heiling (2020) [7] states that the unprecedented policies are taken by governments around the world during the COVID-19 pandemic further emphasize the importance of public sector actors in society and the economy. Public sector accounting plays a crucial role in ensuring accountability, transparency and trust in this area. In addition to public sector reforms, recent examples from Greece and Portugal have shown the importance of public sector accounting for the success of these reforms. Despite this key role of public sector accounting for the economy, it seems that compared to private sector accounting, public sector accounting is underestimated, both from an academic and professional point of view. The role of higher education institutions is to provide students with the skills necessary not only to enter the profession but also to respond to environmental, economic, and social problems. And the role of professional accounting organizations is to develop the profession as a whole – in the private sector and the public.

Tatjana Jovanović & Vesna Vašiček (2020) [8] reveal the factors that should be considered before reforming public sector accounting and budgeting systems, such as having solid political support and commitment from all stakeholders, as well as public and professional oversight at a later stage. The research outcomes reveal the limited usefulness of the information offered by the accounting system for budgeting purposes and several conclusions on the provision of accounting information. These findings can be used as a starting point in the reform of public finance management in Slovenia, as well as in similar countries where the accounting and budgeting system in the public sector is evolving.

Lovinska L. (2020) [9] notes that for the successful implementation of IFRS by state-owned enterprises, it is necessary to develop a concept of accounting and to report on standards for them, which will determine the format of IFRS (full or with certain restrictions) and will be the basis for current legislation. The effectiveness of the implementation of IFRS by state-owned enterprises depends on a high-quality, consistent and harmonized with these standards legal framework that regulates their activities and ensures the application of IFRS, taking into account their role in solving tasks for state-owned enterprises and the national economy.

Methodology. General scientific methods and specific research methods of theoretical study of economic phenomena and processes have been applied for this research.

For clarification of economic substance, we have applied the methods of cognition, terminological analysis, induction, deduction, and theoretical generalization.

We have also considered the recent international developments in the field, the research outcomes from Ukrainian and foreign scientists and practical implementation experience.

Results. The primary mission of the accountant of a public sector institution (public sector accountant) is to create and maintain the proper functioning of the information system of the public sector institution, aimed at accumulating accurate, objective, clear, accessible, and timely information for further economic analysis to meet management and control needs. The main specificity of the accountant's role in this process for the public sector institution is that the public sector accountant must provide information on the process of managing public funds, which

makes him responsible for entrusting to the head of the public sector institution financial resources and their most rational use to increase public goods. Accountants of public sector institutions deal with significant flows of financial resources. All funds go through the treasury system and are distributed among the institutions to perform their functions. At the same time, such funds require competent professional action on the part of accountants and treasurers to ensure their safety, targeted and practical use. For an accountant of a public sector institution to perform the tasks entrusted by the public, he/she must create such an information system in the public sector institution that would allow the most effective information management process and meet the specifics of the institution its goals. On the one hand, this involves the development of accounting methodology: the definition of accounting policy, changes to the chosen accounting policy, and on the other hand, taking into account the peculiarities of the institution and the technology of accounting data processing.

The organization of accounting in a public sector institution requires the solution of the following aspects of accounting: determining the optimal structure of the accounting function and the number of its employees, appointment and dismissal of employees of the accounting function, rational and practical distribution of responsibilities among its employees. All these measures are aimed at creating an effective information system of the public institution, which will provide management with the necessary information for management decisions in order to economically, efficiently and effectively use budget funds. Implementation of management and control requires the provision of already processed and ready-to-use information. Therefore, on the one hand, when forming an accounting system, a public sector accountant should consider these needs and try to create a system that would generate the highest quality and ready-to-use information. On the other hand, the accountant is often required to analyze accounting information, which requires him/her to understand analytical methods and procedures, as well as the possession of modern computer equipment and software, because the scale of the source information and tasks that the accountant must solve by analysis can go beyond human capabilities.

The reform and modernization of the accounting system in Ukraine is declared by the decisions of the Government on reforming of public sector accounting, in particular by the adoption in 2007 of the Strategy for modernizing public sector accounting for 2007-2015, and the Strategy for modernizing of accounting and financial reporting in the public sector for the period until 2025, approved in 2018. The main directions of accounting reform according to the Strategy-2025 [10] are the creation and implementation of an analytical information system of accounting and preparation of financial statements by public sector entities; systematization of accounting processes; improvement of the formation of the organizational structure of accounting bodies and improvement of the system of training and retraining of accounting specialists. It is expected that the creation of a unified informational accounting system that will be achieved on the basis of the Strategy will significantly enhance public financial management, strategic budgetary planning, and financial control over state budget implementation.

The practical and efficient implementation of accounting reform in the public sector depends on the conditions in the country. The transition to accrual accounting varies from country to country depending on goals, strategic objectives, policy support, capacity, administrative traditions, and

procedures. This complexity is the reason why the country receives information on how to better stimulate the results of the reform. The transition towards the accrual method in public sector accounting is the main driving force and/or the development of the public sector accounting reform.

Another reason why public sector accounting reform has taken many years is the lack of effective drivers, including the lack of clearly defined results and outcomes. Often in these cases, public sector accounting reform provides a wealth of information and reports that are simply not used: not used for decision-making, resource allocation, transparency, accountability, or performance management.

Accounting is the primary unit of public financial management systems. It determines most of the content and classification of information processed in general financial management, affecting the main objectives of public financial management. It also provides a clear illustration of how policy rules, including in the regulatory framework, can turn simply valuable data into meaningful information and how the absence of such regulations can hinder the use of potentially helpful information.

Government accounts allow for two types of financial stocks and flows: cash received or paid during the financial period and money earned or liabilities accrued during that period. Each of the basics provides valuable information, and none of them can be replaced by another. The cash method reflects the nominal surplus or deficit and borrowing needs, as well as the short-term impact of public finances on the economy.

The accrual method provides information about the assets and liabilities of the government and its fiscal position, regardless of when the funds were received or paid. The cash method shows the money spent by government agencies on the production of public services; the accrual method shows the resources they have spent. The information obtained using the accrual method serves all the primary purposes of public finance management.

The cash method more fully reflects the fiscal position of the government, because it includes outstanding liabilities that will be paid in future periods and prevents creative accounting approaches that allow transferring the recognition of revenues or payments from one reporting period to another. This strengthens financial accountability as citizens have a clearer idea of the cost of government programs and activities.

The scientific literature often argues that accrual accounting is the basis of fiscal management because it complements cash accounting, in which the government may be tempted to defer disbursements, promote cash inflows, or not disclose public sector debt and liabilities. In addition, research often believes that accrual reforms should lead to new, more effective ways of assessment of the fiscal position of governments, for example, by analyzing variations in the net worth of the public sector.

While these arguments are undoubtedly well-founded, countries do not often mention them as specific goals or results of their accrual-based accounting reforms. Not all nations, for example, have adopted new, balance-based, fiscal headings after the transition to the accrual method or have developed financial ratios for specific governments. Instead, most countries believe that the benefits of the reforms associated with the transition to the accrual method are indirect.

With a growing deficit and increasing public debt, debt transparency has become crucial for the following reasons: lenders must fully assess the acceptability of the level of debt of their potential borrowers, citizens must be able to

hold their governments accountable for their debt obligations, and borrowers need to develop strategies based on a clear understanding of the level and value / risks of their debt portfolio.

Deficit and debt indicators are determined through government reporting and national accounting systems. The quality and completeness of the data provided by these systems will affect the government's ability to evaluate its finances and assets and to make informed and correct decisions. Some experts argue that the lack of accrual-based accounting for public debt in the public sector is the core cause of the debt crisis.

It is important to note that a set of National Public Sector Accounting Standards (NPSAS) has been adopted in Ukraine since 2010. As of April 2022, 20 national standards are in place, and they comply with International Public Sector Accounting Standards (IPSAS). According to the assessment of international experts conducted as part of the World Bank project in 2018, 80 % of international standards are fully or partially applied and included in the regulatory framework of Ukraine [11]. In addition, Ministry of Finance approved a unified chart of accounts and new forms of financial statements for public sector accounting. The Chart of accounts for the public sector considers the budget classification of income and expenses with the specification of information on financial assets and liabilities. It incorporates the usage of the accruals method in public sector accounting.

As international accounting standards advance in the public sector, it is also important that national stakeholders – accountants, auditors, NGOs or members of parliamentary budget departments – have the opportunity to be trained to better understand the standards, their benefits and the incentive to implementation of the reform.

This is crucial to enable such stakeholders to discuss the principles and standards to be adopted and implemented in national systems and assess whether applications are properly submitted after their implementation. Conversely, a situation where standards are widely promoted, but there is no verification of the quality of their application in practice may encourage imitation of standards without real intention or ability to use them to achieve tangible results.

The accounting information received by the accountants is the basis for the implementation of their control function, which involves controls over:

- reflection of all business transactions in accounting systems,
- targeted and effective use of financial, material, informational, and labor resources, preservation of property,
- compliance with the requirements of state budget legislation,
- elimination of gaps and deficiencies identified during control measures.

One of the directions of modernization of the control function of the accountant to increase the efficiency and effectiveness of his/her work is the use of internal control. In the future, it is expected to reduce the burden on accountants of public sector institutions in the framework of the control function, as the Budget Code of Ukraine [12] provides for all budgetary institutions to mandatory implementation of the internal control system and, accordingly, the establishment of internal audit units.

The Budget Code of Ukraine stipulates that control over compliance with budget legislation is aimed at ensuring effective and efficient management of budget funds and is carried out at all stages of the budget process by its

participants. Therefore, control bodies and each participant in the budget process monitor the efficiency and effectiveness of using budget funds. Thus, managers of budget funds represented by the heads of public sector institutions organize internal control systems and internal audits and ensure their implementation within the institutions. The internal control system is not an internal audit activity but a system of rules, regulations, and procedures, which are clearly defined in internal regulations or administrative documents and are binding. The concept of internal control framework is internationally defined by COSO and includes the following components: control environment, risk assessment, control activities, information, communication, and monitoring activities [13]. Across these five components, there are 17 principles of internal control. The most remarkable ones from the perspective of creation of the values of society are demonstrating commitment to integrity and ethical values, demonstrating a commitment to competence, using relevant information, communicating internally and externally, conducting ongoing and separate evaluations, and evaluating and communicating deficiencies. As you can see, internal control is a continuous process of execution by each structural unit, including control and audit, assigned to it by the institution's management. Internal control is a set of measures enabled by the head of institution to ensure compliance with the legality and efficiency of the use of budget funds, achieving results under the established purpose, objectives, plans, and requirements for the activities of the budget institution [1].

The primary purpose of the accountant of the public sector institution is to meet the information needs of management. The head of the institution is primarily interested in obtaining accounting information for making operational business decisions. At the same time, an accountant must provide information about the institution's activities to the chief administrator of budget funds for the general management of a particular area of state activity: science, education and culture, and health care. That is, the accountant's task is to provide information to the public administration system for decision-making of national importance. The accountant of a public sector institution provides information to the public and makes it possible to assess the efficiency and cost-effectiveness of the functioning of institutions providing public services. Thus, for an accountant working in public administration, it is important to provide information primarily to meet the information needs of citizens, NGOs, and society in general to determine the cost of maintaining these bodies – how much it costs taxpayers to operate government officials.

The professional duties of an accountant of a public sector institution are typically defined by internal orders and professional instructions approved by the head of the institution. Professional performance of duties by the chief accountant of a public sector institution is further assessed in accordance with the Order of the Ministry of Finance of 01.12.2011 No 1537 annually. This assessment is divided into internal and external assessments and is performed by the chief accountant and approved by the head of the institution on one hand and by the Treasury unit to which the institution is reporting on the other hand. The annual assessment is due for approval by Treasury by 01 May every year [14].

Performing these functions by an accountant requires a high professional and educational level. As such, the requirements for accountants at the state level are defined in the Handbook of Qualifications of Professional Workers,

but these requirements are already outdated. They do not correspond to the current rapid development of the economy and social relations. Therefore, the criteria established in the professional community, which are defined by the International Standards for the Education of Professional Accountants, are increasingly important for the development of the profession.

These standards define the minimum qualification requirements for academic and professional knowledge, practical experience, and a system of continuous professional development. Therefore, practically implementing these standards in the education system of professional accountants in Ukraine is essential. Currently, the professional education of public sector accountants in Ukraine is carried out by higher education institutions based on the Law of Ukraine "On Higher Education" of 01.07.2014 N 1556-VII [15] under the dedicated Bachelor's and Master's programs on "Accounting and Taxation". Starting from the Bachelor program, students are studying public finance and budgetary process, as well as national standards of accounting in the public sector. Important to note that public sector accounting is studied more in-depth as part of the specialization available within the Bachelor's or Master's courses. There are further professional certification courses open to accounting graduates in Ukraine that are governed by international professional bodies, such as, ACCA (Association of Chartered Certified Accountants), CIMA (Chartered Institute of Management Accountants), CIPA (Certified International Professional Accountant), IFA (Institute of Financial Accountants), etc. However, considering the high certification costs and lack of English language proficiency among the public sector accountants, these certifications remain unpopular among the public sector accountants and are much more frequently pursued by private sector accountants and auditors.

In professional development, accountants should pay attention to modern technology training. Accounting automation has wholly changed the technological process of processing accounting information and set new requirements for the organization of the accountant. Although introducing new technologies in the public sector is slower than in the private sector, the trend towards greater automation is unwavering. Computerization of the accounting process facilitates the work of the accountant. It shifts the emphasis in the work of the accounting function towards the implementation of the control and analytical function of accounting.

Several essential steps have been made since 2015 in terms of improving automation across the public sector accounting services. In particular, a remote access payment processing system has been created by the Treasury of Ukraine to enable more efficient settlements of public sector liabilities. The Treasury payment system is integrated with the electronic system of public procurement (Prozorro). The information and analytical system "E-Treasury" has also been introduced. The system allows monitoring the status of accounts in real time to carry out preventive control of costs and their purpose, as well as to accept financial statements promptly by Treasury units. Further, an automated financial reporting system for public sector entities (AS "E-Reporting") has been implemented based on the Executive Order of Treasury of 27.12.2017 N 421 [16]. This automated system enables the submission of financial statements by public sector institutions through a dedicated personal account in a unified format and following approved NPSAS, in line with international best practices. At the same time, broad implementation of information technologies in public sector

accounting is hindered by various governmental restrictions and standards that must be adhered.

Therefore, the training of accountants should be focused on fully mastering modern technology so that the accountant can not only use modern software, but also take an active part in developing new computer accounting systems in public sector institutions.

One of the ways to improve the quality of work of accountants of public sector institutions and their contribution to the creation of public value is the development and implementation of national standards in the public sector based on international specifications, which is one of the key areas of modernization of accounting and financial reporting. Implementing these standards aims to create a single systematized regulatory framework for budget accounting in the long run. It will also contribute to developing modern computerized accounting systems in government agencies, providing greater stability to the regulatory framework and its system.

Thus, the principal value of the accountant for a particular public sector institution is to control the legality of transactions and the efficiency and effectiveness of the institution. On the one hand, an accountant registers the business transactions of the institution, but, on the other hand, he/she must ensure constant monitoring dependability of such activities. The value of an accountant for the state is that the accountant guards the lawful use of budget funds and provides public administration with the information necessary for decision-making at the national level. Thanks to accountants, society receives the essential information about the effectiveness of the public finance system and allows making the right choice of the future leadership of the state.

Conclusions. Undoubtedly, accounting in the public sector is in the public interest, and to realize this, it is necessary to educate students and professionals on its basics and concepts. Training civil servants and students in business accounting alone is not the right approach, as it will not provide them with what it takes in practice to become public sector accountants. Preparing the public sector for future ongoing changes requires the support of higher education institutions, the accounting profession, and public administrations. Only purposeful actions of these institutions will allow accounting in the public sector to become an independent discipline. Improved professional training for public sector accountants will provide long-term benefits to the public administration system and to broader society as a whole.

In modern society, the accountant is a crucial element of the organization of the economic system.

The study revealed:

- proper performance of the accountant's duties to society requires the creation of such an information system in the public sector institution, which would allow the most effective process of information management and would meet the specifics of the institution and its objectives in a transparent and ethical manner;
- the implementation of the internal control system will help increase the efficiency and effectiveness of the accountant;
- the purpose of the accountant of the public sector institution is to provide management with accounting information for decision-making operational business decisions;

- training of accountants should be focused on maximum mastery of modern technologies to improve efficiency;

- the introduction of national standards in the public sector based on international ones will create a single systematized regulatory framework for budget accounting, as well as promote the development of modern computer accounting systems in public institutions, as it provides greater stability of the regulatory framework and its system.

A developed society striving for efficient allocation of resources, the best possible provision of public goods needs and further sustainable economic growth should create the most optimal conditions for the development of the accounting profession and the work of public sector accountant, as the budget accountant ensures the creation and maintenance of information system budgetary institution aimed at accumulating accurate, objective, clear, accessible, timely and economic information for its further economic analysis and to meet the needs of management and control.

This is the basis for ensuring targeted, legal, efficient and effective use of budget funds. Unfortunately, today in Ukraine, there are many factors that hinder the normal development of the accounting profession, namely:

- inadequate system of incentives for accountants;
- inconsistency of their rights and responsibilities, the vulnerability of accountants to representatives of public financial control;
- instability of the regulatory framework of accounting and lack of real opportunities for self-realization of creative potential of accountants.

Discussion. The present research is based on the analysis of theoretical contributions of academic scholars, reports issued by a professional organization (ACCA), and recent legislative developments in Ukraine. As such, the research has inherent limitations related to the need for empirical testing based on national statistical data for further validation.

The key idea that is supported by this research paper is that public sector accountants must understand the importance of their profession to society, as they are responsible for controlling the use of public property and finances. As a result, the development of public welfare depends primarily on the profession of public sector accountants.

Strengthening the role of accountants in the public sector and enhancement of the delivery of public value in the context of the application of international standards leads to the following directions of potential future research around this topic:

- transitional aspects of the accountants' role in providing information on budget expenditures and performing the functions of a financial controller to fulfilling an extended role in analyzing costs and financial trends, preparing strategic forecasts, and providing policy recommendations to managers;
- increasing role of professional accountants in managing complex accounting systems, preparation of financial statements based on IPSAS, and their interpretation for public sector managers;
- challenges related to the acquisition of new knowledge, skills, and practical abilities by Ukrainian public sector accountants and removing barriers to acquire relevant skills in line with international best practices and standards.

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Б. Засадний, д-р екон. наук, доц.,
О. Михальська, канд. екон. наук, доц.,
Є. Фещенко, канд. екон. наук, доц.
Київський національний університет імені Тараса Шевченка, Київ, Україна,
А. Шаповал, сертифікований бухгалтер (ACCA),
внутрішній аудитор Goldman Sachs

РОЛЬ БУХГАЛТЕРА БЮДЖЕТНОЇ УСТАНОВИ В СУЧАСНОМУ СУСПІЛЬСТВІ

З'ясовано роль бухгалтерів державного сектору у створенні цінностей для держави та суспільства, що полягає в забезпеченні процесу ухвалення управлінських рішень необхідною інформацією та здійсненні контролю за поточною діяльністю бюджетної установи. Запропоновано ключові напрями підвищення їхньої професійної компетентності. Обґрунтовано значення закладів вищої освіти для формування у студентів професійних знань і навичок, необхідних не лише для вступу у професію, а й для врегулювання екологічних, економічних і соціальних проблем. Актуалізовано роль професійних бухгалтерських організацій з метою розвитку та популяризації професії загалом – як у приватному, так і в державному секторах. Визначено фактори негативного впливу на розвиток бухгалтерської професії у сфері державного сектору та запропоновано напрями щодо підвищення її престижності.

Ключові слова: бухгалтер, Міжнародні стандарти бухгалтерського обліку в державному секторі, метод нарахування, цінність для суспільства, фінансова звітність.

DIRECTIONS FOR IMPROVING THE CUSTOMS MECHANISM IN UKRAINE AFTER THE WAR ON THE WAY TO SUSTAINABLE DEVELOPMENT

Studies have been conducted on whether the basic functions of the customs and tariff mechanism changed during martial law and whether the priority of the functions of the customs and tariff mechanism was determined during the war. It is proved that the impact of customs tariffs on the sustainable development of Ukraine is essential, looking at the super-large import component of most Ukrainian goods, as well as the significant effect of imported goods on the domestic market during the downtime of their production. During the war, there are destructive processes associated with the impossibility, in most cases of competing in the market of finished products worldwide. Most of the finished products in Ukraine went to domestic consumption during the war, contrary to global development and globalization trends. A hypothesis has been put forward that these destructive processes are mostly due to the lack of working capital of Ukrainian enterprises during the state of war, and the increase in the cost of the logistics component, which is part of the tax base for imports. Even though the Ukrainian market is increasingly open to foreign manufacturers, it is a complex and long-term competition between Ukrainian and foreign producers in both domestic and foreign markets. One of the most significant factors of influence is customs tariffs, and VAT is one of the most significant burdens on imports. With the help of comparison, a possible reduction in the burden on Ukrainian enterprises during import and export was analyzed, and possible tools were identified that would create new jobs or reinvest earned business funds in the country's economy. The tools were found when conducting a comparative analysis of the customs tariff mechanism before and during the war in Ukraine, considering the goals of sustainable development. Quantitative and qualitative impact to selected macroeconomic indicators of Ukraine after implementing deferred payment for VAT in import of goods analyzed. The qualitative impact was analyzed to show us the result of calls on surveys to understand business attitudes, and interests according to the implementation of deferred payment for VAT in import of goods in Ukraine.

Keywords: customs duties, customs tariffs, customs tariff mechanism, sustainable development, sustainable development of Ukraine.

Introduction. Directions for improving the customs mechanism in Ukraine on the path to sustainable development were a significant issue even before the war for achieving 17 sustainable development goals. Customs mechanism in Ukraine influences most of all for achieving the following goals: no poverty, zero hunger, decent work and economic growth. Ukraine for 2021 has made progress in the fight against poverty and had a positive result.

The attack by Russia on Ukraine on February 24, 2022, made its adjustments and its imprint on the economy of the entire country. Many Ukrainians were left without housing, work, or means of subsistence. More than 1.5 million Ukrainians have requested temporary protection in the European Union. In April 2022, the Ukrainian economy is counting losses and doing everything possible to survive. For this, the state of Ukraine is taking significant measures; some of them are related to the tariff regulation of import-export operations. The speed of recovery of the Ukrainian economy will depend primarily on the rate of recovery of Ukrainian business. Maximum loyalty to the business can provide an opportunity for recovery in a short time. Customs tariffs are an essential part of the study since they are one of the first to influence the development of the economy. Customs tariffs before the war in Ukraine were not low, namely, 20 % VAT, duty, and excise duty differ depending on the country of origin of the goods and HS code.

During the war, small and medium-sized businesses were given relief when importing, which we cannot say about big business or business related to excise goods. The detail is also essential that at the end of 2021, Russia was Ukraine's third largest trading partner. According to Ukrainian statistics, trade with Russia in 2021 accounted for 6.9 % of total trade. These percentages are also significant because in 2022, at least 6.9 % of total trade will need to be both imported from other markets and exported to other markets, which can be a difficult task for Ukrainian enterprises and will take time. From 2014 to 2021, Russia has dropped from 1st place to 3rd. According to the

required eight years, we can understand there will not be a quick replacement for other markets.

This study is important, since customs payments are one of the first that an enterprise makes, even before it has managed to earn money from selling products. It is also one of the first costs for those who produce goods in Ukraine from imported raw materials. It is also the amount that affects the cost of the final product.

The situation in logistics aggravates the situation and significantly raises the cost of goods, which cannot but affect the Ukrainian economy. Analysis of the most suitable customs mechanism can give a chance to develop those businesses that lack quite a bit to start, create new jobs, and move towards sustainable development goals.

The purpose of this study is to look at the Ukrainian custom mechanism progress before the war in Ukraine and instruments of possible fast recovery of the Ukrainian economy after war toward sustainable development.

Literature review. Analysis and the pursuit of sustainable development are much more common in research than in post-war reconstruction. For example, sustainable development analysis was analyzed by such scientists as Jeffrey Sachs, Christian Kroll, Guillaume Lafortune, Grayson Fuller, Finn Woe [1], who made and analyzed the Sustainable Development Report 2021. The analysis of each country's aspirations was reviewed in detail, evaluated, and indexed for the publication of summary data on rankings and achievements. Many studies have already worked on the topic of sustainable development in a narrow field, namely T. E. T. Dantasa, E. D. de-Souza, I. R. Destrob, G. Hammesb, C. M. T. Rodriguezb, S. R. Soaresa [2] in the context of Circular Economy and Industry 4.0, Srijita Nundya, Aritra Ghoshb, Abdelhakim Mesloubc, Ghazy Abdullah Albaqawyc, Mohammed Mashary Alnaimec [3] in Impact of COVID-19 pandemic on sustainable development, Rozhilia Lauretta, Arminda Pazob, Emerson Wagner Mainardes [4], Sustainable Development in Agriculture and its Antecedents in the context of Barriers and Consequences,

Johannes W.H. van der Waal, Thomas Thijssens, Karen Maas [5] in the context of the innovative contribution of multinational enterprises. Luis A. Gil-Alana, Robert Mudida, Eleazar Zerbo [6], Clodfelter M. [7], Gadea M.D., Gomez-Loscos A., Perez-Quiros G. [8], Bellows, J., & Miguel, E. [9], Blattman, C. [10], Bohlken, A. T., & Sergenti, E. J. [11], Collier [12], Djankov, S., & Reynal-Querol [13], Einolf, C. J. [14], Herbst, J. [15], Arcand, J. L. [16] was analyzed recovery after the war in different countries.

The emergence of the country on the path of sustainable development after the war has not been analyzed by researchers, which leaves a wide field for research and analysis. Martial law in Ukraine has been extended until May 25, 2022, as of April, which means that we cannot yet draw a conclusion and draw up a complete picture of the restoration. Still, we can already calculate possible mechanisms to help businesses recover faster. Works that have explored the problem of economic recovery after Covid, as it is an additional investment, as well as a reorientation of the business.

Highlighting previously unresolved parts of the general problem shows us that the general problem is unexplored, and it is in this work that we will explore possible customs mechanisms that can help the economy recover faster.

Results. According to my previous research distinguish the following functions of the customs tariff mechanism in terms of sustainable development: ensuring national security, ensuring the socio-economic development of domestic enterprises and their competitiveness in both domestic and foreign markets, ensuring the implementation of the goals of sustainable development of the country (in this case Ukraine), ensuring the appropriate level of revenues to the

state budget (not only directly – customs duties, VAT, excise duties, but also indirectly – income tax).

Analyzing consider the extent to which the performance of these functions is possible during the war and which of them are more priority for the economy during martial law. To determine the priorities correctly, let's evaluate the consequences of the state's failure to fulfill the functions of the customs-tariff mechanism. For convenience, let's give each function a shorter name:

Security function – ensuring national security,

Protectionist function – ensuring the socio-economic development of domestic enterprises and their competitiveness in both domestic and foreign markets,

Ethics SDG function – ensuring the implementation of the goals of sustainable development of the country (in this case Ukraine),

Fiscal function – ensuring the appropriate level of revenues to the state budget (not only directly – customs duties, VAT, excise duties, but also indirectly – income tax).

Let's evaluate the consequences of failure to perform each of the functions in Table 1. Depending on the scope of the effects of not performing the function, we will assign a mark from 1 to 10 points. 1 point – insignificant influence. 10 points – significant impact. Thus, we will determine the functions with the most significant negative consequences for the country's economy. Functions that receive more points, and therefore have substantial consequences, will be given higher priority for first execution by the Customs Tariff Mechanism of Ukraine. Causal relationships will also be considered in the analysis, which will determine the most important functions that form the basis for the implementation of the remaining ones.

Table 1. Assessment of the consequences of non-fulfillment of functions by the customs-tariff mechanism

Functions	Non-execution of the function	
	one-time	on an ongoing basis
Security function	10	10
Protectionist function	5	10
Ethics SDG function	1	5
Fiscal function	1	10

Source: author's development.

Security function – ensuring national security, received 10 points since the security function should come first, as it is the country's ability to timely identify, prevent and neutralize actual and potential threats to national interests. A threat to national interests, even if there is one, is already a significant impact in terms of priority.

Protectionist function – ensuring the socio-economic development of domestic enterprises and their competitiveness in both domestic and foreign markets, received in one-time conditions 5 points and on an ongoing basis 10 points, that's mean that more competitive Ukrainian manufacturer, who sells more goods, could pay more taxes to the state, as well as to maintain the security of national interests. Since national security is paid for with taxes, and taxes are paid by businesses, this function is currently the highest priority. One-time conditions received 5 points because it is possible that this is one company that was not promoted by the customs tariff function, but it could become a big taxpayer and competitive company in the future. The probability, in this case, is considered 50/50, either yes or no.

Ethics SDG function – ensuring the implementation of the goals of sustainable development of the country (in this case Ukraine), received on one-time conditions 1 point, and on an ongoing basis took 5 points. Before choosing the direction of development in the direction of stable

development, countries grew, developed, and successfully performed their functions. The war showed that the priority of sustainable development, and the achievement of sustainable development goals, can be pushed back to fulfillment in years without significant consequences. Therefore, the issue is not a priority. An ongoing basis took 5 points because constant failure to comply will move Ukraine away from world goals, and therefore it is important to implement a development plan for Ukraine after the war, considering the goals of sustainable development.

Fiscal function – ensuring the appropriate level of revenues to the state budget (not only directly – customs duties, VAT, excise duties, but also indirectly – income tax), received on one-time conditions 1 point, and on an ongoing basis took 10 points. A one-time failure to perform a fiscal function does not bear significant consequences; a permanent inability to perform a fiscal function incurs permanent losses and, as a result, the impossibility of performing other related functions.

Defining priorities. Since one of the main functions is fiscal, and in order for enterprises to be able to pay, they must have working capital, it is important for business development to fill the budget, and as a result, the implementation of other functions of the customs tariff mechanism. Causal relationships are shown in Diagram 1.

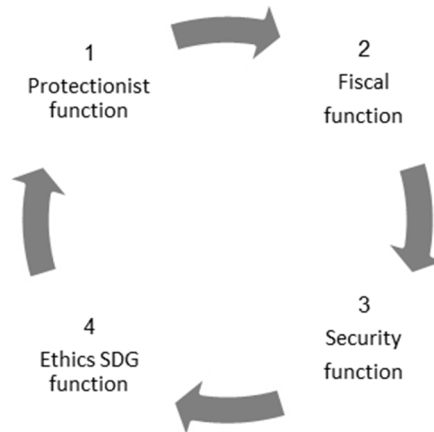


Diagram 1. Cause-and-effect relationships function of the customs-tariff mechanism in Ukraine

Source: author's development.

If the business lacks funds, if we put the fiscal function in the first place, we will not be able to give enterprises the opportunity to develop. As a result, we will not be able to rely on long-term revenues, as the business will be forced to close or evade taxes due to a lack of working capital. To help businesses, it is not necessary to remove the fiscal function but to make it possible to defer payment for Ukrainian businesses on taxes that can be charged during imports.

Let's analyze what customs-tariff mechanisms that used in April 2022 and are planned to be used after war in Ukraine. Let's analyze whether the customs-tariff mechanism performs its functions in each of the cases.

In Table 2, we will analyze what options for the customs-tariff mechanism existed before the war, operated during the war, and are planned to be used after the war.

Table 2. Options for the customs-tariff mechanism before the war, operate during the war, and are planned to be used after the war in Ukraine

Duties	before the war	operate during the war	planned to be used after the war
VAT	20 % – paid immediately	reduced for essential goods. reduced for businesses with 2 % taxation	not announced
Duty	depends on product code – paid immediately	reduced for essential goods. reduced for businesses with 2 % taxation	not announced
Excise duty	depends on product code – paid immediately	depends on product code – paid immediately (the instrument of full excise payment is used even before excise stamps are printed)	not announced

Source: author's development.

In the customs-tariff mechanism adopted during the war, the fiscal function suffers greatly, and as a result, over time, other functions, such as national security, may suffer. In war-time, humanitarian consignments were also greatly simplified, which may in the future cause smuggling of goods, and duty-free importation of products under the guise of humanitarian

purposes into the country. During martial law, freedom for humanitarian aid must necessarily be given, but this freedom must be stopped at the end of martial law.

In table 3, we will analyze whether the customs-tariff mechanism, which was used before the war, and which is used during martial law, performs the functions.

Table 3. Performance by the customs-tariff mechanism of its functions within the framework of various approaches before the war and during martial law in Ukraine

Functions	Performance by the customs-tariff mechanism of its functions	
	customs-tariff mechanism before the war	the customs-tariff mechanism operates during the war
Security function	+	+-
Protectionist function	+	+-
Ethics SDG function	+	+-
Fiscal function	+	+-

Source: author's development.

The customs duty mechanism with concessions during martial law gives only a temporary effect. A lasting effect

after a slight recovery can be the introduction of taxes, with a deferred payment. The possibility of paying taxes for

Ukrainian enterprises after the sale of goods will make it possible to use working capital for business development and pay taxes upon profit receipt. Based on the cause-and-effect relationships shown in Diagram 1, the margin of safety that the state now provides for business development is a push for Ukrainian enterprises, which should restore most businesses that have lost working capital, and personnel and must recover. After the business is already working stably at low speeds, it is possible to introduce a deferred payment for taxes, gradually returning them to the pre-war course. An important element is to leave the possibility of deferring payments to businesses on an ongoing basis to increase opportunities for development, as is done in the

European Union. For April 2022, the European Union gives a delay of 10–14 days for customs payments without charging additional fees. In Ukraine, it is advisable to increase the number of days of delay until the time the product itself is sold, and profit is made. The customs-tariff mechanism operating during the war shows a good tendency to recover during a short duration effect. A positive effect can be observed both from the point of view of the enterprise and from the point of view of the state.

To understand the real effect on the Ukrainian economy, macroeconomics indicators were analyzed.

Criteria to select macroeconomic indicators: impact on international trade, export, import and trade balance.

Table 4. Expected presence / absence quantitative and qualitative impact to selected macroeconomic indicators of Ukraine after implementation of deferred payment for VAT in import of goods

The macroeconomic indicators	Impact	
	qualitative	quantitative
Export	+	+
Import	+	+
Trade balance	+	+

Source: author's development.

As emphasized in Table 4, the presence of quantitative and qualitative impact appears to select macroeconomic indicators of Ukraine after the implementation of deferred payment for VAT in import of goods.

A survey based on 46 companies was done to analyze the qualitative impact and understand business attitudes and interests according to the implementation of deferred payment for VAT in import of goods in Ukraine. All respondents supported the possibility of deferred payment

and additional payment in case of delay before the sale of goods in the Ukrainian market. To assess the economic effect, it was important for us to understand the exact percentage that the business is willing to pay for paying VAT after the sale of goods. Diagram 2 shows us what percentage the respondents voted for when answering the question – how much % are you willing to pay for a VAT deferral until the goods are sold.

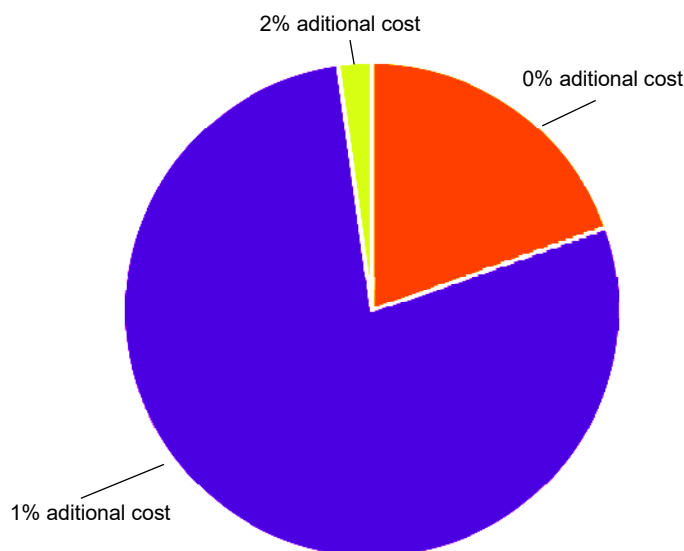


Diagram 2. The additional cost that Ukrainian companies are willing to pay in case of paying VAT after the sale of goods, in %

Source: author's development.

To analyze the quantitative impact the Ukrainian trade balance, import and export were compared with Nominal

GDP per year in UAH million. Diagram 3 shows Ukraine's foreign trade balance from 2005 to 2021 in UAH million.

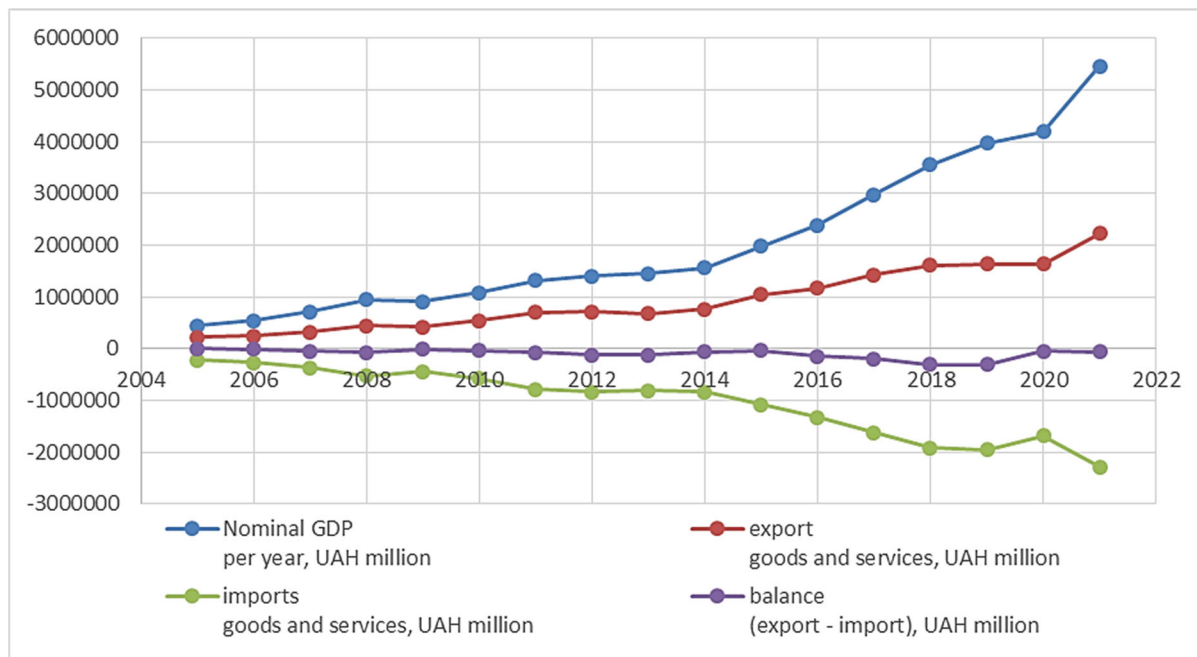


Diagram 3. Ukraine's foreign trade balance from 2005 to 2021 UAH million

Source: State Statistics Service of Ukraine data.

Based on the fact the optimal additional payment in most cases was chosen 1 %, according to Diagram 2, we will evaluate the effect of such payment on macroeconomic

indicators. VAT clearance payments for the import of goods and services were identified and shown in Diagram 4.

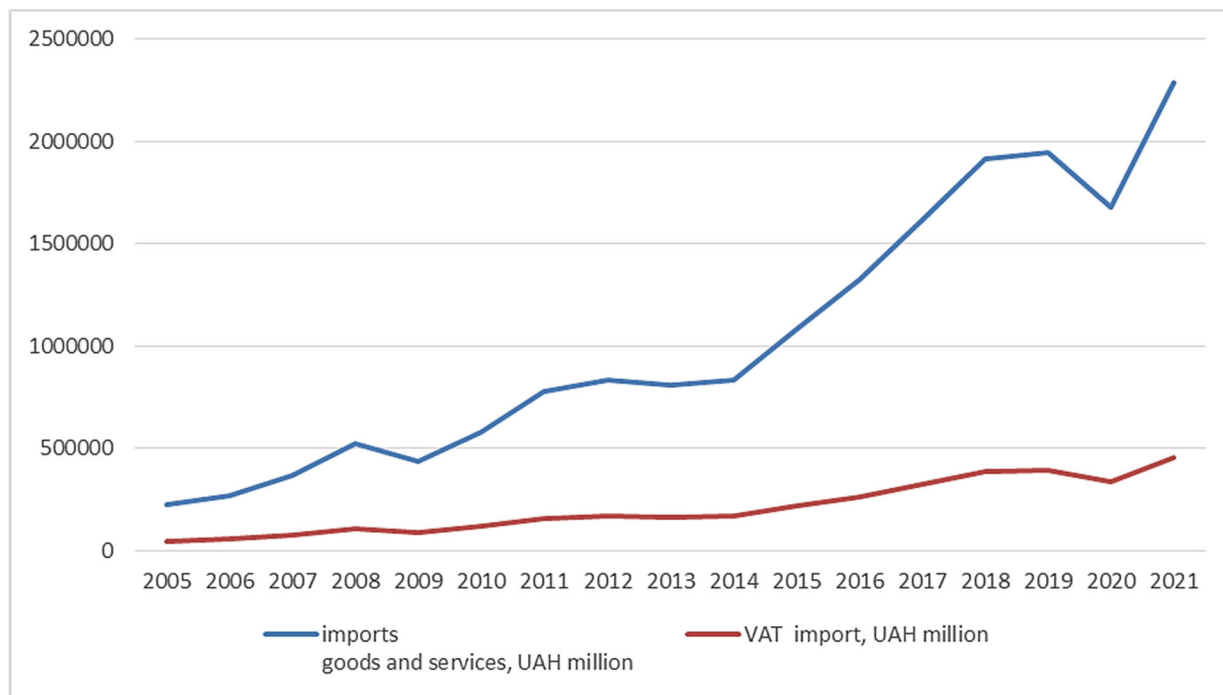


Diagram 4. VAT clearance payments for import goods and services, UAH million

Source: author's development.

As we can see in Diagram 4, the import of goods to Ukraine is growing, which shows the need to focus on an important aspect, the ability to pay VAT after selling goods. The possibility of deferred payment will give the business the opportunity to develop by investing smaller amounts in imported raw materials and imported goods, as well as bring

additional income to the budget in the short term. For forecasting, in Diagram 5 the linear forecast was used, which does not consider the decrease in imports due to military invasion. But since this is an additional payment to the existing ones, that could bring other income to the budget of Ukraine.

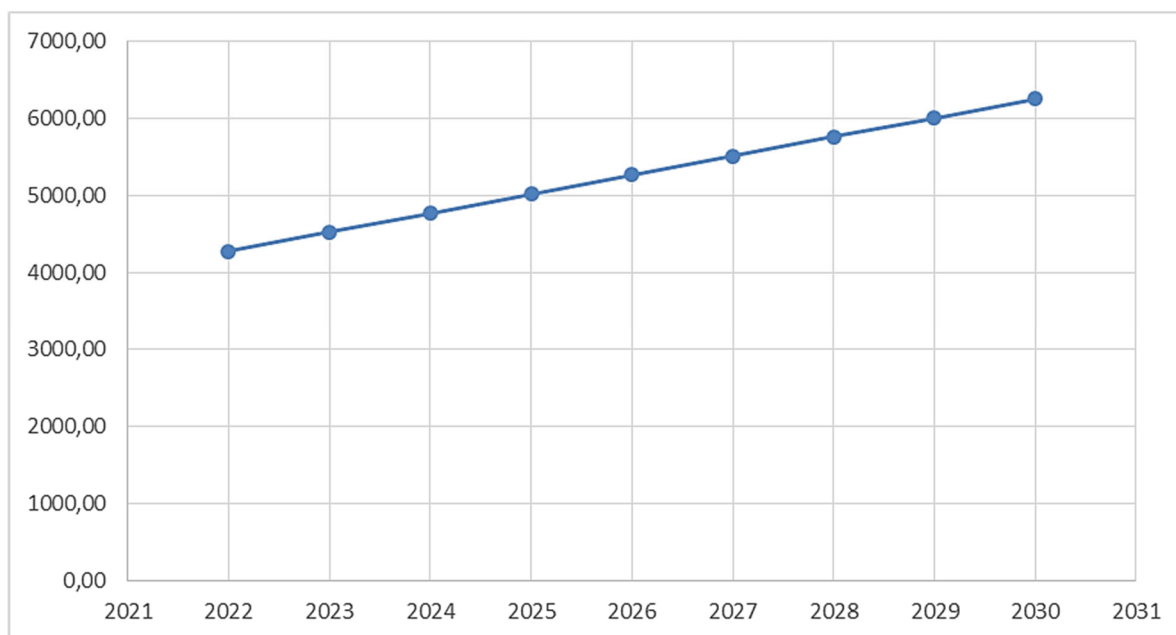


Diagram 5. Forecast for 2022–2030 of additional payment to the budget in case of implementation deferred payment for VAT, UAH million

Source: author's development.

Analyzing macroeconomic indicators, we can confidently say that this payment will have a positive economic effect in the short term, which we can see in Diagram 6,

which shows forecast 2022–2030 growth in % of GDP, additional payment to the budget in case of implementation deferred payment for VAT.

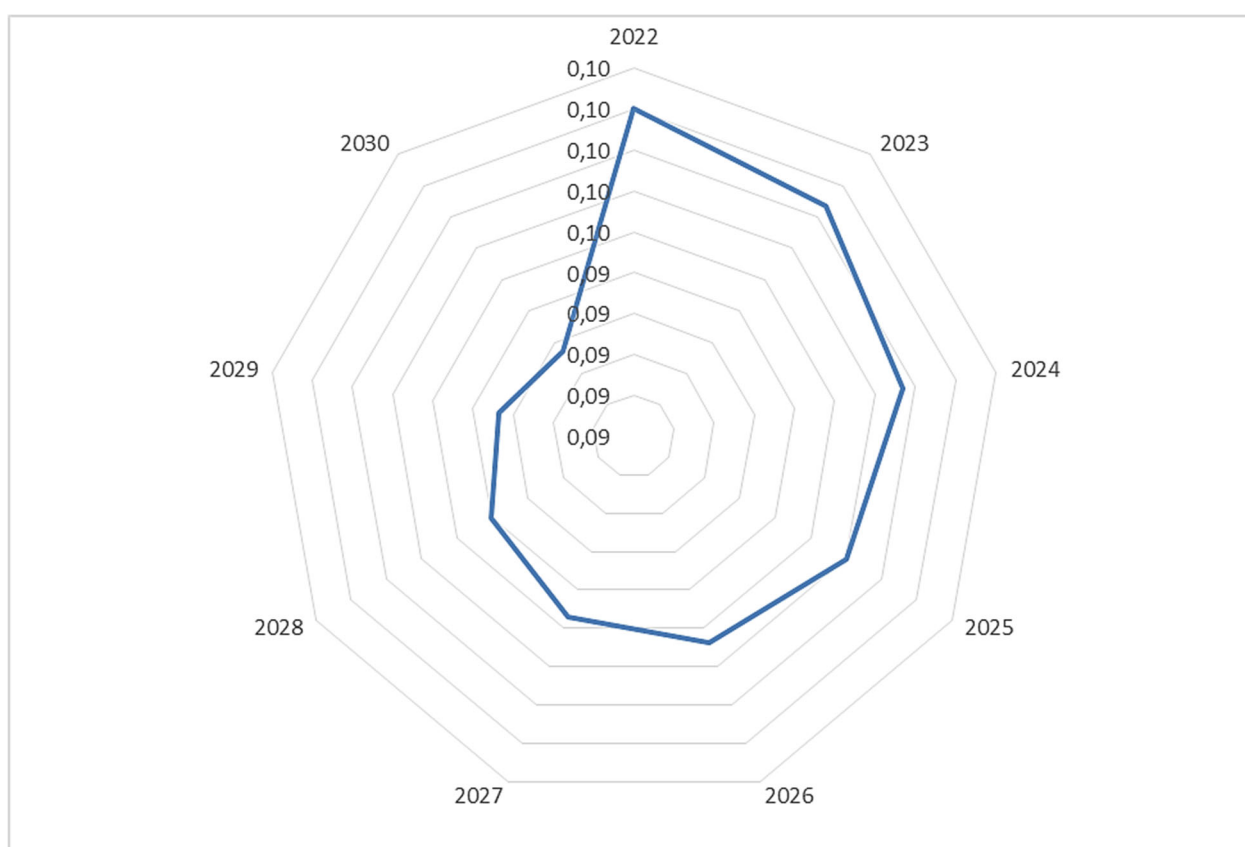


Diagram 6. Forecast for 2022–2030 % of GDP, additional payment to the budget in case of implementation deferred payment for VAT

Source: author's development.

Conclusions. Having analyzed the customs-tariff mechanism in Ukraine before the war and during martial law, we can confidently state that the directions for improving the customs mechanism in Ukraine after the war on the path to sustainable development have been determined. One of the significant advantages that can be provided to Ukrainian business is the deferral of customs payments, and there is a duty, excise, VAT, when importing goods into the territory of Ukraine. Such assistance is needed because of the small amount of working capital that Ukrainian businesses currently have and the large import component of Ukrainian goods, which affects the ability of Ukrainian enterprises to purchase raw materials. The relationship between the functions of the customs-tariff mechanism was analyzed and their priority was determined, which showed that it is the development of business and its interests in the domestic and foreign markets that keep both budget revenues and the economy of Ukraine, and therefore an important aspect is to support the interests of Ukrainian enterprises, and their ability to both support the operation of the enterprise and retain jobs. The possibility of performing functions by the customs-duty mechanism, in two modes before the war, and during the war, is analyzed. Both regimes are valid for Ukraine and are legitimate at the state level. Such an analysis makes it possible to give the desired effect and pay attention to how customs payments can be canceled without canceling. Such a tool is deferred payment, and it is already used for business in many countries, as well as in the European Union.

Sustainable development turned out to be secondary in the analysis since, during the survival of the country and business, they think less about the environment and the fulfillment of the other 17 sustainable development goals. War itself is an ecological disaster. We hope that Ukraine can return to even stable development after passing the first stages of restoring the Ukrainian economy.

Discussion. This study intended to provide directions for improving the customs mechanism in Ukraine after the war. One of the main instruments chosen was the deferment of VAT payment, which can enable Ukrainian enterprises to develop faster, invest less, and pay taxes after selling goods. It is the opportunity to clear goods before VAT is paid that can give impetus to Ukrainian small, medium, and large businesses. The weak point of the study is the inability to predict when martial law in Ukraine will end and how Ukrainian imports will develop in 2022. For the forecast, linear forecasting was used, which shows the

obvious benefits for both the state and Ukrainian enterprises, and therefore helps Ukrainian businesses develop and follow sustainable development goals.

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Є. Литвинова, асп.

Київський національний університет імені Тараса Шевченка, Київ, Україна

НАПРЯМИ УДОСКОНАЛЕННЯ МИТНОГО МЕХАНІЗМУ В УКРАЇНІ ПІСЛЯ ВІЙНИ НА ШЛЯХУ ДО СТАЛОГО РОЗВИТКУ

Досліджено, чи змінились основні функції митно-тарифного механізму під час воєнного стану, та визначено пріоритетність функцій митно-тарифного механізму впродовж війни. Доведено, що вплив митних тарифів на сталий розвиток України має суттєве значення. Висунуто гіпотезу про те, що зазначені деструктивні процеси зазвичай зумовлені саме недостатністю оборотних коштів в українських підприємств під час воєнного стану та підвищенням собівартості логістичної складової, що є частиною бази оподаткування за умови імпорту. За допомогою порівняння проаналізовано можливе зменшення навантаження на українські підприємства за імпортом й експортом та виявлено можливі інструменти, що нададуть можливість створити нові робочі місця або реінвестувати зароблені кошти. Інструменти були знайдені під час проведення компаративного аналізу митно-тарифного механізму до та під час війни в Україні з урахуванням цілей сталого розвитку.

Ключові слова: мито, митні тарифи, митно-тарифний механізм, сталий розвиток, сталий розвиток України.

A. O. Moscardini, Prof.
 ORCID ID 0000-0003-4951-0848
 Cardiff Metropolitan University, UK,
 K. Lawler, Prof.
 ORCID ID 0000-0002-3409-6755
 University of Kuwait, Kuwait,
 T. Vlasova, Visiting Research Fellow
 ORCID ID 0000-0002-5000-6756
 Northumbria University at Newcastle, UK,
 I. Pavlenko, Dr Hab.
 ORCID ID 0000-0002-5687-778X
 University of Warsaw, Poland

THE MAP IS NOT THE TERRITORY: A CRITICAL EVALUATION OF CURRENT ECONOMIC THINKING

This paper purports that throughout history, there has been continuous interplay between the ideals of individual disciplines and the prevailing weltanschauung. It then suggests, using examples from the Arts, Physics and Neuroscience, that the current weltanschauung is gradually adopting a systems view. Economic theory provides a map for human behaviour but can never replicate the whole. The map is not the territory. The paper then critically evaluates the effects of a systems weltanschauung on Economic theory and practice. The current age is strongly connected with environmental issues. The attitudes, values and morality of Gen Z (people born after 1995) are very different to those of previous generations. Gen Z demands a stronger ethical/moral aspect to political, social and economic life and environmental principles. A systems weltanschauung will combine a RV (which is aware of our physical presence in a undifferentiable, changing world, accepts a greater role for emotions, and uses reason to adjust to the world rather than master it) and a OV (which sets this presence in an individualised abstract way which it uses for planning and possibly controlling reality). It ends with an appeal for an interdisciplinarity of experts to enable the solution of current global problems. The thread to this paper is: first, the meaning of a systems weltanschauung is discussed. The paper then looks for signs and indications for the emergence of such a weltanschauung. This then initiates a critical evaluation of current economic thinking. It is hoped that such critical analysis and reflections will lead to a new level of 'understanding economics' rather than 'economic understanding' which would allow Economics to fulfil its potential as a useful and needed contributor to the global problems of today. Systematic learning and education through art and music were regarded as just as important as mathematics to the training of the mind. The ability to think critically was more important than strict vocational training.

Keywords: *Weltanschauung, Systems, Interdisciplinarity, Objectivity, Subjectivity.*

Introduction. Economics consists of theory and practice. Whether one traces its origins to the replacement of goods by paper, to Ibn Khaldun or to Adam Smith, one can see a developing, evolving discipline. This paper addresses the drivers of this development and suggests that it comes from within by critical appraisal and reflection by economists. One needs a peg on which to hang such an appraisal and the authors use the suggestion that at all stages in its history, economics has adjusted to the weltanschauung of the time by critically evaluating current economic thinking and practice. The dictionary definition of weltanschauung as *"a comprehensive conception or theory of the world and the place of humanity within it. It is an intellectual construct that provides both a unified method of analysis for and a set of solutions to the problems of existence"*.

An immediate problem is how to capture the current weltanschauung. It is easier to do so in retrospect. One can identify throughout history weltanschauungs with spiritual, philosophical, rational, and scientific tendencies. To try to define a weltanschauung whilst living in that age is difficult as one is strongly influenced by biases and transitory phenomena. Nevertheless, the authors suggest that there is a current weltanschauung which assumes that there are clearly identifiable problems in the world that can be solved. These problems may be complex, but the application of science and technology will produce solutions. Today, certain modern tendencies such as gender diversity, the woke agenda, Gen Z and the idea of humankind being participators of nature than observers/controllers suggests that a new weltanschauung (which we will term a systems weltanschauung) is emerging which emphasises relationships and interdisciplinarity [54, 67]. It should be noted that a rejection of these views does

not invalidate the purpose of the paper. They provide an opportunity for the evaluation. It is the process of critical self-evaluation that is being promoted. A paper such as this cannot avoid speculation, but speculation is permissible if it is based on research, experience and practice. Readers will not agree with all our statements but that is to be expected as it is only by debate that new economic thinking will develop.

The thread to this paper is: first, the meaning of a systems weltanschauung is discussed. The paper then looks for signs and indications for the emergence of such a weltanschauung. This then initiates a critical evaluation of current economic thinking. It is hoped that such critical analysis and reflections will lead to a new level of 'understanding economics' rather than 'economic understanding' which would allow Economics to fulfil its potential as a useful and needed contributor to the global problems of today.

Literature review. There is a great deal of research on the essence of a Systems Weltanschauung. researched topic. [32, 40, 42] This paper concentrates on two important facets which distinguish it from the scientific paradigm – taking a more relational perspective and interdisciplinarity.

There is a great deal of research on the essence of a Systems Weltanschauung researched topic [32, 40, 42]. This paper concentrates on two important facets which distinguish it from the scientific paradigm – taking a more relational perspective and interdisciplinarity.

Every weltanschauung is consequent to its interpretation of 'reality'. The first line in Wittgenstein's Tractatus [63] is *'The world is all that is the case'* i.e., reality has no boundaries; it forms a single ontological unity. The nature of reality has been discussed for centuries. Plato adhered to an idea of 'anima mundi' which believed the world to be 'a

single visible living entity containing all other living entities, which by their nature are all related'. This view, that places the emphasis on relationships between entities rather than the entities themselves, will be termed the relational view (RV). It has strong links to systems thinking and the second-order cybernetics promulgated by Van Foerster [60], sees reality as a process [52, 64] and gives credence to emotions and feelings in decision making. It differs from the scientific paradigm initiated by Descartes, Galileo and Newton which places emphasis on the identification of individual parts, analysis, causality and the repeatability of experiments [4] which will be termed the objective view. (OV) The adoption of an objective or a relational view can define the essence of a *weltanschauung* [15].

The OV treats problems as closed, not open (closed being defined as precisely identifiable with a unique solution.) The RV view sees the holistic, inter-connected nature of reality where the dichotomy between subject and object is blurred, whereas the OV searches for well-defined relationships between identifiable independent objects. The OV and its reductionism breeds dogma and absolutism whereas the RV encourages tolerance and cooperation. The tension created by the presence of RV and OV can often be a creative force [55]. Whenever the OV is dominant, then a feeling that 'things are not right' arise. An awareness of the needs and desires of society is needed, i.e., including experiential (systemic) issues.

Methodology. A systems *weltanschauung* will combine a RV (which is aware of our physical presence in a undifferentiable, changing world, accepts a greater role for emotions, and uses reason to adjust to the world rather than master it) and a OV (which sets this presence in an individualised abstract way which it uses for planning and possibly controlling reality). It attempts a conciliation by recognising the existence of the RV view whilst still retaining the merits of the OV view. It 'squares the circle' resulting in a messier and more ambiguous view than at present, as the perfection sought by the OV will never be achieved. But the diminishment of expectation from the OV will lessen the current disenchantment. Such a *weltanschauung* is non-prescriptive and ambiguous. This is not seen as a weakness but strength, as it allows participation and observation, theory and action, analysis and synthesis to be applied when needed and in the relevant context. It will incorporate both the Systems and Scientific paradigms cultivating a respect for nature (non-human life) and being cautious about control and exploitation. It also embraces self-reference and paradoxes such as the recognition that an object only exists when it is perceived by a subject, making the subject/object dichotomy illusory. All entities exist as both 'parts of' and wholes, making the participant-observer dichotomy also illusory (which has resonances in measurement and data collection.) A systems *weltanschauung* will accept different ways of knowing including mathematical knowledge (that exists in the Scientific paradigm (OV) view and empirical knowledge which rests on experience and intuition and is more akin to the (RV) view. It recognises non-linear behaviour and the existence of both negative and positive feedback loops.

Results. The adoption of a RV leads naturally to the concept of interdisciplinarity. A prime example of interdisciplinarity can be observed in renaissance polymaths such as Da Vinci. The current increase in the amount of knowledge makes it difficult today for a single person to be so endowed but interdisciplinarity can be inculcated into the ethos of problem-solving teams. Current complex problems such as climate change and Covid have shown the need for an interdisciplinary approach to problem solving which has

led to new areas of research and practice 3. Some Green Shoots of an Emergent System *Weltanschauung*.

The current age is strongly connected with environmental issues [43]. The attitudes, values and morality of Gen Z (people born after 1995) are very different to those of previous generations [14]. Gen Z demands a stronger ethical/moral aspect to political, social and economic life and environmental principles. This is demonstrable by recent protests such as the anti-G7 movements, Extinction Rebellion, MeToo, and Black Lives Matter. If one combines this with effect of social media [58], one can see a shift of Gen Z towards a RV. New theories which are ethical and moral (in the sense of saving the planet) are being pursued.

As both OV and RV are simply belief systems which are unprovable (or unfalsifiable in Kuhn's terminology), a full adoption of either view would, in the opinion of the authors, be a mistake, although it is recognised that this statement itself is unfalsifiable! Any changes to economic thinking has to deal with the problem of the two opposing views. Research into how the arts, science and neuroscience have dealt with the OV/RV problem is now presented. Each of these disciplines has taken a different stance, but by reflecting on their solutions, one can gain guidance for the development of Economics.

The Arts From the earliest times, artists have tried to represent reality. A great artist such as Velasquez could capture the minute intricacies of lace, buttons, visual expressions and could therefore be seen as the epitome of the OV. Yet, in each portrait, he has made subjective decisions regarding pose, background, and activity, all of which send tacit signals to the observer. The fame of the Mona Lisa is not only in its technical exactitude but in what it suggests. In such cases there is a juxtaposition of both the OV and the RV. The myths of Homer, the dialogues of Socrates, painting, and music, the dialectics of Hegel to the dilemmas posed by Facebook and Twitter are all examples of the same problem. The ubiquity and constancy of this juxtaposition in such a diversity of experience indicates its importance.

But this is precisely what the great artist does. He is able to bring together clashing colours, forms that fight each other, dissonances of all kinds, into a unity. And this is also what the great theorist does when he puts puzzling and inconsistent facts together so that we can see that they really belong together. And so also for the great statesman, the great therapist, the great philosopher, the great parent, the great inventor. They are all integrators, able to bring separates and even opposites together into unity [38].

In the last century, artists have veered away from the explicit representational mode of painting and become more abstract. The new aim was to capture the experience or feeling of 'the thing' that is being painted. This involves an internal process within the artist which, in turn, is dependent on their culture and past experiences. (RV) A cubist painting by Picasso is not a 'true representation' of reality but attempts to imitate (simulate) an experience in the mind of the observer. The apotheosis of this process of creating meaning for the observer is the Rothko Chapel in Texas. The main room is a hushed octagonal space with grey stucco walls, each filled by massive paintings which at first appear to be made up of solid, dark colours. But a closer look reveals that the paintings are composed of many uneven washes of pigment that create variations in every inch. Stepping back, waves of subtle colour difference appear across the broad surfaces – leading to an unmistakable impression of physical depth. Observers create their own meaning. This has coincided with the rise of the

postmodernist view that there are many different and equally plausible (valid/true) meanings for every event.

Physics The Scientific (Newtonian) paradigm is based on the objective view. Elements are precisely defined and their behaviour is subject to strict logical rules – mathematics being a perfect example. There is a belief in a reality that can be discovered and, philosophically, there is a search for an ultimate truth. The holy grail is the discovery of a 'theory of everything' [21]. Science associates 'meaning' with explanation which requires faith – faith not in the religious sense but faith in the belief that nature can be explained.

The starting position in any discussion is recognition that all discussion ultimately tests upon statements of fact and principle which are assumed to be accepted as true and which cannot be defended by argument if they are denied or questioned [65].

These beliefs have been challenged in the past hundred years by the rise of quantum theory. The search for these illusive entities provided a spur for science and over the last three hundred years, progress has been spectacular. The atom has been identified and has itself been split into constituent parts. This was initially hailed as a great success for the reductionist OV view and the scientific paradigm. Unfortunately, many problems soon appeared such as determining the nature of these subatomic parts which sometimes behaved as waves and sometimes as particles. They also seemed to communicate simultaneously over great distances. (entanglement) and the results of experiments (measurements) appeared to depend on the nature of the experimenter (measurer). For many years there was an often-acrimonious debate (personified by Bohr and Einstein) on how to interpret these strange quantum dichotomies. In 1929, Bohr and Heisenberg agreed on what was called 'the Copenhagen Interpretation' Even though, in recent years, many new interpretations, such as the many-worlds interpretation proposed by American physicist Hugh Everett, the Copenhagen interpretation is regarded as the most widely accepted interpretation [22]. This interpretation broke new ground. It did not select the RV or OV view as the absolute truth but cleverly allowed both views to co-exist [52].

A positive conclusion to transfer to Economics is that the adoption of the Copenhagen interpretation did not lead to an incoherent or weakening of quantum theory. Even though it is built on uncertainty, it is the most proven and useful scientific theory since Newton. It has shown that it is not necessary to take a dogmatic stance regarding dichotomies. Allowing flexibility does not necessarily introduce error. Although, the nature of quantum entities is left ambiguous, Quantum Theory is precise. It can be said that Quantum Physics has achieved a conciliation between the two opposing views which is a pointer in our search to resolve a similar problem for Economics.

Neuroscience is a modern area of research which probes the working of the brain and develops theories about the role and function of thinking [9, 19]. The latest theories of the brain regard it as a processing network which receives input from both external (through the senses) and internal stimuli (through the endocrinal, nervous and immune systems) [1]. This has consequences for its decision-making capability as feeling and emotion are intertwined with reason, logic and rationality. These recent neuroscientific theories are called 'constructivist' which hypothesise that concepts are not summoned from a store in the brain (as previously supposed) but are continually being formed and reformed [1]. This research contradicts two earlier notions: one which allocated specific functions (such as language, logic and feeling) to specific parts of the brain and another

that memories and perceptions are, in some way, 'hard-wired' in the brain [8]. A consequence of the constructivist theory is that our thinking is strongly influenced by our culture/ background and physical experiences which relates to the experiential view of reality (RV).

Another aspect of neuroscience research concerns the geometry of the brain. The physical dimensions of the brain are restricted by the skull, but its shape is intriguing. It consists of two hemispherical shapes (called right and left) bound together by a band called the Corpus Callosum [62]. The research looks for reasons for this split. Would it not have been evolutionally more efficient to have one unified entity? Neural imaging shows that each hemisphere is involved in mental activities which raises the question of how the hemispheres work together. Current experiments using Split-Brain Research indicate that there is indeed a purpose to this configuration. It seems that there is a continuous interplay between them that is important for the way hominids think [7]. Both hemispheres search for meaning but there is a difference in their emphasis and approach. The right hemisphere sees meaning as implicit. Its emphasis is on context, relationships, emotion, and the nuances of expression [39]. Experimental results have shown that the right-hemisphere (RH) places an emphasis on putting together rather than taking apart; on synthesis rather than division; on the wholes rather than the parts. Opposites co-exist in an 'either/or' dichotomy. Individuality is recognised which leads to empathy, humour and irony.

In the left hemisphere, the emphasis is narrower and more focused, taking (abstracting) things out of context and them which enables planning and control. It is relationally mechanical, an assemblage of independent parts, disembodied, relatively distanced from human feeling, explicit, utilitarian, lacking in empathy and insight. Observations from the left-hemisphere (LH) step outside the flow of experience and abstracts from the world, representing it in a form that is less complex, clearer and therefore more easily manipulated. It aggregates parts into categories, stripping away their qualities, separating them from their interconnections which enables it to introduce linear, logical, sequential processes. It posits hidden structures whose discovery becomes its purpose. Consequently, it is compartmentalised, fragmented, static, mechanical, essentially lifeless. Because it is detached from this world, it sees the opportunity to control it. This type of thinking has provided writing, mathematics, development of laws, geography, educational structures, architecture, geometry and physics [41]. The LH way enables one to get things done, to achieve goals by isolating one thing from another. This isolation is often perceived as objective (as it cultivates a distance from the world) but by its nature, it is a subjective activity. There is a drive for manipulation, planning and control and its ruling value is utility. The danger is that if this drive is left unchecked, then assumptions turn into axioms and the belief system becomes an axiomatic one.

Although each hemisphere has differing perspectives, they are not absolute. Human activities are achieved through a synthesis of both without diminishing the individual contributions [6, 48, 53, 61, 66]. The RH sees humans as part of nature whereas the LH categorises 'human life' as distinct from 'non-human life' with the consequences that are apparent today. The brain acts as a unified whole. Human decisions result from the interplay of the observations from the different hemispheres. It is recognised that much of this research is new and is not accepted by all, but it resonates strongly with the 'Copenhagen Interpretation' and serves as

a useful model that can be used in our suggestions for the changes needed in economic thinking.

Features of the new Economic Thinking and Practice

What changes would occur if Economic thinking and practice changed in response to a Systems Weltanschauung? The authors suggest that the changes would be in attitude and awareness rather in the minutia of theory. Taking a relative view of reality means recognising that we exist in a world that is continuously changing. This world does not follow strict causality is highly interconnected and non-linear. The new thinking would recognise that the economic system is at best a model of what is happening. But *'the map is not the territory'* [29]. Interpreting this rather overused quotation in the context of this paper means that although economic theory has built a coherent version of what it perceives as reality and has created excellent econometric tools for measuring and correlating features of this landscape, this version is not the reality it represents, and it does not fully cover reality. The current economic theory is clever enough to anticipate small changes and adapt to them, but as reality is highly non-linear, events will always arise which could never have been foreseen. We label these as 'shocks to the system' but the new thinking should regard them as the norm. The job of economic practitioners (who work for central banks or advise governments) is to navigate the economic landscape in the knowledge that they are finding pragmatic pathways which will continually change but this will always only be an approximation to what is happening. The authors are not advocating large scale changes in economic theory or prescribing different economic curricula but simply entering a plea for humility. There have been sincere and genuine attempts to build economic stability throughout the world and this is a sensible mission, but the humility needed is in the recognition that however comprehensive the theory, it is just a mirror of reality. 'Shocks' will continue to occur and when they do, they will necessitate adjustments to the theory and practice. This process of continual change is endless. This simple recognition (which could be seen as a weakening of the current thinking) will, in fact, be a strength and ensure that Economics is relevant to whatever weltanschauung prevails.

Economic Thinking and practice must eventually conform to the current weltanschauung The author's hypothesis is that for Economics to continue to be relevant, its thinking and practice must conform to the current weltanschauung. There have been examples in the past. In the 19th century, the emergence of colonial empires and the dynamic expansion of the Industrial Revolution resulted in a weltanschauung which favoured a world trading system [12, 23]. However, amongst economists, there was widespread economic /political debate, both for and against. Eventually, economic thinking and practice coalesced around the theories of Ricardo/ Mill and ushered in an age of Free Trade which lasted to 1914. After the war, there was a global readjustment with a return to protectionism and by 1925/6 Keynes had realised that the Free Trade ethos was moribund. By 1945 Keynes was immersed in planning for the post-war reconstruction of the international economic system. Although he agreed in principle with the British Board of Trade and the American State Department on the desirability of reducing trade barriers, he recognised the emergence of a new post war weltanschauung and realised a return to the practice of free trade was unlikely [10]. This is seen in his speech to the Lords in 1945, where he argued: *'Separate economic blocs, and all the friction and loss of friendship they bring with them, are expedients to which one may be driven in a hostile world where trade has ceased,*

over wide areas, to be cooperative and peaceful and where are forgotten the healthy rules of mutual advantage and equal treatment. But it is surely crazy to prefer that' [20]. There is a continuous feedback loop here. The weltanschauung sets a framework for thinking and practice, but these then feedback and change the weltanschauung. Keynes' thinking on free trade and protection reveals the dynamics of this feedback.

There would be a move from the objective to the relative view. In 1883, the German physicist and philosopher Ernst Mach made a radical suggestion 'not to regard phenomena as manifestations of objects but to regard objects as nodes between phenomena.' and became a prime mover in the promotion of the RV. and heavily influenced later eminent physicists such as Einstein, Heisenberg, and Pauli [36]. No equivalent event occurred in Economics which still predominantly adopts the objective view. As recently as 2015, a survey by Fourcade showed that 58 % of economists take a single economic focus: 'modern-day economists attribute their intellectual standing and autonomy to their reliance on precisely specified and parsimonious models and measures [13].

The propensity to identify parts (OV) leads to rifts and divisions. One division could be the many competing and overlapping economic schools such as the Classical, Marxian, Keynesian, New Classical, New Keynesian and recently Evolutionary Economics and Behavioural Sciences. Another is the micro/macro divide. The micro/macro relationship has been a major source of contention for decades, typified by the Lucas Critique [35] which was an internal debate between economists on whether policy makers, when devising future economic policy, could rely on existing relationships to persist once policies aiming to exploit the relationship are changed. Lucas' critique can be seen as a resurrection of an earlier critique by Keynes who had delivered a stinging review of Tinbergen's pioneering econometric studies for the League of Nations. Regarding Tinbergen's quantification methodology, Keynes questioned whether it was possible to appropriately measure things like expectations, along with political and psychological issues/factors [28]. In this, and many other hitherto unpublished letters, Keynes seems to be taking a 'Machian' role and toying with a relational view for economics whereas Tinbergen's views place him firmly as an objective thinker. He regarded an economist as a 'control engineer' manipulating state variables and searching for solutions [44, 45]. This idea of 'control' fits with an OV as it assumes an identified entity that can be governed. It has no place in a RV. The control engineering aspect of economic policy in the post-Lucas Critique era has been replaced with a Lucas-proof form of policy-making based the idea of forward guidance in monetary policy using developments in macroeconomic theory [49]. Hence there has been some movement toward unification of paradigms in macroeconomics with the new neoclassical synthesis representing the consensus. This consensual approach in monetary policy stills throws up anomalies such as the curious paradox of disinflationary booms.

The new thinking has a different view on models and modelling. One weakness of macro-econometric (DSGE) models has been forecasting/predicting of fundamental financial shocks or regime change such as occurred in the 2008 financial crash [31, 33]. This inability is essentially the criticism proposed by Keynes that economic/econometric predictions are not robust in empirical reality [29, 30]. Can economic models be regarded as valid representations of an objective reality? The authors believe that an abstraction

such as the Phillips curve is not and can never be an exact copy of reality. There can never be absolute precision and certainty as empirical data is likely to be incomplete [51]. The model is always subjective in the sense that it is based on the judgements of its creators.

The Lucas critique effectively argues that unless we can precisely identify the data essential for the modelling microeconomic behaviour, then the aggregative behaviour and policy change is impossible to forecast. Maybe a resolution of the RV/OV dichotomy could be the use of case studies that make observations about behaviour where the parts are identifiable as microcosms of a whole. To some extent, the Lucas critique may be seen as an application of case studies based on elemental behaviour of actors. However, the perspectives offered in this paper indicate that the Lucas critique is a re-interpretation of rational decisions and optimising behaviour in the context of policy change. It may be regarded as a reinterpretation of Goodhart's law [37] which would indicate for issues relating to the perceptions/meanings of data interpretation in the context of aggregative time series analysis, interdisciplinary case studies are required.

Interdisciplinarity thinking is the ability to consider multiple disciplinary perspectives concerning the phenomenon under study, analysis of the strengths and weaknesses of those perspectives, and integration their insights to produce a new, more comprehensive understanding of the phenomenon. Most economists still operate in a belief system where there are 'economic' problems to be solved as opposed to problems which need a contribution from the discipline 'Economics' [5, 11]. An emphasis on the interdisciplinarity approach proposed is not intended to dilute current economic theory. Economics needs expertise – the interdisciplinarity is needed in its practice. The production of the Covid vaccine was a combined effort of experts from Immunology, Virology, Aerobiology, Mechanical Engineering, Virus Epidemiology, Vaccine Science, Microbiology, Mathematical Modelling, Chiropterology and Zoology. Theory must be recognised as only applicable and relevant to the context in which it is being applied and not seen as the ultimate truth. New paradigms such as the information paradigm, proposed by Stiglitz [57] in his Nobel acceptance speech in 2000, are welcomed. Recent developments in Behavioural Science [25] and Evolutionary Economics are inserting a RV into economic methodology. This paper values these contributions and their attempt to braid together the two contrasting versions of reality. Embracing System Thinking does not preclude the use of scientific thinking [30]. Examples from other disciplines have been presented as evidence of the efficacy of this approach. The new thinking should allow the discipline 'Economics' to interbreed with other disciplines and is where the interdisciplinarity is needed, it will be an interdisciplinarity of experts [30].

The new neoclassical synthesis, to some extent includes several sub paradigms from within the macroeconomics mainstream since Keynesian times [18]. The central banks in G7 countries now operate think tanks/monetary policy committees which advise on interest rate determination and meet on a regular basis. The monetary committee of the bank of England is a combination of civil servants and private sector/academic economists and the CEO/Deputies of the Bank who may or may not be economists. For the views of the Central Banks to be heard among the clamour of the new neo classical synthesis, then the voice must be holistic, taking account of economic, political (Brexit), environmental (COP26) and world debt issues [50].

Although in earlier times, they were sometimes portrayed as a council of economic advisors, or "wise men", the central banks now have one major issue to consider, namely inflation [16]. In the 70's, the central banks tended to be politically motivated entities which followed government instruction on interest rates which were often be pro-cyclical in nature [46, 47]. With central bank independence, this changed, and central banking has become more interdisciplinary. Governments rely on a range of expertise from political advisors, economists, populist political trends, environmental accounting methods and insights from natural sciences. The judgement as to the policy outcome is predominantly then a political one. What is clear is that the world has moved on from 1919 and Keynes' view on free trade to a more managed, system of interdisciplinary expertise used in forming socio/politico/economic decisions. There is a difference insofar as central banks e.g., Bank of England/FED have one policy target which is inflation, whereas in the Keynesian days inflation and unemployment were the primary objectives and this has not completely vanished. The difficulties with the new Keynesian Philips curve in theoretical terms are now swept under the carpet and the curve is used as part of the new neoclassical synthesis in determination of the rate of interest to reduce inflation. It now seen as an optimal monetary response to inflation /unemployment [17]. This reflects the benefits when governments bodies are composed of experts from a diversity of academic fields

Conclusion. Adopting this new thinking will have difficulties. Complexity is more like a web or network than a string of causalities. One can follow Ariadne's thread successfully to exit the labyrinth, but the path inwards is full of dead-ends and wrong turnings. A Damascene conversion is unlikely. A relational approach will focus on the differences. *'The tissues between the gaps hold the implicit premises of the system'* [2]. A new practice is produced through a conjoining of experiences and unseen impressions. Maybe nudging techniques that aim to use judgmental heuristics are the answer [59].

One way of dissemination is through education, but this also has difficulties. It is important to discern whether theory informs practice or vice versa. Economic theory is important but interdisciplinary groups result in a merging of paradigms under key economic problem areas. The teaching of undergraduate and postgraduate economics should reflect this but, so far, it is not evident in university curricula. What we find is enhanced specialization in economics/econometrics that Keynes and Tinbergen would recognize. What is missing is further clarification of these paradigms relating to other disciplines in the teaching of economics and its practice. This interdisciplinary is a form of relativism consistent with the Copenhagen compromise in physics, where different perspectives can inform one another in a dialectic that is also reflected in changes in theory and practice. Central banks and monetary policy committees at the highest level, this committee of experts is not reflected in undergraduate teaching. This dialectic needs to inform the teaching of undergraduate economics

Another difficulty is that the present structure of universities is not conducive to inter-disciplinary studies. It is difficult to persuade current 'experts' that their knowledge is not omniscient and to encourage a new wave of economic 'experts' to flourish. There are only a few examples of an interdisciplinary university. One attempt was made in 1811 by Wilhelm von Humboldt when he opened the Humboldt University in Berlin, which soon became the most progressive university in Europe. It had

a holistic structure integrating arts and science, theory and practice. Systematic learning and education through art and music were regarded as just as important as mathematics to the training of the mind. The ability to think critically was more important than strict vocational training. The dictum 'Knowledge is power and education is liberty' was Humboldt's credo. This is reminiscent of the Platonic 'Trivium' [24]. A modern example of interdisciplinarity is Building 20 set up at MIT during the second world war. It was an ideas factory – radar was perfected there and the science of modern linguistics took shape there under Noam Chomsky. It housed labs in nuclear science, cosmic rays, and food technology [3]. Both of these valiant attempts endured a limited lifespan. This paper offers no solutions to these educational problems but feels it is contingent to point them out.

History has shown that even when Economists have been aware of the weaknesses inherent in their theory; their belief systems change very slowly [34]. Nonetheless, this paper is an appeal for economists to commit to a new 'spirit of the age' which will enhance its ability to address the challenges of the modern world.

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А. О. Москардіні, проф.

Кардіфський університет, Кардіфф, Велика Британія,

К. Лоулер, проф.

Кувейтський університет, Кувейт, Держава Кувейт,

Т. Власова, наук. співроб.

Нортумбрийський університет, Ньюкасл, Велика Британія,

І. Павленко, проф.

Варшавський університет, Варшава, Польща

КАРТА – НЕ ТЕРИТОРІЯ: КРИТИЧНА ОЦІНКА СУЧАСНОГО ЕКОНОМІЧНОГО МИСЛЕННЯ

Встановлено, що протягом історії існувала безперервна взаємодія між ідеалами окремих дисциплін і панівним світоглядом. Використовуючи приклади з мистецтва, фізики та нейронауки, висловлено припущення, що нинішній світогляд поступово набуває системного вигляду. Економічна теорія надає карту людської поведінки, але ніколи не може повторити ціле. Карта – це не територія. Критично оцінено також вплив системи світогляду на економічну теорію та практику. Сучасна епоха тісно пов'язана з екологічними проблемами. Відносини, цінності та мораль покоління Z дуже відрізняються від світогляду попередніх поколінь. Покоління Z вимагає посилення етичного/морального аспекту політичного, соціального й економічного життя та екологічних принципів. Авторами визначено значення системи світогляду, проаналізовано ознаки виникнення такого типу світогляду, що у підсумку приводить до критичного оцінювання поточного економічного мислення. Висловлено також думку, що такий критичний аналіз і роздуми приведуть до нового рівня "розуміння економіки", а не "економічного розуміння", що дозволить економіці реалізувати свій потенціал як корисного та необхідного внеску в глобальні проблеми сьогодення.

Ключові слова: світогляд, системи, міждисциплінарність, об'єктивність, суб'єктивність.

RESHAPING HIGHER EDUCATION FUNDING IN UKRAINE: FROM THE SOVIET-ERA FUNDING MODEL TO THE PERFORMANCE-BASED FUNDING

The article focuses on a specific reform in the Ukrainian higher education sector that has taken place in recent years. The reform is aimed at changing the funding model for higher education institutions. The previous outdated Soviet-era funding model inherited by Ukraine in the 90s has been criticized greatly in the last decades. Hence, the current implementation of performance-based funding in Ukraine is considered a significant move toward better public sector management. This paper starts with an overview of existing funding models in the higher education sector, analyzing their advantages and disadvantages. Then it examines current trends in change of funding mechanisms in the higher education sector. Finally, it discovers a considerable reshaping of the higher education funding in Ukraine that has shifted from the Soviet-era funding mechanism to modern performance-based funding. The reform is a logical consequence of a broader international reform agenda of higher education funding and adherence of Ukraine to the European path. The reform in the Ukrainian higher education system resulted from new liberal economic and political agenda that replaced Soviet-era ideas, combined with the impact of European Union accession conditions. Therefore, the Ukrainian higher education system, as well as the other Ukrainian public sector systems, should be harmonized with European Union's recommendations. Currently, it is difficult to reach a definitive conclusion on whether the PBF is a sufficient mechanism for funding higher education sector or not. To obtain a complete picture, it is crucial to analyze the PBF in different contexts. Despite the debatable nature of performance-based funding, no funding model can fit all contexts and institutional landscapes. Hence, it may always be essential to adjust and keep a funding mechanism up to date by the institutional demands and modern trends and analyze the intended and unintended effects of evolving funding mechanisms, particularly in the post-Soviet landscape because it is recognized as a new call for researchers in examining higher education sector reforms.

Keywords: higher education sector, higher education funding, performance-based funding, reforming higher education funding, Ukraine.

Introduction. Bunches of reforms have taken place in the higher education sector in almost all European countries during the last decade [1, 2, 3]. Transformations covered all areas of the higher education system, beginning from governance models and management structures to funding models, diversification of financial sources, and financial autonomy.

Many of such changes were inspired by the introduction of the New Public Management (NPM) concept. NPM has globally become the central issue in the public sector reform agenda [4]. Despite the complexity of the NPM concept, its essential idea remains the same – utilization of the private sector management practices and tools in the public sector [5]. Back in 1991, Hood articulated some major principles, which have prevailed in the modern public reform agenda [6]:

- governance of the public sector by professional managers,
- measure performance for greater efficiency,
- output control mechanisms,
- increase in accountability,
- improvement of transparency.

One of the private sector management practices is the orientation towards performance and efficiency. Undoubtedly, these two concepts are intervened and directly connected with the funding mechanism. That is why there is a trend among many European universities towards the performance-based funding (PBF) models [7]. Statistically, this was confirmed by the fruitful study made by Claeys-Kulik and Estermann [8], where the academics surveyed 28 European higher education systems and identified that 13 of them linked their funding mechanisms to the performance of universities, distributing basic funding using output-based formulas.

European Commission (EC) established this trend back in 2011 when it designed an outline for modernizing the European Union's higher education systems [9]. The

following points regarding higher education funding were articulated:

- control of costs through funding models linked to performance,
- support of the diversification of funding sources,
- investing in professional management,
- increase of universities' autonomy.

In 2017, EC issued the renewed European Union agenda for the higher education sector [10], where it again highlighted the importance of the PBF and performance-based agreements. In addition, EC confirmed a need to review performance indicators and reward structures for universities to optimize them. The reviewing process of performance indicators is essential since measuring performance is a challenging task in the knowledge area [11].

The European trends in reforming the higher education sector have a significant impact on the development of higher education systems in Central Eastern Europe (CEE). Dakowska and Harmsen analyzed Europeanization processes in CEE countries, particularly in Ukraine and Poland [12]. The article examines the adherence of local policies to recommendations of the EC and other international institutions, including OECD, World Bank, UNESCO, and the Council of Europe.

In Ukraine, the Europeanisation trend is also can be confirmed by the signing of the Association Agreement with the European Union. Considering such a signing, many areas of the Ukrainian public sector should be harmonized with the targets of the European Union. One such harmonization process may occur in research and innovation areas, enhancing, for instance, digital education [13]. Therefore, considering both the European Union agenda regarding the importance of the PBF and the adherence of CEE countries to the European path, it is logical to assume that the PBF may gain great attention in post-Soviet countries, especially in Ukraine.

This paper aims to discuss existing funding models in the higher education sector, highlighting their advantages

and disadvantage, analyze current trends in higher education funding, and, more importantly, focus on the reforming of funding mechanisms in the Ukrainian higher education sector.

This paper begins a discussion with an overview of existing funding models in the higher education sector, analyzing both benefits and drawbacks of each one. Then it examines recent trends in a change in funding mechanisms in the higher education sector. Finally, it discovers a considerable reshaping of the higher education funding model in Ukraine that has shifted from the Soviet-era funding mechanism to the modern PBF.

Methodology. Structural and systematic approaches are used in the construction of the logic of this paper. The paper uses methods of literature analysis (to overview existing funding models in the higher education sector and identify the main trends in implementing higher education funding mechanisms), synthesis (to highlight the main benefits and drawbacks of different higher education funding models), causation (to identify preconditions of the implementation of the PBF in Ukraine), and logical analysis (to identify steps of the evolutionary development in the Ukrainian higher education sector). The sources of data and empirical basis of this paper are official information from

domestic and world databases, and foreign and domestic literature regarding the research topic.

Results

Overview of existing funding models in the higher education sector. To begin with, it is essential to understand from which sources higher education institutions receive their financial resources. Three core financial sources create a revenue base for universities: public funding (also known as core funding), tuition fees (paid by students), and third-party funding from public and private organizations (given as grants, donations, etc.) [14].

The largest share of universities' revenue is attributed to public funding which is given by governments mainly to support higher education institutions' operations (see Figure 1). On average across OECD countries, public funding accounts for around 70 % of total expenditures on higher education levels, whereas private funding remains at 30 %. If we look at average across 22 European Union countries, public funds account for an even larger share of total expenditures on tertiary education – 80 %. From these figures, it is reasonable to state that it is crucial to have an efficient public allocation mechanism since public funding is the main financial source for universities.

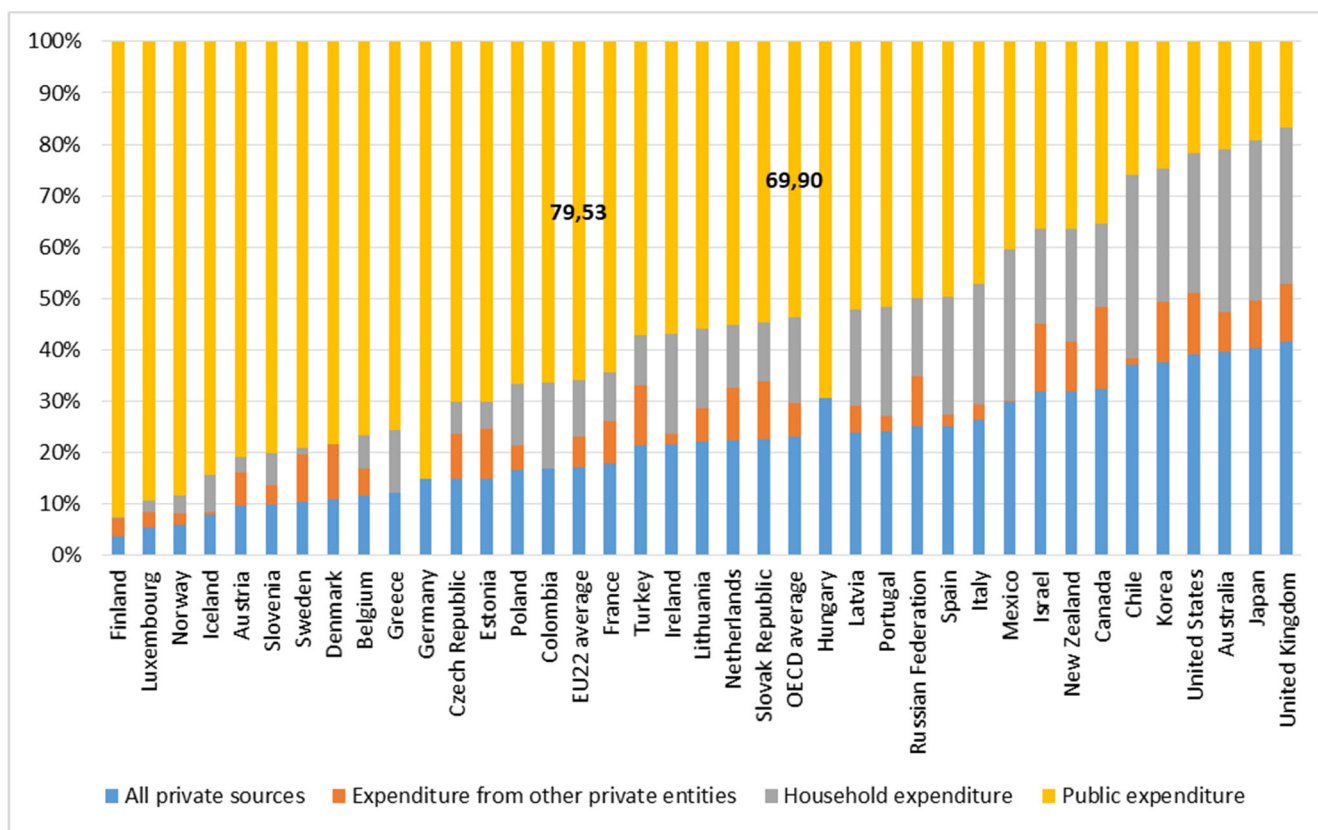


Figure 1. Distribution of public and private expenditure on higher educational institutions in 2018 (in %)

Source: Compiled by the author based on [15].

We now proceed to the reviewing allocation mechanisms (funding models) governments use to ensure the proper functioning of higher education institutions. Funding models of universities can be viewed from two perspectives: 1) the level of output orientation and 2) the level of centralization of decision-making [16].

From the first perspective, there are two opposing directions for funding universities: input-based funding (incremental or negotiation-based funding) and output-based funding (the PBF and performance contracts). For example, if the funding mechanism depends on the number of students enrolled or the number of teaching staff, then such a mechanism is based on input-based indicators. If

funding depends on the number of articles written by professors (research output) or the number of credits completed by students (teaching output), then a system is based on performance-based indicators.

From the second perspective, funding mechanisms for the higher education sector can be divided according to the level of centralization of decision-making. This refers to who will decide whether to accept or reject certain indicators: universities or the government alone. The tendency for universities to make their own decisions points to a more market-oriented model. If a government alone approves the indicators, then we are talking about a centralized approach.

However, it is worth noting that almost all models are hybrid, combining features of different approaches [16].

Based on the two perspectives discussed above, funding models for higher education institutions can be divided into the following groups [17]:

- incremental funding and negotiation-based funding,
- funding formula mechanism, including both input-based and output-based funding (PBF),
- performance contracts,
- project-based funding,
- funding for excellence,
- other direct funding.

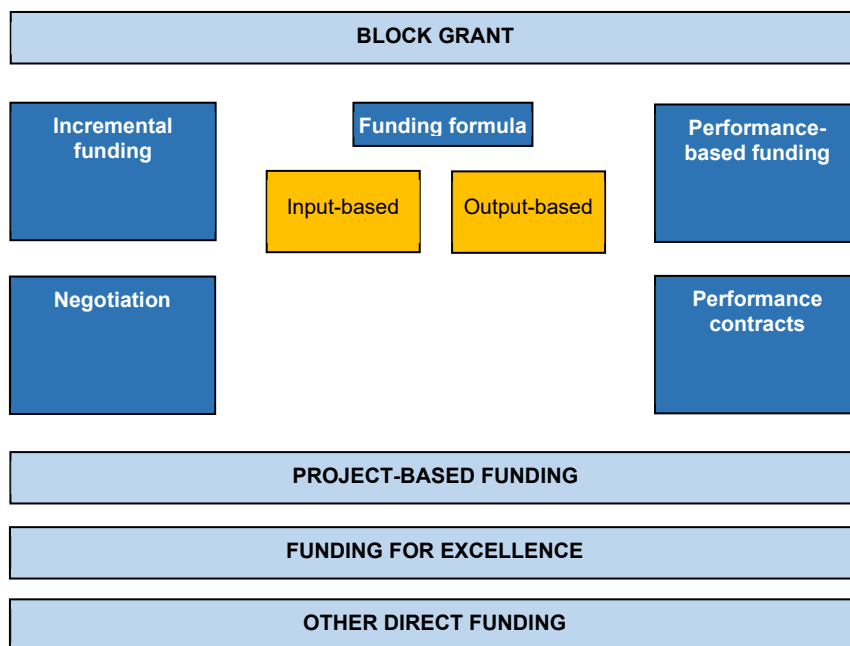


Figure 2. Different groups of funding models

Source: Compiled by the author based on [17].

The first group of funding models includes incremental funding and negotiation-based funding. The main idea behind incremental funding is to use the previous year's funding as a basis for the following year. There is no room for performance measurement here; therefore, this mechanism is not associated with promoting efficiency. A lot of criticism has become evident using incremental funding [18]:

- Incremental funding does not provide helpful information for the decision-making process. It gives a weak understanding of value creation.
- In incremental funding, it is difficult to determine items which cause the most significant changes in an organization. In other words, it is difficult for decision-makers to identify which areas they should focus on.
- It does not support improvements over time, which requires determining the actual efficiency.

A negotiation process between the government and higher education institutions using, in most cases, input indicators and historically determined trends forms a negotiation-based funding mechanism. In this model, everything depends solely on the negotiation process, which ultimately determines the number of financial resources to be allocated to the university.

Negotiation-based funding is usually based on historical trends and is usually allocated to higher education institutions in the form of line-item budgets or block grants [19]. Line-item budgeting is a budgeting mechanism when an organization has to prepare each line item in all financial statements (operation statement, cash-flow statement, balance sheet, etc.) [20]. It simply means identifying how much money is estimated to be received and how much an organization can spend on each cost group. In contrast, a block grant is a single grant allocation to a university, where internal budgeting is under the control of higher education institutions [20]. Line-item funding is a more centralized approach that fully controls how universities spend given funds, whereas block grants give more flexibility and autonomy.

Successful negotiations are associated with a fact that parties reach a mutual consensus that aims to achieve common goals and outcomes. However, this model has been criticized a lot because of its non-transparent nature, the absence of all stakeholders in the negotiation process (e.g., students) and the lack of quality assurance in terms of performance [21]. Moreover, both incremental and negotiation-based funding takes into consideration a short-term context, which consequently may lead to a long-term collapse [22].

Despite a lot of criticism of the mentioned funding models, they obviously have advantages. Both methods are recognized as relatively simple mechanisms which lack ambiguity. Moreover, they provide comprehensible control of expenditures based on a year-over-year comparison [23]. Such models are seen as a protection from administrative misuse and they mostly derive from a practical angle.

The second group of funding models includes formula-based funding, which provides for both input and output criteria. The main idea here is that universities receive their funds based on a mathematical formula. Such funding mechanisms differentiate in terms of the composition of the formula and the number of funds to be allocated. In general, such formulas integrate both input and output indicators linked to specific objectives. If funding is related to the number of students enrolled or teaching staff, it is input-based funding. However, if the allocation mechanism is tied to research output (number of written articles by academics) or credits completed by students, we speak of output-based funding or the PBF.

The PBF is also a formula-based approach to allocating funds to public entities, including higher education institutions. However, this mechanism is mostly tied to output and the results of activities, which are utilized to assess efficiency among universities [24]. Interestingly, the PBF is mainly associated with the healthcare and higher education sectors [25]. However, there are many differences in the PBF models, including a focus on different activities, different performance indicators, different weights of such indicators, and finally different amount of funding that is linked to performance criteria [7].

According to Jongbloed and Vossensteyn, OECD countries in most cases use the following performance indicators in their PBF formulas [7]:

- the number of Bachelor's and Master's degrees (Germany, Netherlands, Austria, etc.),
- the number of credits earned by students (Denmark, Finland, etc.),
- the number of doctoral degrees (Denmark, Germany, Netherlands, etc.),
- research output (Denmark, Finland, etc.),
- external income (Denmark, Finland, Germany, etc.).

Whereas input-based funding focuses on the incremental mechanism, the PBF concentrates mainly on the results [26]. Such a focus can lead to the efficient use of given resources, a better decision-making process, and a better orientation to long-term objectives [27]. Moreover, the PBF is considered an efficient way to enhance public accountability [8]. Performance indicators "manage and control academic work by making visible and subjecting academic activities to external evaluation," and they can be "designed to advance the agenda and implement the policy" [28, p. 280, 289–290].

In times of budget austerity, it is crucial to have a mechanism that can increase national productivity, improve the competitiveness of human capital and create a knowledge economy [29]. This can be done by improving higher education institutions' performance. Many academics confirm that the PBF can increase universities' performance [27]. In addition, such a funding allocation system can eventually boost research output and increase university productivity [30].

Despite all advantages of the PBF, measuring performance in the knowledge area is a difficult task [11]. Considering the multifaceted nature of the higher education

sector, most performance indicators do not manage to capture all sides of universities' output in terms of quality [7]. The ambiguity of performance indicators also creates challenges regarding what indicators to choose.

Many academics pointed out that the PBF does not provide firm evidence of boosting universities' performance [31]. However, this conclusion is based primarily on studies which analyzed the PBF with low weight in total funding given to universities [32, 33]. Hence, it is difficult to reach definitive conclusions on whether the PBF is a sufficient mechanism. It is crucial to analyze the PBF with a higher weight in total funding to have clearer decisions about the PBF influence [34].

In addition, the PBF can cause some unintended impacts. One such unintended impact is the "quantification of quality" [35]. To put it in other words, a funding system that is based on quantitative results provokes an increase in quantity at the expense of quality. For instance, many academics may strive to achieve the desired results based on the number of articles written rather than their quality. This, in turn, undermines the very essence of research and a scientific process. Such a mechanism may not encourage creativity and originality in research [36].

The following unintended effect is linked to the disability of the PBF to sufficiently take into account the differences among universities (research universities and universities of applied science) and different fields (humanities, social science and natural science) [36]. The higher education funding mechanism is usually the same for all types of universities. This raises a concern that it is difficult to find performance indicators that fit all of them. Additionally, regarding different fields, it is not the same to write an article in the natural science field and social science. Accordingly, many academics emphasize the significance of the suitability of performance indicators to the different fields of science [35].

Finally, yet importantly, it is a "free-riding" effect [35]. This corresponds to the situation when some academics focus their attention solely on research output regardless of the teaching process. In such a situation, the PBF may consider one group of academics to perform better. Consequently, this creates a situation where some academics are rewarded at the expense of others [37].

The last group of funding models overviewed in this paper is performance contracts. This model is a relatively new mechanism, which has gained significant attention in the previous few years [7]. The main difference between performance contracts and the PBF is a focus on different perspectives. In the PBF, performance indicators are linked to the recent past, whereas in performance contracts, they are connected to the near future [38].

When talking about performance agreements, we refer to a bilateral agreement set between a government and a higher education institution. Such an agreement clearly defines aims that have to be achieved by a particular university and links these aims to performance indicators to understand progress. Based on the stated goals, the performance agreement also specifies the funding needed to achieve the goals.

In this approach, there is a much greater role for universities in the decision-making process regarding their funding. Performance agreements promote the improvement of strategic dialogue between funding authorities and higher education institutions [38]. More importantly, such a mechanism may address the drawbacks of the PBF, particularly the homogeneity of performance

indicators, instead of promoting different indicators for different types of universities and activities [39]. Finally, such contracts can take into account the diverse nature of the universities' objectives and, at the same time, their commitment to the nationally-set agenda [7].

Despite the debatable nature of the PBF, there is a vivid trend in the higher education sector that more and more universities have been implementing funding mechanisms based on performance criteria. During the last decade, hundreds of universities all around the world have implemented the PBF [40]. For instance, 13 out of 28 European higher education systems linked their funding mechanisms to performance, distributing basic funding using the PBF [8]. Jongbloed and Vossensteyn confirmed this trend, stating that funding models that previously had been linked to incremental mechanisms have been substituted by the PBF [7]. More interestingly, recent trends show that more and more countries (Austria, Denmark, Germany, Netherlands, etc.) seek to diversify the funding mechanism in the higher education sector, and performance agreements are an effective tool for this purpose [38].

Reshaping of higher education funding model in Ukraine that has shifted from the Soviet-era funding mechanism to the modern PBF. Back in 2015, the European University Association identified the main problems in the Ukrainian higher education system [42], namely:

- outdated and inefficient methods of financing,
- low financial autonomy,
- unbalanced sources of income for universities.

The first problem highlighted by the European Association of Universities concerns the funding mechanism for the higher education sector in Ukraine. Higher education institutions in Ukraine received state funding according to the historical principle. Any changes in universities' budgets depended solely on input indicators, namely on annual fluctuations in the number of students financed by the state. This incremental budgeting approach, which had its roots back in Soviet-era times, created many challenges, imbalances, and disproportions in the Ukrainian higher education sector [42].

Many researchers have proposed different ways how the Ukrainian higher education funding mechanism should be reformed. A large number of them conclude that the outdated state order approach should be replaced by the modern practices of higher education funding, namely block grants and the PBF [43]. Such mechanisms might influence the financial autonomy of the Ukrainian universities, which they have significantly lacked for a long time. This was also confirmed by Bogolib [44], stating that to increase the competitiveness of the Ukrainian higher education institutions, financial autonomy should be enhanced. One of the possible ways to do this is to introduce a funding mechanism based on performance criteria [44, 45]. Moreover, during budget austerity, the PBF can be seen as a possible way to improve and optimize budget allocations given to Ukrainian higher education institutions [46].

Considering the drawbacks of the incremental state order approach and the international trend to shift to the PBF, a performance funding formula was introduced for the Ukrainian higher education sector in 2019 [47]. The performance funding formula intends to allocate public funding to Ukrainian universities based on their teaching, research and international performance.

Higher education institutions are to receive funding from the consolidated amount of funding provided in the state budget, which consists of the following main components:

- Funding operational activities of higher education institutions.
- Funding is provided depending on the performance of higher education institutions.
- Reserve funding.

The first component refers to the funding of universities' operational activities to ensure their normal functioning. The funding is based on the number of students enrolled under the state order and the ratio of the average monthly salary of the employees. The government still uses an incremental approach to fund the core operational activities of higher education institutions.

The second component, which is considered a fundamental change in a funding mechanism, relates to the performance of the Ukrainian universities. The amount of the PBF is calculated based on such performance indicators [47]:

- indicator of the scale of activity,
- indicator of regional support,
- indicator of research activity,
- indicator of international recognition,
- indicator of graduate employment.

The first two indicators are essentially input-oriented indicators by their nature. The first indicator is set according to the number of enrolled students. The second one is based on the regional location of a particular university. The logic here is that the further the university is located from big cities, the higher funding it should receive.

The third and fourth indicators are the output-based indicators. The indicator of research activity is determined depending on the amount of financial income from the research work on international cooperation projects under agreements with the private sector and the results of research output per researcher on average for the previous three years. Therefore, funds from international research projects, commercial contacts, and scientific expertise are seen as sound indications of sufficient universities' performance. The indicator of international recognition considers universities to be funded for reaching the top 1000 positions in QS World University Rankings, The Times Higher Education World University Rankings, or Academic Ranking of World Universities – World Top 500 Universities.

Finally, yet importantly, the indicator of graduate employment is essentially seen as an output-based indicator, but with a focus on the impact of universities' activities. If graduates are to be employed in positions that require a higher education qualification, their universities are to receive a higher portion of public funding. For this reason, a tracking system of employment of graduates is to be set up. However, such indicators are utilized less frequently because there are doubts about how to effectively track and control them [7].

The last component, reserve funding, is considered an emergency fund to cover unpredictable costs and assist construction projects.

Given that Ukraine had a very outdated system of financing universities, which was based mainly on an incremental approach set in the Soviet era, it is not surprising that the new funding model has been implemented since the beginning of 2020. Many academics have supported this change during the last decades, articulating the drawbacks of the state order system and the possible positive impacts of introducing the PBF in Ukraine.

Conclusion. The changes in higher education systems in CEE resulted from new liberal economic and political agenda that has replaced Soviet-era ideas, combined with the impact of European Union accession conditions. Considering the alignment of Ukraine to the European path, many areas of the Ukrainian public sector should be harmonized with the European Union recommendations. For that reason, the Ukrainian higher education system also follows the European agenda.

The transformations of higher education institutions have been shaped by global trends. One such trend is the NPM, which has become the central issue in the public sector reform agenda [4]. To put it simply, the NPM considers the use of private-sector practices in the public sector. One of the private sector practices is the orientation towards performance and efficiency. Despite the debatable nature of the PBF, there is a clear trend in the higher education sector toward implementing funding mechanisms based on performance criteria [23].

In view of the European trend towards using the PBF and the adherence of CEE countries to the European path, it is logical to take into consideration that Ukraine will follow the implementation of the PBF. Hence, the Ukrainian government has implemented the PBF in 2020, changing the outdated Soviet-era funding mechanism. This reform is seen as a considerable step toward better public sector management since many academics have discussed and criticized the outdated Soviet-era funding model that Ukraine inherited in the 90s.

Discussion. The introduction of the PBF in the higher education sector is quite a positive step in the Ukrainian context since this reform has been discussed for a long time as a good way to improve higher education sector financing. However, we should not forget that this higher education financing mechanism has drawbacks. Among such disadvantages are worth mentioning: a quantification game, a free-riding problem, the disability of the PBF to sufficiently take into account the differences among universities and academic fields, and finally, difficulties in measuring performance in the knowledge sphere.

It isn't easy to reach a definitive conclusion on whether the PBF is a sufficient mechanism or not. To obtain a complete picture, it is crucial to analyze the PBF in different contexts. For instance, the weight of the PBF in total funding and the length of using this mechanism can be addressed as critical points to have more precise conclusions about the PBF influence [34]. It should be noted that all funding mechanisms have their advantages and disadvantage, and no funding model can fit all contexts and perspectives [7]. Therefore, there will be always a need to adjust the funding mechanism in accordance with the institutional landscape and modern trends.

Funding approaches are constantly evolving since governments seek the most efficient mechanism of funding public institutions, especially higher education institutions. Thus, it may always be important to identify new intended and unintended effects of evolving funding mechanisms. Specifically, this may be of great importance in the post-Soviet landscape since the context of post-Soviet countries is considered a new call for academics to examine higher education sector reforms [48].

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Г. Поляновський, асп.

Київський національний університет імені Тараса Шевченка, Київ, Україна

РЕФОРМУВАННЯ ФІНАНСУВАННЯ ВИЩОЇ ОСВІТИ В УКРАЇНІ: ВІД РАДЯНСЬКОЇ МОДЕЛІ ФІНАНСУВАННЯ ДО ФІНАНСУВАННЯ НА ОСНОВІ РЕЗУЛЬТАТІВ

Здійснено аналіз процесу реформування системи фінансування вищої освіти в Україні, що відбулося протягом останніх років. Реформу спрямовано на зміну моделі фінансування закладів вищої освіти. Попередня застаріла модель фінансування радянських часів, успадкована Україною в 90-х рр., останнім часом зазнала значної критики. Нинішнє ж запровадження фінансування, орієнтованого на результати, в Україні розглядають як значний крок до ефективнішого управління державним сектором. Реформа української системи вищої освіти стала результатом нового ліберального економічного та політичного порядку денного, що прийшов на зміну ідеям радянського періоду, у поєднанні з впливом умов вступу до ЄС. З огляду на це українська система вищої освіти, як і інші системи державного сектору України, має бути приведена у відповідність до рекомендацій ЄС. Наразі важко зробити остаточний висновок про те, чи є система фінансування на основі результатів ефективним механізмом фінансування сектору вищої освіти, чи ні. Для отримання повної картини дуже важливо проаналізувати систему фінансування на основі результатів у різних контекстах. Незважаючи на дискусійний характер моделі фінансування на основі результатів, слід зауважити: не існує такої моделі фінансування, що підходила б до всіх контекстів й інституційних ландшафтів. Отже, завжди буде існувати потреба в тому, щоб коригувати та підтримувати механізм фінансування в актуальному стані відповідно до інституційних потреб і сучасних тенденцій.

Ключові слова: сектор вищої освіти, фінансування вищої освіти, фінансування на основі результатів, реформування фінансування вищої освіти, Україна.

PANDEMIC COVID-19 AS A KEY FACTOR IN THE DEVELOPMENT OF DDoS-ATTACKS INSURANCE

The COVID-19 pandemic was a turning point for all participants in economic relations. The insurance market has faced new challenges related to the format of cooperation with clients changing, as well as the transformation of clients' business. Remote work has identified threats that can not only stop the industry but also destroy it. One of the examples of such threats is DDoS-attacks, targeted at stopping the computer systems of the victims of the attack. In 2021, the share of organizations that suffered losses after DDoS-attack increased to 86.2 %, 9 pp more than before the COVID-19 pandemic. IT administrators sometimes don't notice the consequences of attacks, so they can't assess the state of their business entirely. Cybersecurity experts should be involved in this monitoring, but often they only restore IT systems, without compensation. The set of services in cyber-insurance policy consists of: monitoring the client's IT systems, providing recommendations for its improvement, assistance in case of DDoS-attack, payment of compensation, and restoration of reputation. Therefore, DDoS-attacks insurance has become more popular during the COVID-19 pandemic. The volume of the cyber-insurance market grew by 39 % in 2020 and reached \$7 billion vs 2018. The primary insurers in this area are media and publications, as all their activities are built on Internet-based systems.

The article examines the transformation of the cyber insurance market in the world before and after the beginning of the COVID-19 pandemic. The state and prospects of DDoS-attacks insurance are considered, and the necessity of developing of this type of insurance in Ukraine is proved. Recommendations are provided for the introduction of cyber DDoS-attacks insurance products in the portfolio of Ukrainian insurance companies in the context of the Digital Strategy of Ukraine 2030.

Keywords: insurance; cyber insurance; cyber risk; DDoS-attack; digital transformation.

Introduction. The digital transformation of developed countries has accelerated globalization processes around the world. Along with the positive effects of innovation, some problems cannot be solved in the usual ways. The issue of low levels of cyber security became particularly acute with the onset of the global COVID-19 pandemic, and most business entities were forced to switch to a remote work format and automate much of their processes.

The international community has repeatedly covered cases of discrediting and shutting down reputable services through DDoS attacks carried out by interested groups of attackers. Despite the well-known devastating effects of such cyber-attacks, there is still no single tool to block them completely. It is a widespread practice of organizations to create cyber security departments, conduct briefings and staff training, and cooperate with relevant experts, but even such a set of measures does not provide zero risk. An effective mechanism in this case is the DDoS-attacks insurance, as it combines and prior monitoring of the insured in the field of cyber security, and providing recommendations for improving its IT-systems, and support the proposed software, and compensation in case the onset of a cyber incident, and the resumption of its activities after the attack. Therefore, the development of cyber insurance in the world needs research, as specific patterns will help start this type of insurance in Ukraine.

The purpose of the article is to determine the role and impact of the COVID-19 pandemic on the development of DDoS-attacks insurance and to outline the key features of its occurrence for use in the insurance market of Ukraine.

Methodology. The article is based on the following methods of research and analysis of insurance market development in the world and Ukraine: methods of induction and deduction in analyzing the cyber insurance market in the world; observation in identifying key features of the development of DDoS-attacks insurance in the world; synthesis in establishing relationships between the pace of market development and the challenges of the environment arising from the impact of COVID-19;

comparison method to create a ranking of DDoS-attacks insurance types of policies, system analysis in the process of considering the prospects for the development of DDoS-attacks insurance in Ukraine.

Literature review. Cyber security has become an especially critical after the transition of business processes to digital structure. At the current stage of economic development, companies need to use digital technical devices and ensure their integrity and safety. Theoretical cyber insurance issues are reflected in many prominent economists' works. Thus, among the scientists who study and research the process of assessment and insurance of cyber risks, we can single out S. Romanosky, L. Ablon, A. Kuehn, T. Jones [1], who investigated approaches to cyber risk assessment risks from a practical perspective in their research. N. Kshetri conducted an institutional analysis and studied the evolution of the cyber insurance market [2], as well as considered the economic nature of cyber insurance with the justification of the profitability of its various types [3]. D. Woods and R. Bohme considered the mechanisms of response to cyber incidents in the context of globalization processes, as well as options for partnership with expert organizations [4]. D. Markopoulou compared the place of cyber insurance in EU and US policy and suggested regulatory options for various possible challenges [5]. M. Liu described the theoretical and practical aspects of cyber insurance as a key element in promoting the cyber security of enterprises and states [6]. At the same time, the issue of cyber insurance in Ukraine remains insufficiently disclosed, as there is a need to identify current global trends in cyber insurance and the position of domestic insurers on the readiness to present cyber insurance products in the Ukraine insurance market.

Results. Cyber insurance market overview in 2018–2021. The global COVID-19 pandemic has become the basis for the transformation of the insurance market. Optimization of insurance companies' business processes was based on the virtual jobs creation, data collection automation and transmission, branching out channels of communication with

customers and simplification of formalized procedures at the stage of insurers' acquisition process.

Global trends that have affected change include external and internal factors. The key factors that became the basis for the transformation of the cyber insurance market were:

- reduction in work efficiency due to illness (temporary absence from work) or death (loss of a skilled worker) from COVID-19,
- attempts to maintain business activity during the crisis with the maintenance of contacts with both external and internal customers,
- the transition of most enterprises to a remote format of work with the concomitant need to train staff in new technologies and programs,

- establishing continuous supply chains of organizations and their customers,

- organizations depend on the latest technologies and programs, as well as the level of their security and safety of data channels [7].

Obviously, the primary indicator that distinguishes the format of business organizations before and after the COVID-19 pandemic is the quality of digitalization of companies' processes. The transition adaptation period to new conditions has been crucial for many companies, as the share of companies that have suffered at least once from a successful cyber-attack has increased by 1 percent in 2019 vs 2018, by 3 percents in 2020 vs 2018 and by 9 percents in 2021 vs 2018 (see Figure 1). Such galloping growth is evidence of the cyber-attacks development, as well as the lack of enterprise IT-systems security.

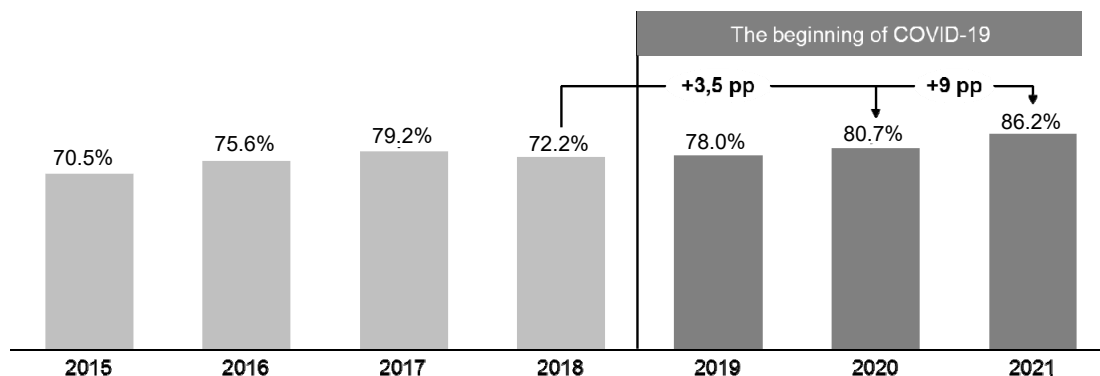


Figure 1. The share of organizations that suffered from at least one successful cyber-attack in 2015–2021

Source: Compiled by the authors based on [8].

At the end of 2021, about 86.2 % of companies have been attacked by cybercriminals with further consequences: financial and reputational losses. In order to reduce cyber-attacks negative impact, business owners have made decisions to secure information structures. However, today the pace of development of cybercrime tools is growing rapidly, so it is impossible to fully secure IT systems. A practical solution, in this case, is cyber insurance product usage, which on the one hand, help to monitor the current status of policyholders, and

on the other hand provides financial support in case of losses due to the cyber incident.

Cyber insurance became more popular in 2019–2021 compared to 2017–2018, due to a higher growth rate of gross insurance premiums. The volume of the cyber insurance market shows an average growth rate of 28 % during 2015–2021 due to the increase in threats caused by cyber incidents (see Figure 2).

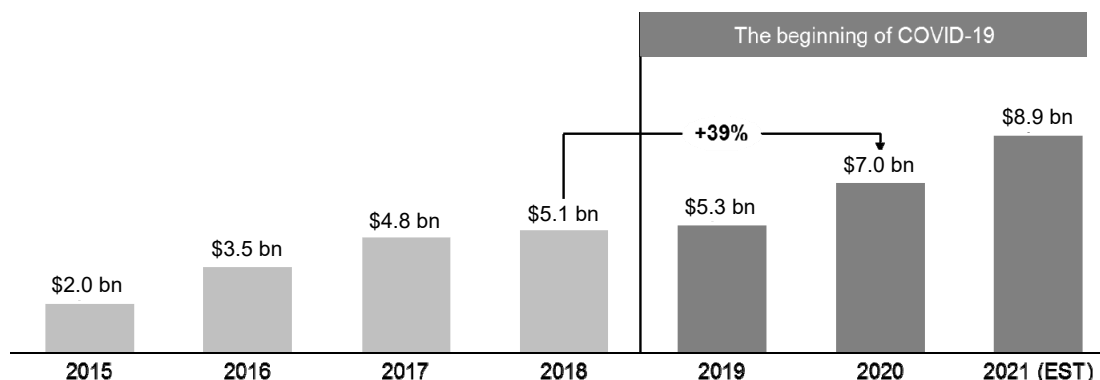


Figure 2. The volume of the cyber insurance market in 2015–2021

Source: Compiled by the authors based on [9].

Every year, the diversity of cyber insurance products expands under the influence of challenges that arise at the global and local levels. It was found that the reason for the significant increase of 39 % of gross premiums in 2020 vs 2018 were an improvements of cyber insurance policies, which covered more types of risks than in the period before the COVID-19 pandemic. Scientists identified many approaches to the classification of the kinds of cyber insurance. However, in the framework of building a model for the development of this type of insurance, we consider the most appropriate classification by sources of risk. According to Aliant Cybersecurity, the most common sources of risk are cyber-attacks, such as:

- malicious software,
- denial of service due to DDoS-attack,
- employee attack (MITM),
- SQL injection into program code [10].

It is worth noting that this classification is currently a generalized state, as over time the variety of options for cyber

threats will increase. In our opinion, one of the most promising areas of development of cyber insurance, which already exists, is the promotion of policies to cover the risk of denial of service through a DDoS attack.

DDoS-attack is implemented by attackers according to the following procedure: the site is attacked from a large number of devices, not one. The more devices, the more load on the server and the more chances to make the site inaccessible. The complexity of the attack is measured by time, the longer attack duration, the more dangerous it is. The attack can involve any device that connects to the Internet and can send requests: smartphones, smart watches, appliances, hosting servers [11].

After the start of the COVID-19 pandemic in 2019, the number of DDoS attacks increased by 20 % vs. 2018, and in 2020 by 37 % vs. 2018. As of the end of 2021, the daily number of DDoS attacks exceeded 33,000, as this type of cyber-attack is one of the cheapest and most accessible in the world (see Figure 3).

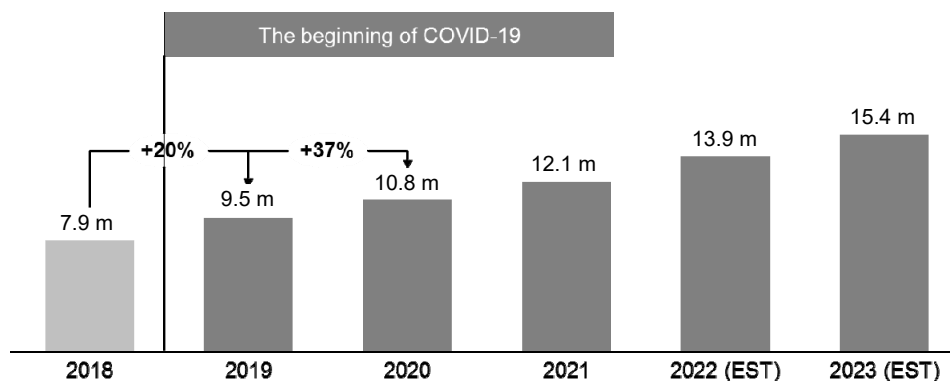


Figure 3. The dynamics of DDoS attacks in the world in 2018–2021

Source: Compiled by the authors based on [12].

Given the growth rate of DDoS attacks, in 2023, their number is expected to ~15 million. As the number of attacks increases and their success and effectiveness, we consider cyber insurance a promising option for securing organizations and their customers.

The state of DDoS-attacks insurance in the world. Despite their ease of implementation and relative cheapness, DDoS attacks are an effective instrument of discrediting government websites, official websites of global and local organizations or public figures; "freezing" the sites of competitors of online platforms for dating or sales; to stop the provision of certain administrative or entertainment services. For local organizations that do not have adequate protection against cyber-attacks, such interventions can be catastrophic, as DDoS attacks can completely stop their service or sales. The traditional consequences of DDoS attacks are:

- loss of income due to unavailability of service,
- inability to monetize content,
- reduction of labor productivity,
- costs for restoring IT systems,
- damage to the brand reputation,
- reduction of market share,
- redemption costs for blocked files/applications [13].

Given the possible consequences, most organizations create preventive sets of measures that increase the

reliability of their IT systems. But it is impossible to altogether avoid this type of risk, as attackers, in turn, are constantly improving their tools, thereby increasing the opportunities for cybercrime. An effective way out of such conditions was to create a new type of cyber insurance – DDoS attacks insurance. Nowadays, the Financial Services Roundtable [13] has identified four types of cyber insurance policies aimed at protecting against the effects of DDoS attacks:

- covering losses caused by breaches of the integrity and confidentiality of the insured's data, as well as the costs of the process of restoring data warehouses (in some cases, the policy covers the costs of legal services and legal investigations),
- reputational costs associated with restoring the insured's multimedia profile (websites, media and intellectual property rights) that may have been harmed or blocked by cybercriminals,
- losses due to cyber extortion (for the return of rights to manage the systems or websites of the insured),
- covering the costs of security development of the insured's IT systems.

The world practice of using DDoS-attacks insurance has qualitatively changed under external conditions. Thus, the current procedure is the use of affiliate programs, which are based on the cooperation of insurance companies and expert

organizations in the field of cyber security. In this case, when concluding an insurance contract, the policyholder undertakes to monitor the current state of security of its IT structures and provide experts with access to internal control systems for storage, publication and transmission of data.

DDoS-attacks insurance services are already available in the USA, China, Japan and Europe. Insurers in these

countries are guided by the position that buying an insurance policy does not replace the need to invest in improving cyber security systems. At the same time, the popularity of different types of policies differs in these countries, as the state policy on information support is different (see Table 1).

Table 1. Rating of DDoS-attacks insurance policies types

Policy type	USA	China	Japan	EU
Cover the risks associated with data integrity and confidentiality	1	2	1	2
Cover the risks associated with the reputation of the insured	2	1	2	3
Cover the risks associated with cyber-extortion	4	3	3	1
Cover the risks arising from the insufficient level of security development of the insured's IT systems	3	4	4	4

Source: Compiled by the authors based on [14, 15, 16, 17].

The assessment of the popularity of insurance types is based on the availability of these policies in different regions, the number of cyber-attacks with the corresponding consequences and the features of regional cyber security policies. According to the analysis, we noticed that the most popular are the purchase of DDoS-attacks insurance policies, which are related to the integrity and confidentiality of data, as well as the insured's reputation. This is also confirmed by the expansion of international policies that control relations in data storage and confidentiality.

Prospects for the development of DDoS-attacks insurance in Ukraine. The modern Ukrainian insurance market is increasingly adapting to global requirements. Nowadays,

about 5 % of insurance companies in Ukraine already provide cyber insurance services, but no one company offers standard policies that cover only the risks associated with DDoS-attacks. In addition, the confidentiality of data in the face of Russia's aggression is becoming one of the main tasks of the Ukrainian digital sector.

It is important to understand which countries carry out DDoS-attacks on Ukraine, as their features and consequences may differ. In the first quarter 2022, the most significant number of DDoS-attacks was committed by the USA – 17 %, indicating the presence of a large number of criminal centers that commit cybercrime; in second place was Russia – 9 %; in third Germany – 9 % (see Figure 4).

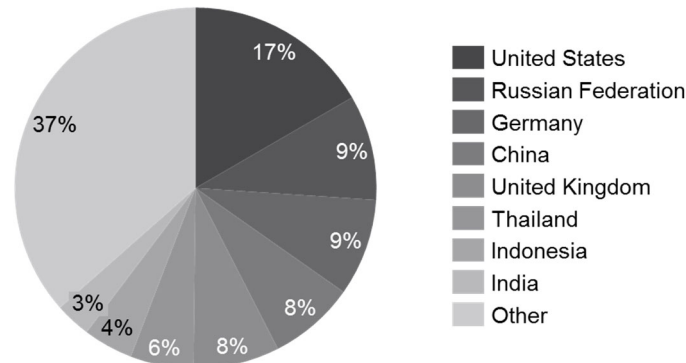


Figure 4. DDoS attacks on Ukraine in Q1 2022 by source countries

Source: Compiled by the authors based on [18].

Traditionally, the major centers of DDoS-attacks are USA, Russia, and China. These countries are among the TOP-5 countries that attacked Ukraine during the first quarter of 2022.

Another approach to clustering DDoS-attacks is by object or industry. As each industry has its characteristics, the proposals for improving its IT structures may differ. Most cybersecurity experts have ready-made platforms and software suitable for a particular sector. During the first quarter of 2022, the following industries suffered the most from DDoS-attacks, %:

- Broadcast Media (41),
- Media and Publishing (17),
- Internet (11),

- Online Media (11),
- Media Production (7) [18].

Obviously, the most vulnerable industries related to media, advertising, and publication, due to the extensive information campaign to discredit Ukrainian information resources. An option to maintain their stable operation may be insurance against DDoS-attacks, as its implementation will check the current state of all organizations, create specialized mechanisms to protect and prevent blocking attacks and finance possible reputational and material losses.

DDoS attacks insurance is particularly important in the context of the Digital Strategy of Ukraine 2030. The national strategy includes digital transformation or the integration of the latest digital technologies in all areas of

business, supporting infrastructure changes including some provisions, one of which is the creation of cybersecurity infrastructure and computer systems (cloud and virtualized) [19]. These changes should be considered comprehensively and highlight both advantages and disadvantages. The advantages are the upgrading of infrastructure, its compliance with global trends, and a more comprehensive range of opportunities. We consider the need to train personnel who will work with the new systems, the lack of a unified legal framework in the field of cybersecurity and the difficulty of detecting cyber-attacks as possible obstacles to implementing the national strategy.

In this context, the frequency of DDoS-attacks may increase as business process virtualization expands opportunities for criminals. Therefore, the development of this type of insurance will take place simultaneously with the digital transformation to preserve the integrity and confidentiality of data.

Ukrainian insurance companies can use the European experience of introducing DDoS-attacks insurance in their portfolio. The priority is to find partner companies that will assess the condition of policyholders and support their IT systems. This format of cooperation will be mutually beneficial for both parties, as the permanent format of cooperation involves the availability of contracts and discounts, as well as joint, and therefore more effective, customer search. Discussion of their format of cooperation should be based on transparent conditions and in the presence of appropriate certificates confirming the qualifications of cyber security experts. Then the insurer must approve a clear list of risks associated with DDoS-attacks. Thanks to this, the client can choose the policy that will cover the required set of risks, thereby adjusting the cost of the policy itself.

Conclusions. The COVID-19 pandemic was a difficult period for all participants in economic relations. Due to the transition to remote format of doing business and increasing the share of automated processes, organizations were forced to create new departments dealing with cybersecurity. Even though the innovations have helped to increase the level of companies' protection, it was impossible to completely block the threats of attackers, as the share of companies that have suffered at least once from cyber-attacks has increased. Simultaneously with the development of cyber defense systems, the active spread of cyber insurance began, which served as an effective mechanism for checking the current status of the insured and compensation in the event of a cyber incident.

One area of cyber insurance actively developing in the world is DDoS-attacks insurance. The research identified four main types of policies to protect against the effects of DDoS attacks: coverage for damages caused by breaches of the integrity and confidentiality of policyholder data, scope of reputational costs, coverage of losses due to cyber claims, coverage of cost recovery security of IT systems. These types of insurance already exist in the USA, China, Japan, EU countries, but each of the regions has their own distinctive features. In 2022, this type of insurance became especially relevant in Ukraine. During the first quarter, attackers launched an information campaign to disrupt the stable operation of websites, servers, and public accounts of government, media, and television. Most of the attacks were carried out from the so-called global hubs of cybercriminals who carry out mass DDoS attacks: the United

States, Russia, China, and others. Therefore, DDoS attacks insurance is a promising segment that needs investment and support at the state level, as the Digital Strategy of Ukraine 2030 includes provisions such as developing cyber security and building a cloud computing infrastructure. Broadcast Media, Media and Publishing, Internet, Online Media, and Media Production are areas for which the creation of appropriate mechanisms is particularly relevant. These industries have become the main target of aggression by cybercriminals, as today they have a special social and educational importance in the conditions of information war.

Discussion. Further research may address the mechanism of launching a product of DDoS-attacks insurance in Ukraine and creating government programs to support this innovation area. As cyber insurance products are built on the cooperation of insurance companies and specialized organizations in cyber security, it is worth considering options for mutually beneficial partnerships that will help minimize the risk of cyber incidents and accurately calculate the amount of losses.

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Н. Приказюк, д-р екон. наук, проф.,

Л. Гуменюк, асп.

Київський національний університет імені Тараса Шевченка, Київ, Україна

ПАНДЕМІЯ COVID-19 ЯК КЛЮЧОВИЙ ФАКТОР РОЗВИТКУ СТРАХУВАННЯ ВІД DDOS-АТАК

Досліджено трансформацію ринку кіберстрахування у світі до та після початку пандемії COVID-19, оскільки пандемія стала переломним моментом для усіх учасників економічних відносин. Страховий ринок зіштовхнувся з новими викликами, що пов'язані зі зміною формату співпраці з клієнтами, а також із трансформацією бізнесу самих клієнтів. Дистанційний формат співпраці відкрив багато загроз, що можуть не тільки зупинити бізнес, а й повністю його знищити. Одним із прикладів таких загроз є DDoS-атаки, що націлені на зупинку комп'ютерних систем жертв атаки. Також у статті розглянуто стан і перспективи страхування від DDoS-атак та доведено необхідність розвитку зазначеного виду страхування в Україні. Надано рекомендації з уведення продуктів кіберстрахування від DDoS-атак у портфель українських страхових компаній у контексті Цифрової стратегії України 2030.

Ключові слова: страхування, кіберстрахування, кіберризик, DDoS-атака, цифрова трансформація.

SOCIO-ECONOMIC DEVELOPMENT OF POST-SOCIALIST COUNTRIES: CONTRADICTIONARY TRENDS AND CHALLENGES OF THE PRESENT

The article analyses the social and economic development of 14 post-socialist countries from 2001 to 2020. By assessing their clustering, a conclusion was made about the contradictory combination of two evolution tendencies of these countries: simultaneous deployment of processes of divergence, asymmetry of their social and economic development and deployment of convergence processes, and formation of separate clusters of the specified countries. In particular, the European Union member states, such as Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Bulgaria, Hungary, and the Czech Republic, formed a separate cluster in 2020, characterized by the highest GDP per capita in the group, the share of expenditure on education and the highest level of the spending on health care in GDP. A separate cluster was formed by Ukraine and Moldova, potential EU candidate countries. The place of Ukraine among the considered countries in the period 2001-2020 and in modern conditions was analyzed. It was concluded that the indicators of socio-economic development of Ukraine demonstrate cyclical dynamics under the influence of global factors and shocks, taking into account the turning point events for the whole world in 2022. It was noted that new world order is currently developing. There are new initiatives and concepts within the EU, which provide great opportunities for Ukraine for European integration. In this context, the institutional factors of convergent and divergent development of post-socialist countries, which will be aimed at resolving the existing military and political conflicts, settlement of global imbalances, stabilization of world economic development, have an essential role.

Keywords: *post-socialist countries; globalization of economy; convergence of socio-economic development of post-socialist countries; divergence of socio-economic development of post-socialist countries; global imbalances; global shocks.*

Introduction. Global economic development is generally recognized as a highly complex, multistructural and contradictory process. On the one hand, the deployment of multilevel integration processes, the strengthening of trade relations, the growth of foreign investment, and the institutional and organizational ordering of the global economy contributed to the convergence of socio-economic development levels of developed and developing countries. A vivid manifestation of this is the convergence of national economies, in particular, the so-called new convergence, which began in the 1990s to equalize asymmetries and imbalances in the development of the world economy.

In addition, globalization increases the instability of the world economic system, differentiates national economies, and deepens the gap between them. In particular, the implementation of the neoliberal model of globalization provokes a deepening gap between the financial and real sectors of national economies; the transformation of the countries of the former socialist camp is accompanied by the aggravation of old and the appearance of new socio-economic risks and contradictions, the "difference" of their ways of civilizational evolution. This problem is especially relevant under current conditions of Ukraine's assertion of the right to European integration and the development of a pro-European vector of economic growth. In this context, the comparative analysis of socio-economic development of post-socialist countries based on the dynamics of the macroeconomic indicators in the context of convergent-divergent trajectories of their evolution contributes to more effective and sound managerial decision-making, and improvement of planning and forecasting of further socio-economic and institutional transformations. At the same time, the unprecedented global crisis caused by the COVID-19 pandemic and full-scale invasion of sovereign Ukraine by the Russian Federation bring new accents in the scientific understanding of the impact of global challenges and shocks on the socio-economic development of the former socialist camp countries.

Literature review. The problems of uneven development of national economies have always been the focus of attention of both Ukrainian and foreign scholars. In particular, the representative of the neoclassical direction of economic theory R. Solow analyzed the reasons for absolute

and conditional convergence of the economies of poor and rich countries based on the level of capital-employment dynamics as the main factor of their convergence [24]. J. Stigler and F. Fukuyama viewed globalization as a triumph of economic liberalism and democracy, rejecting the role of the state, especially in the social sphere, and arguing that globalization opens to all countries new unprecedented opportunities for economic development, associated with the cross-border distribution of information, knowledge, and new technologies, enabling a more efficient use of resources [5, 25].

Representatives of neo-orthodox research programs have severely criticized such neoliberal approaches. The work of R. Barro and X. Sala-i-Martin's "Convergence of Countries and Regions", which drew attention to the fact that, at the turn of the 20th and 21st centuries, global economic development and economic growth determined greater progress of individual countries on the basis of their convergence, primarily, the diffusion of national economies [3, 23]. J. Baumol, R. Nelson, and I. Wolf came to the conclusion that individual countries in the context of globalization form a kind of dynamic "convergence clubs" on the basis of shared ideas on the implementation of foreign policy. According to the researchers, such clubs include not only industrially developed countries but also countries with transformational economies with the necessary potential for convergence [4]. At the same time, the analysis of economic development of countries outside the "convergence clubs" was carried out by researchers such as D. Kway and L. Pritchett, who substantiated the simultaneous deployment of convergent and divergent processes of socio-economic development of the world countries [19, 20]. In the context of the problem under study the widely cited work of E. Reinert "How the rich countries became rich and why the poor countries remain poor" deserves attention, in which the author emphasizes that the modern economic development of the world countries indicates their divergence, the difference in different trajectories, since globalization by its nature is a contradictory process. This finds expression in the fact that some mostly developed countries specialize in activities with increasing returns (technology, intensive manufacturing, and services), and greatly benefit from the positive effects of globalization.

At the same time, other countries specialize in activities with descending returns (traditional production of raw materials and agriculture), and continue to become poorer, feeling the asymmetric impact of integration processes [21].

As for the trajectories of development of post-socialist countries, comparative studies of their socio-economic evolution during the period of market transformation and integration into the global world economic environment are reflected in the works: L.Balcerovich, who carried out a comparative analysis of the socialist and capitalist systems functioning, investigated the impact of institutions and institutional changes on the economy of post-socialist countries, and also insisted on the need for radical economic reforms aimed at departing from directive planning inherent in the Soviet countries and transition to an efficient market economic system [2]; W.Grzegorz Kolodko, who noted that the economy is not only a means of interpreting the past, but also a tool for shaping strategies for sustainable economic development based on an understanding of the trajectory of inevitable economic processes. The scientist highlighted the impact of globalization processes on the economic development of post-socialist countries and substantiated the strategies that can help less developed countries to catch up with more developed countries, to use the modern wave of globalization in their interests and, as a consequence, to restrain the deepening of global imbalances [10, 11]; Danish researcher A. Norgard and Swedish-American economist A.Aslund, who carried out a comparative analysis of the socio-economic development of post-communist countries in the 1990s post-socialist countries and predict the impact and consequences of economic reforms in individual countries based on internal and external initial conditions for their transformation [15, 17]; well-known developers of the concept of comparative economic systems B.Rosser and M.Rosser, who noted the need to take into account cultural, religious, and historical preconditions for understanding the institutional and systemic mechanisms of a particular economic system [22].

However, despite the significant amount of solid theoretical work in this area, the problems of socio-economic development trajectories of post-socialist countries in the context of current global challenges and shocks remain underdeveloped, which led to the purpose of the study.

Methodology. Testing the presence or absence of convergence of development trajectories of different countries in the modern scientific literature is based on the use of different approaches, ranging from simple statistical methods (estimation of standard deviation dynamics) to the use of complex econometric models to confirm the integration of countries into the world economic space.

To determine the degree of dispersion (dispersion) of economic development indicators, in particular inter-country differentiation, the author applied the calculation of the coefficient of variation and carried out a cluster analysis.

The quantitative assessment of the convergence of the selected group of countries was based on the calculation of the coefficient of variation, which in practice is used to characterize the homogeneity of a given population. Suppose this indicator does not exceed 0.333 or 33.3 %, the variation of the series is considered weak, and the population is homogeneous. In that case, i.e., convergent processes are strengthened, and if more than 0.333 – strong, which means a substantial variation of the series and heterogeneity of the population, i.e. strengthening of divergent processes. The specified technique is actively used for the estimation of the processes of convergence of the countries, in particular, sigma-convergence, by the experts of the European Union [14, p. 5–6].

The calculations were made according to the formula:

$$\sigma = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (M_i - M_{av})^2}}{M_{av}}$$

Where M_i is the value of the selected indicator for each country; M_{av} is the average value of the selected indicator for the set of countries; n is the total number of countries in the sample.

The cluster analysis, it was conducted with the SPSS software based on a sample of 14 post-socialist countries (Armenia, Bulgaria, Czech Republic, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Poland, Romania, Slovakia, Slovenia, and Ukraine), for the following two periods:

- 1) the pre-crisis year 2001,
- 2) the crisis year of 2020.

In our opinion, these countries should be included in the sample because with approximately the same starting conditions after the collapse of the Soviet Union, the vectors of their economic development have significant differences. Therefore, it is advisable to consider how they will be grouped in 2001, i.e., 10 years after the collapse of the USSR, as well as in 2020 (as the last one available according to the statistical base).

A significant advantage of cluster analysis is that it is possible to produce a breakdown of objects not by one parameter, but by several attributes. Clustering was performed by the single bond method or the "neighbor" method using the Euclidean distance. In this case, before the cluster analysis, all variables were standardized to avoid the diversity of values. After that, dendrograms were constructed separately for each period to further compare the results. The leading macroeconomic indicators involved in the comparative analysis of socio-economic development of these countries through their clustering included the volume of real GDP per person, the unemployment rate, the share of spending on health care (% of GDP), the share of spending on education (% of GDP). Statistical data of the World Bank formed the information base of the conducted research. The economic-statistical analysis was carried out with the use of MS Excel and SPSS software packages.

Results. One of the most debatable problems in the study of market transformations in the countries of the former socialist camp is the ratio of convergence and divergence of post-socialist development trajectories of post-socialist development. It is well known that the term divergence (from Latin *divergere* – to deviate, diverge) is used by researchers of socio-economic processes to reflect the increasing gap between the levels of development of individual countries, the deviation of their macroeconomic indicators from the regional average, as well as the deepening qualitative differences between national economic models. Instead, the concept of convergence (from Latin *convergentio* – to converge) is used as an antipode to the idea of divergence, characterizing the processes of integration, gradual convergence of different economic systems, and the involvement on this basis of a more significant number of countries in the common channel of world civilization.

The hypothesis of convergence of national economies lies in the fact that the economic growth rate of the poorest countries on average exceeds the growth rate of rich countries. The economic literature distinguishes between conditional and absolute convergence, which is divided into δ - and β -convergence (Figure 1) [7].

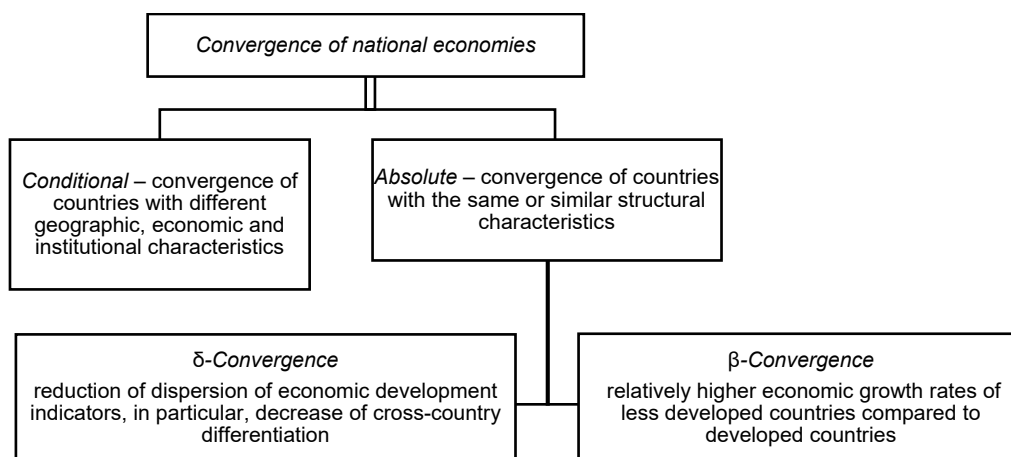


Figure 1. Types of convergence of national economies

Source: Developed by the author based on data [7, p. 14–19].

More balanced, in our opinion, is the position of those researchers who consider convergence and divergence as two complementary determinants of the socio-economic development of national economies in the context of globalization. The point is that the information and technological revolution, the acceleration and deepening of integration processes accelerate the cross-border movement of goods, services, information, knowledge, and human and intellectual capital, whose bearers are representatives of different institutional systems, cultures, traditions, religions, etc. Under these circumstances, the global environment is characterized, on the one hand, by the unprecedented interconnectedness and interdependence of national economies and, on the other hand, by the increasing diversity and plurality of trajectories of their economic evolution.

As noted above, the degree of integration of a country's economy into the global economy can be determined by calculating the coefficient of variation. The criterion for the presence of σ -convergence is the tendency for the coefficient of variation to decrease at the end of the period compared to

the beginning of the period. In our case, this is the time interval from 2001–2020 for 14 post-socialist countries.

As it can be seen from Figure 2, during 2001–2008, the value of the coefficient of variation calculated on the basis of GDP per capita has been decreasing annually, which indicated the strengthening of the processes of convergence of development trajectories of the countries under consideration by this indicator. However, starting from 2008, the value of the coefficient has been growing up to 2019, which allows us to state that the processes of divergence in the development trajectories of the national economies under analysis, in particular under the influence of the global financial and economic crisis, have been intensifying. At the same time, in 2020, there was a decrease in the specified indicator and then an increase in convergence processes between a selected group of post-socialist countries. At the same time, the value of the coefficients is significantly greater than 0.33, which means a strong variability of the series and heterogeneity of the population. The slope of the trend line is equal to $y = 0.0362x + 1.3755$, in general, it has an ascending trend.

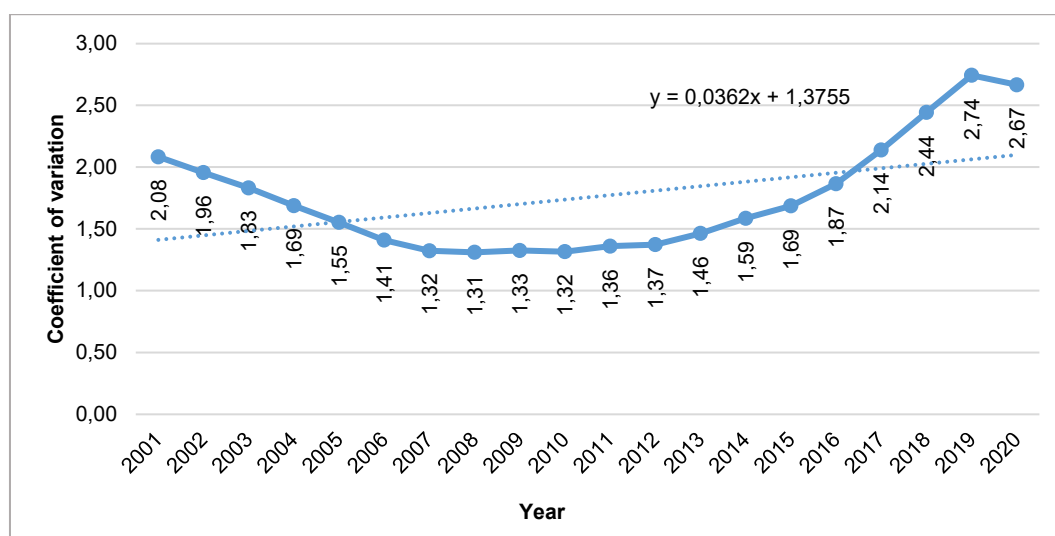


Figure 2. Dynamics of the value of the coefficient of variation calculated on the basis of GDP per 1 person of 14 post-socialist countries for the period 2001–2020

Source: Developed by the author based on [26].

Figure 3 shows that during 2001–2006, the value of the coefficient of variation, calculated on the basis of the unemployment rate, tended to decline, which indicated the strengthening of convergence processes in the employment sphere of the post-socialist countries under consideration during this period. However, from 2004 to 2010, the coefficient's value was growing, indicating an increase in the processes of divergence in this sphere in this period. From 2010 to 2015, the coefficient decreased

again, and from 2015 it increased significantly, strengthening the country's imbalances in the sphere of employment. At the same time, the value of the coefficients is markedly higher than 0,33 during the analyzed period, which means a substantial variability of the series and heterogeneity of the population. The slope of the trend line is equal to $y = -0.0001x + 0.4444$, which indicates a general decrease in unemployment in the group of countries in question and is generally a positive trend.

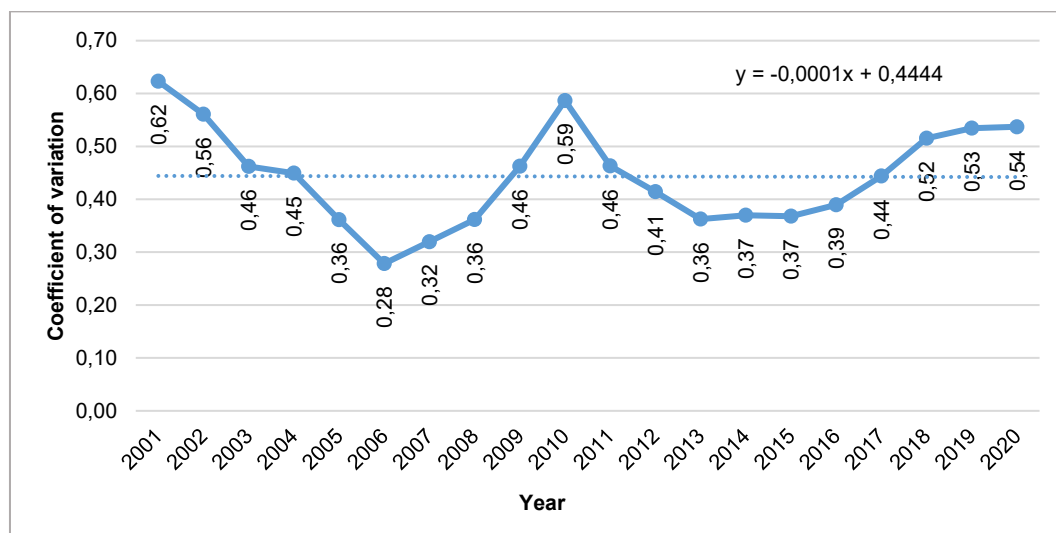


Figure 3. Dynamics of the value of the coefficient of variation calculated on the basis of the unemployment rate of 14 post-socialist countries for the period 2001–2020

Source: Developed by the author based on [26].

Figure 4 illustrates the results of the calculation of the coefficient of variation based on the share of expenditures on health care. In contrast to the dynamics of the coefficient of variation calculated on the basis of GDP volume per 1 person, the value of this coefficient of variation fluctuated to a greater extent during the analyzed period, and the slope of the trend line is $y = 0.0044x + 1.1816$ and in general has an upward trend. At the same time, the coefficient value is less than 0.33 during the whole analyzed period, which indicates homogeneity of the population and strengthening of convergent tendencies in this sphere. However, in recent

years, in particular, during the period of the corona-crisis, the coefficient has increased significantly, which indicates the increase of disintegrative trends in health care expenditures of the group of countries under consideration. This can be explained, in particular, by the fact that the share of health expenditures in the GDP structure in some countries has increased significantly (Armenia, the Czech Republic, Estonia, Moldova, Poland, Romania, Slovakia and Slovenia); it has slightly increased in Bulgaria, Latvia, Lithuania; and in other countries on the contrary – decreased (Hungary, Kazakhstan, Ukraine) (Tab. 1).

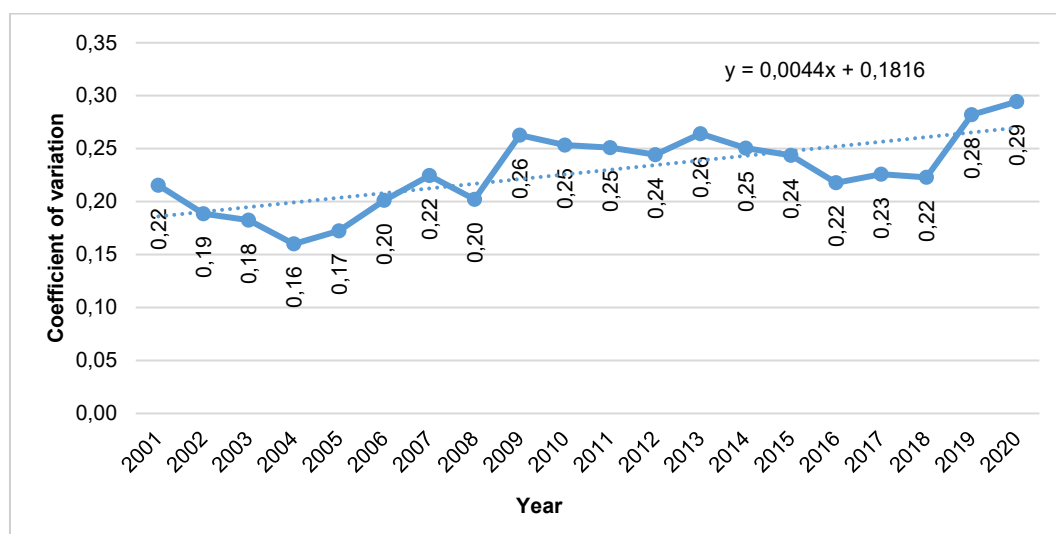


Figure 4. Dynamics of the value of the coefficient of variation calculated on the basis of the health care expenditures share in GDP of 14 post-socialist countries for the period 2001–2020

Source: Developed by the author on the basis of [26].

Figure 5 shows the results of taking into account the coefficient of variation based on the share of education costs in the GDP structure of the countries under consideration. It is important to note that the slope of the trend line is downward and equals $y = -0.0033x + 0.2838$. At the same time, the coefficient value is less than 0.33 during almost the whole analyzed period, which indicates homogeneity of the population and strengthening of convergent trends. At the

same time, from 2001 to 2009 there was an increase in this indicator, which indicates the build-up of divergent trends. However, the period 2009–2019 saw a significant drop in the coefficient of variation calculated on the basis of the share of education spending in GDP, which means that all the countries in the sample increased the amount of the expenditure on education, which reinforces the convergent processes in the analyzed population.

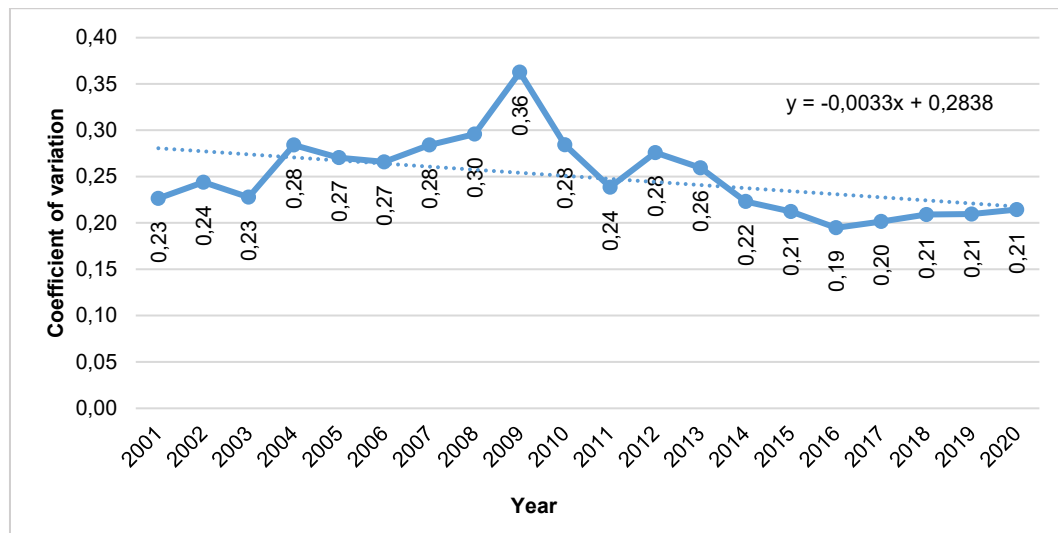


Figure 5. Dynamics of the value of the coefficient of variation calculated based on the expenditures on education share in GDP of 14 post-socialist countries for the period 2001–2020

Source: Developed by the author based on [26].

In order to divide the population of the countries in question into groups and to determine what indicators are used to combine the countries into clusters, we took the above sample of 14 countries of the post-socialist space and typologized the sample countries into groups using cluster analysis with the software environment SPSS. A significant advantage of cluster analysis is that it makes it possible to break down objects not by one parameter but by some features. For the gradation of the countries under study, we

used the previously established indicators of their socio-economic development for the period 2001 and 2020:

- var 1: GDP per 1 person (dollars, according to the PPC),
- var 2: the share of spending on health care (% of GDP),
- var 3: the share of spending on education (% of GDP),
- var 4: unemployment rate (%).

The raw data for the analysis were obtained from the World Bank's indicator database. The summary statistics is presented in Table 1.

Table 1. Indicators of socio-economic development of post-socialist countries for the period 2020 and 2021

Indicator / Year / Country	GDP per capita, \$		Share of health expenditure, % of GDP		Share of education expenditure, % of GDP		Unemployment rate, %	
	2001	2020	2001	2020	2001	2020	2001	2020
Armenia	1547.25	4732.0	4.64	10.5	2.47	2.70	10.9	20.2
Bulgaria	4219.94	9058.73	6.85	7.45	3.38	4.28	19.92	5.71
Czech Republic	15399.89	24261.07	5.88	7.7	3.73	4.71	7.98	2.94
Estonia	10732.27	20851.17	4.77	6.71	5.22	5.04	13.13	6.46
Hungary	10932.09	17570.16	6.82	6.7	4.93	4.23	5.67	4.34
Kazakhstan	5106.63	11518.51	3.47	2.92	3.03	3.11	10.43	6.05
Latvia	7501.55	16713.07	5.78	6.19	5.85	3.83	13.81	8.18
Lithuania	7448.16	18561.14	6	6.56	5.45	5.06	16.84	8.43
Moldova	1538.31	3712.38	5.19	6.59	4.85	6.29	7.28	4.71
Poland	8655.38	17409.02	5.67	6.33	5.32	4.51	18.37	3.54
Romania	5227.25	12085.85	4.37	5.55	3.27	3.05	6.55	4.84
Slovakia	10675.97	20998.84	5.33	6.68	3.94	4.06	19.37	6.78
Slovenia	19088.88	27421.02	7.87	8.29	5.76	4.85	5.67	5.17
Ukraine	2006.26	3224.93	9.72	7.72	4.69	5.96	11.06	9.47

Source: Developed by the author on the basis of [26].

Clustering was performed using the single-relationship method or the nearest-neighbor method using Euclidean distance. Prior to cluster analysis, all variables were

standardized to avoid variance. A dendrogram was plotted separately for each period to compare the results later.

The cluster analysis showed that in 2001 the countries were grouped as follows (Figure 6): the first cluster included Latvia, Poland, Lithuania, Estonia, and Slovakia (countries with an average level of GDP per person and a share of health care expenditures, but with high health care expenditure shares and high unemployment rates). The second cluster included Kazakhstan, Romania, and Armenia (countries with low GDP per capita, the lowest shares of health and education expenditures, but moderate

unemployment rates (6–10 %)). Bulgaria, the Czech Republic, Hungary, Slovenia, Moldova, and Ukraine remained outside the clusters, which showed certain specifics of their socio-economic development in terms of the indicators under consideration. In particular, in 2001 Slovenia had the highest indicator of GDP volume per person (\$19.088), Bulgaria had the highest unemployment rate (19.92 %), Slovenia had the lowest unemployment rate (5.67 %) among the countries under consideration.

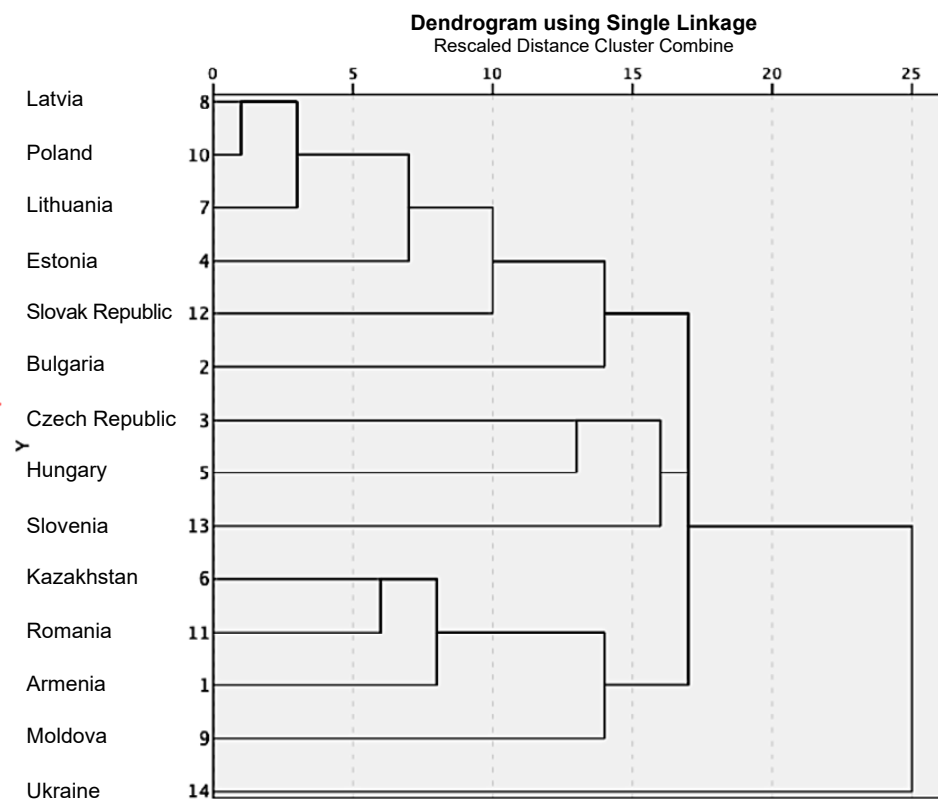


Figure 6. Results of clustering a sample of 14 post-socialist countries according to selected indicators, 2001

Source: Compiled by the author.

It is important to note that the socio-economic development of post-socialist countries after 2001 was influenced by some internal and external factors, including accession to the EU, in particular, in 2004 such countries from the analyzed sample as Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Hungary, and the Czech Republic, and in 2007 – Bulgaria and Romania. The impact of the global financial and economic crisis of 2008–2009 brightly highlighted the problems of the imperfect institutional ordering of the global economic environment, which contributed to the rethinking of the role and functions of national states and influential international organizations in ensuring sustainable development goals. To this should be added the strengthening of global integration, which reduced state control over domestic socio-economic processes, the loss of national governments' monopoly on the implementation of power functions, the shift in the balance of powers from the national to the transnational level, as well as the deployment of the global information and communication revolution [18, p. 198]. The coronavirus pandemic, which began in 2019, contributed to the intensification of crisis trends in the global economy

in general and in the post-socialist countries in particular [1]. Currently, the global economy is experiencing a global systemic crisis caused by the Russian-Ukrainian war. It is generally recognized that this crisis is a global, civilizational, which will lead to a transition to qualitatively new world order. At the same time, the transition from the old system of institutional adjustment to the new order is characterized by an increased level of instability and unpredictability of possible scenarios of the development of post-socialist countries. Under these conditions, the problem of ensuring their stable and secure socio-economic development acquires particular weight [16, p. 58–59]. Given the limitations of statistical data, the author conducted a cluster analysis of a selected sample of countries in 2020 in the context of identifying convergent or divergent trends in their evolution.

As Figure 7 shows, in 2020, the countries were clustered as follows: the first cluster included Hungary, Poland, Lithuania, Slovakia, Estonia, Latvia, Bulgaria, Czech Republic, Slovenia (characterized by high GDP per capita (\$ 9–27 thousand), approximately the same share of spending on health care (at about 6–8 %), a high share of

the expenditure on education (4–5 %) and low unemployment rate (up to 8.5 %). The second cluster included Kazakhstan and Romania, the countries with average GDP per capita (about \$12,000), the lowest share of healthcare expenditures (up to 5.5 %) and low education expenditures in the GDP structure (up to 3.5 %), and low unemployment rates (4–6 %). A separate third cluster was formed by Moldova and Ukraine, which were grouped mainly

due to the comparable volume of GDP per person (up to \$ 3,700), approximately the same share of spending on health care (about 7 %), the highest share of spending on education (about 6 %) and a low level of unemployment (up to 9.5 %). During this period, only Armenia left out of the clusters with the highest share of health care spending (10.5 %) and simultaneously the lowest share of education spending (2.7 %), the highest unemployment rate (20.2 %) in 2020.

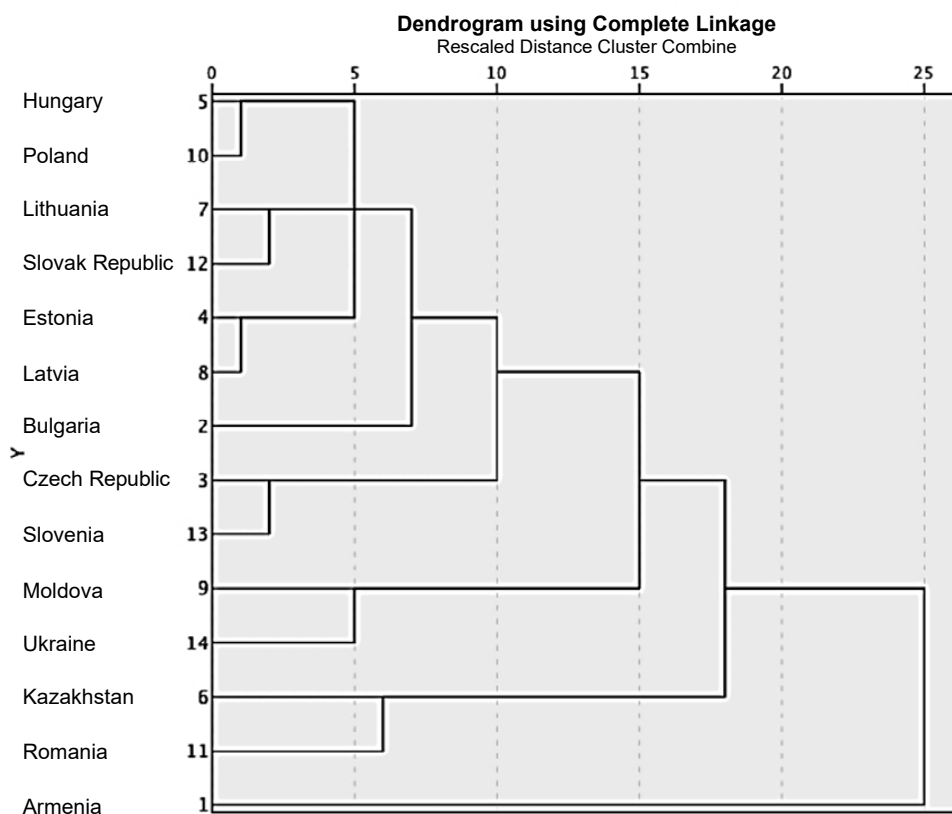


Figure 7. Results of clustering a sample of 14 post-socialist countries according to selected indicators, 2020.

Source: Compiled by the author

Thus, the clustering of post-socialist countries by the level of their socio-economic development for the period of 2001 and 2020 testified to the unevenness of this process and the presence of convergent-divergent trends in the spheres in question. We can conclude that over the 20 years of market transformations, specific shifts took place, as a result of which some countries became closer in terms of socio-economic development indicators, while others, on the contrary, were characterized by differences in the corresponding vectors of socio-economic dynamics. The results of clustering the selected sample of countries are summarized in Table 2.

It is important to note that a significant impact on the deployment of convergent, divergent trends in the development of the world countries in general and post-socialist countries, in particular, was made by the current acute phase of the Russian-Ukrainian war. According to scientists and practitioners, now for our country there is a turning point on the way of departure from the previous "Soviet" trajectory of evolution and reorientation to the "pro-European" vector of economic and social development. We

are also talking about a significant strengthening of systemic concurrent trends in the development of the world, the driver of which is modern Ukraine, and the deployment of unprecedented divergent processes of development of the Russian Federation and the civilized world. At the same time, the world is experiencing significant negative consequences of the Russian invasion of Ukraine [6, 8, 13]. In particular, the experts of the National Institute of Economics and Social Research have built the econometric model NiGEM (National Institute Global Econometric Model), according to which it was predicted a decrease of the world GDP by 1 % by 2023, which is about \$1 trillion view of the world GDP, and also the increase of the world inflation rate by about 3 % in 2022 and by 2 % in 2023 [12]. New world order is developing now, and countries are waiting for new opportunities for economic development, domestic political reforms, investment attraction, resolution of regional conflicts, etc. There are new initiatives and concepts within the EU, which provide great opportunities for Ukraine on the way to European integration, particularly the Associated Trio, the Trio 2030 Strategy, and

the Marshall Plan for Ukraine. Noting that the post-war reconstruction of Ukraine will have a Euro-integration direction, experts emphasize possible scenarios of Ukraine's development as an EU member: "quiet integration," which does not foresee the perspective of Ukraine's membership in the EU, but only economic cooperation; "Russian hegemony" which will put Ukraine under full control of the Russian Federation; 3) "cooperation between EU and Russia" which assumes their alliance against the global leadership of China, while countries of Eastern Europe will become part of the geopolitical and political system. At the same time, other

analysts note that these scenarios are very abstract, as they do not take into account various regional and global trends, security issues, energy, economic dynamics, technological changes, demographic and social problems, which are impossible to predict and predict. In this context, institutional factors as a factor of convergent-divergent development of post-socialist countries, which will be aimed at resolving existing military-political conflicts, settling global imbalances, stabilizing the world economic development, acquire an important role [9, p. 149].

Table 2. Results of the post-socialist countries clustering

Country	Number of cluster		Comments
	2001	2020	
Estonia	1	1	The countries with high GDP per capita and the share of spending on education, with high indicators of the share of spending on health care, but also with a high level of unemployment. In 2020, the Czech Republic, Slovenia, Bulgaria, and Hungary joined them, mainly due to the reduction of unemployment in the cluster 1 countries.
Latvia	1	1	
Lithuania	1	1	
Poland	1	1	
Slovakia	1	1	
Czech Republic	-	1	Due to improved indicators of GDP per capita and expenditures in the field of health care and education, the country joined the cluster of leading European countries
Slovenia	-	1	Continued to show the best results of all analyzed indicators among the countries of the sample during the 20 years, but in 2020 entered the cluster 1 countries, in particular, due to their improved socio-economic development indicators
Hungary	-	1	Due to a significant increase in GDP per person, it moved into the cluster of leading European countries
Romania	2	2	Romania's place in the sample has not changed in 20 years, while there was a significant density of ties with Kazakhstan, particularly by the lowest share of health care spending and the low level of education spending in the GDP structure, as well as low unemployment rates.
Armenia	2	-	Out of cluster #2 and found itself outside of groupings due to the high unemployment rate among the entire sample
Bulgaria	-	1	Due to a significant decrease in the unemployment rate and a general improvement of other analyzed indicators, it caught up with cluster 1 countries and in 2020 was in the same group
Kazakhstan	2	2	Kazakhstan's place in the sample has not changed over 20 years, with a significant density of association with Romania, particularly in terms of the lowest share of health care spending and the low level of education spending in the GDP structure, as well as the low level of unemployment
Moldova	-	3	In 2020, there is a significant density of connections between Moldova and Ukraine, which united them into a separate cluster, in particular, by the volume of GDP per person among the analyzed set of countries, high volume of spending on health care and education and a moderate level of unemployment
Ukraine	-	3	

Source: Compiled by the author

Conclusions. The comparison of such indices of socio-economic development, such as GDP per capita, the share of expenditure on public health, the share of expenditure on education in the GDP structure, and the unemployment rate, for the period of 2001–2020 for 14 post-socialist countries, including Armenia, Bulgaria, Czech Republic, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Poland, Romania, Slovakia, Slovenia, and Ukraine, let us state that despite approximately the same starting conditions at the beginning of market reforms, as of 2001 certain differences began to appear.

In particular, according to the calculation of the coefficient of variation of GDP per capita, the unemployment rate, the share of expenditures on health care, and the share of spending on education in the GDP structure for the period 2001–2020, it can be concluded that the indicator is cyclical, which means the simultaneous strengthening of both convergent and divergent tendencies. According to the results of clustering, it can be argued that the main "convergence club" among the post-socialist countries under consideration is formed by the EU

member states, and it is them that are characterized by a high level of analyzed indicators.

Thus, despite approximately equal opportunities at the beginning of their independence and development of statehood, post-socialist countries have demonstrated different results of socio-economic development, which indicates the effectiveness of market reforms. The point is that there is not only convergence of the nations, but also strengthening of divergence. This is illustrated by the differentiation of indicators of socio-economic well-being, and therefore requires a more profound study, in particular, the study of the main tools and consequences of reforms in different countries, the study of their feasibility in Ukraine; on what socio-economic problems they can be directed.

Discussion. The conducted comparative analysis showed that the problem of convergent and divergent development of post-socialist countries is relevant and requires more in-depth research, in particular, to determine the influence of various global, political, national factors on the socio-economic development of the selected countries, the essence and consequences of the reforms conducted after the collapse of the Soviet Union, as well as to study the

dependence of economic development trajectory on history, cultural, religious features of the region, the institutional component. In particular, it should be noted the importance of conducting a re-study of the updated statistics, which will take into account the turning point for the whole world in 2022.

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I. Шемахіна, асп.

Київський національний університет імені Тараса Шевченка, Київ, Україна

СОЦІАЛЬНО-ЕКОНОМІЧНИЙ РОЗВИТОК ПОСТСОЦІАЛІСТИЧНИХ КРАЇН: СУПЕРЕЧЛИВІ ТЕНДЕНЦІЇ ТА ВИКЛИКИ СУЧАСНОСТІ

Здійснено аналіз соціально-економічного розвитку 14 постсоціалістичних країн впродовж 2001–2020 рр. Висвітлення динаміки коефіцієнта варіації на основі показника ВВП на 1 особу, частки витрат на охорону здоров'я, частки витрат на освіту та рівня безробіття в зазначених країнах, а також їхнє кластерування уможливило висновок щодо суперечливого поєднання двох тенденцій еволюції цих країн, а саме: одночасного розгортання процесів дивергенції й асиметричності їхнього соціально-економічного розвитку та розгортання процесів конвергенції, формування окремих кластерів цих країн. Досліджено місце України серед аналізованих країн у період 2001–2020 рр. та за сучасних умов. Зроблено висновок, що показники соціально-економічного розвитку України демонструють циклічну динаміку під впливом глобальних чинників і потрясінь з урахуванням переломних для всього світу подій 2022 р. Зазначено, що нині відбувається розбудова нового світового порядку, з'являються нові ініціативи й концепції в межах ЄС, які надають Україні великі можливості на шляху до євроінтеграції. У цьому контексті важливою ролі набувають інституційні фактори як чинник конвергентно-дивергентного розвитку постсоціалістичних країн, що будуть спрямовані на залагодження наявних воєнно-політичних конфліктів, урегулювання глобальних дисбалансів, стабілізацію світового економічного розвитку.

Ключові слова: постсоціалістичні країни, глобалізація економіки, конвергенція соціально-економічного розвитку постсоціалістичних країн, дивергенція соціально-економічного розвитку постсоціалістичних країн, глобальні дисбаланси, глобальні потрясіння.

EXTENDED ABSTRACT IN ENGLISH AND REFERENCES (IN LATIN): TRANSLATION / TRANSLITERATION / TRANSCRIPTION

O. Bulkot, PhD of Economics, Associate Prof.
ORCID ID 0000-0002-6311-1459
Taras Shevchenko National University of Kyiv, Kyiv, Ukraine
DOI: <https://doi.org/10.17721/1728-2667.2022/218-1/1>
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SUSTAINABLE INVESTING: WORLD PRACTICE AND PERSPECTIVES FOR NATIONAL ECONOMY OF UKRAINE

The article is devoted to investigating the basics and trends of the development of sustainable investing in the global economy and the practice in Ukraine. Sustainable investing is defined as an investment approach referring to environmental, social, and governance (ESG) factors in selecting and managing investments. A comparison of responsible and sustainable investments is made. Sustainable investing is shown to be much more extensive than the responsible one and includes not only ESG strategies of the companies but as well introducing and performing some (or all) of UN principles of sustainable development in their businesses. The following basic sustainable investment strategies are defined: Negative/exclusionary screening, Integration of ESG factors, Corporate engagement&shareholder action, Norms-based screening, Best-in-class/positive screening, Negative/exclusionary screening, and Sustainability themed/thematic investing. Current trends based on statistical data analysis are shown in implementing sustainable investment strategies. The author proves the appearance of a new paradigm of development and interrelations in national investment ecosystems through forming new factors in investment environments and definitely other interaction models, as well as the regulative principles to be introduced and policies to be developed. The sum-up of existing practices in implementing sustainable investment strategies in Ukraine is made. It is stated that the institution of corporate social responsibility, the implementation of the principles of sustainable development in the activities of economic entities at all levels, and the development and implementation of sustainable investment strategies in Ukraine are currently in their infancy. Also, suggestions about profitable products in the Ukrainian investment ecosystem in the post-war renovation are made.

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B. Zasadnyi, Doctor of Economics, Associate Prof.
ORCID ID 0000-0002-5308-7248,

O. Mykhalska, PhD of Economics, Associate Prof.
ORCID ID 0000-0003-1921-6293,

Y. Feshchenko, PhD of Economics, Associate Prof.
ORCID ID 0000-0002-5673-7672

Taras Shevchenko National University of Kyiv, Kyiv, Ukraine,

A. Shapoval, Chartered Certified Accountant (ACCA)
Internal Auditor, Goldman Sachs

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THE ROLE OF PUBLIC SECTOR ACCOUNTANT IN THE MODERN SOCIETY

The article identifies the role of public sector accountants in creating value for the state and society and suggests possible ways to improve skills in making professional judgments. Public accountants should provide the necessary information for decision-making and check the current activities of public organizations. The accountant of the public sector institution informs the population and allows assessing the efficiency and cost-effectiveness of the institutions that provide public services. Thus, for an accountant working in public administration, it is important to provide information primarily to meet the information needs of citizens, NGOs and society in general, to determine the cost of maintaining these bodies – how much taxpayers work for civil servants. At the same time, despite the existing problems and troubles, the profession of accountant is constantly evolving in response to the constant development of socio-economic relations, introduction of new innovative technologies and integration of society, which leads to growth, organization in solving problems and advocating. Despite this key role of accounting in the public sector, it is underestimated compared to accounting in the corporate sector, both scientifically and professionally. The role of higher education institutions is to provide students with the skills necessary not only to enter the profession, but also to solve environmental, economic and social problems. The role of professional accounting organizations is to develop the profession as a whole – both in the private and public sectors. The factors of negative influence on the development of the accounting profession in the public sector are identified and directions for increasing its prestige are proposed. The acquisition of new knowledge and practical skills and the identification of barriers to the acquisition of relevant skills in accordance with international best practices and standards contribute to the role of accountants in the public sector and increase their social value, especially in the context of international practices.

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I. Lytvynova, PhD Student
ORCID ID 0000-0001-5858-1686

Taras Shevchenko National University of Kyiv, Kyiv, Ukraine
DOI: <https://doi.org/10.17721/1728-2667.2022/218-1/3>
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DIRECTIONS FOR IMPROVING THE CUSTOMS MECHANISM IN UKRAINE AFTER THE WAR ON THE WAY TO SUSTAINABLE DEVELOPMENT

Studies have been carried out whether the main functions of the customs tariff mechanism have changed during martial law and the priority of the functions of the customs tariff mechanism during the war has been determined. It is proved that the impact of customs tariffs on the sustainable development of Ukraine is essential, looking at the super-large import component of most Ukrainian goods, as well as the large impact of imported goods on the domestic market during the downtime of their own production. During the war, there are destructive processes associated with the impossibility in most cases to compete in the market of finished products in the world. Most of the finished products in Ukraine go to domestic consumption during the war, which is contrary to global development and globalization trends. A hypothesis has been put forward that these destructive processes are mostly due to the lack of working capital of Ukrainian enterprises during the state of war, and the increase in the cost of the logistics component, which is part of the tax base for imports. Even though the Ukrainian market is increasingly open to foreign manufacturers, it is a complex and long-term competition between Ukrainian and foreign producers, both in the domestic and foreign markets. It is determined that one of the most significant factors of influence are customs tariffs, and VAT is one of the largest burdens on imports. With the help of comparison, a possible reduction in the burden on Ukrainian enterprises during import and export was analyzed, and possible tools were identified that would create new jobs or reinvest earned business funds in the country's economy. The tools were found when conducting a comparative analysis of the customs tariff mechanism before the war and during the war in Ukraine, considering the goals of sustainable development. Quantitative and qualitative impact to selected macroeconomic indicators of Ukraine after implementation of deferred payment for VAT in import of goods analyzed. Qualitative impact was analyzed to show us result of calls on surveys to understood business attitudes, and interests according to the implementation of deferred payment for VAT in import of goods in Ukraine.

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A. O. Moscardini, Prof.
ORCID ID 0000-0003-4951-0848
Cardiff Metropolitan University, UK,
K. Lawler, Prof.

ORCID ID 0000-0002-3409-6755
University of Kuwait, Kuwait,
T. Vlasova, Visiting Research Fellow

ORCID ID 0000-0002-5000-6756
Northumbria University at Newcastle, UK,
I. Pavlenko, Dr Hab.

ORCID ID 0000-0002-5687-778X
University of Warsaw, Poland

DOI: <https://doi.org/10.17721/1728-2667.2022/218-1/4>
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THE MAP IS NOT THE TERRITORY: A CRITICAL EVALUATION OF CURRENT ECONOMIC THINKING

This paper purports that throughout history, there has been continuous interplay between the ideals of individual disciplines and the prevailing weltanschauung. It then suggests, using examples from the Arts, Physics and Neuroscience, that the current weltanschauung is gradually adopting a systems view. Economic theory provides a map for human behaviour but can never replicate the whole. The map is not the territory. The paper then critically evaluates the effects of a systems weltanschauung on Economic theory and practice. The current age is strongly connected with environmental issues. The attitudes, values and morality of Gen Z (people born after 1995) are very different to those of previous generations. Gen Z demands a stronger ethical/moral aspect to political, social and economic life and environmental principles. A systems weltanschauung will combine a RV (which is aware of our physical presence in a undifferentiable, changing world, accepts a greater role for emotions, and uses reason to adjust to the world rather than master it) and a OV (which sets this presence in an individualised abstract way which it uses for planning and possibly controlling reality). It ends with an appeal for an interdisciplinarity of experts to enable the solution of current global problems. The thread to this paper is: first, the meaning of a systems weltanschauung is discussed. The paper then looks for signs and indications for the emergence of such a weltanschauung. This then initiates a critical evaluation of current economic thinking. It is hoped that such critical analysis and reflections will lead to a new level of 'understanding economics' rather than 'economic understanding' which would allow Economics to fulfil its potential as a useful and needed contributor to the global problems of today. Systematic learning and education through art and music were regarded as just as important as mathematics to the training of the mind. The ability to think critically was more important than strict vocational training.

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H. Polianovkyi, PhD Student
 ORCID iD 0000-0001-5664-7207
 Taras Shevchenko National University of Kyiv, Kyiv, Ukraine
 DOI: <https://doi.org/10.17721/1728-2667.2022/218-1/5>
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RESHAPING HIGHER EDUCATION FUNDING IN UKRAINE: FROM THE SOVIET-ERA FUNDING MODEL TO THE PERFORMANCE-BASED FUNDING

This article focuses on a specific reform in the Ukrainian higher education sector taken place in recent years. The reform is aimed at changing the funding model for higher education institutions. The previous outdated Soviet-era funding model inherited by Ukraine in the 90s has been criticized a lot in the last decades. Hence, the current implementation of performance-based funding in Ukraine is considered as a significant move toward better public sector management. This paper starts with an overview of existing funding models in the higher education sector, analyzing both their advantages and disadvantage. Then it examines current trends in change of funding mechanisms in the higher education sector. Finally, it discovers a considerable reshaping of the higher education funding in Ukraine that has shifted from the Soviet-era funding mechanism to modern performance-based funding. The reform is a logical consequence of a broader international reform agenda of higher education funding and adherence of Ukraine to the European path. The reform in the Ukrainian higher education system resulted from new liberal economic and political agenda that has replaced Soviet-era ideas, combined with the impact of European Union accession conditions. Therefore, the Ukrainian higher education system, as well as the other Ukrainian public sector systems, should be harmonized with European Union's recommendations. Currently, it is difficult to reach a definitive conclusion on whether the PBF is a sufficient mechanism of financing higher education sector or not. To obtain a complete picture, it is crucial to analyze the PBF in different contexts. Despite the debatable nature of performance-based funding, no funding model can fit all contexts and institutional landscapes. Hence, it may always be important to adjust and keep a funding mechanism up to date in accordance with the institutional demands and modern trends and analyze intended and unintended effects of evolving funding mechanisms, particularly in the post-Soviet landscape because it is recognized as a new call for researchers in examining higher education sector reforms.

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N. Prykaziuk, Doctor of Economics, Prof.

ORCID ID 0000-0002-7813-8590

L. Gumenyuk, PhD Student

ORCID ID 0000-0002-2803-913X

Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

DOI: <https://doi.org/10.17721/1728-2667.2022/218-1/6>

p. 39-44

PANDEMIC COVID-19 AS A KEY FACTOR IN THE DEVELOPMENT OF DDOS-ATTACKS INSURANCE

The COVID-19 pandemic was a turning point for all participants in economic relations. The insurance market has faced new challenges related to format of cooperation with clients changing, as well as the transformation of clients' business. Remote work has identified threats that can not only stop the industry, but also destroy it. One example of such threats is DDoS-attacks, targeted at stopping the computer systems of the victims of the attack. In 2021, the share of organizations that suffered losses after DDoS-attack increased to 86.2 %, which is 9 p.p. more than before COVID-19 pandemic. IT administrators sometimes don't notice the consequences of attacks, so they can't assess the state of their business entirely. Cybersecurity experts should be involved in this monitoring, but often they only restore IT-systems, without compensation. The set of services in cyber-insurance policy consists of: monitoring the client's IT systems, providing recommendations for its improvement, assistance in case of DDOS-attack, payment of compensation and restoration of reputation. Therefore, DDoS-attacks insurance has become more popular during the COVID-19 pandemic. The volume of the cyber-insurance market grew by 39 % in 2020 and reached \$7 billion vs 2018. The main insurers in this area are media and publications, as all their activities are built on the Internet-based systems.

The article examines the transformation of the cyber insurance market in the world before and after the beginning of COVID-19 pandemic. The state and prospects of DDoS-attacks insurance are considered and the necessity of development of this type of insurance in Ukraine is proved. Recommendations are provided for the introduction of cyber DDoS-attacks insurance products in the portfolio of Ukrainian insurance companies in the context of the Digital Strategy of Ukraine 2030.

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I. Shemakhina, PhD Student

Taras Shevchenko National University of Kyiv

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SOCIO-ECONOMIC DEVELOPMENT OF POST-SOCIALIST COUNTRIES: CONTRADICTIONARY TRENDS AND CHALLENGES OF THE PRESENT

The article analyses the social and economic development of 14 post-socialist countries from 2001 to 2020. By assessing their clustering, a conclusion was made about the contradictory combination of two evolution tendencies of these countries: simultaneous deployment of processes of divergence, asymmetry of their social and economic development and deployment of convergence processes, and formation of separate clusters of the specified countries. In particular, the European Union member states, such as Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Bulgaria, Hungary, and the Czech Republic, formed a separate cluster in 2020, characterized by the highest GDP per capita in the group, the share of expenditure on education and the highest level of the spending on health care in GDP. A separate cluster was formed by Ukraine and Moldova, potential EU candidate countries. The place of Ukraine among the considered countries in the period 2001-2020 and in modern conditions was analyzed. It was concluded that the indicators of socio-economic development of Ukraine demonstrate cyclical dynamics under the influence of global factors and shocks, taking into account the turning point events for the whole world in 2022. It was noted that new world order is currently developing. There are new initiatives and concepts within the EU, which provide great opportunities for Ukraine for European integration. In this context, the institutional factors of convergent and divergent development of post-socialist countries, which will be aimed at resolving the existing military and political conflicts, settlement of global imbalances, stabilization of world economic development, have an essential role.

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INFORMATION ABOUT AUTHORS (META-DATA)

Булкот Оксана Вікторівна – кандидат економічних наук, доцент кафедри міжнародної економіки та маркетингу економічного факультету, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: oksanabulkot@knu.ua

Bulkot Oksana – PhD of Economics, Associate Professor at the Department of International Economics and Marketing, Faculty of Economics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Засадний Богдан Андрійович – доктор економічних наук, доцент, завідувач кафедри обліку та аудиту, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: bzasadnyi@narda.org.ua

Михальська Олена Леонідівна – кандидат економічних наук, доцент кафедри обліку та аудиту, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: olena.mykhalska@gmail.com

Фещенко Євгенія Аркадіївна – кандидат економічних наук, доцент кафедри обліку та аудиту, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: evgeniya.feshchenko@gmail.com

Шаповал Андрій Сергійович – сертифікований бухгалтер (ACCA), внутрішній аудитор, Goldman Sachs

Контактна інформація: andriishapoval116@gmail.com

Zasadnyi Bohdan – Doctor of Economics, Associate Professor, Head of the Department of Accounting and Auditing, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Mykhalska Olena – PhD of Economics, Associate Professor of the Department of Accounting and Auditing, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Feshchenko Yevheniya – PhD of Economics, Associate Professor of the Department of Accounting and Auditing, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Shapoval Andrii – Chartered Certified Accountant (ACCA), Internal Auditor, Goldman Sachs

Литвинова Євгенія Василівна – аспірант, кафедра фінансів, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: +38 066 7408 571

Lytvynova levgeniia – PhD Student, Finance department, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Москардіні Альфредо – професор, Кардіффський університет, Кардіфф, Велика Британія

Контактна інформація: amoscardini@cardiffmet.ac.uk

Лоулер Кевін – професор, Кувейтський університет, Кувейт, Держава Кувейт

Контактна інформація: kevinlawler.kl@gmail.com

Власова Тетяна – науковий співробітник, Нортумбрійський університет, Ньюкасл, Велика Британія

Контактна інформація: tanya.vlasova@northumbria.ac.uk

Павленко Ірина – професор, Варшавський Університет, Польща

Контактна інформація: i.pavlenko2@uw.edu.pl

Moscardini Alfredo – Professor, Cardiff Metropolitan University, UK

Lawler Kevin – Professor, University of Kuwait, Kuwait

Vlasova Tetyana – Visiting Research Fellow, Northumbria University, UK

Pavlenko Iryna – Dr Hab., University of Warsaw, Poland

Поляновський Гліб Аркадійович – аспірант, кафедра фінансів, банківської справи та страхування, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: +38 050 335 0338, g.polianovskiy@gmail.com

Polianovskiy Hleb – PhD Student, Department of Finance, Banking and Insurance, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Приказюк Наталія Валентинівна – доктор економічних наук, професор, зав. кафедри страхування, банківської справи та ризик-менеджменту, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: pnvuniv15@ukr.net

Гуменюк Людмила Сергіївна – аспірантка кафедри страхування, банківської справи та ризик-менеджменту, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: mila20071997@gmail.com

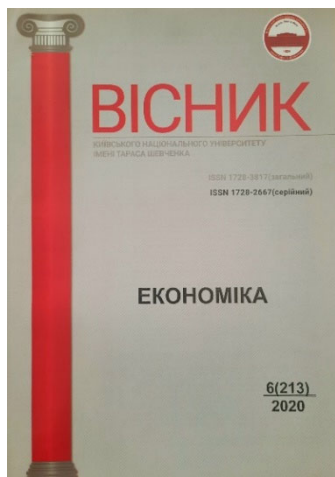
Prykaziuk Nataliia – Doctor of Economics, Professor, Head of Department of Insurance, Banking and Risk Management, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Gumenyuk Lyidmila – PhD Student, Department of Insurance, Banking and Risk Management, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Шемахіна Ірина Вадимівна – аспірантка, кафедра економічної теорії, макро- та мікроекономіки, Київський національний університет імені Тараса Шевченка, Київ, Україна

Контактна інформація: ira_904@ukr.net

Shemakhina Iryna – PhD Student, Department of Economic Theory, Macro- and Microeconomics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine



Editorial Report 2021

the Journal "BULLETIN OF TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV. ECONOMICS"

by Oksana Bulkot, Executive Editor

This annual report presents the summary statistics on the operations of the Bulletin in 2021. Since 2014, this report is published on the Bulletin website in a continued effort to increase the transparency of the editorial process:

<http://bulletin-econom.univ.kiev.ua/editorial-board/the-editorial-policy>

The report provides insights to the Bulletin for authors, reviewers, and readers about how the editorial team has improved its responsibilities.

General situation

BULLETIN OF TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV. ECONOMICS is the academic periodical of Taras Shevchenko National University of Kyiv, Faculty of Economics. The journal covers a range of research topics in economic theory, insurance, risk management, reinsurance, public administration, international economics, business economics, management, marketing, investment management, theory of finance, banking, statistics, the ways and means of solving these problems. The journal is intended for researchers, practitioners, teachers and students.

The journal is published 4 times a year. It is peer-reviewed and indexed in international scientometric databases (Index Copernicus, Google Scholar, DOAJ, RePEc, Maksymovych Scientific Library, Vernadsky National Library of Ukraine, etc.). Scientific publication is included in the List of scientific professional publications of Ukraine, category "B" (Order of the Ministry of Education and Science of Ukraine No 409 of 17.03.2020). Certificate of state registration KV No 19866-9666PR from 29.04.2013.

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- staff of Taras Shevchenko National University of Kyiv;
- members of Editorial Board;

• if the article is co-authored: 1) staff for free, the co-author pays 1/2 or 1/3 of the cost of the article (depends on the number of authors); 2) if the co-author from the partner university together with the KNU employee is free of charge; 3) If the authors of the university-partner without our employee then authors of the article – PAY (the cost is divided by the number of authors)

The issues are printed in Publishing center "Kyiv University". This allows the journal fulfill its long-standing public service mission of well-regarded and respected academic discourse.

In 2021 **4 issues** were produced (the normal number) – <http://bulletin-econom.univ.kiev.ua/archive/2021-2>

As pursued, during 2021 the issues of the journal were published within schedule and included:

- **28 papers** printed, every 2nd paper is printed in English;
- **61 unique** authors, every 4th author is from all over the world.

We clearly see a jump in Journal's internationalization and share of papers in English.

As to citation: h-index (median) = 20, i10-index = 61 (Google Scholar).

The Editorial Board felt that this was a particularly good year for high quality submissions.

The geographical distribution of all authors of accepted papers over the year: Ukraine, Bulgaria, Chile, Germany, Hungary, Kazakhstan, Kuwait, the Netherlands, Nigeria, Norwegian, and Romania. In 2021 turnaround times for editorial feedback to authors were as follows: max – 1 month, min – 5 days.

Indexing

For nowadays, we are indexed and abstracted in: more than 20 databases (Google Scholar, Index Copernicus, J-Gate, DOAJ, Science Index, Ulrich's Periodicals Directory, RepEc, CrossRef, OCLC WorldCat, Microsoft Academic Search, EconPapers, etc):

<http://bulletin-econom.univ.kiev.ua/abstracted-indexed>

Third year in a row **we received 100 points in Index of Copernicus.**



English title: Bulletin of Taras Shevchenko National University of Kyiv.
Economics.

ISSN: 1728-2667 (print), 2079-908X (online)

GICID: n/d

DOI: 10.17721

Website: <http://bulletin-econom.univ.kiev.ua/>

Publisher: Taras Shevchenko National University of Kyiv, Publishing center
"Kyiv University"

Country: UA

Language of publication: DE RU EN UA

Deposited publications: 563 > Full text: 99% | Abstract: 100% | Keywords: 100% | References: 100%

Issues and contents

Impact factors are highly volatile, especially for journals that recently got indexed in the Index, and hence caution is advised at the time of evaluating these results. However, these results do suggest that there exist good opportunities for a high-quality international and generalist journal in economic field, such as the BULLETIN OF TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV. ECONOMICS and that pursuance of tolerance in the editorial policy towards various research paradigms and methods of conducting research will definitely make the Bulletin a "first choice" journal.

Statistics

Year	Prev. meth.	Act. meth.
2019		100.00
2018		100.00
2017		100.00
2016		78.52
2015		70.91
2014		67.43
2013	6.54	

The Statistics of 2017-2021:

Year	Volume	Articles	Authors	Foreign authors	Ukrainian authors	Articles in English	Articles in Ukrainian	Articles in other languages	Countries	Universities, organizations
2017	190	9	11	0	11	0	9	0	1	4
	191	8	11	8	3	8	0	0	7	8
	192	7	11	3	8	1	6	0	2	5
	193	8	10	0	10	0	8	0	1	8
	194	10	13	0	13	0	10	0	1	5
2018	195	6	14	2	12	5	0	1	2	8
	196	13	18	0	18	0	18	0	1	8
	197	8	13	1	12	0	8	0	2	8
	198	12	27	21	6	12	0	0	5	11
	199	8	11	2	9	1	7	0	2	6
2019	200	9	18	3	15	1	8	0	2	9
	201	11	20	13	7	7	4	0	4	6
	202	8	18	8	10	5	2	1	5	9
	203	8	12	3	9	2	6	0	3	8
	204	9	19	5	14	2	7	0	4	9
2020	205	8	15	5	10	3	5	0	4	9
	206	6	13	3	10	2	4	0	4	6
	207	6	11	0	11	2	4	0	1	5
	208	6	16	5	11	3	3	0	4	7
	209	6	13	6	7	3	3	0	4	4
2021	210	6	14	9	5	4	2	0	4	6
	211	6	15	5	10	2	4	0	5	7
	212	6	14	4	10	2	4	0	2	5
	213	6	10			0	6	0	1	3
	214	6	12	3	9	6	0	0	4	7
	215	6	10	2	8	1	4	1	2	6
	216	8	22	8	14	5	2	1	8	10
	217	8	16	3	13	2	6	0	3	5

The past year has been another good one for the journal. As **Statistics** shows, the number of our **foreign authors** reached a new high of 37% of total at the end of 2021. The total accepted articles in English is 50% of total and 2 extra were in German so the average articles submitted in foreign language is reached almost 60%, reflecting the growing international status of the journal, which now receives papers from over 10 countries each year. Average rate of papers' decline is 22%. We have just a few recalls by authors. We have a double peer-review system.

The journal has free access to archive and we have already thousands of visitors.

People also read our papers – at least they download them!

Series-Handle: repec:scn:pnoeeq

Address on IDEAS: <https://logec.repec.org/scripts/seriesstat.pl?item=repec:scn:pnoeeq>

Page views (file downloads) on participating RePEc services:

Last month (2021): 171 (25)

Last 3 months (2021): 483 (69)

Last year (2021): 1 793 (280)

Since start: 22 267 (2 902)

Top items in the series: <http://logec.repec.org/scripts/seritemstat.pl?h=repec:scn:pnoeeq>

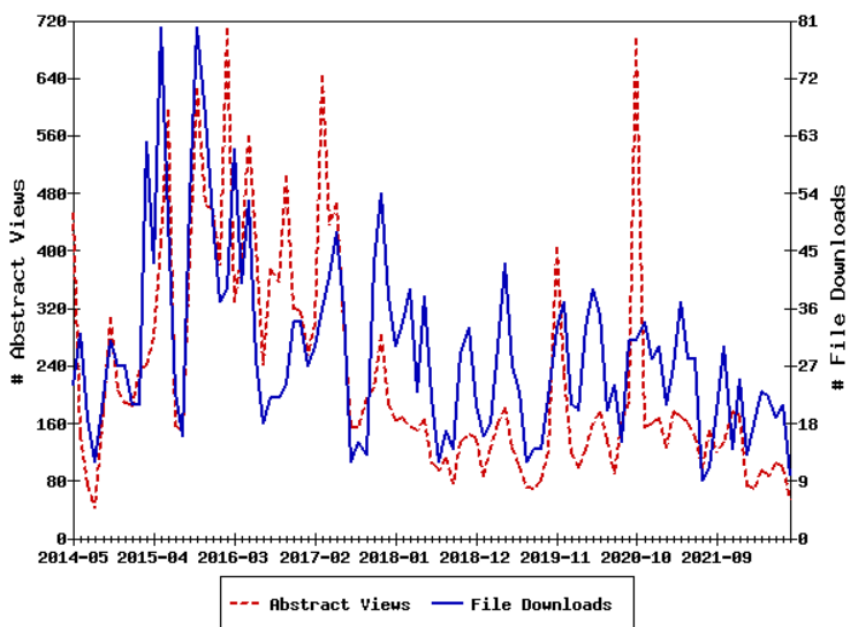
Access Statistics, 2021

2021-01	30	168
2021-02	21	126
2021-03	27	176
2021-04	37	169
2021-05	28	161
2021-06	28	142
2021-07	9	98
2021-08	11	150
2021-09	20	120
2021-10	30	135
2021-11	14	177
2021-12	25	171

The most downloaded papers according to RePEc services:

Top 10 journal articles by file downloads

Rank	Journal Article	Abstract Views			File Downloads		
		3 months	12 months	Total	3 months	12 months	Total
1	Cryptocurrency: Era and Field of Financial Innovations <i>V. Korneev and O. Cheberyako</i>	14	49	129	4	11	42
2	Implementation of Statistical Indicators to Analysis of Effectiveness of Cash-Flows of the Enterprise <i>H. Rohanova</i>	1	15	23	0	10	14
3	Technical and Functional Opportunities of Sap Business One Use in Ukrainian Companies <i>I. Derun</i>	0	21	37	0	9	18
4	Influence of Modern Geopolitical Challenges on State's Economic Security <i>Andriy Stavytskyi</i>	8	15	47	2	8	16
5	Profitability, Liquidity, Leverage and Corporate Governance Impact on Financial Statement Fraud and Financial Distress as Intervening Variable <i>A. N. Adi, Z. Baridwan and E. Mardiaty</i>	6	31	97	1	8	36
6	How Internal Risk – Based Audit Appraises the Evaluation of Risks Management <i>N. Dorosh</i>	4	16	44	1	7	17
7	The Role of Public Debt Management in Financial Stability of Ukraine <i>Z. Varnalii and O. Savilova</i>	2	8	20	0	6	11
8	BREXIT Fallout for British and World Insurance Market: Operational and Institutional Aspects <i>D. Rasshyvalov</i>	1	9	31	1	6	16
9	Analysis Models of Profitability in Agriculture <i>S. Bumbescu</i>	6	22	105	1	6	31
10	Финансовые ресурсы страховых организаций и направления их размещения <i>Д. Нестерова</i>	1	7	104	0	5	15



Impact factors for all years (last 10 years) show stable upward dynamics:

Simple impact factor: 0.05 (0.033)

Recursive impact factor: 0.001 (0.002)

Discounted impact factor: 0.011 (0.011)

Recursive discounted impact factor: 0.001 (0.002)

h-index: 3 (3)

Euclidian citation score: 5.264 (4.288)





Aggregate ranking: 4556.39 (3436.85)

For more details, see: <http://ideas.repec.org/top/#series>

Our ranks in

Index Copernicus gave us 100 for 2020 and we are top-3 in Economics (Economics, econometrics, finance (miscellaneous), Ukraine) according to the ICV.

Search Results

	Journal title: Economic Annals-XXI ISSN: 1728-6220 (print), 1728-6239 (online) GICID: 71.0000.1500.3827 Country / Language: UA / EN Publisher: Institute of Society Transformation Deposited publications: 218 > Full text: 100% Abstract: 100% Keywords: 98% References: 100%	Citation: C/S	ICV 2020: ON
		MEIN 2019: 40	ICV 2019: 121.05
	Journal title: Risk Governance and Control: Financial Markets & Institutions ISSN: 2077-429X (print), 2077-4303 (online) GICID: n/d Country / Language: UA / EN Publisher: Publishing house "Virtus Interpress" Deposited publications: 67 > Full text: 100% Abstract: 100% Keywords: 87% References: 100%	Citation: C/S	ICV 2020: E/P
		MEIN 2019: N/D	ICV 2019: 120.63
	Journal title: Geopolitics under Globalization ISSN: 2543-5493 (print), 2543-9820 (online) GICID: n/d Country / Language: UA / EN Publisher: LLC "Consulting Publishing Company "Business Perspectives" Deposited publications: 0 > Full text: 0% Abstract: 0% Keywords: 0% References: 0%	Citation: C/S	ICV 2020: ON
		MEIN 2019: N/D	ICV 2018: 100.00
	Journal title: Bulletin of Taras Shevchenko National University of Kyiv. Economics. ISSN: 1728-2667 (print), 2079-908X (online) GICID: n/d Country / Language: UA / DE / RU / EN / UA Publisher: Publishing center "Kyiv University" Deposited publications: 563 > Full text: 99% Abstract: 100% Keywords: 100% References: 100%	Citation: C/S	ICV 2020: ON
		MEIN 2019: N/D	ICV 2019: 100.00

Editorial policy

During 2021 the journal faithfully continued to implement its aims and scope as defined in 2013. It is: "The Bulletin is the international scholarly journal of Taras Shevchenko National University of Kyiv. Devoted to the advancement of economic knowledge, it provides a forum for the publication of high-quality socio-economic research manuscripts. The journal acknowledges its European origins and the distinctive variety of the Ukrainian and European economic research community. Conscious of these origins, the Bulletin emphasizes openness and flexibility, not only regarding the substantive issues of economic research, but also with respect to paradigms, methodologies and styles of conducting that research."

What are we working on now?

International bases. Filling with information of international scientometric databases in which the Bulletin is presented.

Improving the quality of articles. Compliance of the Bulletin's editorial policy with the requirements for articles published in Scopus and WoS.

Website. Updating the structure and content of the site, editorial policy, approaches to attracting reviewers and peer review, moving to OJS.

Popularization of the publication. Dissemination of information about the Bulletin via e-mail, advertising on social networks, etc.

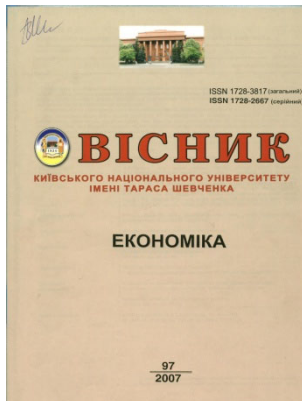
The journal is very pleased to announce new Chief Editor, Executive Editor and some members of the **Editorial and Review Boards:**

<http://bulletin-econom.univ.kiev.ua/editorial-board>

<http://bulletin-econom.univ.kiev.ua/editorial-board/our-peer-reviewers>

They bring expertise across a range of quantitative application. We would like to warmly thank all those who have generously given their time to review articles for the journal.

We strongly encourage academics from across the field to submit their work to the journal and in closing I know I speak for the entire Editorial Board when I express my unreserved thanks to the large team of Referee's who support the journal. Without your continued support the journal could not survive – thank you!



Вісник Київського національного університету імені Тараса Шевченка. Економіка – це рецензований, цитований у міжнародних наукометричних базах науковий журнал, що видається із 2017 року чотири рази на рік і присвячений дослідженням в економічній сфері. Журнал видається з 1958 року

Атестовано

Внесено до Списку друкованих періодичних видань, що включаються до Переліку наукових фахових видань України (категорія "Б") Наказом Міністерства освіти і науки України 17.03.2020 № 409

Зареєстровано

Державною реєстраційною службою України. Свідчення про державну реєстрацію КВ № 19866-9666ПР від 29.04.13

Засновник та видавець

Київський національний університет імені Тараса Шевченка, Видавничо-поліграфічний центр "Київський університет".

Свідчення внесено до Державного реєстру

ДК № 1103 від 31.10.02

Адреса видавця: 01601, Київ-601, б-р Т. Шевченка, 14



Індексується в таких міжнародних наукометричних базах та депозитаріях:

ERIH PLUS, OUCI, Ulrich's Periodicals Directory, Google Scholar, RepEc, Index Copernicus (ICV 2020 = 100), OCLC WorldCat, CrossRef, J-Gate, Microsoft Academic Search, Bielefeld Academic Search Engine (BASE), Registry of Open Access Repositories (ROAR), The Directory of Open Access Repositories (OpenDOAR), IDEAS, EconPapers, Maksymovych Scientific Library of Taras Shevchenko National University of Kyiv, National Library of Ukraine Vernadsky, DOAJ, ProQuest, CitEc, RedLink, Infobase (India), Researchbib (Japan), MIAR (Spain) (ICDS = 6,5), Directory of Research Journals Indexing (DRJI), Social Science Research Network, Scientific Indexing Services, Open Academic Journals IndexGIGA Information Centre, Cabell's etc.

DOI префікс: 10.17721 (з 2013)

Редакційна колегія Вісника Київського національного університету імені Тараса Шевченка. ЕКОНОМІКА схвалює ті рукописи, що відповідають загальним критеріям значущості в економічній галузі:

- оригінальні статті з фундаментальних і прикладних досліджень;
- тематичні дослідження;
- критичні відгуки, огляди, думки, коментарі й есе.

Проблематика:

- актуальні проблеми економіки й економічної теорії;
- менеджмент;
- маркетинг;
- міжнародна економіка й економічні відносини;
- облік, аудит та оподаткування;
- фінанси, банківська справа та страхування;
- підприємництво, торгівля та біржова діяльність;
- економіко-математичне моделювання та інформаційні технології в економіці.

Запрошуємо науковців до співпраці!

Статті можна подавати впродовж року трьома мовами:
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Наукове видання



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ВПЦ "Київський університет"

Б-р Тараса Шевченка, 14, м. Київ, 01601, Україна
☎ (38044) 239 32 22; (38044) 239 31 72; тел./факс (38044) 239 31 28
e-mail: vpc_div.chief@univ.net.ua; redaktor@univ.net.ua
http: vpc.knu.ua

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