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THE STATE FINANCIAL SUPPORT FOR THE UKRAINIAN LOGISTICS SYSTEM MODERNIZATION

Krykavskiy Ye.

Doctor of Economics, Professor, Lviv Polytechnic National University, Lviv, Ukraine,
 ORCID: [0000-0002-1847-586X](https://orcid.org/0000-0002-1847-586X)

Lykholat S.

Candidate of Economic Sciences, Associate Professor, Lviv Polytechnic National University, Lviv, Ukraine,
 e-mail: s1925p@i.ua;
 ORCID: [0000-0002-0517-6852](https://orcid.org/0000-0002-0517-6852)
 (Corresponding author)

Bolibruk L.

graduate student, Lviv Polytechnic National University, Lviv, Ukraine;
 ORCID: [0000-0003-2407-6838](https://orcid.org/0000-0003-2407-6838)

Sapi sky A.

Bielsko-Biala School of Finance and Law, Bielsko-Biala, Poland,
 ORCID: [0000-0002-3326-2387](https://orcid.org/0000-0002-3326-2387)

Nycz-Wojtan S.

Warsaw University of Wista, Warsaw, Poland,
 ORCID: [0000-0002-2350-7328](https://orcid.org/0000-0002-2350-7328)

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ABSTRACT

The logistics system of Ukraine in the conditions of Covid-19 in combination with well-being indicators had been examined, and it was noted that it needed to be singled out as an economic and social component with a high level of perspective development. It has been noted that the logistics systems of some countries have been able to adapt more quickly to the new non-standard environment, while others need additional support. One such country is Ukraine. It had been established that this system has many years of experience, which attracts increased attention to Ukraine's integration into the EU. Also, it was found that, in contrast to the EU countries, Ukraine, having a favorable geographical location, has limited resources for state support of the logistics sphere. Analyzing freight traffic by type of transport in Ukraine, it was determined that the country's vital railway sector is characterized by worn-out infrastructure and an outdated system of operation, which in the context of the corona crisis suffered even more significant losses. Analyzing the level of public funding for railway infrastructure in the EU, significant differences have been identified concerning public funding in Ukraine. The forecast of volumes of the state financing of freight transportations on three scenarios (optimistic, actual, pessimistic) was carried out. It was established that the freight transportation sphere, regardless of the occurrence of any of the scenarios, is an essential component not only of the logistics system of Ukraine but also has a direct impact on its competitiveness. The correlation between the sphere of public financing of logistics and the integrated indicator of population happiness in Ukraine has been revealed. The polynomial trend line of the size of capital investments in logistics demonstrates the positive dynamics of gradual growth. According to the received calculations, the financing of logistics affects the country's level of competitiveness, which occurs due to an increase in investments that contribute to raising the country's rating in the next period.

Keywords: public financing, Covid-19, logistics system, freight transportation, happiness index, competitiveness index

JEL Classification: D92; G11; L92; R4; W131

INTRODUCTION

The Covid-19 crisis has become an unexpected challenge not only for business but for the world at large. A sharp paradigm shift in most sectors of the economy, provoked by numerous restrictions, has forced us to rethink the existing values of humanity, reassess priorities and adapt to the "new normality." During the corona crisis, this period of life was characterized by non-standard variability, quarantine, and social restrictions. One such object of revaluation was logistics, which was a vital tool for ensuring the functioning of the world both in crises and in everyday life [3-5].

The issue of financing logistics has always been quite controversial, as logistics operators are usually private companies that can provide results independently [6]. However, if we talk about the components of logistics that are important for the country's economy, the state's involvement in its development is indisputable. Therefore, the discussion of financing and support of logistics during the Covid-19 crisis in Ukraine and other countries became especially acute as the corona crisis strengthened its role and further clear awareness that logistics plays a crucial role in ensuring economic development. Accordingly, the task of the study is to analyze the state funding of the railway industry

of Ukraine to identify further an effective mechanism for providing domestic railways in the wake of a pandemic.

LITERATURE REVIEW AND PROBLEM STATEMENT

The analysis of domestic and foreign publications showed the relevance of the pandemic's impact on the logistics industry. Kim K. [7], combining interdisciplinary research in transportation and highlighting the possible global implications, proposed a vision of "new" normality, which involves adaptation to a constantly changing environment and limited resources associated with quarantine restrictions. Grida M. [8], assessing the impact of preventive measures in the context of the COVID-19 pandemic on supply chains, identifies the decline in demand for logistics services as the most significant risk, as well as considers other factors influencing supply chains of four major industries - food, electronics, pharmaceuticals, and textile. At the same time, researchers analyze and predict the development of a pandemic to determine potential risks and possible pandemics in the future. Thus, Bocaletti S. [9] models the spread of coronavirus and notes its impact by predicting a new global economic crisis. Ivanov D. [10] predicted the possible consequences that will take place in global supply chains and identified topics for future research that will help to quickly address and predict the operational and long-term effects of the pandemic on supply chains. Choi T. [11] analyzed the logistics risks in pandemic offers a program to overcome post-coronavirus challenges in logistics. Topical logistics issues during Covid-19 were explored by the World Economic Forum community in its reports [11, 12]. It is argued that logistics in crises is one of the main elements of overcoming them and therefore requires additional attention from both public and private businesses.

Researchers agree that the consequences of the pandemic will not only be long-term but also much more complex than during the global financial crisis of 2008: the consequences are estimated at 4.4% in 2020, while in 2008, the figure was 0.1% [13]. The current state of functioning of humankind and business in terms of minimizing direct contact based on quarantine restrictions has already been dubbed the term low touch economy [14]. However, the pandemic has undoubtedly brought positive consequences, such as reliable transportation, which is being studied by Budd L. and Ayson S. [15], which helps reduce environmental pollution and involves the conscious use of resources, or the growth of innovative approaches during the crisis. [16], which consist of using the latest technologies, digitalization, and solutions based on the principles of conscious consumption.

At the same time, scientists have repeatedly emphasized the importance of logistics in overcoming the coronary crisis. Thus, Goel R. Saunoris J. and Goel S. prove on the example of data from 130 countries that the improvement of logistics indicators of the supply chain has a positive effect on system performance [17]. Carmaker C. and Ahmed T. [18] emphasize the need for financial support for logistics by governments and their partners, and Reimbolt N. [19] discusses the impact of financial schemes on the logistics space. To financially support logistics, Tang R. and Young L. [20] propose a mechanism of early payments for the development of the ecological supply chain, and Dilmann F. and Luttenberg M. [21] propose to develop public-private collaboration to reduce the negative consequences of the logistics industry. Therefore, numerous studies on this topic have confirmed the relevance of financing logistics as a factor in overcoming the coronary crisis.

Despite the available research, the public funding issue of the logistics system as a tool for regulating public welfare in the COVID-19 crisis remains insufficiently substantiated. Accordingly, we consider it appropriate to highlight the goal of the same name and use the following research methods: historical, comparative analysis, scenario forecasting, and based on trend lines, assumptions, and hypotheses.

RESULTS

Analyzing the impact of the pandemic on logistics in Ukraine, it is necessary to focus on the current need to separate logistics as an economic and social component, which requires a comparative analysis of its functioning and dynamic development in combination with the welfare of Ukraine. The logistics component has been characterized by a high level of prospects for further development and improvement. First of all, this is due to the historically formed logistics system in Ukraine, which is an environment that attracts attention in the context of Ukraine's integration into the EU. It is one of the prerequisites for the existence of the Association Agreement between Ukraine and the EU [22].

The domestic logistics system is constantly changing due to the revision of the outdated system of operation and the implementation of European best practices. The Covid-19 crisis was the impetus that showed particularly critical moments in the existing logistics system. For example, if before the pandemic the issue of liberalization of the railway transport market, infrastructure development, renewal of rolling stock, or improvement of the management system of transport institutions was acute, then with the onset of the pandemic quarantine restrictions became paramount [23, 24]. But also, around the world. A similar situation has developed with freight traffic, which depends on the available capacity and

flexibility of the domestic transportation system.

In Ukraine, freight turnover in 2020 decreased in all markets and incredibly critically in the automotive industry by 52.1% (Figure 1) due to the difficulty of implementing quarantine restrictions.

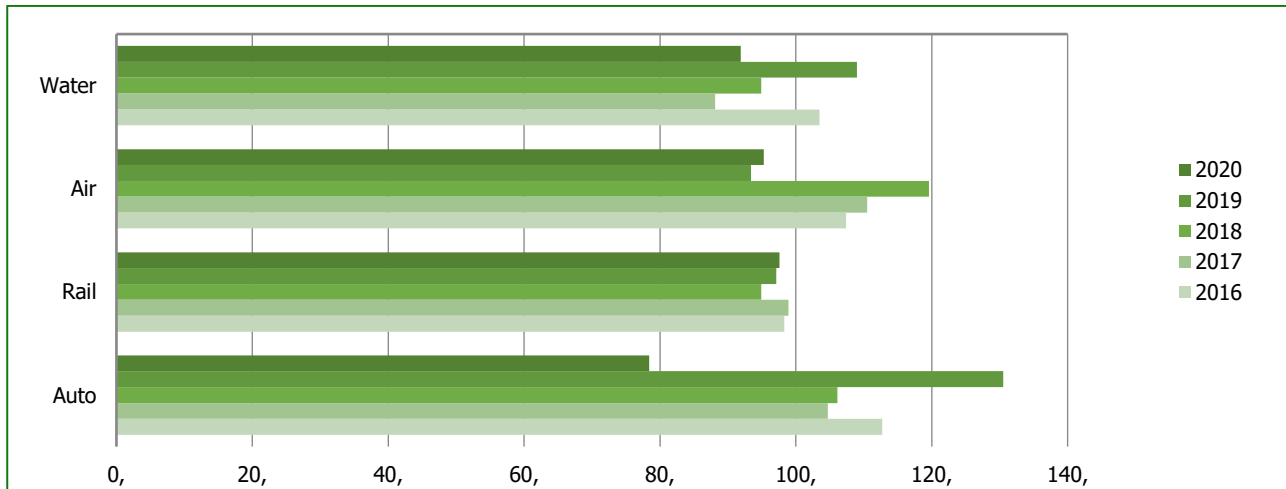


Figure 1. Comparative analysis of the shares of freight traffic by transport type in Ukraine, 2016-2020 (%) (Source: Calculated and plotted according to [25, 26])

At the same time, rail freight in Ukraine is underdeveloped but extremely important in the context of the country's strategic development. Accordingly, the freight traffic share in 2020 was (+ 0.6%) compared to the same period in 2019 and (+ 2.2%) in 2019 compared to the share of traffic in 2018 [25, 26].

Examining the impact of the pandemic on the rail freight market in Ukraine, which is in the initial stages of liberalization, it should be noted that in the segment of passenger transport services are provided by the state monopolist JSC "Ukrzaliznytsia," whose activities are unprofitable. At the same time, freight transportation is partially carried out by private carriers, but JSC "Ukrzaliznytsia," which is also the owner of the infrastructure, has a monopoly position in access to railway capacity [27, 28]. This situation brings losses to the state and creates obstacles to the development of private transportation, and reduces Ukraine's competitiveness on the world stage. Objectively assessing the existing conditions and minor prospects for self-improvement of the system of JSC "Ukrzaliznytsia," it was evident that the company needs significant investment and constant monitoring of processes. However, only in the state budget for 2021 the Government of Ukraine, for the first time since independence, provided co-financing to upgrade rolling stock and infrastructure [29]. Thus, if before the pandemic, the process of easing the existing constraints to improve the Ukrainian railway logistics system was slowed down and politicized, and further prospects were not convincing for investors, now we can see an even more critical situation.

The experience of EU member states shows [30] that public funding combined with private and EU subsidies is an effective mechanism for the development of railway infrastructure and the industry in general. A modern integrated rail transport system is key to global competitiveness, which is why leading countries budget for railways, as the country's railway system is often unable to self-finance according to external trends or unforeseen emergencies such as the Covid-19 pandemic. Therefore, the practice of national public funding is the lion's share in developing the EU railway market [30, 31].

Thus, if the EU countries to which Ukraine seeks to integrate, identify the railway industry as an essential component of supporting the international level of competitiveness and invest from the state budget in its development of about 70% of total investment, Ukraine must implement this experience because it is not able to fully self-financing.

According to the Law of Ukraine "On the State Budget of Ukraine for 2021" [32] and statistical data for similar periods in 2016-2020 [33], the volume of public funding for railway transport and infrastructure for the first time shows a positive trend in the actual financial year. It is 4030878, 7 thousand UAH. The increase in the share of financing by 100% is explained by the absolute lack of prior support for the railway transportation industry in Ukraine and the provision of public funds only to reimburse the cost of passenger transportation and support the staff of JSC "Ukrzaliznytsia".

Considering the experience of the EU member states and Ukraine in the context of state funding of the railway industry, it can be concluded that Ukraine lags far behind. It should be noted that within the budget program of modernization of Ukrainian railways following the Law of Ukraine dated 03.10.2018 № 2585-VIII "On Ratification of the Financial Agreement

(Ukrainian Railways Modernization Project (Infrastructure Modernization of PJSC "Ukrzaliznytsia")) between Ukraine and the European Investment Bank" funds, which, however, are provided for the renewal of individual projects [34].

Since the amount of public funding for railway transport is not representative enough to forecast them for future periods, it is advisable to analyze further the leading indicators of capital investment in logistics of Ukraine, taking into account inflation to study the dynamics [33]. This considers the new state course to support, in particular, the railway industry (Figure 2).

For a more detailed analysis and a broader understanding of the scale of capital investment in logistics in Ukraine, the global competitiveness rating of Ukraine in the period 2010-2020 has been taken into account. According to the chart presented in Figure 3, logistics financing directly affects competitiveness: an increase in investment provokes an increase in the country's rating in the next period. Additionally, a polynomial line of the trend of capital investments in logistics is presented, which demonstrates the positive dynamics of gradual growth.

The logistics situation in Ukraine shows the dynamics of capital investment over the past ten years. However, the impact of the pandemic is noticeable. However, the peak of the smallest amount of public investment for UAH is 15,498.2 million. It took place in 2014 and gradually recovered in 2018, increasing 3.2 times. In the subsequent two periods of 2018-2020, the situation gradually deteriorated, which can be explained by the unstable economic and political situation in Ukraine.

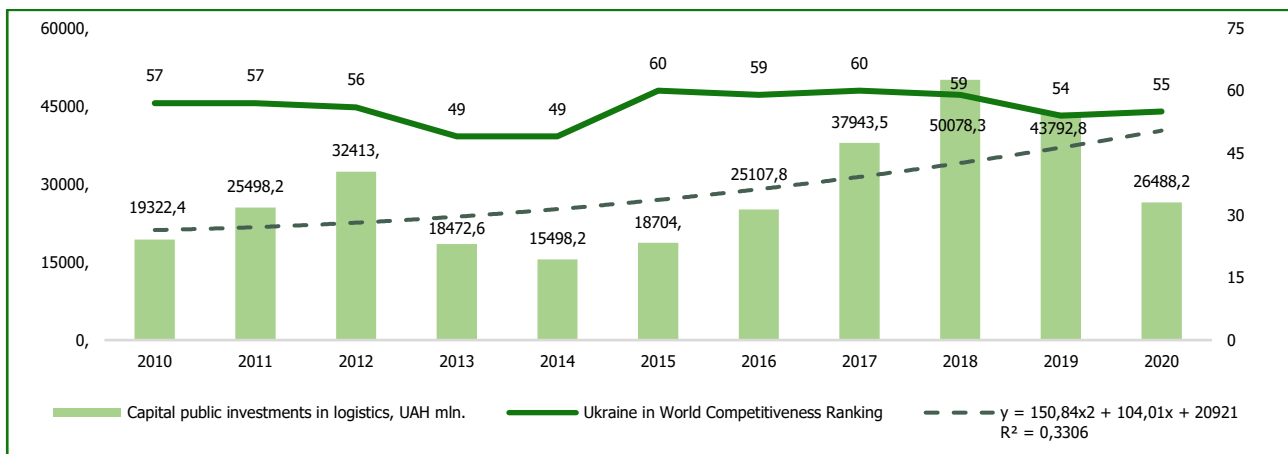


Figure 2. The amount of capital public investment in logistics in Ukraine, 2010-2020 (Source: Calculated and plotted according to [33,35,36,37])

Considering the capital investment indicators in 2010-2020, the investment amount for future periods is difficult to predict. Since the value of the reliability of the approximation (R^2) is small in the context of the polynomial function, the forecast will be unreliable (Figure 3). Such results have been correlated with the unstable political, economic and military situation in Ukraine. Accordingly, it was proposed to forecast the volume of public funding for transport in three scenarios, namely, actual, pessimistic and optimistic, based on statistics (Figure 3) [32].

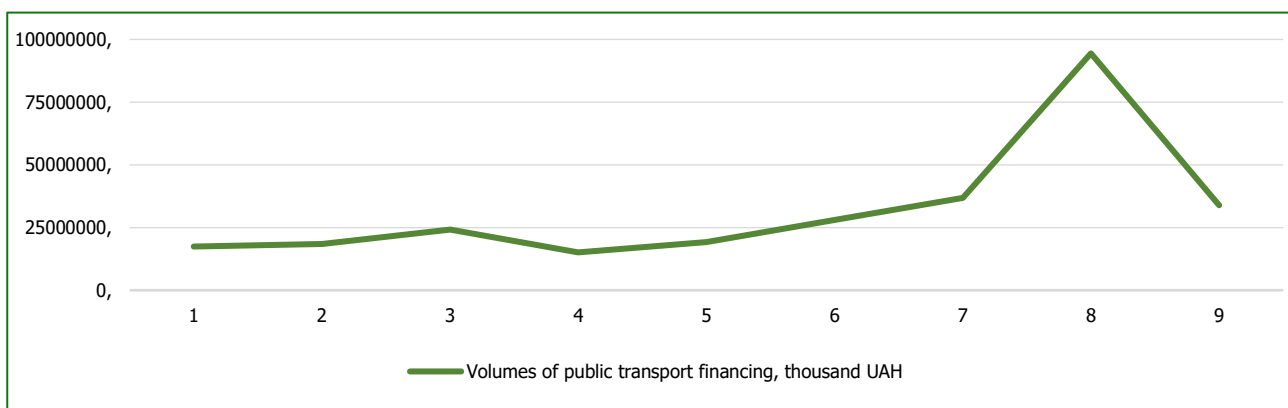


Figure 3. Volumes of state financing of freight transportation in Ukraine, 2012-2021 (2022-2025 - forecast indicators) (Source: Calculated and plotted according to [32])

Accordingly, the forecast above shows that in the case of an optimistic scenario of state support for the support of the transport sector in Ukraine, public funding will increase sharply in 2022 and will continue to grow slightly in the following forecast periods.

According to the actual forecast, the amount of funding will increase significantly by 2022 compared to the same indicators in 2021, after which the level of investment will increase by slight fluctuations.

The pessimistic forecasting scenario shows a gradual decline in investment in 2023 but a sharp recovery over the next period to 2021 investment.

It is safe to say that government support for the country's transport sector will exist and grow under three scenarios. These results explain the transport potential importance for the country, its direct impact on competitiveness, and its correlation with the welfare level of the population in Ukraine.

It is logical that for Ukraine, as a country with an unstable macroeconomic situation, it would be pretty optimal to use a public-private partnership in logistics, which has been recommended by the community of the World Economic Forum. Such a model represents a joint effort of the state and the private sector to achieve common interests in the country's development in terms of technological, social, and economic changes that accompany modern society [35,36]. Therefore, the first step for Ukraine's logistics is the introduction of such a partnership.

Considering the integrated indicators of countries' competitiveness, they indeed correlate with the level of happiness of the population. This situation has been explained by the interdependence of physical and psychological well-being of people with the country's ability to provide these indicators. It is logical that logistics, which plays a crucial role in ensuring the livelihood of individuals and their physical and material needs, allow them to be mobile and feel psychological freedom. Accordingly, the sudden change in the usual way of life caused by the pandemic has become a massive challenge for humanity in both economic and social aspects. Suppose there is a high level of infrastructure development and mobility, quality of logistics services, interaction with market trends, and accessibility to meet consumer needs. In that case, such aspects will affect the overall satisfaction of the population even in a coronavirus crisis. Therefore, it is expedient to put forward the hypothesis of considering logistics as an indicator of the impact on people's happiness and, consequently, on the competitiveness of countries.

In order, the hypothesis of correlation test between the level of development of transport opportunities as a factor of competitiveness of the country and the level of happiness of its population, the indicators of public transport funding, indices of the World Happiness Rating, and the World Competitiveness Rating for Ukraine in 2013-2021 are taken into account. trend line to track the trend (Figure 4) [36,37, 38,39,40].

Analyzing the indicators of both ratings of Ukraine worldwide, we can trace the interdependence of curves ranging from 51 points for the World Happiness Rating and 11 points for the World Competitiveness Rating during the study period. However, Ukraine occupies the worst positions on both scales. Namely, the happiness index is 110 out of 149 positions, and the competitiveness index is 54 out of 61 positions in 2021. This situation is explained by difficult political, economic, and social situations. At the same time, the pandemic creates preconditions for new challenges in Ukraine, in particular, in the context of the logistics component: slowing down the development of the existing transport system, liberalization of the railway segment, renewal and modernization of infrastructure, and improving the quality of logistics services. Accordingly, there is an increase in negative factors influencing the increase of the happy population of Ukraine.

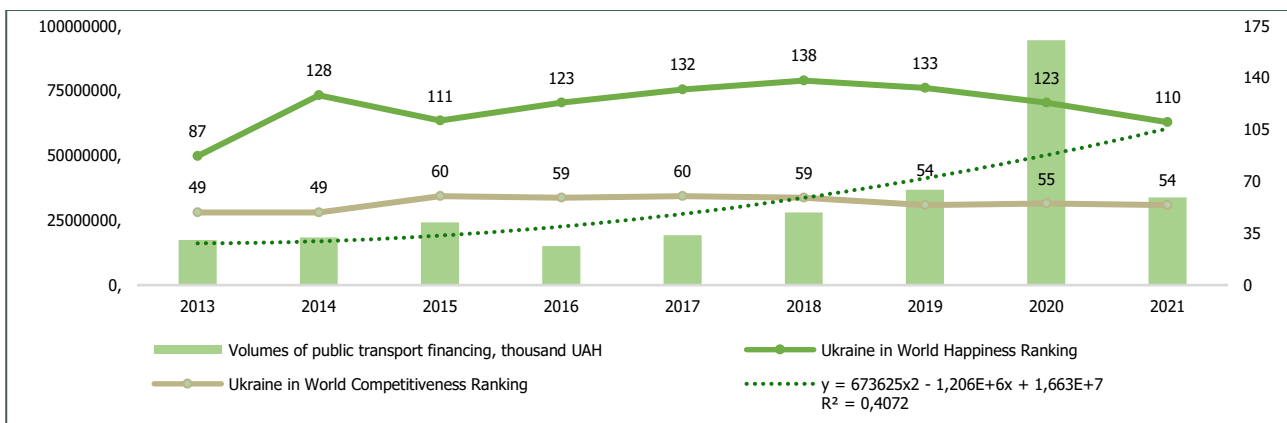


Figure 4. Dynamics of the volume of state funding in freight transportation and indices of Ukraine in the World Happiness Ranking and the World Competitiveness Ranking, 2013-2021 (Source: Calculated and plotted according to [32, 36,37, 38,39,40])

Analyzing this situation, we can assume that to simultaneously increase Ukraine's competitiveness and the welfare of the population, it is necessary to support the development of logistics. Improving and modernizing infrastructure, improving the quality of transport services, and creating a business environment requires investment and oversight of the transparent use of funds. At the same time, the first and leading investor in the transport sector should be the state apparatus, which by its example will stimulate private investors to cooperate. As a result, an effective model of private-public financing of logistics will be developed, which will help increase the country's competitiveness in interdependence with the satisfaction of living standards.

CONCLUSIONS

The Covid-19 crisis came as a shock to the world for many reasons and has become a valuable flexibility and resilience test for businesses, governments, and individuals. The pandemic has become a phenomenon that affects everyone and affects the usual way of life. However, such changes have also become a starting point for the transformation of human thinking, and thus the beginning of a new social order, "new normality," as evidenced by analysis of literary sources.

Of course, the importance of logistics is undeniable, especially in times of rapid development of integrated supply chains, uneven economic and political development of the state, and the accompaniment of local or global crises. Logistics has become a factor of everyday social minimum, a duty at the primary level of needs, which directly affects the well-being of humanity and their level of happiness and requires more attention to the social component.

According to the public funding changes forecast for transport in Ukraine, there is reason to expect their growth because it was proven that there was a relation in 2013-2018. However, along with the Covid-19 crisis, there was an awareness of the need to be prepared for potentially similar situations. If people need time for the adoption stage, the logistics must always be prepared for risks.

Informing the purpose and objectives of the study, as well as the results of the analysis, it can be argued that the model of private sector-state interaction is effective for logistics, as an example of the EU rail freight market, which accumulates a large share of public funds and requires public funding.

Formulating the purpose and objectives of the study and based on the analysis results, it could be argued that the model of interaction between the private sector and the state is effective for the logistics sector, as an example of the EU rail freight market, which accumulates a large share of public funds and requires public funding. For Ukraine, this model is especially relevant in the railway space, as the liberalization process is being slowed down, and the prospect of market opening during the Covid-19 crisis is an opportunity to increase its competitiveness and level of public welfare.

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Крикавський Є. В., Лихолат С. М., Болібрux Л. І., Сапінський О., Нич-Войтан С.

ДЕРЖАВНА ФІНАНСОВА ПІДТРИМКА МОДЕРНІЗАЦІЇ ЛОГІСТИЧНОЇ СИСТЕМИ УКРАЇНИ

Розглянуто логістичну систему України в умовах Covid-19 у поєднанні з показниками добробуту та зазначено, що вона потребує виокремлення як економічна та соціальна складова з високим рівнем перспективного розвитку. Зазначено, що логістичні системи деяких країн змогли швидше адаптуватися до нового нестандартного середовища, а інші – потребують додаткової підтримки. Однією з таких країн є Україна. Установлено, що ця система має багаторічний досвід, який повертає до себе підвищену увагу в контексті інтеграції України до простору ЄС. Виявлено, що на протигагу країнам ЄС Україна, маючи вигідне географічне розташування, обмежена ресурсами для державної підтримки логістичної сфери. При аналізі вантажних перевезень відповідно до виду транспорту в Україні встановлено, що ключова для країни залізнична сфера характеризується зношеністю інфраструктури та застарілою системою функціонування, яка в умовах корона кризи зазнала ще більших збитків. При розгляді рівня державного фінансування залізничної інфраструктури в ЄС встановлено суттєві відмінності порівняно з державним фінансуванням в Україні. Здійснено прогнозування обсягів державного фінансування сфери вантажних перевезень за трьома сценаріями (оптимістичний, фактичний, песимістичний). Установлено, що сфера вантажних перевезень незалежно від реалізації будь-якого зі сценаріїв не лише є важливою складовою логістичної системи України, але й має безпосередній вплив на її конкурентоспроможність. Виявлено кореляційний зв'язок між публічним фінансуванням логістики та інтегрованим показником щастя населення в Україні. Поліноміальна лінія тренду розміру капітальних інвестицій у логістику демонструє позитивну динаміку поступового зростання. Згідно з отриманими розрахунками, фінансування логістики впливає на рівень конкурентоспроможності країни, що відбувається за рахунок збільшення обсягу капіталовкладень, які сприяють підвищенню рейтингу країни в наступному періоді.

Ключові слова: публічне фінансування, Covid-19, логістична система, вантажні перевезення, індекс щастя, індекс конкурентоспроможності

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