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LANZHOU UNIVERSITY
SCHOOL OF POLITICS AND INTERNATIONAL RELATIONS

**INTERNATIONAL ECONOMIC AND POLITICAL
RELATIONSHIPS UNDER COVID-19: EXPERIENCE OF CHINA
AND UKRAINE**

Collection of international scientific works

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I-69

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The collection of international scientific papers summarizes the main results of the scientific discussion held at the intersectoral scientific seminar organized by the Institute for Economics and Forecasting of the NAS of Ukraine and Lanzhou University (China) in late July 2020.

The reports of Ukrainian and Chinese scientists present scientific approaches to solving current problems of socio-economic development and international cooperation caused by the impact of the COVID-19 pandemic on macroeconomic and political conditions in different countries. Researchers provide sound assessments of the impact of the coronavirus pandemic on the dynamics and state of economic, financial, social, educational, health and other spheres of societal development of Ukraine and China; prospects of international cooperation and development of the global economy are highlighted.

The collection is of interest to scientists, teachers, students and everyone who is interested in issues of socio-economic development and international relations.

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WELCOMING SPEECH

to the participants of the joint seminar on the topic:

**"International Economic and Political Relationships under COVID-19:
Experience of China and Ukraine" (22 July 2020)**

Dear Mr. Academician Valeriy Heyets!

Dear Colleagues from Ukraine and China!

Dear Friends! Greetings to all of you!

It's still 10 am in Ukraine, and I say to my Ukrainian friends: "Good morning!"
And in China it is already 3 pm, and I say to my Chinese friends: "Good afternoon!"

Today it is especially pleasant that old and new friends can communicate via the Internet. The coronavirus outbreak is a disaster, but seeing friends is still a pleasure.

In January of this 2020, a coronavirus epidemic suddenly broke out in Wuhan, but where the source of this virus has not yet been determined! I think maybe a doctor or virologist can give us an answer, but in the end, only time will give us an answer to this question. However, this question is not the topic of our today's Scientific Forum, and I will not return to this again.

But in any case, the coronavirus is the common enemy of humanity, and people around the world must join forces and respond together.

The coronavirus outbreak was horrific, but the experience of fighting the coronavirus of the Chinese people under the leadership of the Chinese government is worth studying around the world. Since the beginning of the coronavirus outbreak, the Chinese Leader has given an important instruction: "*put the safety of life and health of people first and decisively stop the spread of the coronavirus.*"

Our Leader said: "We insist that "*people are above all, life is above all*", in order to mobilize all state resources for large-scale treatment, not missing a single

infected person and not abandoning a single patient.” Under this call, thousands of medical workers in all provinces of China went to help the sick and achieved a decisive victory in the fight against the coronavirus outbreak.

In the early days of the coronavirus epidemic, we received support and care from friends from all over the world, including Ukrainian friends, and even received donations from them. When China defeated the epidemic, and the epidemic spread throughout the world, including in Ukraine, the Chinese people supported and took care of your country, extending a helping hand and providing materials to jointly fight the epidemic, which testifies to the friendship between China and Ukraine.

The coronavirus outbreak has spread throughout the world and has had a profound impact on the international economic and political landscape. Considering the far-reaching consequences of this outbreak for international economic and political relations, as well as new changes in the world in the "post-epidemic period", we organized our joint International Forum. It was organized to invite scientists from our two countries to a public dialogue and exchange of ideas in order to study the evolution of the international environment and the new landscape of economic and political relations.

The coronavirus epidemic has truly changed us in many ways, including our daily lives, communication methods and ways, and even mental health and mental performance. Today, even though we cannot sit together, we can still exchange ideas over the Internet. Of course, this is a completely new way of communication, which is due precisely to the outbreak of the coronavirus. And it is precisely because of the outbreak and spread of this epidemic that our today's topic appeared: "International economic and political relations in the context of the coronavirus epidemic." If anything, the outbreak of the coronavirus has a huge impact on changes in international economic and political relations. And this topic, which we are discussing today, is of great scientific and applied importance.

The Institute of Political Science and International Relations of Lanzhou University has good relations with the Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine.

Professor Olena Borzenko came to Lanzhou to give lectures. At the end of August last 2019, the teachers of our institute visited Ukraine, met with the distinguished Director Academician Valeriy Heyets and Ukrainian colleagues discussed specific issues of bilateral cooperation, including the creation of the Centre for the Study of Ukraine at Lanzhou University.

The parties have repeatedly communicated by e-mail and reached a general agreement. As soon as the haze of the coronavirus epidemic clears up, we cordially invite all our Ukrainian friends to come to China, to the Institute of Political Science and International Relations of Lanzhou University for academic exchanges.

It gives great hope that, within the framework of today's International Forum, scientists from our countries express their scientific views and opinions, establish academic ties and contribute to academic development.

I wish success to the Scientific Forum “International Economic and Political Relationships under COVID-19: Experience of China and Ukraine”!

Thanks everyone!

Heyets Valeriy
Academician of the National Academy of Sciences of Ukraine,
Director of the SI "Institute for Economics and Forecasting
of the National Academy of Sciences of Ukraine"

WELCOMING SPEECH

to the participants of the joint seminar on the topic:

**"International Economic and Political Relationships under COVID-19:
Experience of China and Ukraine" (22 July 2020)**

Dear Colleagues!

I greet you and hope you are all healthy and continue your successful work.

Our joint seminar takes place in an unusual form and this is already a challenge for all of us for the reason that we cannot feel the spirit of joint communication, since our socialized capabilities are technologically limited. And this is not only the sign of the times, but also the result of an existing challenge generated by the COVID-19 pandemic.

I began my presentation by defining our communication, which is one of the signs that determine the essence of time – an increase in quantity and quality of challenges.

My position is that today's challenges are associated not only with the risk of an expansion of the pandemic, but also with the intensifying competition of a global dimension. I'm not talking about political competition, because our Institute does not conduct research in this scientific direction. However, competition in the economic sphere is intensifying and increasingly globalizing. First of all this is the result of an increase in cost level in the economy, which is determined by an ever-decreasing natural resource and an ever-deeper human intervention into the environment and causing irreparable, in many ways, losses to it.

However, we must understand that competition, compared to cooperation and interaction, increases costs.

In this regard, I believe that the main issues are cost reduction and more respectful attitude of people towards the environment. The main path will still push the population of countries and individual countries to interaction and cooperation.

To ensure proactive interaction for a long period, we need to interconnect solve the problems of competition, capitalization and socialization. This actualizes the accumulation of invisible assets and their increased impact on economic growth, as well as ensuring the safety of economic development in terms of the impact on humans and the environment.

The path of confrontation and war is the path to nowhere. The "black swans" appearing on this highway do not allow the world to develop. The poor get poorer and the rich get richer.

It is important for our country to study the experience of other countries, including the economic development of the PRC, in terms of cooperation and development, and this requires joint contacts, especially of a socializing nature, and not limited to ICT-technologies. I hope that we will overcome COVID-19 and mutual visits will become the norm again.

I wish you all success, prosperity, and most importantly, health!

PROBLEMS OF UKRAINE'S EXTERNAL DEBT RESTRUCTURING IN CONDITIONS OF COVID-19 PANDEMIC

The global financial and economic crisis caused by the COVID-19 pandemic is spreading around the world. The health care crisis has a major impact on the socio-economic and public finance. The necessary expenditures on health care, as well as measures in the field of taxation and spending money to support the population and companies are associated with direct budget expenditures, which are estimated at 3.3 trillion dollars on the global scale. A significant increase in the budget deficit and the level of public debt is projected. According to the *optimistic* IMF forecast, world GDP will decline by 3% (+5.8% in 2021) in 2020. At the same time, the World Bank is more pessimistic about the expected decline –5.2% (+4.2% in 2021).

The IMF forecasts a fall in GDP by 5.9% in the USA in 2020 (+4.7% in 2021), a fall of 7.5% (+4.7% in 2021) in the Eurozone, and growth in China by 1.2% in 2020 (+9.2% in 2021). The World Bank forecasts a decline of 6.1% in 2020 (+4.0 in 2021) for the United States, a decline by 9.1% (+4.5% in 2021) for the Eurozone, and growth by 1.0% in 2020 (+6.9% in 2021) for China. That is, the pandemic will seriously affect growth around the world. Moreover the developed countries will not reach the level of 2019 in the following year. For Ukraine, the World Bank forecasts a 3.5% drop in GDP in 2020, while the IMF downgraded the forecast for the Ukrainian economy in June to fall to 8.2% (–7.7% in April).

The IMF believes that Ukraine's has successfully performed in macro-stabilization over the past 5 years and in the Fund's successive programmes, but the goal of strong and comprehensive growth remains elusive in the absence of sustainable and comprehensive structural reform. After the outbreak of the COVID-19 pandemic, the Ukrainian government has significantly revised its understanding and policy of containment and stabilization. Uncertainty is high, and the economy is likely to shrink sharply as austerity measures – in Ukraine and around the world –

have led to a significant drop in domestic and external demand. The budget is expected to be hit hard, with sharp cuts in revenues and large emergency spending calling for a solution to the crisis. The high level of external debt creates Ukrainian financial system's vulnerability to external shocks. Particularly, the end of 2019 and the beginning of 2020 were the peak times for the spread of SARS-COVID-19 coronavirus in the world forcing investors to reassess the risks of the international financial situation and to begin withdrawing capital from emerging markets. In modern conditions, a high level of public debt is risky and the necessity to service public debt causes the need to find resources and affects the increase in external borrowing, thus forming a debt spiral.

One of the methods of regulating debt processes used in times of crisis is restructuring of debt obligations in order to minimize creditors' loss and ensure fulfilment of borrowers' obligations by reducing the debt burden. Restructuring parameters are individual for each country, with some common features or patterns. There are examples of successful debt restructuring in the world.

Modern economy requires concentration of significant financial resources, and therefore, it is based on the principles of credit financing. However, a situation of excessive debt burden may occur in conditions of attraction of considerable volumes of loan capital, which requires opting one of the following scenarios for the exit:

1. *Fulfilment of debt obligations* despite the need to increase taxation and reduce budget expenditures. This strategy is chosen when:

- the debt load is not considered not critical enough for the situation to be corrected through adjustment of economic policy;
- the political authorities expect to hold on until critical aggravation of the situation, after which they will leave the aggravated *legacy* to their political competitors.

2. *Announcement of a sovereign default*, which will unilaterally delay the debt payment. As this automatically leads to a loss of confidence on the part of foreign creditors and investors, declaring default is a logical solution for the current political power, provided that:

- it has sufficient political will to radically change its economic policy and a real roadmap for actions (including alternative sources of financing) and will return to negotiations with creditors in the future in more favourable conditions;
- it does not expect a long political life, but believes that the savings due to the temporary cessation of external debt service will be sufficient to hold on for some time, and then transfer the problem of debt repayment as a ‘*poison pill*’ to its political competitors.

3. Carrying out debt restructuring, which will allow postponing the debt payment with the consent of the creditors and on terms negotiated by all parties. In this case, the authorities will have to conduct difficult negotiations (with the IMF, creditors and investors) in order to prove to them that the economic situation in the country is really tipping over into uncontrolled default. Therefore, in the interests of all parties a programme of reforms should be implemented to significantly improve the situation over time, and to repay the existing debts with some compensation for losses of creditors. Such a strategy is chosen when the political power:

- counts on long-term rule and understands that the debt problem will still have to be solved by it – and the later, in the more unfavourable conditions;
- has its *own* clear reform programme, political and human resourcing [1].

The choice of a strategic scenario for Ukraine thus depends on the results of the analysis of the political and economic situation. Quarantine and related restrictions will have a serious negative impact on the state of Ukraine's economy and budget system. Lockdowns, stopping the production of certain goods and reducing the volume of services have led to: reduction of wages and gross profit. In turn, falling incomes and, consequently, consumer spending will lead to a reduction in indirect tax revenues.

The international experience of debt restructuring deserves attention. There are several ways of restructuring through: 1) conversion, 2) securitisation, 3) conversion, and 4) debt write-off. Debt conversion was used in restructuring of Ukraine's public external debt in 2015. During the crisis of 2015, Ukraine managed to reduce the value

of debt and not to declare default. In the context of spreading global crisis phenomena in Ukraine, lack of external financing and beginning of the debt crisis, the Government and the NBU (National Bank of Ukraine) are forced to use anti-crisis measures. In order to avoid possible problems with timely settlements with external creditors in 2016-2019, Ukraine partly restructured its external debt (14 issues of Eurobonds) for a total of about 18 billion dollars. This external debt restructuring provided for the following actions: immediate write-off of about \$3.6 billion; exchange of 9 issues of Eurobonds worth about 15 billion dollars for new issues of Eurobonds with an extension of their maturity from 2015-2023 to 2019-2027; increase of the coupon rate on new bonds from 7.22% to 7.75%.

Almost all of the debt written off (\$ 3.2 billion) **new** for Ukraine securities were issued (the Verkhovna Rada of Ukraine passed a special law) – GDP warrants (VRI). The amount of payments on them is tied to the dynamics of GDP growth. At growth rates up to 3% payments are not made; from 3 to 4% they are 15% of each additional percentage of GDP growth; more than 4% per year will account for 40% of each additional percentage of GDP growth (until 2038). A five-year grace period was envisaged: until 2025 inclusive, payments may not exceed 1% of GDP. In addition, the parties agreed that the mechanism of payments on GDP warrants works only when Ukraine's GDP exceeds \$125 billion. *The state's liabilities for GDP warrants will amount to 19.42 billion dollars (at the rate of 1 dollar to 27 hryvnias) during 2020–2024 [7] (Table 1).*

Panic in world markets due to the spread of the coronavirus and the collapse of oil prices have led to another sharp drop in the value of GDP warrants and Eurobonds of Ukraine. As a result, as of March 9, 2020, GDP warrants cost about 81.8% of the face value, although on March 2 they cost 90%, and on February 17 they were estimated at 107.5% of the face value. Eurobonds maturing in 2020 are now quoted at a rate of about 4.9% per annum, in 2021 – 5.7%, in 2022 – 6%, in 2023 – 6.9% and in 2025 – 7.3% per annum. The yield on securities maturing in 2025 has reached 7.6%, in 2026–2027 – 7.7–7.9%, and the most “long-term” securities maturing in 2032 – 8.3% [8].

Projected payments on Ukraine's public debt repayment (2020–2024), bln dollars

<i>Payments</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2023</i>	<i>2024</i>	<i>Total (2020-2024)</i>
Ukraine's public debt	16.65	11.98	8.03	8.02	10.02	54.70
National external debt	6.66	5.32	4.37	4.29	6.78	27.42
Repayment	4.77	3.64	2.83	2.88	5.30	19.42
Commercial loans	2.73	2.52	1.49	1.46	2.77	10.97
Official loans	0.18	0.06	0.08	0.08	0.10	0.50
Loans provided by MFIs	1.85	1.06	1.25	1.33	1.32	6.81

Source: compiled by the author from www.mof.gov.ua (MINFIN)

Restructuring of external debt, which in Ukraine has a multi-credit nature, can be used by domestic borrowers as a tool for crisis management. Effectively completed restructuring of external debt on financial instruments to raise funds in international markets will allow the borrower to reduce interest costs, because in case of default, as a rule, in addition to the margin and floating interest rate, an additional interest rate is applied. An analysis of world experience shows that the restructuring of Eurobond liabilities generally consists of four successive stages: notifying investors of the events that necessitated the restructuring, appointing advisors and negotiating with investors, formally presenting the terms of debt restructuring and their legal consolidation. The issuer needs to assess the effectiveness of a particular restructuring option among all the variety of models, parameters and characteristics of loan restructuring processes in international financial markets. In the process of restructuring multi-credit indebtedness, covenants, which are additional conditions in credit agreements that limit credit risks, play an extremely important role. Analysing the application practice one can divide the whole set of covenants into three groups: negative, positive and financial. A properly constructed set of covenants can minimize the risks of restructuring multi-lender loans in international markets, thus improving the efficiency of restructuring for the issuer [9].

External debt restructuring in today's Ukrainian economy should free up financial resources that can be used to support primarily those businesses that have suffered

losses due to the SARS-COVID-19 epidemic, as well as to support promising sectors of the national economy ensuring long-term growth. The government can release funds planned for interest and repayment of a part of the debt – either entirely (subject to write-off) or for a certain period (postponement, loan extension or conversion of loans by replacing with new debt obligations) – the amount will depend on specific conditions. However, it is too early to discuss it before even starting negotiations on restructuring. As a prerequisite for successful restructuring, the Government should prepare an action programme identifying the directions of allocating the freed funds and also proving that economic growth will be achieved as a result. Currently, there are three basic models of debt restructuring involved in international financial markets: parametric, mandatory and counter-provision of property. In the case of a parametric model, the parameters of the existing debt are subject to adjustment. Most often, there the maturity of the existing debt obligations can be extended and (or) the value of obligations can be decreased due to voluntary reduction of creditors' claims. The parametric model may include, among others, early repayment of the contractual part of the debt (usually 10-25%). Due to its relative simplicity, the parametric model has become especially widespread in restructuring syndicated loans and partially closed bond issues [1].

The mandatory model is used mainly in the restructuring of Eurobond loans and involves reaching an agreement between creditors and the debtor, as a result of which the latter assumes certain additional obligations. The specified agreement is fixed, as a rule, in two ways: either by conclusion of contracts of purchase and sale of bonds, or by presentation of the offer in the dates provided by the agreement [6]. The implementation of both options presupposes the existence of a preliminary agreement between the issuer and investors which regulates the restructuring procedure. Quite often, the application of the mandatory model is accompanied by a special condition according to which the issuer is released from the obligation to repurchase Eurobonds from the investor provided that they are not in sufficient quantities on his account. This condition encourages the investor to refrain from selling Eurobonds on the secondary market during the restructuring process. The contract of sale may provide for the actual delivery of the entire number of Eurobonds from the issuer to the

investor. This procedure is usually called "*strong investor protection*". Instead, in some cases, the parties are limited to delivering from the investor to the issuer only the number of Eurobonds that are subject to actual redemption on the date of execution.

On the other hand, in order to protect its own interests, the issuer may insist on application of a special scheme when all redeemed Eurobonds are concentrated on the account of the technical structure created specifically for this case. Thus, the rights of all investors are concentrated within one company which has a confidentiality agreement with the issuer.

One option for a mandatory restructuring model is to place an offer to purchase Eurobonds on a date set by the parties. This version of the mandatory model compensates for shortcomings of the previous one, as the offer is addressed to all investors, not just those who own Eurobonds at the time of debt restructuring. However, the voluntary acceptance of the offer should be considered a disadvantage of this option.

The second option of counter-provision of property is investors' admission to participate in the issuer's capital. It includes replacing default Eurobonds with ordinary or preferred shares of the issuer. In this way, investors receive permission to manage the issuer, often making this type of restructuring the most profitable and reliable. For the issuer, this type of restructuring is extremely undesirable and dangerous. It is usually agreed by issuers in extremely poor financial condition [10].

An important argument in favour of external debt restructuring is that debt restructuring and prolongation during economic downturns serve the purpose of stabilizing the economy, as they prevent a sharp decline in aggregate demand. The strategy of public debt management should be focused on structural reforms of the economy in accordance with the national interests of the state and its financial security; management should be long-term, strategic, and aimed at increasing the maturity of debt and reducing the cost of debt service. In practical terms, it is necessary to introduce effective debt management for the duration of the crisis caused by the coronavirus pandemic (2020), to develop and implement in practice a

scientifically sound strategy of external debt restructuring which would be in line with strategic national interests.

Three main issues may be exacerbated in the sovereign debt restructuring negotiations.

First, debtors and some creditors may have their own reasons not to want a quick solution. External motives can interfere, especially on the part of the debtor. Sovereign debtors are governments that respond to political incentives, and so a confrontational approach, while not helping to reach an agreement, can be popular with voters and political allies.

Second, there is almost always an asymmetry of information between the debtor and his creditors. Sovereign debtors know their ability to repay debts better than creditors (because they are in a better position to assess how realistic crisis programmes and reforms are and to take into account all political aspects). At the same time, creditors can reasonably assume that governments are trying to offer too unattractive terms for debt relief. But there is a reverse problem: debtors cannot be sure how much creditors are willing to change the terms of debt payment.

Third, there are conflicts of interest not only between the debtor and creditors collectively, but also among creditors. The debtor's ability to repay a debt to an individual creditor or group of creditors will improve if more other creditors agree to a full debt relief. Therefore, each creditor has an incentive to avoid final approval, relying on special conditions. This is called the "creditor coordination problem" or the "holdout" problem [2].

The role of the IMF in sovereign debt restructuring. Due to supervision and its role in financing, the IMF often plays a central role in the debt restructuring process through the functions enshrined in its Charter.

Thus, the IMF provides balance of payments financing "under appropriate guarantees" (for example, conditions) for a member country that implements an economic adjustment programme. The success of this programme aims to help a member country to overcome its balance of payments problem, enable it to repay its debt to the IMF, and promote stability in general, also by preventing or mitigating the spread of side effects to other countries [2].

And here, the direct reduction of production and employment (which can be offset by rapid growth in demand and, consequently, production and sales – after overcoming the pandemic) is not as dangerous as the possibility of provoking a financial crisis that will have longer-term and deeper negative effects than in 2008-2009. Rapid debt restructuring, which is supported by the vast majority of creditors and provides sufficient debt relief to restore the country's solvency, can significantly reduce these costs. But this is not easy to do, even when the debtor and most creditors are negotiating honestly. In addition to the inevitable conflict of interest between creditors and the sovereign debtor, debt restructuring requires overcoming asymmetric information problems – especially regarding the debtor's ability to pay, as well as particularly attractive offers made to other creditors [5].

In preparing for debt restructuring, it is desirable: 1) to involve the IMF in this process as soon as possible, 2) to hold intensive consultations with borrowers, 3) to pay special attention to coordinating actions on certain groups of borrowers and, finally, 4) not to try to create too unattractive conditions for borrowers (similar to debt confiscation) [2].

The threat of negative economic consequences caused by the coronavirus pandemic has revived talks about joint European bonds (Eurobonds) – i.e. debt, guaranteed not by individual governments, but by the EU as a whole (which increases the ability to borrow for weak economies – Italy, Spain, Greece and even France), but poses a threat to the stronger – Germany, the Netherlands and Austria who have not yet agreed to such an option). This idea is currently being discussed in the context of the need to issue the so-called "*Corona bonds*" – the similar joint bonds, with the difference that the funds raised should be used for costs associated with the fight against coronavirus and overcoming the negative economic consequences (employment creation, export support, promotion of small and medium-sized businesses). Moreover, the idea is put forward that such bonds should be redeemed directly by the European Central Bank – although it is illegal so far). On the other hand, Indonesia made a loan of 4.3 billion dollars for a period of 10 to 50 years in early March this year (for the first time in Asia), using the "Chinese model" of so-called 'Pandemic bonds'[5].

The anti-crisis measures of the Government of Ukraine should also include a separate package of actions aimed at counteracting the panic and crisis in the field of credit and financial relations.

Conclusions and suggestions. Taking into account domestic and foreign experience, as well as measures that are already being implemented or declared in the world, *it is proposed to:*

1. Announce the restructuring of public debt of Ukraine on the *'bail-in'* principle, i.e. the joint participation of creditors, in particular:

a) to terminate the payment (but not the accrual of interest on the debt obligations of the state) – with the postponement of their payment to subsequent periods;

b) to issue new (internal and external) low and high-yield national and municipal liabilities (*coronabonds*) under the programme to combat the economic consequences of the coronavirus pandemic (improving the health care system, supporting small and medium-sized businesses, compensation for losses due to quarantine regime, etc.);

c) to offer creditors-holders of national and municipal debt obligations to exchange bonds of previous issues for new *coronabonds*;

d) to request the US Department of Treasury to provide additional limits on guarantees for external *coronabonds* (on the principle of "Brady bonds");

e) in connection with *force majeure*, to offer creditors-holders of VRI on debts of Ukraine to hold negotiations on changing the terms of "restructuring 2015".

2. We need to buy time until the whole world reboots its own economies because of the possibility of external debt restructuring. The current coronavirus pandemic has posed unprecedented challenges to national economies. The changes that have taken place in international relations have led to reduction in trade and economic relations between the countries, and now the risks of their further complication remain high. The money released through the restructuring of Ukraine's external debt can help solve the problem of unemployment of laid-off workers, as well as the launch of production facilities of domestic industries. In addition, the

Government can develop a programme to support certain sectors of industry encouraging corporations to increase production through the public procurement system.

3. Subject to successful negotiations to defer repayment of loans to international creditors for at least 2020-2021, the Government of Ukraine may convert \$2.6 billion in non-resident repayment of IGLBs by exchanging IGLBs for *coronabonds*; bonds with a maturity of 3-5 years and a coupon rate fixed or pegged to the minimum value between the discount rate and inflation. A similar procedure for the conversion of Ukraine's domestic liabilities was already conducted in 1998 through the exchange of IGLBs for CIGLBs (conversion bonds).

At the moment, the conversion of debts can give up to UAH 75 billion savings on government debt payments, and this resource under a certain scheme can be monetized in favour of the national reserve anti-crisis fund. It is possible to introduce taxation of income from IGLB redemption and its abolition with participation in the conversion, the introduction of the Tobin tax on the purchase of currency in case of repatriation of the amount of IGLB repayment abroad. In this case, non-residents will have to decide what is more profitable for them: to insist on repayment and pay taxes, as well as a special tax on withdrawal of capital abroad, or voluntarily agree to the conversion of obligations and exchange their IGLB portfolio for a new issue of *coronabonds*.

Conclusions and Recommendations for Ukraine. These schemes and examples of debt restructuring show that in most countries this procedure began with a technical default – a refusal or warning to refuse to repay a certain type of debt instruments on time.

It is known that in 2015 the Ukrainian government restructured its debt to private foreign creditors by \$15 billion. This agreement is considered by many international and domestic experts to be a failure or a ‘slow-action mine’. After all, the announced ‘write-off’ of \$3 billion turned into much larger payments over the next two decades: the government issued new securities to creditors pegged to Ukraine's GDP growth. If the Ukrainian economy grows faster than 3%, then from 2021 to 2040 the country can give from 5 billion dollars up to \$20 billion, depending

on the pace of development. That is, the more production grows, the more money will be given. Such an agreement kills Ukraine's chances of escaping poverty.

Under these circumstances, taking into account the published UNCTAD initiative, the Ukrainian Government should resume negotiations with the IMF and private creditors on debt restructuring, including the postponement of debt payments to international financial institutions (IMF, EBRD, World Bank Group, etc.) for at least a year. It is possible to negotiate the partial write-off of the debt. At the same time, it is necessary to develop a debt management strategy, choose the most acceptable debt instruments for the country and negotiate with private creditors under the "bond-bond" or "bond-share" patterns.

We should not count on the "simplicity" of negotiations with the IMF. However, it is possible to prepare sound proposals for future reforms, taking into account national rather than transnational capital interests.

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CORONA-TEST FOR UKRAINE'S FINANCIAL SYSTEM

The purpose of the article is to clarify the question of the resilience of the financial system of Ukraine against threats posed by the coronavirus pandemic and the response to it by governments and other global actors.

After the last World Financial crisis 2008-2009 experts constantly talked about its recurrence in the near future. Gradually, the number of failed forecasts began to reach a critical point and in fact the final date of the "end of the financial world" was identified as 2020. In particular, experts from JP Morgan argued that next global financial crisis will strike in 2020 to be provoked by automated trading systems and could lead to social unrest as in 1968 [1]. The chief economist of Moody's Analytics Mark Zandi clarified that "2020 is a real inflection point" – after which a continuous decline in the world economy will begin [2]. Of course, New York's professor Nouriel Roubini was not silent either, warning about the emergence of conditions for a global recession in 2020: global stimulus packages from governments and central banks are coming to an end; inflation is approaching; trade disputes slow down the economy, and interest rates are on a growing trajectory [3].

Thus, it is not surprising that in Ukraine critical-oriented and openly opposition experts spoke on the impending crisis, while pro-government analysts, not excluding the existing risks, argued about the adequacy of financial policy (in the broadest sense) and the sustainability of the domestic financial system. This was particularly

acute during the discussions on the Government's external debt and the National Bank's monetary policy (in particular, in its exchange rate aspect).

But the author was sharply criticized for his evaluation of risk for a new World Financial Crisis as 50% probability as too low [4, p. 17]. Meanwhile it was approximately on the level as later downgrading prediction for Greece and Italy and just a few lower than for Latvia – the “weak points” of Eurozone (see Fig.).

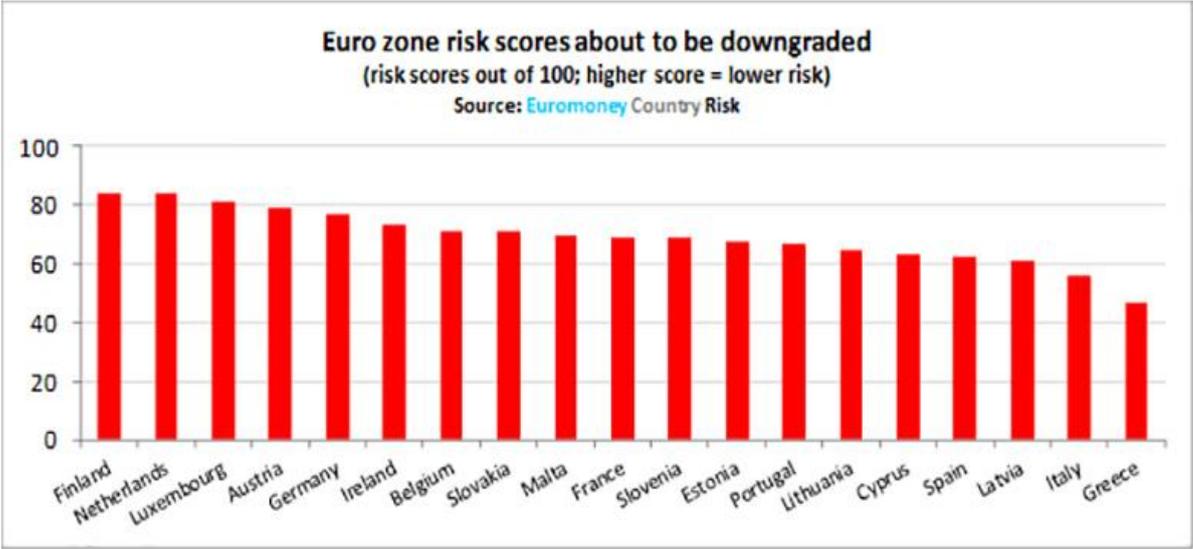


Fig. Euro zone risk scores about to be downgraded, risk scores out of 100; higher scores = lower risk

Source: Weltman J. ECR risk experts contemplate another financial crisis. *Euromoney*, March 20, 2020.

In time-table format it meant that the Crisis will not happens at least until mid of 2020. And in fact it still not started even in spite of additional negative in pact done by COVID-19 pandemic which plays a role of stress-test for a financial system.

Statistics shows that the exchange rate of the Ukrainian hryvnia began to fall in the first decade of March 2020 and the National Bank of Ukraine sold more than \$ 980 million in just three days (March 10-13) to stabilize it. Almost immediately after that, the medium-term strengthening of the exchange rate began, which lasted until the beginning of July (causing dissatisfaction of exporters and surprise of macroeconomist analysts). However, the government declared a nationwide quarantine, which created significant difficulties in the areas of transport, maintenance and production and acted as an "overburden" on the financial system. Of

course, the first reaction of financial institutions was a warning: in particular, some of them stopped selling foreign currency (in cash) or closed some of their branches.

The National Bank continued its foreign exchange interventions, selling and buying foreign currency at the same time (most likely due to fears of a collapse in the exchange rate – intimidated by pessimists and the opposition amid undesirable growth due to falling demand from importers affected by quarantine restrictions). Panic was also exacerbated by appeals to international financial institutions for assistance (against the background of significant underutilization of credit limits by the World Bank and other IFIs) and the adoption by the Verkhovna Rada of Ukraine (the parliament) of amendments to the state budget of Ukraine for 2020 needed to combat the coronavirus pandemic that provided for a threefold increase in the budget deficit.

A logical consequence was the decline in production in the first quarter of 2020 by 5.1%. The expected confirmation of this trend in the second quarter (in April, the decline in industrial production compared to the same period last year exceeded 16 percent) allows us to talk about the crisis in Ukraine's economy. But we must understand that **this is not a financial crisis, but a supply-side crisis** (supported by decrease of demand as result of slowdown of incomes).

The financial system of Ukraine has demonstrated its quite good sustainability: the inflation is kept in target limits (5% +/- 1%), the exchange rate still higher than Government's predictions (28 hryvna per 1 US Dollar compare with 30 – in budget calculating), no bank or another financial institution collapsed, the IMF has agreed to offer a new stand-by program and yield for Ukrainian Eurobonds decreased a little bit... By our opinion there are two groups of factors to promote for such situation:

- i)* the last years' sound financial policy and
- ii)* the weakness of our financial system.

As for sound policy it could be noted “the bank's cleaning” done few years ago [5] (and still criticized by some experts); a tough monetary policy of inflation targeting and quite good budget expenditure discipline.

The paradox of our financial system's weakness to be the state of the system is so bad that our economy already are in the bottom and COVID-19 impact couldn't do

it much worse. A stock market (which indexes are most important benchmarks of economic development) in fact doesn't exist in Ukraine. We have a strong banking institutions which credit the Government but industry (corporate loans consist less than 30% of general bank's assets compare with 50% five years ago) [6, p. 5]. Another hand, looking on sources of corporate financing we could find that share of banking loans is less than 10 per cents. Ukraine's national currency (hryvnia) is one of most undervalued in the world [7]. External debt is quite large but mainly inefficiency used (see detailed above article by prof. O. Borzenko) – and the Government has to apply for the IMF support just for debt service to be unable to adjust Ukraine's balance of payments.

Such way, for Ukraine, passing the global financial system "corona-test" means understanding that the danger to its own financial system is determined not so much by external factors (the importance of which for the "open economy" remains very important) but by internal ones. According to foreign experts, the pandemic could quickly close the "window of opportunity" for the new government if investors lose confidence for Ukraine [8].

Conclusions. Thus, it can be stated that the Ukrainian financial system has so far (as of end of July 2020) passed the corona-test and proved to be more stable than some experts expected. However, if the situation deteriorates due to the consequences of quarantine (and this can be expected: in particular, a significant increase in "bad loans" – NPL should be expected in the fourth quarter of this year, and a number of international defaults may be provoked by a probable default of Argentina) the financial crisis in Ukraine may become a reality.

At the same time, Ukraine must, above all, demonstrate its willingness to counter the negative effects of the COVID-19 pandemic and prevent a possible financial crisis. And hence the need for urgent measures "coronomics" aimed at levelling the negative impact of the "quarantine regime" of the economy, namely:

1. Announce the restructuring of Ukraine's domestic public debt on a "bail-in" basis, i.e. the common participation of creditors, in particular:

a) to suspend payment (but not payment of interest on government debt) – with the postponement of their payment to subsequent periods;

b) to issue new domestic government and low-yield municipal liabilities ("coronabonds") under the program to combat the economic consequences of the coronavirus pandemic (improvement of the health care system, support for small and medium-sized businesses, compensation for losses due to quarantine, etc.);

c) to offer for creditors (holders of state and municipal debt obligations) to exchange bonds of previous issues for new "coronabonds";

2. Introduce changes in monetary policy aimed at increasing the liquidity of the financial market in the fight against the coronavirus pandemic, in particular:

a) the National Bank of Ukraine has to accept "coronabonds" as collateral in refinancing transactions as well as to purchase "coronabonds" on the primary market – within the limits agreed with the Cabinet of Ministers of Ukraine;

b) to announce the transition from the regime of free floating of the hryvnia exchange rate to the regime of managed floating within the "corridor" agreed between the National Bank and the Government of Ukraine;

c) to ensure the launch of mass transactions on the stock market of Ukraine by quoting shares of state-owned banks and companies (eg, Oschadbank, Privatbank, Ukrzaliznytsia) – which must be additionally issued and placed among small domestic investors (individuals) – provided that no holder of such shares will not be entitled to own more than 1% of the total shares.

3. Announce the restructuring of Ukraine's external public debt, in connection with which:

a) to terminate the payment (but not the accrual of interest on the debt obligations of the state) – with the postponement of their payment to subsequent periods;

b) to apply to the US Department of the Treasury to provide additional limits on guarantees for external "coronabonds" (on the principle of "Brady bonds");

c) to invite creditors-holders of VRI on debts of Ukraine to hold negotiations on changing the terms of restructuring in 2015.

Only strengthening the national financial system could give to Ukraine chance to be able to successfully pass the "corona-test" and ensure the stability of its financial system in the conditions of production and trade (sales) crisis in the world,

which is due to the quarantine regime and forced transformation of production and trade relations.

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CHANGES IN CONSUMPTION TRENDS IN UKRAINE IN THE CONTEXT OF ITS SAFETY UNDER COVID-19

A problem of consumption safety providing has close relationship with the problems of ecological and socio-economic development. After all, we can say that in some extent it even caused the emergence of the coronary crisis by non-compliance and failure of its ensuring by consumers, producers and states. So, we understand the consumption safety as the ability of state, business and society to create conditions

for conscious satisfaction of self-reproduction needs by a person with the provision of health, environmental protection and society development. The objects of research on this issue vary widely.

To begin with, we've investigated the problems of development of the society of consumption in the context of the Ukrainian environment specifics and substantiated the connection of consumption safety with the goals of sustainable development (fig. 1).

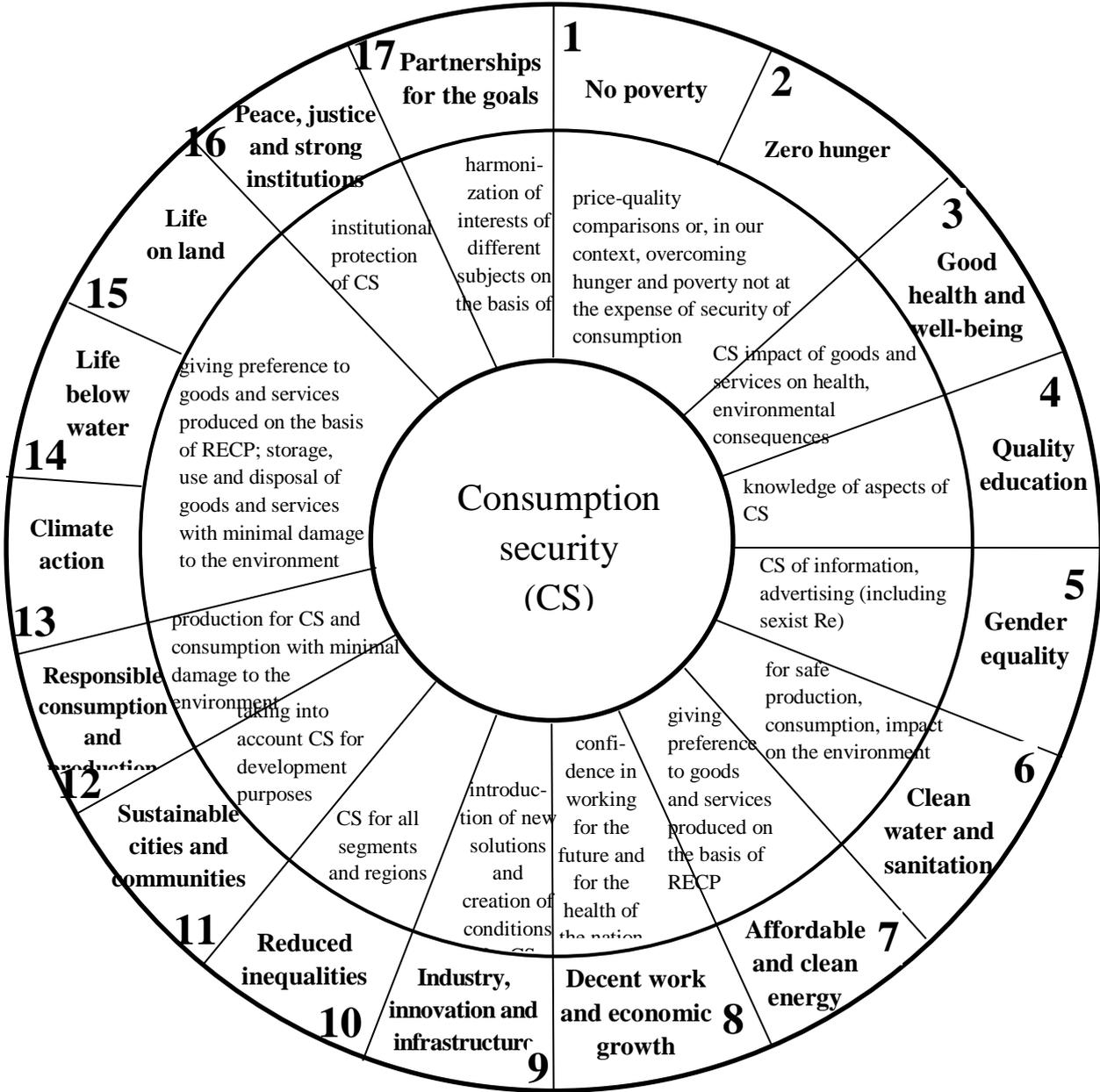


Fig. 1. The relationship between consumption security and the UN Sustainable Development Goals

Source: developed by the authors.

It should be mentioned that according to the ranking of countries on the sustainable development index, Ukraine occupies the 130 position out of 137 countries. Significant dropping of the Index since 2015 (fig. 2) is caused by the low position on the component "Quality of Life", namely the Index of economic dimension, which takes into account the efficiency of the labor market, macroeconomic environment, innovation and technology of the economy, the level of financial market and infrastructure, and economic freedom of the population.

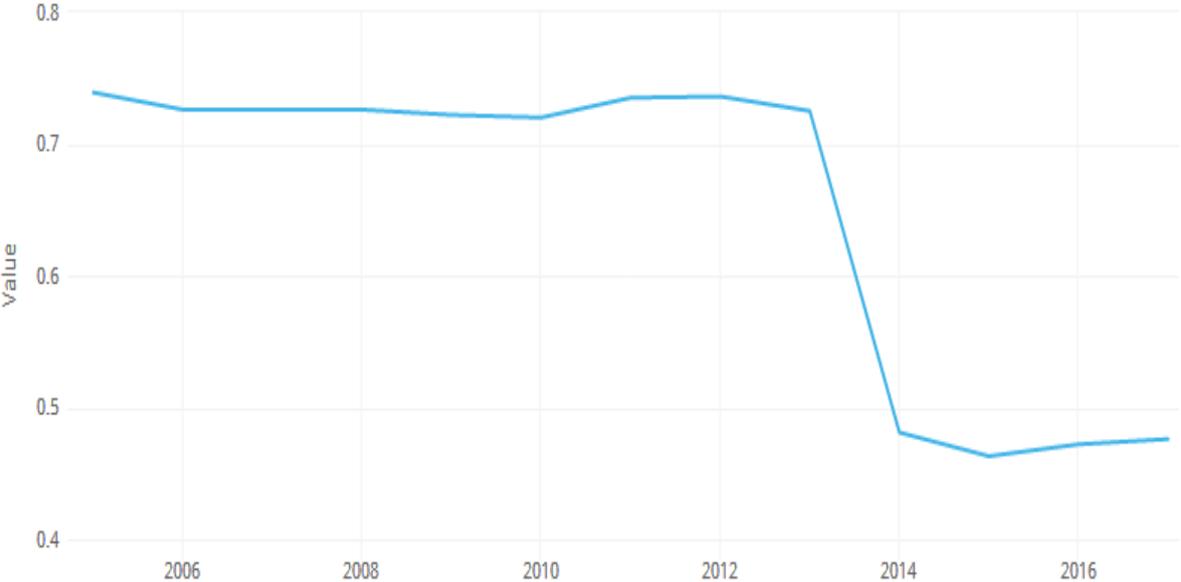


Fig. 2. Dynamics of Sustainable development Index of Ukraine change, 2005-2017

Source: composed by the authors based on data [1].

We’ve also proved the determination of the consumption level distribution in the countries of the world by the volume of the country's GDP, the number of population and the quality of life level (fig. 3).

China’s belonging to the first group can be explained by large number of population and the correspondingly low value of GDP spent by households per capita. Ukraine is in the group with a low level of consumption of goods and services. Despite the positive changes in the development of retail trade and household consumption, GDP and average monthly wages remain very low comparing to the developed countries (see Table).

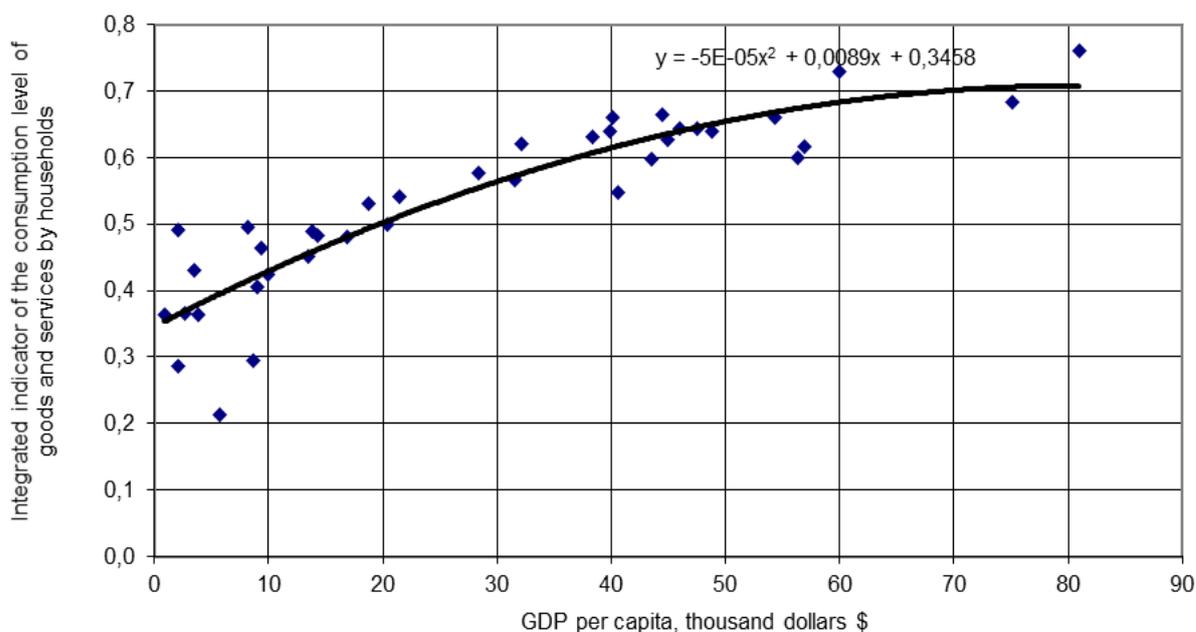


Fig. 3. Relationship between the country's GDP per capita and the integrated indicator of the level of goods (services) consumption by households

Source: composed by the authors.

Table

Grouping of countries by goods and services consumption level in 2017

Groups of countries	Consumption level	Integrated indicator Y	Countries
I	Very low	<0,3	Belarus, China, India
II	Low	0,3-0,4	Azerbaijan, Tajikistan, Ukraine
III	Average	0,41-0,5	Armenia, Bulgaria, Brazil, Czech Republic, Hungary, Kazakhstan, Latvia, Lithuania, Mexico, Poland, Uzbekistan
IV	High	0,51-0,6	Belgium, Greece, Israel, Korea, Spain, Portugal
V	Very high	>0,6	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Switzerland, Sweden, United Kingdom, USA

Source: calculated by the authors.

Analysis of the state of security of consumption in Ukraine by a set of criteria and indicators, grouped by functional components (fig. 4), showed a low level (fig. 5), which since 2016 on some indicators is improving slightly, but remains quite low on areas that form the social basis of human existence (living conditions, work and health).

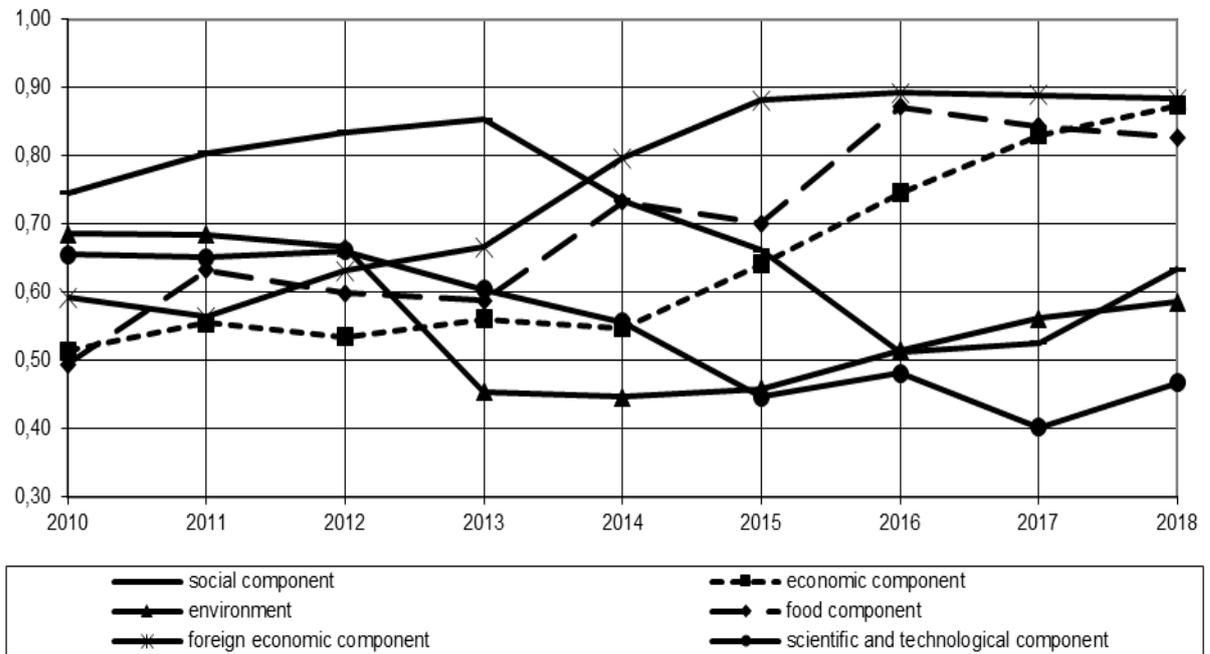


Fig. 4. Dynamics of change of taxonomic indicators of consumption safety in Ukraine by functional components, 2010-2018

Source: calculated and composed by the authors.

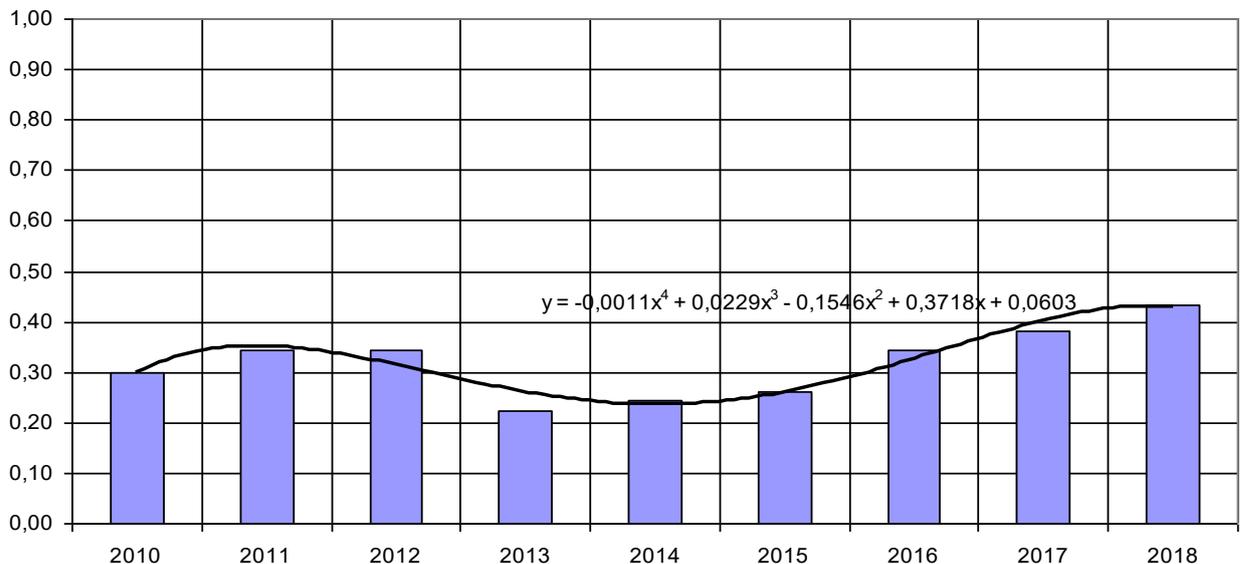


Fig. 5. Dynamics of change in the taxonomic indicator of consumption safety in Ukraine, 2010-2018

Source: calculated and composed by the authors.

Thus, as we see, even without threats from COVID-19, there were enough problems of providing the safety of consumption (fig. 6). However, we'd like to draw attention to such an issue that has direct relationship with the problem mentioned above and to providing of consumption safety as the changes in consumption trends

under corona crisis. The object of the study covers consumers of Ukraine; however, we believe that the issue should be of interest to many people, because a number of vectors of change in consumption trends are of global nature.

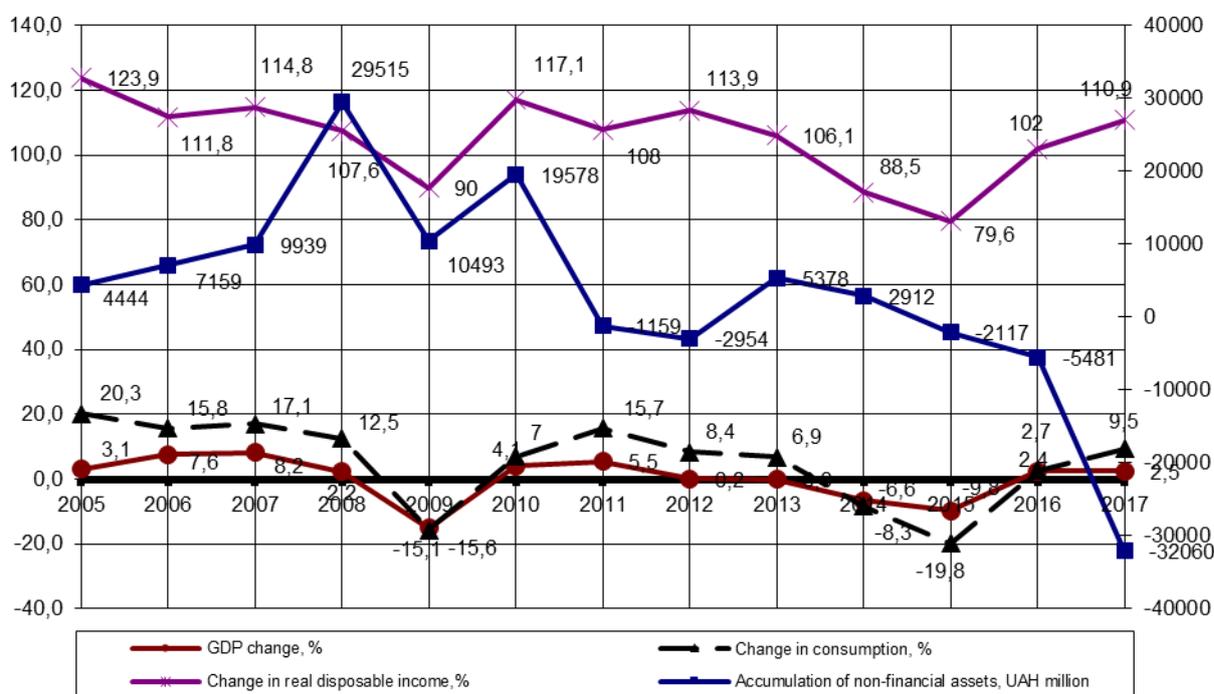


Fig. 6. Relationship between changes in consumption and GDP and disposable income and accumulation of non-financial assets of the population of Ukraine, 2005–2017

Source: composed by the authors based on data [2].

So, considering the recent events, we noted the high probability of changes in consumer preferences and attitudes, in particular due to the changes in income and employment. If during the quarantine period the volume of demand has decreased to the size of the needs for basic necessities, at the stage of weakening the pandemic measures it is possible to increase it due to delayed needs, while further positive dynamics may slow down due to caution and social distance. Thus, there can be identified such areas of influence on the consumption structure as reducing of its total amount, cost savings and pragmatization, increasing the share of online shopping, reducing demand for everything that involves social contacts, increasing demand at points of sale "near the house" etc. So, we should agree that such trends may demonstrate not only a change in consumer preferences, but also the formation of a new culture of consumption, in particular within its safety.

In summary it should be noted that consumption safety motivates and, at the same time, limits consumers, intermediaries, producers and the state to economic interests, which necessitates their harmonization in the production and consumption of goods (services) on the basis of sustainable development. And this fact should be considered while forming development strategy and policy on different levels of system hierarchy during and without crises of any nature.

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CHALLENGES OF GLOBAL RISKS AND THE RISE OF ONLINE EDUCATION SYSTEM

Based on the topic of challenges of global risks and the rise of online education system, I explore three main questions in the talk:

(1) *Crisis*: The world is facing a growing number of complex and interconnected challenges in recent years, which may bring fundamental changes to humanity.

(2) *Crash*: Facing various risks globally, as there is nothing permanent except for changes, the governance of modern University is facing more and more complex scientific, technological and cultural challenges.

UNESCO's figures show that over 80 percent of the world's learners are now being kept out of educational institutions, and 138 governments have now ordered country-wide closures of their schools and universities.

(3) *Response*: The rise of online education has met personal needs and preferences rapidly. Starting from enrollment and classroom management, online-learning support ecosystem is growing up and providing utility that is available to

everybody throughout the globe. Moreover, an ecosystem of open-standards-based interoperable digital products shaped by the education community enables integration at low cost and are rapidly becoming a reality.

By the end, I propose the spillover effect of online learning ecosystem, as the advent of the era of knowledge economy, hope Universities globally could work together to provide online education as a new source of global public goods.

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REMOTE PROVISION OF MEDICAL SERVICES IN THE ELECTRONIC ACCOUNTING SYSTEM: INTERNATIONAL EXPERIENCE

The exponential development of innovative digital technologies leads to an increase in demand for medical services in the field of health care and increased costs for medical care. According to Deloitte forecasts, by 2022 the annual further growth of global health care expenditures is projected at 5.4%, which will have a significant impact on the financial performance of the ecosystem [1]. Use of new models of providing medical services to improve the availability and affordability of such services requires the construction of a financial model and data infrastructure of virtual environments that provide benefits by reducing costs and expanding access. In line with WHO's operational guidelines in the context of combating COVID-19 and EU Directive 2016/2102 on the accessibility of websites and mobile applications, the emphasis is placed on maintaining an international electronic accounting system in the field of health care, which has gained new meaning and aims to implement remote health care and a new level of basic health care, enabling patients to be examined and monitored remotely anytime, anywhere, based on an expanded list of sample indicators and secure access to high-quality health services.

WHO-recommended measures for COVID-19 preparedness, preparedness, and response are the registration and follow-up of suspected cases of multisystem inflammation associated with COVID-19 on a global clinical data platform [2]. Key decisions for the provision of affordable medical services during all stages of the COVID-19 pandemic are made based on the application of *modern methods of analysis of electronic medical records (Electronic Health Record, EHR)* on the state of health of patients and the formation of information maps needed for market segmentation of medical services and analysis of geographical, demographic, clinical and medical factors, diagnosis, therapeutic treatment and drugs, laboratory and visual research results, genomics data, institutional resources, etc.

Assessments of the impact of digital transformation on the provision of medical services and decision-making at various levels of the health care system are based on clinical indicators of the quality of medical services, in respect of which there is an evidence base and are defined in international practice retrospectively as an alternative tool for achieving goals in the context of promoting the improvement of digital services of the health care system as a whole. In the United Kingdom, for example, information on the *economic assessment of related group databases (NHS Economic Evaluation Database, NHS EED)* and *cost-benefit analyses of health care delivery and cost of health services* is used.

The modeling of these processes in the *international medical nomenclature of electronic medical records* is presented in the form of *systematized clinical information* (symptoms, diagnoses, procedures, organisms and other aetiologies), which is used to digitize medical records and form clinical databases at different levels - both national, regional and local – *and is based on common clinical information models based on industry-specific digital data standards*, such as the following *HL7* [3], *FHIR HL7* [4], *CDISC* [5] and *FAIR* [6].

Based on the *basic reference model for Open Systems Interconnection (OSI)* both clinical (image archiving and mailing, electronic medical records, telegnesis), and non-clinical (billing, equipment maintenance, supply, etc.) health information systems are systematized, which cover software (*SaaS*) and hardware (*IaaS*) network services that are integrated into *the HL7 (Health Level7) [7] communications model*

platform for the provision of healthcare services. The platform itself, which regulates tools for structuring, collecting and analysing standardized data parameters and identifies participants, assesses the capacity of health facilities and the provision of basic health services to respond to COVID-19 [8].

Relevant detailed standards that offer *a reference list of functions in the Electronic Health Record System (EHR-S)* are available from the International Organization for Standardization *ISO / HL7 10781: 2015 (EHR FM)* and serve as a *guideline for determining the type of diseases and observing a holistic approach in the provision of quality medical services* and are based on the Clinical Data Interchange Standards Consortium (*CDISC*) [9].

The *FHIR HL7* series of standards are *used to describe data and programming interfaces, share digital medical records, and obtain Fast Healthcare Interoperability Resources (FHIR)* on the *HL7* platform. In practice, these standards are used to enable doctors and healthcare professionals to access integrated electronic medical records and provide healthcare services to patients in the form of automatically generated recommendations that are published in the *FHIR HL7* directory as evidence.

The world experience shows that the provision of medical services is an important, but not exclusive, element in the development of a national e-health system. An important conclusion is that the development of a national *eHealth* system should be carried out on the basis of integrated approaches to managing the fragmented regional infrastructure of medical institutions and digitization of unstructured (handwritten) medical records placed in a central database, *eHealth* and assessment of the impact of digital transformation of medical services on the overall health of the population.

The process of digital transformation of health care into digital healthcare is a special group of indicators, as it focuses on defining entities such as digital data (or any digital object), metadata (information on digital object) and digital infrastructure. Description of patients' life status based on available, accessible and compatible digital data (*Findability, Accessibility, Interoperability and Reuse, FAIR*) [6], which are used repeatedly in accordance with the set of guidelines on digital

assets, helps to update and increase the probability of discovery of large amounts of clinical data without human intervention and the emergence of new services and digital health care services.

Examples of *digital health services* now include: electronic medical records, electronic prescription, internal communication of health care workers, electronic referral, and automation of process steps. On this basis, supported or emerging *new digital health services* such as: *e-Triage* (communication tools and databases), clinical logistics work, telemonitoring of patients with chronic diseases, effective information panels, patient flow routing, algorithms based on *BigData*, medical chats, prevention tools, patient supporting networks, teleradiology, etc.

The models organized in this way allow implementing a *system of digital medical records* based on *Fast Healthcare Interoperability Resources (FHIR)*, which contain medical data formats and exchange of this data through the *platform of interaction of distributed application components* for effective provision of digital medical services, in a single algorithm. In practice, *various categories are currently being used to measure the impact of digital transformation on the delivery of healthcare services* based on the selection of multi-criteria measurement and cost effectiveness tools in the respective systems (*EQ-5D, HUI and SF-6D*) [10].

Based on the results of research of the best world practices in the field of health care, as well as taking into account recommendations on these issues provided by *WHO, Jasehn, MAST* and other leading international organizations, it is proposed to implement in Ukraine a *common action algorithm for the assessment of digital health care services* based on *electronic resources for rapid interaction through the platform of interaction of distributed application components*.

Effective coordination and collaboration between health facilities and recipients at national, regional and local levels is essential. The issue of establishing a *coordination centre to manage the architecture of clinical documents in the health sector as a national body for overseeing processes related to the systematization of the consolidated architecture of clinical documents and the integration of health facilities is also becoming increasingly important.*

The dynamic course of the epidemic situation with *COVID-19* demonstrates the need in Ukraine to implement a comprehensive model of multi-level system of evaluation of medical services based on information clinical models, based on international standards of digital data. Implementation of the proposed measures will allow providing access to clinical data of patients and coordination of all participants in the assessment of risks and threats caused by *COVID-19*.

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THE PARADOXICAL DYNAMICS OF GLOBALIZATION UNDER COVID-19

At the current stage of development of economic globalization, there is decompartmentalization or merger, homogenization of markets, which can restrict the freedom of companies in the global space. Decompartmentalization of markets expands the scope of industrial and commercial opportunities and at the same time, imposes some restrictions on companies, limits their independence and autonomy. Due to globalization, the borders of national markets are becoming more open to foreign economic activity. Gradually, there are disappearing tariff barriers (duties, countervailing taxes, anti-dumping duties), non-tariff barriers (standards, quotas, import licenses), regulatory barriers (currency control, currency repatriation, local participation) and cultural barriers (traditional trade values, specific shopping habits, special conditions of use) [1].

The KOF Globalization Index includes a number of sub-indexes, including trade globalization, financial, interpersonal, informational and cultural [1]. These sub-indexes include a number of indicators that characterize globalization de facto and de jure. The corona crisis has strengthened and sharpened differences of globalization between de facto and de jure. In particular, there is de jure freedom to travel, and international airports are open to tourists, but de facto, there are green and red zones of countries that restrict international tourism and migration.

COVID-19 is a global humanitarian crisis, and its human scale is growing as the virus spreads to low-income countries with low-health systems. Since the beginning of the epidemic, COVID-19 has been found 15,084,963 cases worldwide; 633,007 deaths and 9,445,216 recovered cases [2]. By the number of infected and dead from coronavirus, the leaders are: United States – 4,028,569 (26.7% of world cases), Brazil – 2,166,532 (14.36% of world cases), India – 1,194,888 (7.92% of world cases). In

China defined 83,707 laboratory-confirmed cases of COVID-19 or 0.55% of world cases, in Ukraine 61,851 (0.41% of world cases) cases of COVID-19, of which 1,551 deaths, 34,000 recovered [3].

According to the new forecast of the government, the nominal GDP of Ukraine this year will amount to 3,985.5 trillion. UAH (-4.8%), while the inflation rate may rise to 11.6% (previous forecast -5.5%). The previous correction of inflation was 8.7%, the drop in GDP was -3.9% [4]. One of the biggest challenges of the coronavirus crisis for the Ukrainian labor market is closing the border with EU countries and the return of Ukrainian workers home. This situation reinforces all the negative factors on unemployment in the domestic market, as competition grows, which leads to a further decline in wages. Among the Ukrainian spheres of economic activity most affected by the coronacrisis are: air-traffic, tourism, catering, agricultural sector, IT-sector, as well as metallurgy (see Fig.).

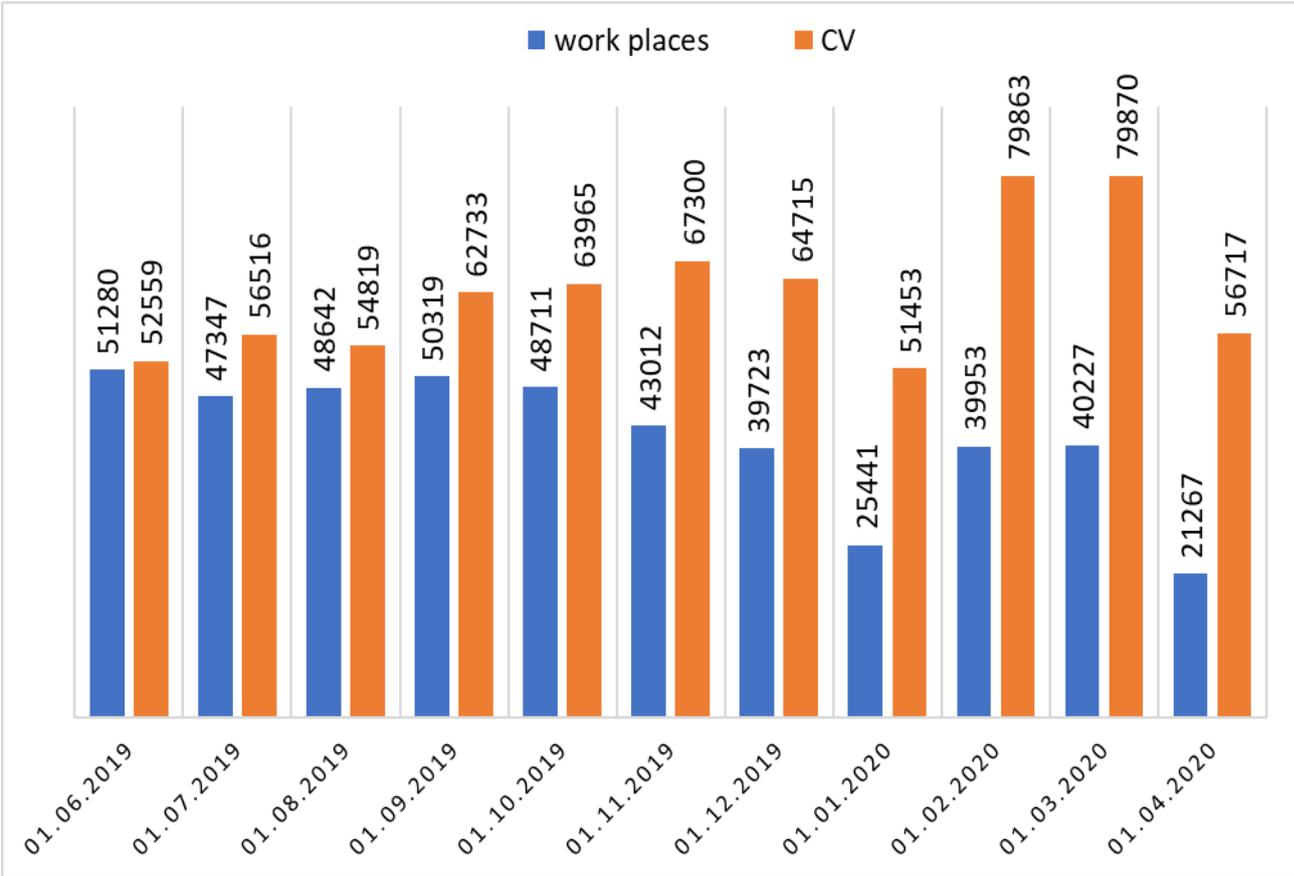


Fig. Labour market of Ukraine under COVID-19

Source: [4].

International trade can support the fight against COVID-19, including making it cheaper and easier for people to stay connected to jobs, markets – and each other – by [5]: reducing tariffs on information and communication technology goods and measures affecting access to digitally enabled services; temporarily increasing minimise thresholds to cut delays in cross-border e-commerce; and keeping trade moving without physical contact through enacting regulations to enable e-payments, e-signatures and e-contracts.

The Chinese economy was the first economies that face the coronacrisis, so today, as the rest of the world struggles with the negative impact of the pandemic on business; China has already outlined some strategic goals for overcoming it. Given the difficult conditions in which Ukraine found itself, the experience of Asian regions is useful for the domestic economy. To overcome the consequences of the coronacrisis, Chinese companies follow to basic principles.

First of all, Chinese organizations focus on the strategic goals of the business, but are also ready to change certain guidelines. The next principle is a flexible redistribution of talent in accordance with modern organizational needs. Some Chinese companies are actively redirecting or hiring their employees to other fast-growing companies. Another important principle is the ability to change the company's sales channels, which was quickly applied by flexible Chinese companies.

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ECONOMY OF HAPPINESS VS UNHAPPINESS IN THE POST-PANDEMIC PERIOD

To the question "What is happiness?" philosophers, psychologists, sociologists, physicians and economists tried to look for answers. In particular, at the 6th annual meeting of the Yalta European Strategy YES 2019 "Happiness is now. New Approaches to the World in Crisis" was considered how the factor of the happiness of society affects politics and what needs of people must be satisfied for their happiness. In the report of this meeting it was noted that Ukrainians most of all want welfare for their children and together with the Chinese they are the most optimistic nation – they believe that they will be happier in 5 years [1].

If we consider the phenomenon of happiness from a psychological point of view, then the answer will be completely ambiguous: happiness is a subjective feeling of a particular person. It can be interpreted as a state of subjective psychological well-being, a high level of satisfaction with one's life. The appearance of a feeling of happiness in an individual will be facilitated by the pleasure of meta-need (according to A. Maslow): the realization of the motives of growth, the need for self-actualization [2].

If we consider the phenomenon of happiness from an economic point of view, then today it becomes clear that a modern economy based on increasing consumption and maximizing profits has no prospects. Another ideology of the development of society has appeared, the purpose of which is to create not so much the wealth of countries as the greatest happiness for all its citizens. The theoretical foundations of happiness [2] presuppose the study of economic and other factors that determine human happiness, its dependence on the level of economic development of the country and the determination of parameters for assessing the level of happiness of

society as a whole. Studies have shown that the main factors of subjective well-being are [3, p. 65]:

- 1) life in a stable democratic society, material security;
- 2) loving friends and family;
- 3) interesting work and decent wages;
- 4) health and affordable treatment;
- 5) the presence of life goals according to their own value system;
- 6) philosophy or religion that give meaning to life.

Most countries consider the "economy of happiness" in the context of subjective economic well-being; in particular, S. Bergheim identifies four criteria of well-being: GDP, economic well-being, individual living conditions and happiness [4]. But as the Easterlin paradox shows, material progress and economic growth do not automatically lead to an increase in life satisfaction. At a certain moment in time, with an increase in well-being, happiness also grows, but if the country's incomes increase for a long time, and per capita income has reached a relatively high level, this dependence disappears [5].

Explaining the correlation between economic growth in different countries and the level of happiness of their population, the economic theory of happiness offers the following conclusions: for poor countries and countries with emerging markets for GDP growth, it is necessary to solve two problems – an increase in material well-being and an improvement in the mental well-being of citizens. As for the developed countries, the problem of increasing mental well-being comes to the fore [6].

In Ukraine in April 2020 the Consumer Confidence Index (CCI) (Fig. 1) equalled 66.2, which is 6.8 points lower than the indicator in March. Index of the Current Situation (ICS) decreased by 18.4 points to the level of 48.8. The components of this index have changed as follows: Index of Current Personal Financial Standing equalled 52.3, which is 7.8 points lower than the indicator in March 2020; Index of Propensity to Consume decreased by 29.0 p. and reached the indicator of 45.3.

In April 2020, Index of Economic Expectations (IEE) increased insignificantly by 0.9 points to the level of 77.8. The components of this index have changed as

follows: Index of Expected Changes in Personal Financial Standing decreased by 5.3 points comparing in March and equals 69.7; Index of Expectations of the Country's Economic Development Over the next year decreased by 13.4 points and equals 54.5; Index of Expectations of the Country's Economic Development over the next 5 years increased to the level of 109.1, which is 21.4 points higher than in March. In April 2020, the indicator of Index of Expectations of Changes in Unemployment equalled 168.9, which is 35.5 p. higher than in March. Index of Inflationary Expectations decreased to the level of 172.7, which is 12.7 points lower. Expectations of Ukrainians regarding the hryvnia's exchange rate in the coming three months have improved: Index of Devaluation Expectations decreased by 7.2 points and reached the level of 146.8 (see Fig. 1).



Fig. 1. Consumer Confidence Index in Ukraine, 16+ target group

Source: [12].

The Consumer Confidence Index (Tab.) lost 7 more points during the second month of the quarantine. Such loss is not big comparing with negative dynamics of the CCI in March-April in European countries. Namely, in Poland and Hungary the Index decreased by 37 p., in Germany – 26 p., in Spain – 13 p., Italy – 13 p.

The propensity of Ukrainians to believe in the short-term nature of the crisis (in the perspective of one year) and optimistic expectations about economic development in the next 5 years keeps consumer confidence from rapid decline. At the same time,

the most sensitive to the current crisis was the Index of Propensity to Consume: April value of this index is the lowest for the period June 2014 – April 2020. Approximately the same level of this Index was observed in July-August 2015. The decrease of propensity to consume indicates a strong sense of uncertainty among consumers and a strategy of cautious consumer behaviour (Tab.).

Table

Dynamics of the Consumer Confidence Index in Ukraine, 16+ target group

<i>Month, year</i>	<i>Consumer Confidence Index (CCI)</i>	<i>Index of the Current Situation (IPS)</i>	<i>Index of Economic Expectations (IEE)</i>	<i>Index of Expectations on the Changes in Unemployment (IECU)</i>	<i>Index of Inflation Expectations (IIE)</i>	<i>Index of Devaluation Expectations (IDE)</i>
04/2020	66,2	48,8	77,8	168,9	172,7	146,8
03/2020	73,0	67,2	76,9	133,4	185,4	154,0
04/2019	71,6	65,2	75,9	109,9	177,9	143,6

Source: [12].

COVID-19 has made adjustments to the development of the economy fortunately, turning many happy people into unhappy, worsening the first three of the above criteria for well-being (according to Bergheim), which could not but reduce the level of happiness. During the pandemic, many people around the world have lost their jobs, their living space has narrowed and it became necessary for all family members to be at home 24 hours a day. Happiness as a subjective well-being of people has significantly suffered; the above-mentioned main factors [3] have changed, since today's realities are:

- 1) life in an *unstable* democratic society, *insufficiency* or *lack* of material support;
- 2) *lack* of communication with friends and family;
- 3) *lack* of work and decent wages;
- 4) *danger* to health and *lack* of *vaccine* for treatment;
- 5) *change* existing life goals.

There remain philosophy and religion, and psychology, which give an understanding of how to survive during and after the COVID-19 pandemic.

Studies show that mental health has deteriorated due to stress and anxiety as the COVID-19 crisis progresses. A recent Gallup poll found that nearly 60% of Americans said they were anxious, up 20% from last summer, while the percentage who thinks their lives are prosperous fell to almost 49%, which is the lowest level since 2008. Yale professor Laurie Santos believes that "Everyone feels anxious, insecure and afraid, and people just really want to feel better." The professor gives 3 tips on how to deal with feelings of isolation and low mood [7]:

1. *Socialize.* Although this is difficult to do in the times of COVID-19, modern technology allows emotional communication with people in real time using Zoom or FaceTime, since you can see their facial expressions, hear the emotion in their voice. In particular, the digital tools used by young people during the COVID-19 period are shown in Fig. 2 [8].

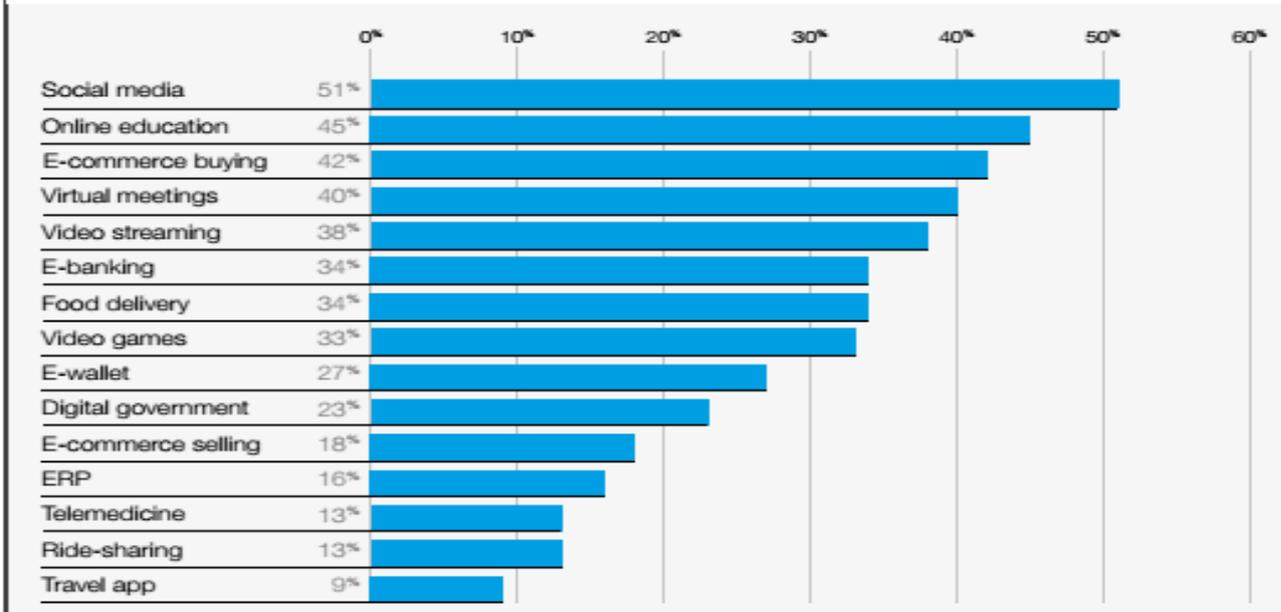


Fig. 2. Young people's use of digital tools during COVID-19

Source: [8].

2. *Help others.* Happy people tend to focus on other people's happiness rather than their own. Performing random acts of kindness, especially at a time when we are all really struggling, can have a positive effect on both the individual and society.

3. *Practice mindfulness.* Happy people tend to be more attentive – they are present “here” and “now”, noticing what is happening to them.

The economic outlook in the post-pandemic period is unfavourable for many countries of the world. Inflation is expected to return, or rather stagflation, and a transition from monetarist to fiscal policy. The role of the state will expand and taxes will increase, perhaps the future period will be much more similar to the 1970-s, both in Europe and in the United States. “The effects of the pandemic are likely to cement the counter-reaction against globalization, as friction between borders inevitably intensifies, and the role of the state naturally increases through de facto nationalization, incentives and health care” [9]. Today, scenarios are being developed for the development of the world's economies in the post-pandemic period [10], in particular, in Fig. 3 shows continuity 1 "Balanced global order".

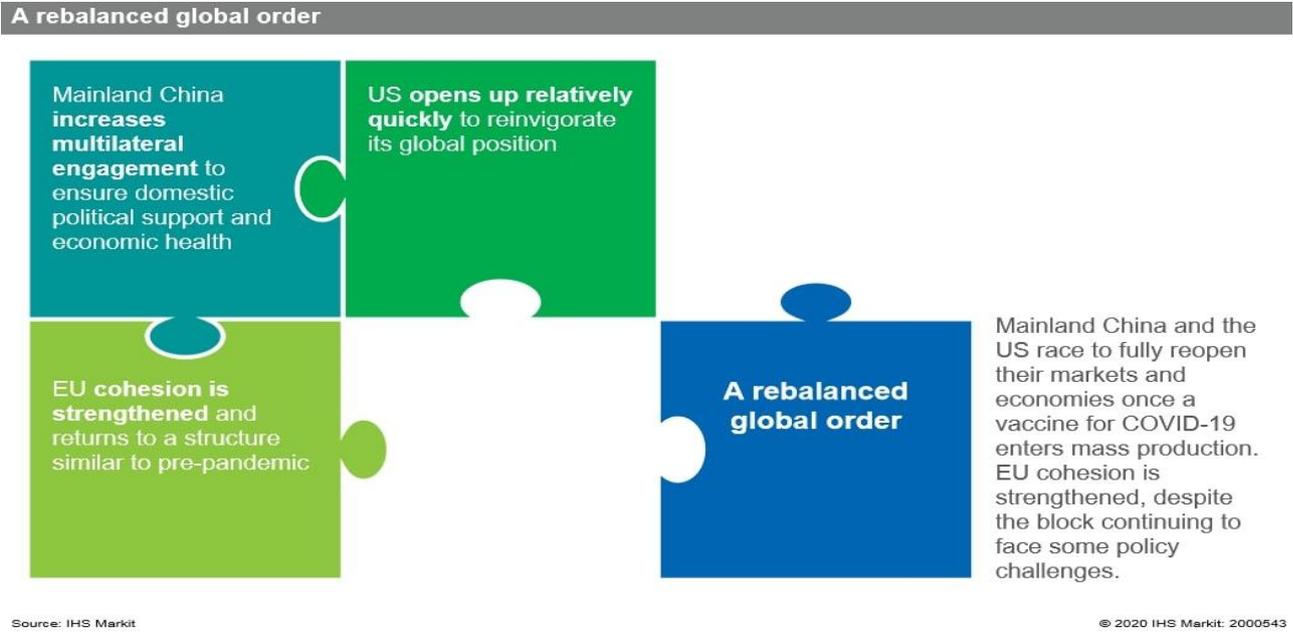


Fig. 3. Continuity 1 "Balanced Global Order"

Source: [10].

As a result, under this continuity, most countries and regions will pursue policies of cooperation and multilateralism to manage the impact of the COVID-19 pandemic and mitigate such shocks.

But despite the above, to answer the question; "What awaits us all in the post-pandemic period?" optimism and positive thinking are very important resources. According to D. Goleman, people who are full of hope are less prone to depression they walk confidently through life, achieve their goals and, in general, worry much

less. This process is based on human ability, which psychologists call personality self-efficacy, or the belief that we can control events in our life and withstand any difficulties [11].

Therefore, in our opinion, the life experience of experiencing COVID-19 through overcoming difficulties can give an impetus to the strengthening of self-efficacy both at the level of individuals and entire countries, and a return to building an economy of happiness.

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GLOBAL CONNECTIONS NOW. A CARE ETHICS PERSPECTIVE

From the perspectives of feminist theories, the realities surrounding international relations are flawed at least in three dimensions: firstly, the state, in theory and practice, are gendered by masculinist assumptions and structures; secondly, the relations between states, are always about dominating and being dominated; thirdly, mainstream international relations theory is male-streamed, it takes the male constructed reality as the framework of arguments. Thus, current discussions on IR rely on views such as conflicts, military strategies, control over and threats from other nations, self-preservation at the price of others, war (including nuclear war and biological war) at worst and views such as self-interests, sovereignty, autonomy, equality, freedom, justice at best.

The coronavirus raging across the world uncovers again the most unsatisfying relations among states: mistrust, accusation, hatred, indifference or controlling over... Trump even attempted to control the patent of coronavirus vaccine not long ago, only thinking about some rich Americans and leaving the rest of the world in danger. This is not what feminist theories expect, this is not what the world we all live in should be, though for thousands of years, human beings have been suffering from this kind of male constructed reality.

The ethics of care, probably the most important and promising feminist ethics, regards care as the fundamental human activity. Without care, mothers taking care of children, friends caring about each other, people caring about those live nearby or far away, there won't be any human being in this world, not to mention diverse human societies. Unlike mainstream moral theories (Kantian moral theory, utilitarianism and suchlike) whose goals are fair distributions of the products of economic activity and of positions of power in political field, the ethics of care views persons as relational and as interdependent. Our ties to different social groups and our historical

embeddedness are part of who we are; we are not separated from persons in our community and in other nations as well. Maybe someone would say, “Hey, look, I am totally relying on myself” OR “you cannot depend on anyone but yourself”.

However, the fact is that everyone is relying on perhaps thousands of people. Where do you get your electricity? Where do you get your WIFI? How do you travel from one place to another? How do you finish your work? Even, where do you get your food and clear water? Marx calls it the division of labor, but the ethics of care prefers to name it interdependence. This coronavirus global pandemic makes the view of care ethics much clearer: the division of labor remains there, however the material interdependence becomes very difficult, even impossible.

It is those kinds of different levels of interdependence, material, emotional, spiritual, political, economic, and others that preserve human beings. The ethics of care appreciates values such as mutual trust, empathy, sensitivity and responsiveness to particular others, calls for developing caring relations for persons who are suffering in distant parts of the world.

This coronavirus global moment calls for our rebuilding of interdependence and connection. Mistrust, accusation, hatred, indifference or controlling over others will bring the world into disasters we cannot imagine.

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COVID-19 AS THE STARTING POINT OF ESTABLISHING NEW FORMS OF INTERNATIONAL RELATIONS IN THE SYSTEM OF EDUCATION AND SCIENCE

Challenges related to COVID-19 are currently being analysed in all sectors of the economy. Education and science are among the areas of the service sector that have suffered the most losses this year. More than 1.5 billion students and youth worldwide have been affected by school and university closures due to COVID-19 outbreak, according to World Bank [3]. This situation has become an incentive for

many international organizations to identify problems and find answers to questions regarding the development of the education system in the conditions of a pandemic. Among them are: UNESCO, World Bank, International Association of Universities (IAU). As part of IAU's activities, a report titled "The Impact of COVID-19 on Higher Education around the World" was published [4].

World Bank also released a policy paper "The COVID-19 Crisis Response: Supporting tertiary education for continuity, adaptation and innovation" [5]. Assessing the impact of COVID-19 on the state of higher education in the global space, the World Bank made the following conclusion: "A rapid assessment of the experiences of COVID-19 disruption to tertiary education globally exposed many significant short- and long-term challenges facing tertiary education systems and institutions, including: diminished resources for institutions, personal and academic challenges for institutions and students, demand for improved infrastructure to support continued distance and blended learning models, reduced mobility placing pressures to improve regional and local tertiary institutions, and much more. A comprehensive list of immediate and long-term challenges and interventions follows, and together those inform an assessment of the potential for some positive outcomes from these unprecedented times" [5].

The crisis phenomena in the education sector that arose as a result of the pandemic initially required a concentration of efforts on finding ways to stabilize the educational process. However, whilst implementing anti-crisis measures, a number of approaches were discovered that deserve to be preserved and developed in order to create new organizational, methodological and didactic norms and methods of teaching.

Analysing modern processes in the field of education and science, it is worth noting that COVID-19 challenged traditional, one might say age-old, ideas associated with the spatial considerations. He showed that the use of online systems in teaching could create intense competition for the traditional modes of learning. This is due to the fact that the use of IT technologies makes it possible to carry out most of the educational processes without being tied to the university campus and facilities. Already in spring semester of 2020, TNEU managed to attract students who were on

a study break at universities of other countries into its educational process. Moreover, their attendance at online classes and the results of the exam session were sometimes better than those of the students who were in Ternopil and Ukraine.

For the 2020/2021 academic year, a decline in the admission of foreign students to universities in developed countries is predicted, in particular in the USA, Canada, the European Union and the UK. This allows us to predict that world leaders in the field of higher education will make efforts to create educational institutions or faculties, whose activities will be based on the use of online methods. For the purpose of exporting educational services, the business can quickly reorient itself in order to transform technological training tools into ones favourable for remote lectures, seminars, practical, laboratory and other types of classes.

Distance learning is no longer a new form of education. However, the life under quarantine conditions has created quite favourable conditions for its rapid development. *First*, distance learning truly globalizes educational and pedagogical processes, forming a global learning space without borders. *Second*, the younger generation, having been forced to switch to the online mode of education, crossed the psychological barrier regarding its adequacy during the first half of 2020. *Third*, online education opens up new opportunities for the access of gifted children from low-income families and children with special needs to education in educational institutions that are world leaders in the field.

Of course, the global spread of distance learning will not lead to the abandonment of traditional forms, but it motivates the creation of forms and systems that will make it possible to significantly reduce the role of the spatial factor in educational and research activities. Leading universities will be able to have their own foreign centres (whether institutes, faculties, or laboratories, etc.). These establishments, firstly, will be able to offer online training services provided by the staff of the head scientific institution, and secondly, employ specially trained trainers who will contribute to the development of students' practical skills and creative abilities, as well as maintain teaching software and hardware, and monitor the labour market, etc.

The development of online education requires a lot of work to create adaptive systems of methodological support. It should take into account both the requirements of complying with the rules of social distancing, and accountability when testing students' knowledge and skills. This is important primarily for high-stakes exams, in particular for external independent assessment; final exams; examinations for obtaining certificates, etc. Some experience of such solutions has already been accumulated in various countries. For example, the United States have introduced home versions of exams for university admission, enrolment in courses and certification (TOEFL), and passing exams in the Advanced Placement (AP) programs [1; 2]. To ensure public health safety, Saudi Arabia has launched an online university admission process using artificial intelligence technology. Imperial College London held the final exam for medical students online [2]. The experience of organizing the educational process in the context of COVID-19 online shows that these technologies will require the development of methods that will allow achieving its goals, taking into account the specifics of the discipline and specialty.

Global transition to forms of online education in the context of COVID-19, most likely, will not end with the conclusion of the pandemic and quarantine. Distance learning has become so powerful that it is transforming into an autonomous entity, within which full-fledged educational services will be provided. Despite the short time and the forced nature of using distance learning by the absolute majority of educational institutions so far, there are sufficient grounds to assert that a new market for online educational services has emerged and is rapidly developing in the global economy. Its products have competitive advantages sufficient to successfully compete with services provided within the framework of classical forms of education – full-time and part-time. This market requires the development of international and national legal provisions, the creation of an infrastructure adapted to it, teaching-related technologies and telecommunication networks.

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CIRCULAR ECONOMY AS AN ANTI-CRISIS METHOD UNDER COVID-19

How much additional plastic waste was generated during the crisis? One of the most important lessons is ecological. The coronavirus pandemic has demonstrated nature's amazing ability to self-repair (see Fig.).

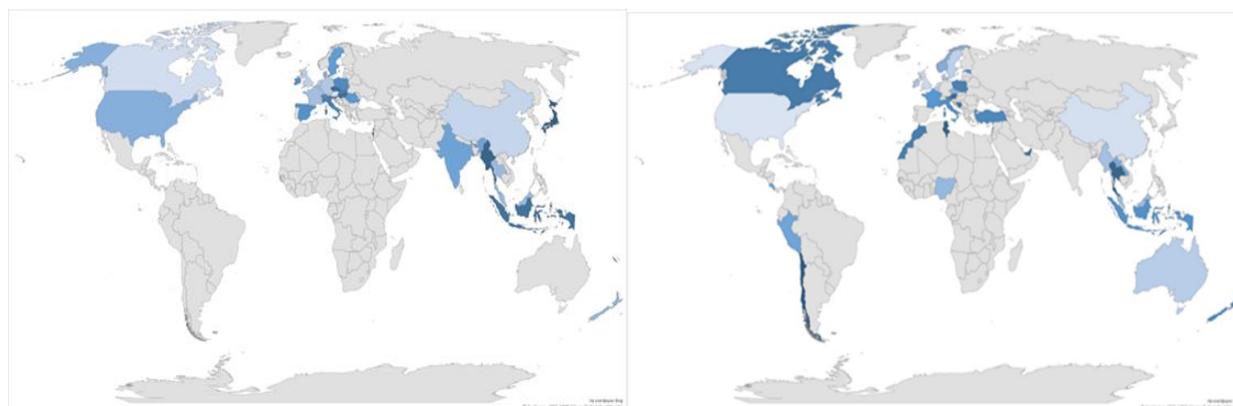


Fig. Export and import of clinical waste, 2016

Source: made by author based on OECD Statistics

Back in February, when the epidemic-stricken areas of China were under severe quarantine, satellites from NASA and the European Space Agency recorded a marked reduction in air pollution.

In Venice, in the absence of tourists and through quarantine, the canals suddenly became unprecedentedly clean and transparent, something the city's residents had never seen.

Reusable packaging is a critical part of the solution for achieving a circular economy... [4].

According to the Chinese Ministry of Ecology and Environment, at the height of the epidemic, hospitals in Wuhan produced more than 240 tons of waste per day, compared to the usual 40 tons. In China, the daily production of face masks rose to 116 million in February, which is 12 times more than the previous month. During the peak of the outbreak, hundreds of tons of discarded masks accumulated in public containers alone every day; it is impossible to say how much was thrown into household waste systems.

United States...through COVID-19 could accumulate an annual amount of medical waste in just two months. In the United States, waste collection has been stopped altogether in many places, including Miami-Dade and Los Angeles.

United Kingdom... In the, the number of so-called unauthorized landfills – illegal dumping – increased by 300% during the pandemic. In some countries, companies developing innovative methods for recycling and reusing plastic waste have reported a reduction in the amount of plastic coming through waste streams, suggesting that the amount of plastic that is growing is falling into landfills or the environment [4, 5].

The COVID-19 pandemic has provided us all with challenges not faced for a generation. Yet the current moment in time also provides a historic opportunity for the EU and its Member States to show its global leadership in addressing one of the biggest challenges of our time.

Reconstruction of industry will be implemented at the expense of adaptive quarantine and additional anti-crisis measures by the government in Ukraine [1]. Crisis time should be used to prepare the conditions for growth by saturating the sector with equipment for the transition to production from higher added value,

development of industrial parks to attract investment, promoting the development of a circular economy.

In Ukraine a framework draft law "On waste management" registration No. 2207-1d was adopted. While the primary concern for all of us during these times is the health and safety of our communities, COVID-19 should not become an excuse to pollute or roll back environmental policies [1; 2].

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TRANSPORT AND LOGISTICS IN THE ONLINE AGE: RISING OR FALLING?

Coronavirus has caused enormous damage to the global economy as a whole and virtually all industries. The transport and logistics sector has faced challenges and was one of the first to suffer from the epidemic.

Globally, the first to suffer were those logistics providers, in whose business a significant share is occupied by exports and imports to / from China.

"The biggest problem for us today is that due to the late resumption of factories in China, many batches of products must be delivered to the consumer as soon as possible. This forces us to change the vector of work, reducing the number of

multimodal traffic in favour of increasing aviation" – CEO of the Chinese company FANSTRANS says [1].

Given that many airlines have suspended or reduced the number of flights to China (both passenger and cargo), the total carrying capacity of air transport in this direction has decreased, and there is an imbalance of supply and demand, which "makes the Chinese market crazy." Airlines increase fares every two to three days, waiting time for shipments can reach up to 7 days.

However, there is a positive example of Asian countries, where the peak of the epidemic has passed and the flow of goods from these countries to Europe is beginning to recover. 90% of China's production have resumed operations and are already shipping to export [2].

The rate of change in freight traffic by all modes of transport in China during the coronavirus pandemic compared to the corresponding periods of 2019 was: in March: -13%, April: -2.1%, May: +0.4%, June: +3.9% (Fig. 1) [3]. In China, all types of transportation were affected: air, sea, rail, and road. Multimodal schemes were destroyed. Logistics companies had to urgently look for an alternative to the "broken" links: for example, to replace road transport within the provinces with rail. Due to logistics problems, the most affected party could be the automotive industry, where the supply chain between auto parts production sites and assembly plants was threatened. However, the logistical congestion was overcome.

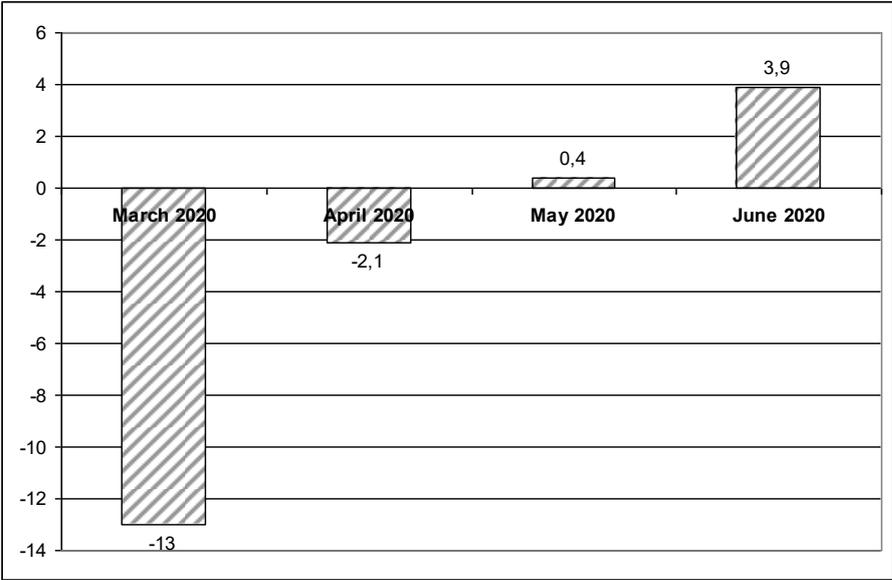


Fig. 1. The rate of change of freight traffic of all modes of transport in China to the corresponding period of 2019, %

As can be seen in the diagram (Fig. 2), the positive dynamics in June 2020 was registered in freight transport by rail and road.

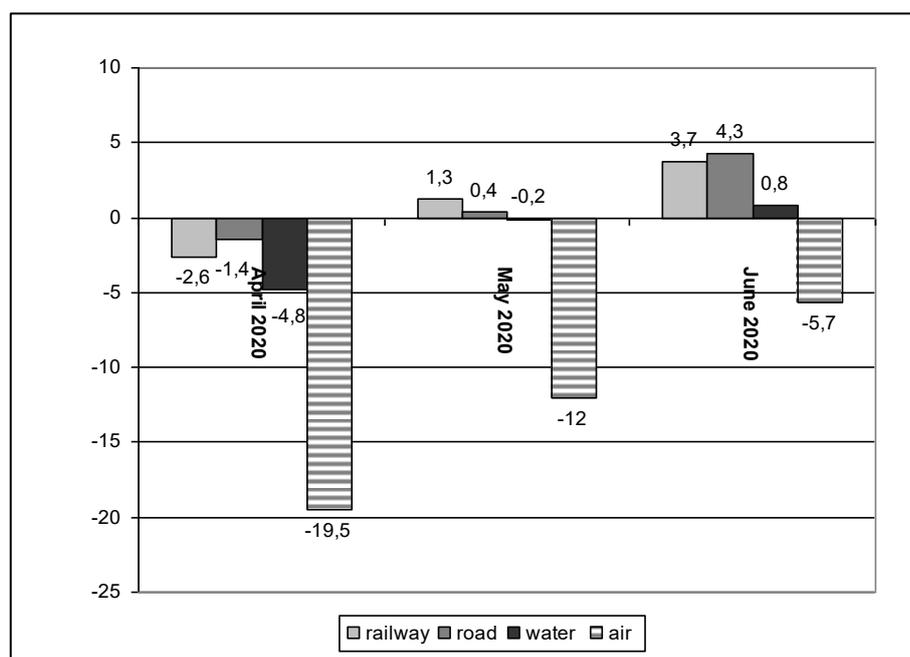


Fig. 2. Rate of change of freight traffic by types of transport of China to the corresponding period of 2019, %

The quarantine had the greatest impact on the passenger transport industry. The rate of decline in passenger traffic by all modes of transport in China during the coronavirus pandemic compared to the corresponding periods of 2019 was: in March: -73% , April: -60.2% , May: -49.3% , June: -43.7% .

In the conditions of the epidemic, railway transport became the main tool in transportation. It was by trains that much of China's anti-epidemic and medical cargo moved. Railway teams in many Chinese provinces worked around the clock and helped factories, mills, construction and trading companies return to work on time. In May 2020, there was a high demand for rail transport from Asia.

It was possible to solve the problems on the sea lines, despite the fact that maritime logistics is less flexible and requires more time to restore normal rhythm. Operators tried to respond flexibly to the situation by deploying emergency feeder services.

The customs services of the Chinese provinces are working effectively in the conditions of the epidemic, which have significantly reduced the time of registration

of priority cargoes, and opened "green corridors" for anti-epidemic and medical cargoes, as well as raw materials and spare parts needed to resume production. Most customs switched to the "first release – then the end of customs procedures" regime. It also helped to restore the work of enterprises and normalize foreign trade.

In general, freight is being carried out, although the supply chain between China and Europe is still broken.

During and after the quarantine period, public transport operated normally in most Chinese cities. In February 2020, mandatory public temperature monitoring using manual electronic thermometers was introduced in Chinese public transport.

This led to the fact that the subway began to form huge queues at the entrance, especially during rush hour. Therefore, over time, the Chinese installed special devices and frames for monitoring the body temperature of visitors, which scan at a speed of several hundred people per minute, which significantly accelerated the passage of passengers and eliminated the problem of queues. Fialan is now actively implementing projects to provide such screening devices to Ukrainian business.

Manual electronic thermometers are still used in buses and taxis. During February-March, subway cars were patrolled by security guards, whose staff checked that all passengers were in masks. To enter the subway, you still need to present a "health code", and in some cities in China you need to scan a special QR-code at the entrance in order to register your visits.

At the entrance to the railway station they also measure the temperature of all visitors. At the same time, during the check of tickets already in the train, the railway employees repeatedly make temperature measurements by means of contactless thermometers.

A protective screen was installed between the driver and passengers in the taxi. These are preventative measures because drivers come into contact with a large number of people on a daily basis. A prerequisite for both the driver and the passenger is the presence of a mask and temperature check. In China, the subway was never closed, and airports were never closed either [4].

Studying the positive dynamics of transport and other sectors of the economy, the trend of China's quarantine (no deaths from coronavirus have been recorded in

China in the last 2 months) [5], Ukraine should study and adopt this experience taking into account national specifics.

The coronavirus pandemic has had a significant impact on transport in Ukraine. According to preliminary data of the State Statistics Service of Ukraine for the period January-May 2020 [6], the volume of cargo transportation amounted to 229 million tons, which is by 16.5% less than in the corresponding period of 2019 (Fig. 3).

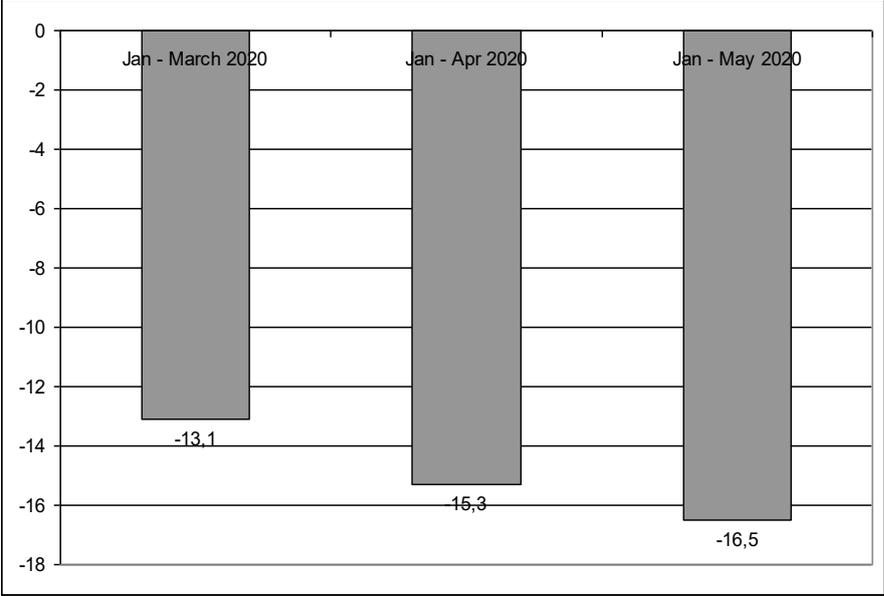


Fig. 3. Fall rates of freight traffic by all modes of transport of Ukraine to the corresponding period of 2019, %

The largest decline in freight traffic in January-May 2020 was experienced by pipeline (-24.7% compared to the corresponding period of 2019) and road (-22.6%) modes of transport. Rail transport reduced freight traffic by 9.4%. In January-June 2020, the cargo turnover of transport enterprises of Ukraine amounted to 135.1 billion tkm, or 80.4% of the volume in January-June 2019.

The greatest impact was caused by the coronavirus on the rate of decline in passenger traffic. For the period January-June 2020, passenger turnover of all modes of transport in Ukraine compared to the corresponding period of 2019 was 55.9% (Fig. 4).

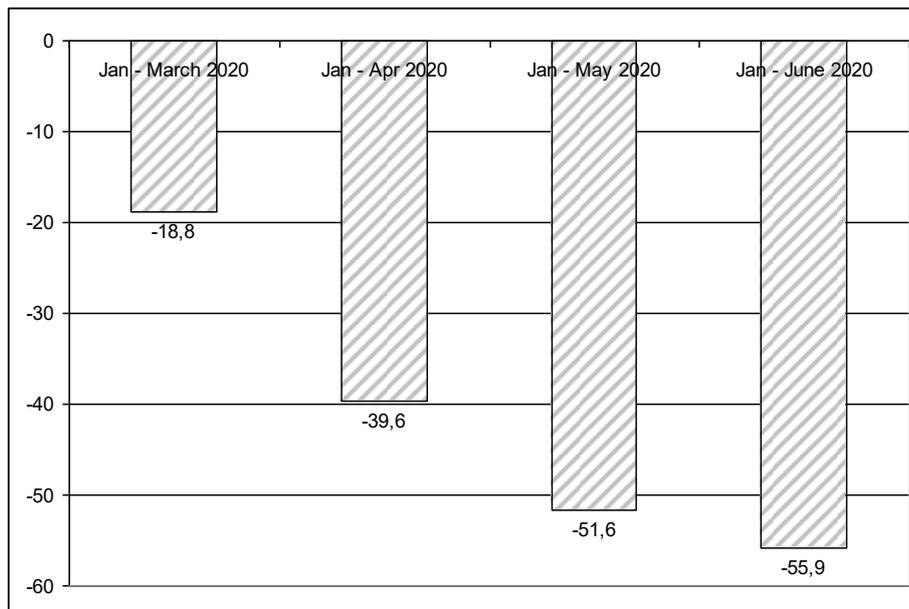


Fig. 4. The rate of decline in passenger turnover of all modes of transport in Ukraine to the corresponding period in 2019, %

The largest decline in the quarantine period was experienced by passenger transportation by rail (33.4% of the volume in the corresponding period of 2019) and air transport (35.1%). Passenger turnover of road transport of Ukraine for the first half of 2020 amounted to 54.8% of the corresponding period last year.

Passenger rail traffic in Ukraine was completely suspended since March 11, 2020. Partial resumption of this type of transportation took place in the second half of May.

In 2019, Ukrzaliznytsia transported about 154 million people. Due to quarantine, the volume of passenger traffic will be reduced to 110-115 million people this year. In addition, operating revenues from passenger transportation are expected to decrease by UAH 2.8 billion.

The most affected from quarantine mode of transport is aviation. According to preliminary estimates, air traffic will be reduced by 40%.

In 2019, the total volume of air traffic amounted to about 24 million people. In 2020, according to optimistic forecasts, it will be 14-15 million people with the resumption of flights in June - July 2020. The industry's losses will amount to about UAH 10-15 billion. Airlines have a safety margin of no more than three months.

Further downtime could lead to the bankruptcy of small and medium-sized airlines. One downtime plane is 4-5 crews, or 36-50 people. Most domestic companies will send staff on unpaid leave. Aviators should not expect a way out of the crisis before 2021-2022.

As noted by the head of the logistics department of the NGO "Business-Guard" Valery Tkachev, international road transport in Ukraine in 2020 will be reduced by 30-40% due to quarantine restrictions and falling industrial production [7]. About 30% of domestic road haulage is in the shadows - outside the official tax zone.

Domestic traffic is expected to fall by 15-20% of total freight traffic. According to the results of 2020, the total fall in freight traffic by road will be about 10-15%. In general, truckers will receive about 3.8-4 billion hryvnias.

Passenger traffic was suspended for 2-3 months of quarantine. The segment of passenger traffic is expected to fall by 45-50%. In 2019, 1804 million passengers were officially transported by Ukrainian vehicles. At the same time, the trucking market is in the shadows by 60-80%. Licensed hauliers participating in tenders for routes do not exceed 30% of the total number of hauliers.

The fall in freight traffic by Ukrainian railways in the first half of 2020 may be 5-7%, or about 10 million tons of freight. According to the results of the first half of 2020, Ukrzaliznytsia transported approximately 146 million tons. In 2019, for the same period, Ukrzaliznytsia transported 156.8 million tons.

The largest decline in freight traffic is expected in the first half of 2020 for the following goods: hard coal (20%) - 3.5-4 million tons; coke (15%) - 0.33 million tons; oil products (5%) - 0.05 million tons; cement (5%) - 0.05 million tons; cargoes of the 2nd and 3rd tariff class.

Positive dynamics of freight traffic is possible in the second half of 2020 only in the transportation of grain, scrap metal, ore and containers.

In monetary terms, Ukrzaliznytsia will receive about UAH 3-3.5 billion during the first half of the year. The dynamics of the second half of the year is not yet clear. The scenario of development of the current situation will depend on:

- duration of quarantine measures in Ukraine, their severity;
- world conditions for raw materials from Ukraine (grain, ore, metal);

- state of industrial production in Ukraine;
- from the period of recovery of the world economy;
- actions of Ukrzaliznytsia to ensure uninterrupted transportation of goods.

It is projected that by the end of 2020, Ukraine's river transport will show an increase. In 2019, the volume of cargo transported by water amounted to about 12 million tons. This year it is planned to transport 13.5-14 million tons (or plus 10-15%), due to agricultural and construction cargo. At the same time, in 2020, for the first time, the volume of agricultural cargo may exceed the volume of construction cargo in the structure of transportation. An increase is also expected in the port industry. The increase in cargo handling will increase by 10% to 176 million tons, mainly due to agricultural cargo and ore. The aviation industry and Ukrzaliznytsia urgently need financial support.

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ECONOMIC CHALLENGES TO UKRAINE UNDER THE CONDITIONS OF PANDEMIC COVID-19 CRISIS

The economic impact of COVID-19 is noticeable both in the world and in Ukraine. The coronavirus crisis comes at the time when Ukraine is already faced with some serious challenges, including a weak economy and ongoing conflict in the Donbas.

Very important task for Ukraine is how to introduce effective anti-epidemic measures to curb COVID-19 with minimal negative effects on the country's economy. But the restrictive measures are already affecting the work of businesses, government agencies and institutions, as well as the daily lives of millions of people.

Till now the sum over 2.6 bln UAH of budget resource has spent to prevent the spread of COVID-19. According to the statistics of State Treasury, until May 2020 such payments in the amount of 2.62 billion UAH were made from budgets of all levels: 658 million UAH from the state budget and 1.965 million UAH from local budgets.

The National Bank of Ukraine downgraded the inflation forecast in Ukraine in 2020 from 4.8% to 6% and confirmed it at 5% for 2021-2022. During the quarantine, the unemployment rate in Ukraine has risen, and wage growth has virtually stopped [1].

According to IMF forecasts, the world economy is expected to fall by 3%. Ukraine has traditionally been more vulnerable to economic shocks: GDP may fall by 4-8% compared to 2019.

According to the forecast of the Institute for Economic Research and Policy Consulting, the impact of the COVID-19 pandemic on Ukraine's economy will be quite strong. At the beginning of the year, GDP was expected to grow by 3% in 2020. In the baseline scenario, the fall in GDP is 7%, and the optimistic scenario is -5.9%.

Under the pessimistic scenario, the level of GDP decline increases to -11.2%. The main reasons for the decline in GDP include: domestic quarantine measures that reduce economic activity in retail, restaurant and transport, reduced exports and remittances from abroad (Fig. 1) [2].

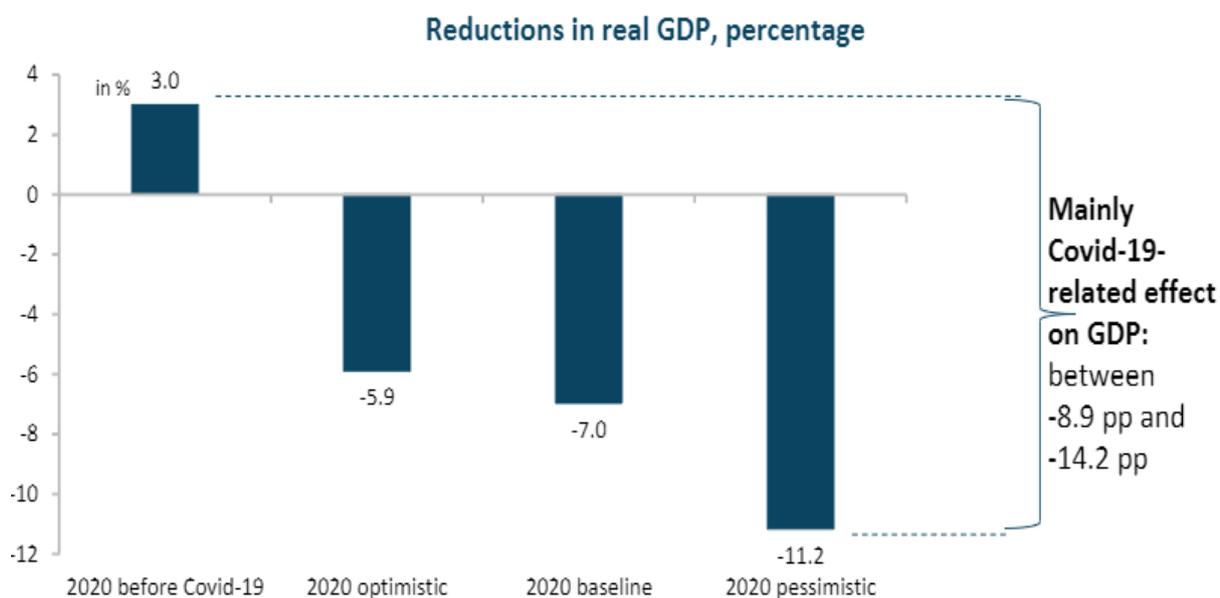


Fig.1. Reductions in real GDP, percentage

Source: [2].

Ukraine has an export-oriented economy and reducing global demand also limits the country's export potential.

From the point of view of importance for the economy, wholesale and retail trade, industry and agriculture generate the most added value and create the most jobs. At the same time, quarantine restrictions had the greatest impact on the activities of non-food retail, hotel and restaurant business, service and entertainment.

Although the share of the hotel and restaurant business in the economy is relatively small, a large proportion of small businesses in need of support are concentrated in this sector. Under the conditions of the COVID-19 crisis pandemic, only the health sector can increase its economic role, but at the same time it needs significant financial support (Fig. 2) [3].

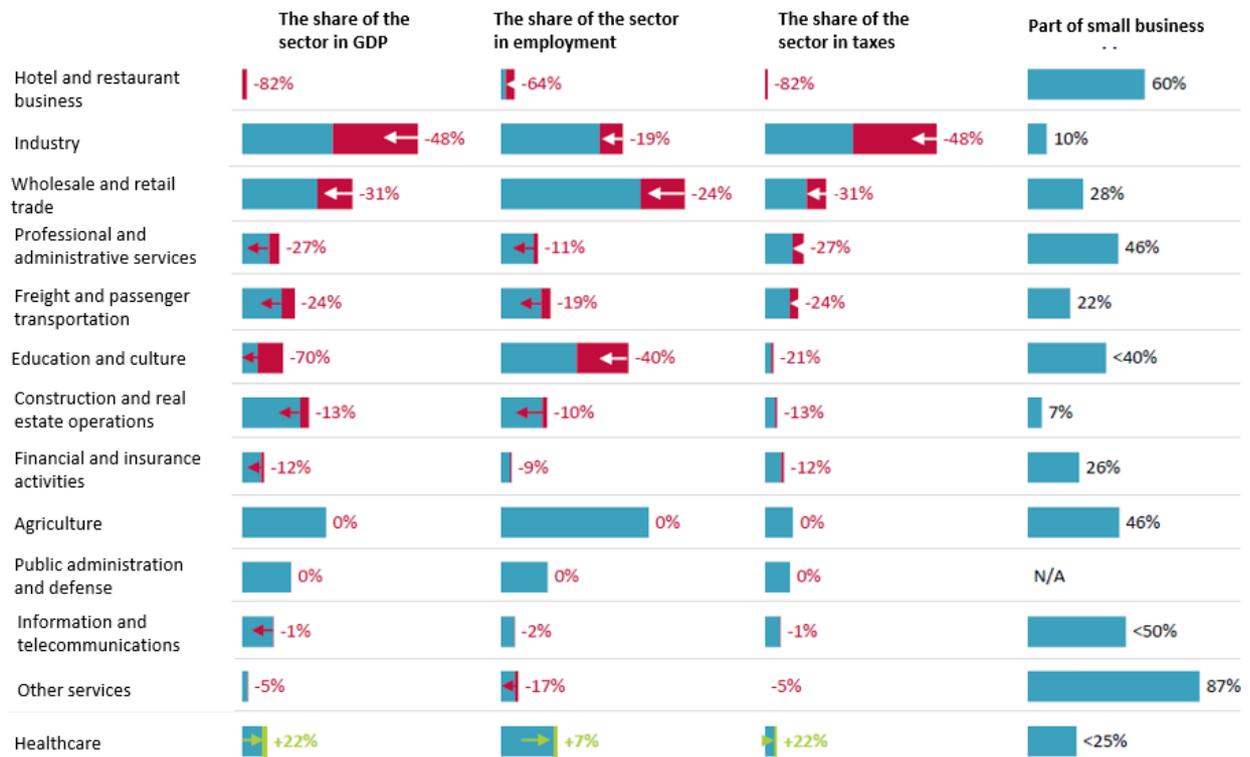


Fig. 2. Impact of pandemic COVID-19 crisis on the economy of Ukraine

Source: [3].

Today, there is a dilemma that initiatives to combat the virus help reduce the number of infected people, increase the capacity of the health care system to combat COVID-19, and initiatives to support the economy help reduce the negative effects of the pandemic and recession on the country's economy. Therefore, it is necessary to find a balance in the use of these initiatives for economic development and the cessation of the spread of COVID-19.

It should be noted that the business sector quickly adapted to new challenges and conditions of doing business. A large number of employees continued their work remotely; communication was carried out through online services.

Society opens new methods of business communications, new mechanism of doing business, trading and new methods of learning and education. All these methods help stimulate the renovation of national economics. The speed of economic recovery of national economies will depend on the duration and depth of internal quarantine measures, the depth of internal shocks, external challenges, effectiveness

of fiscal and monetary policy, possible future changes in consumer and investor behaviour.

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DEVELOPMENT AXIS UNDER THE CONDITIONS OF PANDEMIC COVID-19 TRANSPORT LIMITATIONS

The processes of globalization and the uneven geographical distribution of production activities are manifested through the emergence of territories with faster rates of economic growth or general social development, which are often called "growth / development poles". The scope of "poles" could be considered either from the perspectives of "global city networks" à la Taylor, Derudder [1] or as contemporary continuation of Perroux's [2] ideas concerning "growth poles". From both perspectives the concept of growth/development poles is inextricably linked with the theory of development axis, which was briefly discussed yet by Perroux [2]. However more thorough and autonomous concept of axis (corridors) of development was proposed by Pottier [3], Richardson [4] and others, who noted that the territories located between the poles of development and offer transport connections between

the poles are receiving additional incentives for development as a result of increased traffic, innovation and infrastructure density.

The effect of intensive transport connection is rather sustainable. In this context, it is worth noting the contemporary research of Dalgaard et al. [5], who showed a positive correlation between the density of ancient Roman roads built almost 2,000 years ago and modern poles and axis of development (estimated on the basis of density parameters of modern transport infrastructure, population and nightlight intensity).

The idea of development axis became the basic prototype for launching the numerous practical strategies during last 50 years. Despite their variable success in the past this type strategies even now are rather popular. We could mention for example “Common Spatial Development Strategy of the V4+2 Countries” [6], where the policy of development poles and axis are among the crucial. In this line we should also mention the China’s Belt & Road Initiative (Silk Road, Maritime Silk Road and rarer mentioned Arctic Silk Road) that aimed to unite Chinese growth poles with African, Asian and European strategic centers (see Fig. 1).



Fig. 1. China’s Belt and Road Initiative
 Source: [7].

The main driver of development axis is the intensive transport communication (both internal and international). However, in 2020 the COVID-19 pandemic conditions have limited the traffic to the lowest points during last decades. At this moment it is hard to evaluate the precise influence of COVID-19 on transport infrastructure, but the general shrink is considerable.

According to the estimation of International Transport Forum, COVID-19 could reduce global freight transport by up to 36% by the end of 2020 [8]. Regional differences are significant (Tab.). A reduction of more than half is projected for ASEAN countries, Russia/Central Asia and India. For China, the impact is just above a quarter less freight. Europe and the Americas are in the middle of the range with reductions of around 40%; only the Andean countries are projected to be hit harder, with a 50% fall in non-urban freight activity [8]. If urban freight activity is expected to be adapted to the pandemic condition, the relative decline of inter-urban transportation (which is the core of development axis) would be more visible. Among the positive sides of such collapse is the tremendous expected reduction of greenhouse gas emission.

Different transportation segments suffered diverse levels of shrinking. The aviation sector was among the hardest hit with 80% global drop at the beginning of 2020. The EUROCONTROL provides a good visualization of the decline, comparing it with the reference year 2010 because of the volcanic ash crisis from 14-20 April which brought European aviation close to a standstill (Fig. 2). Of course, the dimension of the COVID-19 crisis is of a completely different order of magnitude, comparing to the year 2020. However, the EUROCONTROL experts suggest that the turning point was reached in mid-April 2020. Since then traffic very slowly started to grow again [9].

ITF projection of COVID-19 impact on freight and CO₂ emissions for 2020
(by region and freight type, percentage change on projections pre-COVID-19)

Regions	Urban freight activity	Inter-urban freight activity	CO ₂ emissions urban freight	CO ₂ emissions inter-urban freight
ASEAN countries	-16	-53	-22	-42
China	-3	-27	-10	-23
India	-14	-51	-20	-46
Japan and Korea	-10	-33	-17	-26
Russia and Central Asia	-6	-53	-13	-54
Other Asia	-5	-32	-12	-25
Oceania	-3	-42	-10	-41
Middle East	-6	-36	-13	-31
North Africa	-15	-36	-21	-25
Southern Africa	-12	-32	-19	-41
Other Africa	-10	-50	-16	-38
South America (Andean)	-14	-50	-20	-37
South America (South Cone)	-5	-35	-12	-31
Caribbean	-15	-43	-21	-39
Central America	-12	-39	-19	-35
North America	-10	-37	-17	-35
Scandinavia	-15	-41	-21	-37
Western Europe	-12	-43	-19	-37
Eastern Europe	-14	-40	-20	-36
Global	-8	-37	-14	-30

Source: [8].

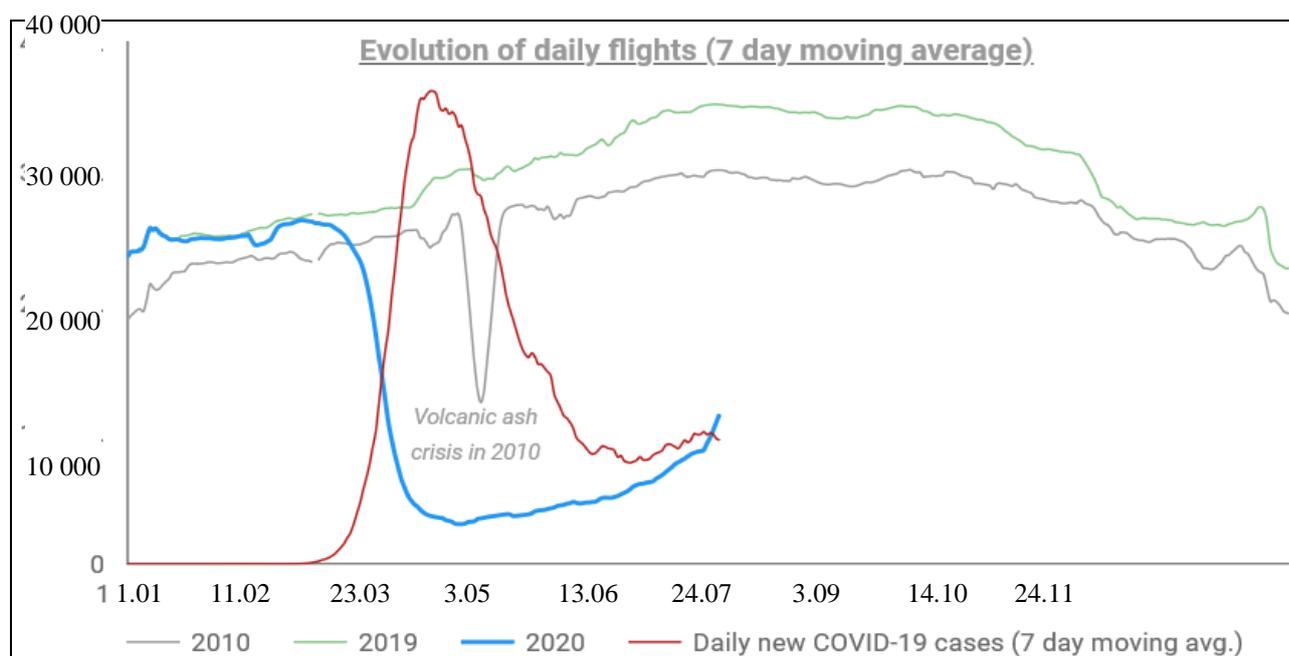


Fig. 2. The evolution of the flights (moving 7 day average) in the EUROCONTROL Area for the years 2010, 2019 and 2020

Source: [9].

In Ukraine the transport industry is also experiencing rapid decline connected with COVID-19 pandemic conditions. The most obvious slowdown was observed in passenger segment that was almost stopped in March–May, 2020. However, all the types of cargo segment shrink also (Fig. 3).

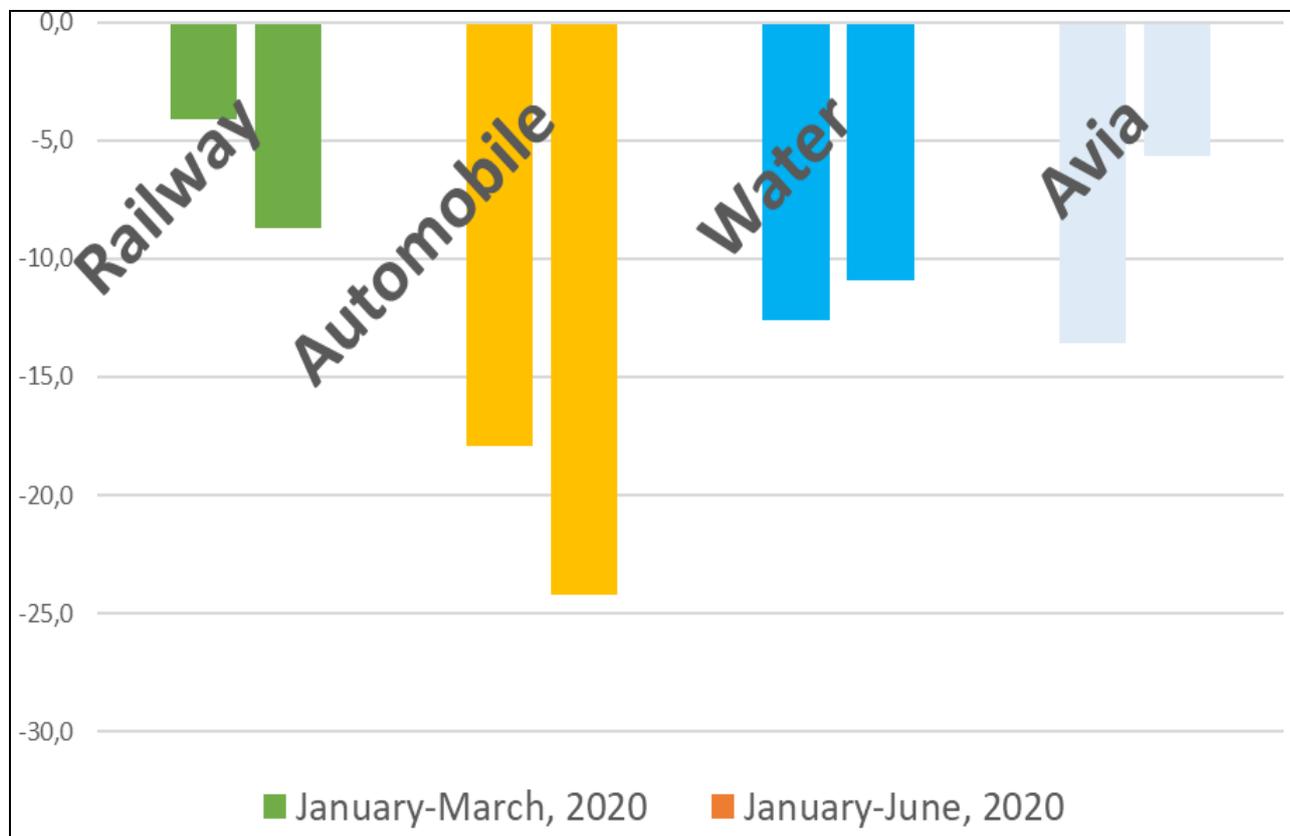


Fig. 3. Decline of cargo carriage in Ukraine under COVID-19, % comparing to the same period of the previous year

Source: author's calculations, [10].

The biggest decline in Ukrainian cargo segment was observed in automobile industry. However, the real figures could be blurred, considering that about 30% of domestic freight is in the shadows, as there are a lot of self-employed workers and sole proprietors in this segment. Anyway, the volume of traffic is expected to decrease. For instance, international traffic will be reduced by 30–40% due to quarantine restrictions and falling industrial production. Domestic traffic is expected to fall by 15–20% of total freight traffic. At the end of the year, the total decline in freight traffic will be about 10–15%. Here the support of automobile transport will be made by the volumes which have been transferred from the railway.

Summarizing, we should admit that COVID-19 pandemic conditions are influencing greatly on the global transport industry. This fact mitigates the stimulating role of development axis on local and national economics. Without sufficient circulation of people and products, the development axis could not generate enough stimuli for spreading the innovations and adding value. Thus, the largest hopes are connected with the expectation that COVID-19 threats would not last for a long time span.

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FEATURES OF THE INNOVATIVE DEVELOPMENT OF THE INDUSTRIAL SECTOR OF THE ECONOMY IN CONTEXT OF COVID-19 PANDEMIC

The “Great Self-Isolation”, which manifested itself most actively in 2020, is accompanied by the most severe economic downturn. It covered 213 states, the number of cases in which as of July 21, 2020 is 14 885 965 people (the number of deaths is 614,060 people) [1]. A rare disaster has led not only to the tragic loss of large numbers of human lives, but also to a drop in global economic activity.

Our analysis indicates the presence of economic shocks, which we will consider in this article. First, it concerns the issue of supply and demand. According to experts from the International Monetary Fund, consumers are reducing their spending. This phenomenon leads to a decrease in the demand for goods and services in many industrial sectors. Thus, in the UK, 69% of companies report a drop in demand for their goods and services. The trend was largely reflected in the development of small and medium-sized businesses (77% of enterprises with an annual income of 62 million US dollars) [2]. For large enterprises this figure is 64%. Most of the enterprises have difficulties with value chains. For example, in the PRC, domestic sales of Hyundai Motors fell 97% in February 2020 compared to the same period in 2019. This phenomenon has led to the fact that many enterprises were forced to reduce production. So in March 2020, the drop in total US industrial production occurred by 5.4%.

World Bank experts note that falling demand and disruptions in supply chains have led to a fall in energy prices – by 18.4% (Q1 2020). It should be noted that in the United States from March 29 to April 4, 2020, the demand for electricity decreased by 5.7% compared to the same period last year (the minimum value of demand over the past 16 years) [3].

In March, world oil prices decreased by 50% compared to January 2020. Gas prices fell from 12% (USA) to 25% (European countries). Coal prices decreased by 5-17%, copper and zinc – by 15%; iron ore – by 7%, platinum – by 23%. This price decline leads to a complete or partial cessation of activities in the extractive industry. At the moment, mining at copper mines (15%) and zinc mines (20%) is fully or partially stopped.

Due to the situation that arose, the enterprises began to redesign production. The “General Motors” company, which specializes in the production of automobiles, has produced 30,000 artificial lung ventilation devices. The facility was awarded a \$ 489 million contract with the US Department of Health and Human Services.

The introduction of quarantine measures had an impact on the organization of work in enterprises. Before the introduction of quarantine measures, the industrial sector employed 2.7 billion people (81% of the total world labor force) [4]. The crisis led not only to a decrease in labor activity, but also in working hours (in the second quarter of 2020 – by 6.7%). In addition, many companies, trying to keep the number of employees, were forced to resort to lower wages. Thus, the company “Tesla” (USA) has cut the salaries of vice presidents by 30%, heads of departments – by 20%, ordinary employees – by 10%.

Another example is the Japanese automakers, which sent 10,000 hourly workers on unpaid leave at three factories in the United States. Also closed the plant for the production of cars of the “Subaru” company. In France, automakers were forced to temporarily close the factories of “Peugeot”, “Renault”, “Citroën”. In Slovakia, the “Kia Motors” automobile plant was closed.

COVID-19 has impacted other industries as well. For an indefinite period in India suspended the production of electronics “Xiaomi”, “Samsung Electronics”, “LG Electronics”.

Exhibitions and events, which represent one of the ways to promote goods and services, conclude new contracts and make investments, were among the most affected areas of activity from COVID-19. According to data released by the European Alliance of the Exhibition Industry, at the time of the pandemic, 3 300 events (European states) were cancelled or postponed. Despite the start of easing

quarantine measures, most European countries have banned major events until the end of August 2020. According to the World Association of the Exhibition Industry, the cancellation or postponement of exhibitions will result in losses of 134.2 billion euros in the form of outstanding contracts.

According to UNCTAD, the negative consequences of the spread of COVID-19, as well as a set of measures taken by states, will reduce the global flow of foreign direct investment by 40%. In particular, industrial production and the mining industry will be the most affected. Conversely, an increase in income in the information and communication sectors of the economy is expected.

Industrial enterprises of the world have developed measures aimed at improving the current situation. According to the PWC source, they are divided into groups: change in labor safety requirements – 77%; re-equipment of workplaces, provision of distancing – 65%; preservation of remote working methods for some employees – 55%; automation of labor – 40%, as well as reduction of working areas – 38% [5]. In addition, innovation has always been an important tool in the fight against unemployment and poverty reduction. Particular attention should be paid to the development of special forms of organizing innovation activities – industrial parks.

Today there are more than 20 thousand industrial parks in the world. So, for example, the largest number of industrial parks is concentrated in countries such as the United States – more than 400 industrial parks, the Turkish Republic – 263 industrial parks, the Socialist Republic of Vietnam – 200 industrial parks, the Hungarian Republic – more than 200 industrial parks, Germany – 200 industrial parks, the Arab the Republic of Egypt – 119 industrial zones, the Czech Republic – 100 industrial parks, the Republic of Poland – more than 69 industrial parks, the People's Republic of China – 54 industrial zones, Ukraine – 56 industrial parks. Of these, 43 are included in the Register of Industrial Parks of Ukraine.

Consider an example of the development of industrial parks in the PRC and in Ukraine. On the territory of the PRC, 54 industrial zones form about 10% of the gross domestic product. They also accumulate 30.0% of direct foreign investments in the development of enterprises located on the territory of the industrial park. Products

manufactured by enterprises in the industrial park account for 37% of the country's merchandise exports.

The most interesting example is the Sino-Singapore Industrial Park “Suzhou City - Singapore”. Its territory covers an area of 260 km², on which 330 companies (79 of the largest corporations in the world) are located, employing 35 thousand people. The volume of attracted investments – 100 billion dollars USA.

The peculiarity of the functioning of the industrial park is that it is an object of joint development of the PRC and Singapore (shares are distributed as follows: 52% of the shares belong to a consortium of Chinese companies, 28% – to the Singapore consortium, 10% – to “The Hong Kong and China Gas Co., Ltd.”, 5% – “Singapore CPG Corporation Pte., Ltd.”, 5% – “Suzhou New District High-tech Industrial Stock Co., Ltd.”).

Another example is the Chinese-Belarusian industrial “Great Stone” with a total area of 112.5 km². The project is being developed within the framework of interstate Chinese-Belarusian cooperation and the signed relevant intergovernmental documents. Any company, regardless of the country of origin of the capital, can act as residents of the industrial park. A favourable investment climate has been created for residents of the industrial park, guaranteed both by national legislation and by special international agreements and obligations.

As part of the implementation of state policy in the PRC to support enterprises in industrial parks, programs such as “Key Technologies”, “Key Laboratories”, “Program 863”, “Fakel”, “Iskra”, “Plan 2020”, “Made in China – 2025” and others [6, 7].

Unlike China, Ukraine as of 01.05.2020 included 43 industrial parks in the Register of Industrial Parks. Management companies have been identified in 17 industrial parks, and there are members in 7 industrial parks.

Financing the development of the infrastructure of industrial parks included in the Register, as well as creating conditions for their functioning, is possible at the expense of the State Fund for Regional Development. In 2018-2019 the Fund financed one regional development project for the formation of the infrastructure of industrial parks (order of the Cabinet of Ministers of Ukraine dated May 23, 2018 No

372-r (as amended by the Cabinet of Ministers of Ukraine order dated July 11, 2018 No 479-r) in the amount of UAH 5.175 million. It is planned to implement 5 projects (UAH 75 million) in 2019-2020. Note that the work on the preparation of design, estimate documentation, land acquisition and other activities necessary for the creation and operation of industrial parks is financed from local budgets and extra-budgetary sources of funding.

The main normative legal acts regulating the process of creation and functioning of industrial parks in Ukraine include: Law of Ukraine “On Industrial Parks” dated June 21, 2012 No 5018-VI; Order of the Cabinet of Ministers of Ukraine “On Approval of the Concept of Establishing Industrial Parks in Ukraine” dated 01.08.2006, No 447; Resolution of the Cabinet of Ministers of Ukraine “On approval of the Procedure for making a decision on the inclusion of an industrial park in the Register of industrial parks” dated January 16, 2013 No 216; Order of the Ministry of Economic Development and Trade of Ukraine “On Approval of the Form of the Model Agreement on the Creation and Operation of an Industrial Park” dated 15.04.2013 No 386; Resolution of the Cabinet of Ministers of Ukraine “On approval of the list of projects in priority areas of socio-economic and cultural development” dated 08.12.2010 No 1256; Customs Code of Ukraine (Art. 287) dated 13.03.2012, No 4495-VI; Resolution of the Cabinet of Ministers of Ukraine “On the Procedure for Approving Lists of Equipment, Equipment and Components, Materials that are not produced in Ukraine, which are not excisable goods imported into the customs territory of Ukraine by initiators of the creation of industrial parks – business entities, management companies of such parks for their arrangement and participants of industrial (industrial) parks for the implementation of economic activities within the specified parks and exempt from duty” dated June 19, 2013 No 558 [8].

At the moment, the government of Ukraine has taken the following key measures to support business during the quarantine: individual entrepreneurs are temporarily exempted from calculating and paying a single social contribution; a moratorium was introduced on conducting business inspections by regulatory authorities; no fines will be imposed for violations of tax legislation; during the quarantine period, there is a ban on eviction of tenants for non-payment of utilities,

and fines and penalties for non-payment of utilities are not charged; individuals are exempt from paying fines and penalties for violations of consumer lending agreements; employees of small and medium-sized enterprises, for whom the employer retains jobs, can receive partial unemployment benefits; banks are prohibited from increasing interest rates on loans; payments on mortgage loans have been deferred, and banks are prohibited from levying execution on mortgage objects due to non-payment of payments under mortgage agreements; legal entities and individual entrepreneurs are exempted from paying land tax or rent for a land plot.

Promising forms of scientific and technical cooperation are being implemented between Ukraine and the PRC. These are Ukrainian-Chinese centers and technology parks (cities of Jinan, Harbin, Shanghai). The first Ukrainian-Chinese Park of high-tech cooperation was opened in the city of Jinan (2002). The purpose of its activities is the transfer of high technologies joint development of scientific and technical projects and their implementation in production; creation of joint ventures for the sale of science-intensive and high-tech products.

In 2003, the Ukrainian-Chinese Center for Welding and Related Technologies was opened in Harbin. A cooperation agreement was signed between the Institute of Electric Welding. Paton National Academy of Sciences of Ukraine and Harbin Institute of Welding. Also, in 2011, a new Ukrainian-Chinese Technopark was opened in the city of Shanghai, which is engaged in research in the maritime sector and technologies [9]. And in 2012, the Ukrainian-Chinese Center for Technology Transfer in the field of shipbuilding and ocean design was opened in Zhenjiang. In 2016, in the city of Harbin, the "Chinese-Ukrainian Center for Scientific and Technical Cooperation" was created, representing a platform for scientific cooperation in certain areas, in particular in the field of electric welding.

Strengthening Ukrainian-Chinese cooperation in the direction of organizing special forms of innovative activity not only makes it possible to preserve them, but also contributes to their growth. They can enhance bottom-up action by supporting the development of small knowledge-based firms and venture capitalists; to promote professional development of specialists in the field of production of high technology products and high technologies.

In order to promote the development of Ukrainian industry on an innovative basis, we propose to look at unfinished regulatory and legal documents, restore those that are relevant, and also develop new state target programs. According to the Concept for the creation of industrial parks, approved by the order of the Cabinet of Ministers of Ukraine No 447-r. of August 1, 2006, in our country, the development of this type of activity was started, a mechanism and sequence of actions for the implementation of state policy in the field of creation and development of industrial parks was determined, broad opportunities were guaranteed to stimulate investment and innovation in Ukraine.

In 2012, the Law of Ukraine “On Industrial Parks” was registered. In order to further develop industrial parks in Ukraine, a legislative package was adopted in the first reading (No 2554 a-d and No 2555 a-d), which introduces tax and customs investment incentives for new domestic industrial enterprises [10]. Out of the existing package of incentives, this legislative package provides for the application of only some tax preferences, including: exemption for five years from income tax and a half rate (9%) for the next five years, subject to reinvestment of these funds in the development of production; exemption from import duties on equipment and equipment for the implementation of economic activities; instalment plan for five years of import value added tax on equipment and equipment for carrying out economic activities within the industrial park, etc. At the same time, the draft legislative package (No 2554 a-d and No 2555 a-e) contains clear norms of direct action, which require: the implementation of specialized production and research activities; on the territory of the industrial park, there should be an official employment mechanism with less than 30 employees; the average monthly wage must be at least three minimum wages, that is, more than UAH 11.1 thousand. The implementation of these directions, contributing to the creation and development of a network of industrial parks on the territory of Ukraine, to intensify investment activities, to promote an increase in direct investment, to stimulate the development of the real sector of the economy, will predetermine the creation of new high-tech industries and jobs, an increase in the volume and range of export-oriented products.

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REMOTE SERVICES AS AN IMPLEMENT FOR OVERCOMING THE EXCLUSIVE FACTORS OF STRUCTURAL DIVERGENCE IN THE POST-PANDEMIC PERIOD

At this stage of development of the global economy it is necessary to recognize that globalization has failed to ensure the convergence of states in terms of living standards and reduce on this basis the depth of interstate stratification. The search for a development macro-model based on alterglobalism becomes imperative for our country [3], [8].

We emphasized the uncertainty of global challenges of negative technological and environmental events. As we can see, large-scale demographic and environmental changes are happening much faster than expected, and their consequences can be predicted only after they occur.

The goal of megaregional integration is the convergence of macroeconomic systems. However, in the functioning of interregional economic entities, along with convergence, there are processes of divergence of economies, which is especially important for our country.

At the same time, divergence covers the development of the primary element of the macrosystem – man, family, household, human capital. Moreover, divergent tendencies are observed in the structure of the macrosystem – in the relationship between its elements.

Structural divergence is a prerequisite for the destruction of the integrity of the state's macrosystem in the face of the negative impact of geopolitical challenges. It is

structural divergence – "disagreement", the destruction of existing relatively inclusive relationships, which are transformed into exclusive extractive institutions-regulators of socio-economic development of the national macrosystem, aimed at maximum "extraction" of income from the exploitation of one part of society and focus on its interest's parts, according to D. Ajemoglu, J.A. Robinson [1]. Tracing the relationship and synergy between political and economic institutions, they emphasize that a synergistic effect can be obtained for inclusive institutions, as opposed to extractive ones.

That is why, assuming the identity or similarity of extractive with/and official institutions, transformed (modified) under the influence of exclusive regulatory actions (in a broader sense – management) socio-economic development of regions, we will focus on the ranking of terms (concepts) included in the word exclusivity of regulation of social and economic development (SER) of regions (Fig. 1).

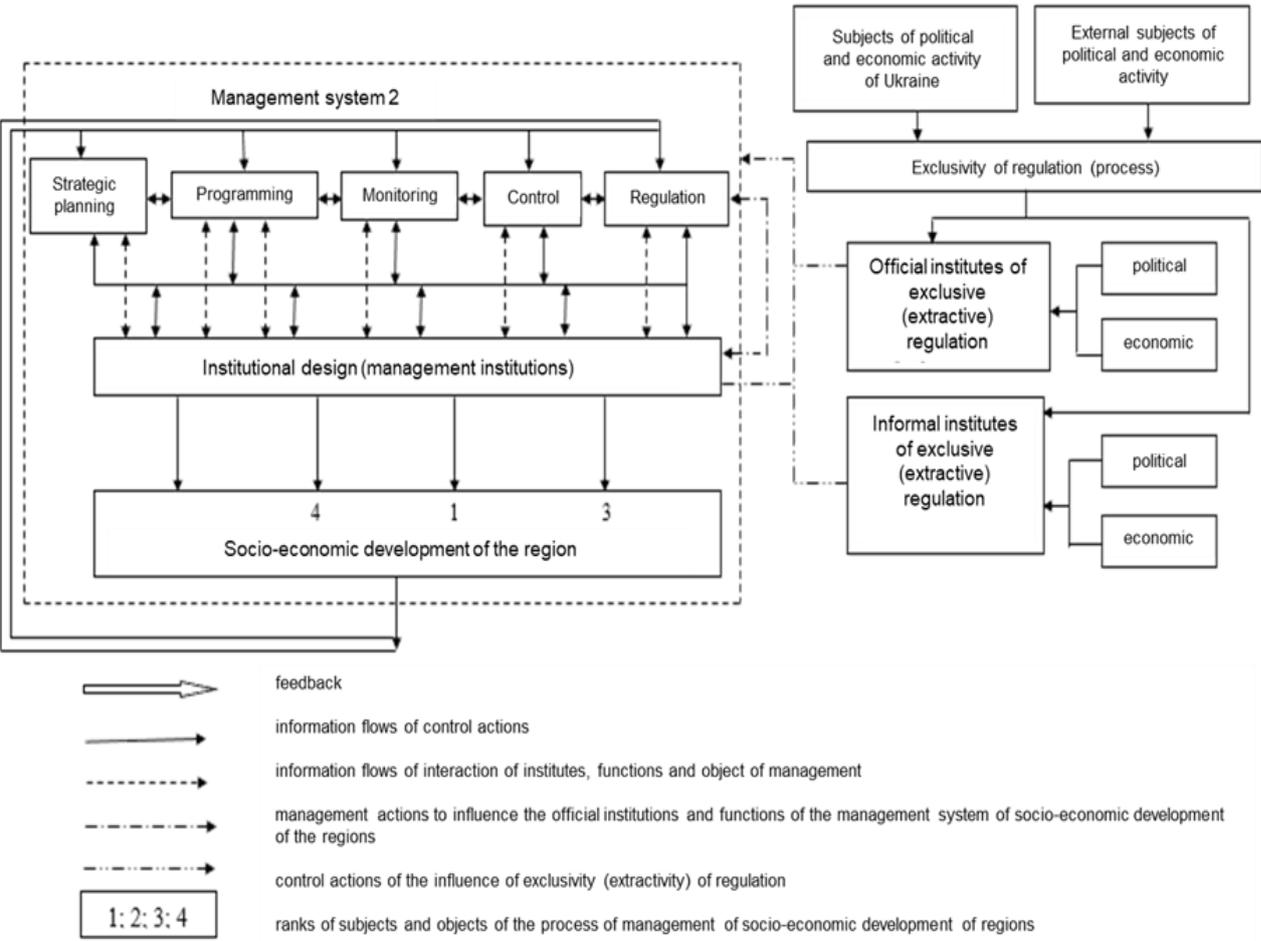


Fig. 1. Conceptual structural and functional scheme of the process of exclusive regulation of socio-economic development of regions

Source: author's development

Structural divergence of the socio-economic macrosystem of Ukraine includes the following: it manifests itself in the divergence of elements at different levels of the system hierarchy; objects of divergence – spatial units (regions, cities, rural settlements, territorial communities; industries, sectors, spheres of economy and society (scientific and technological, educational and health and environmental protection)); divergence covers the development of the primary element of the macrosystem – individual, family, household, human capital due to the diversity of their movement, stratification by income, sources of origin, the degree of legitimacy of property rights, the level of quality of life and safety of life, as well as the structure of the macrosystem in the relationship between its elements.

The strengthening of the divergence of the economies of Ukraine and the EU in 2014-2019 is reflected in the tendency to maintain the "gap" between Ukraine, the EU, and the countries of the "second wave" of European integration (Fig. 2).

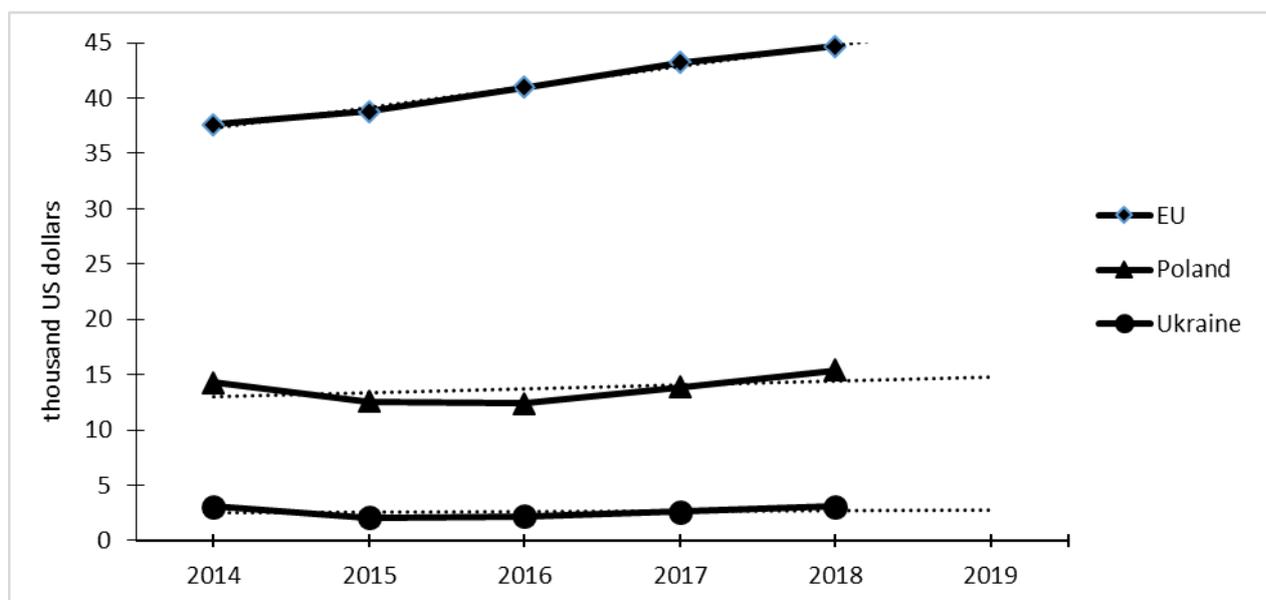


Fig. 2. Dynamics of GDP of the EU, Poland and Ukraine, thousand dollars USA, per person, 2014-2019

Source: [5]; [7]; author's calculations

At the same time, throughout the period under study there was a declining and uneven abrupt dynamics of index change (Fig. 3), which significantly complicates, among other factors, the possibility of strategic and even medium-term programming of foreign trade relations.

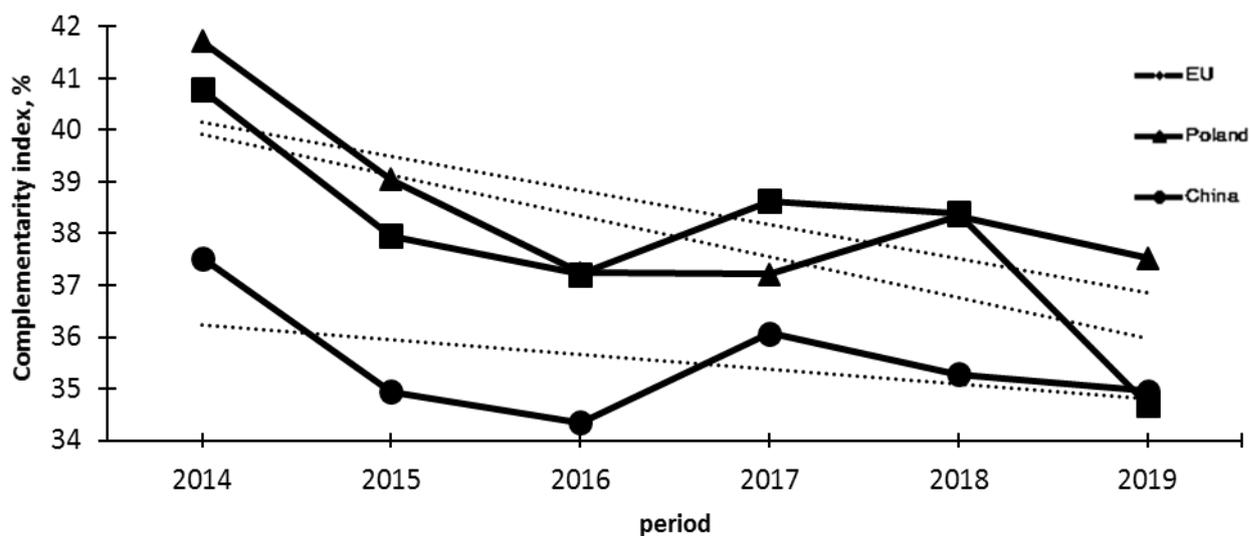


Fig. 3. Dynamics of change in the complementarity index of foreign trade of Ukraine with the EU, Turkey and China, 2014-2019

Source: [6]; [7]; author's calculations

Based on the provisions of E. Reinert's Other Canon, strategic forecast estimates of increasing returns, declining or rising expenditures, and the synergy effect of emulating and assimilating successful trade policies of partner countries seem appropriate [2], [4].

Internal divergence was exacerbated by the coronavirus pandemic and the postpandemic crisis. We found ourselves in a unique situation when the whole world was forced to move on masse to online communication, business meetings, training. Ukraine has not had such experience, for example, with distance learning. If we compare our experience with China, we will see that distance learning for students in this country was not something special before the pandemic. Back in 2016, the University of Tsinghua developed its own online platform for distance learning – Rain Classroom, which became very popular.

The transition to online has led to another problem – the lack of Internet access in the regions. Not all people, especially in remote regions, have a computer and the Internet. So, while other countries are making conscious choices in favor of real life, abandoning smartphones and round-the-clock Internet access, our country is only mastering remote services.

We have proposed a scheme of levels of international cooperation (Fig. 4).

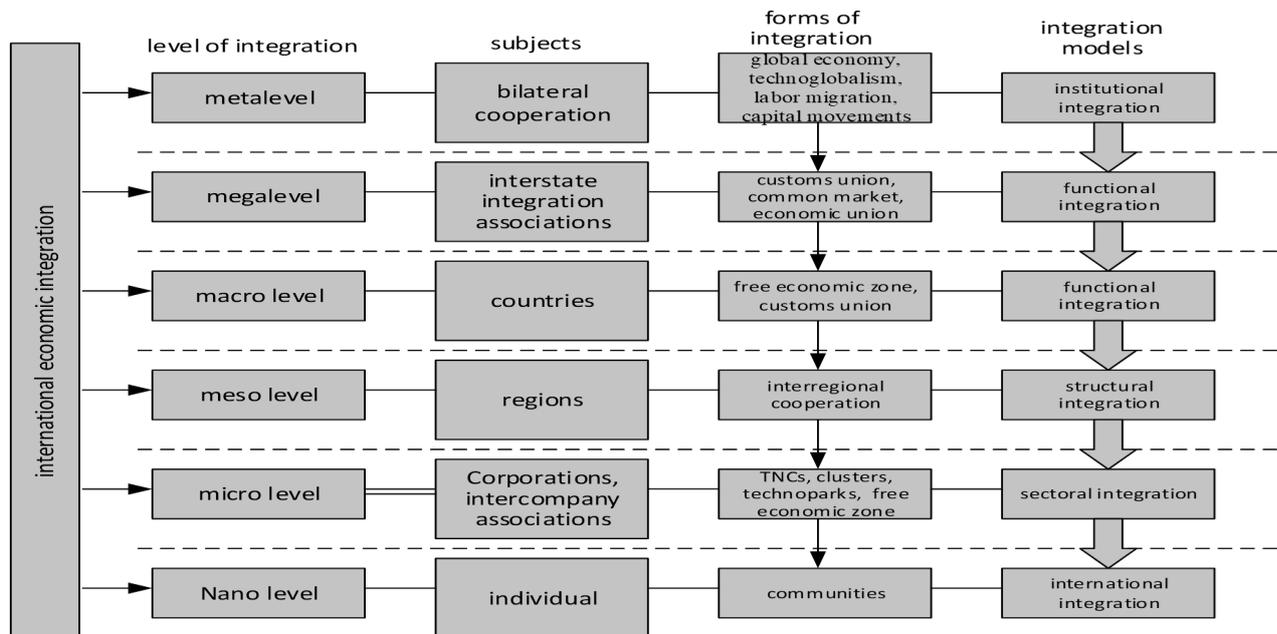


Fig. 4. Levels of international cooperation Author's development

Source: author's development

One of the forms of institutional integration is emulation and assimilation in the regions of Ukraine of international practices of functioning of science and technology parks. The objective prerequisites for the creation of a technology park in Zaporizhzhya include: concentration of "old industrial" industries; environmentally threatening state of development of the city with signs of depression and demographic crisis; significant research and production capacity. Creating a technology park involves solving problems: reindustrialization of the city's industry; resumption of applied research and production of the military-economic and environmental sectors; development of digital infrastructure and implementation of digital transformations in priority sectors of the economy; stimulating the gradual legalization of the IT sphere; formation of financial infrastructure of innovation, investment activity in scientific and educational sphere, health care and environment; legalization of the commercial services sector.

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VIRTUALIZATION OF HUMAN BEING AS REMOTE WORK BACKGROUND: CASE OF UKRAINE

Virtualization of economic system is a distinctive feature of global economy throughout the world. The phenomenon is caused by wide spreading of Informational Technologies, Communication networks, the Cyberspace etc. These are the environment of the Information Society existence, key peculiarities of which is the network interaction between the users of different terminals, connecting them without taking into account countries' borders. Actually, the cyber space involves all the spheres of human beings and provides facilities for the further development. The virtualization of human being supports the concept of intensive economic development and has a positive impact on the deepening of sustainable development.

Generally, virtualization is a process of transition into the information (digital) environment (cyberspace); development of digital infrastructure due to the large-scale implementation of telecommunications, information, computer technologies and systems into the operational activities in all sphere of human beings.

Virtualization is determined as the introduction of digital technologies into markets, institutions, etc. and the modification of material socio-economic relations form into a virtual one (digital). From the technical point of view it is the

representation of a resource, an object in the information space by means of special software and computer technologies. Virtualization of human being as a background for remote work is actualized in the condition of global pandemic.

To positive effects of virtualization belong increasing effectiveness of operating processes; decreasing resource losing; time effectiveness; mobility; rapid interaction etc.

Virtualization of human being as basis for deepening the remote work background in Ukraine is characterized by Internet penetration. The Internet in Ukraine is well developed and steadily growing (see Fig.).

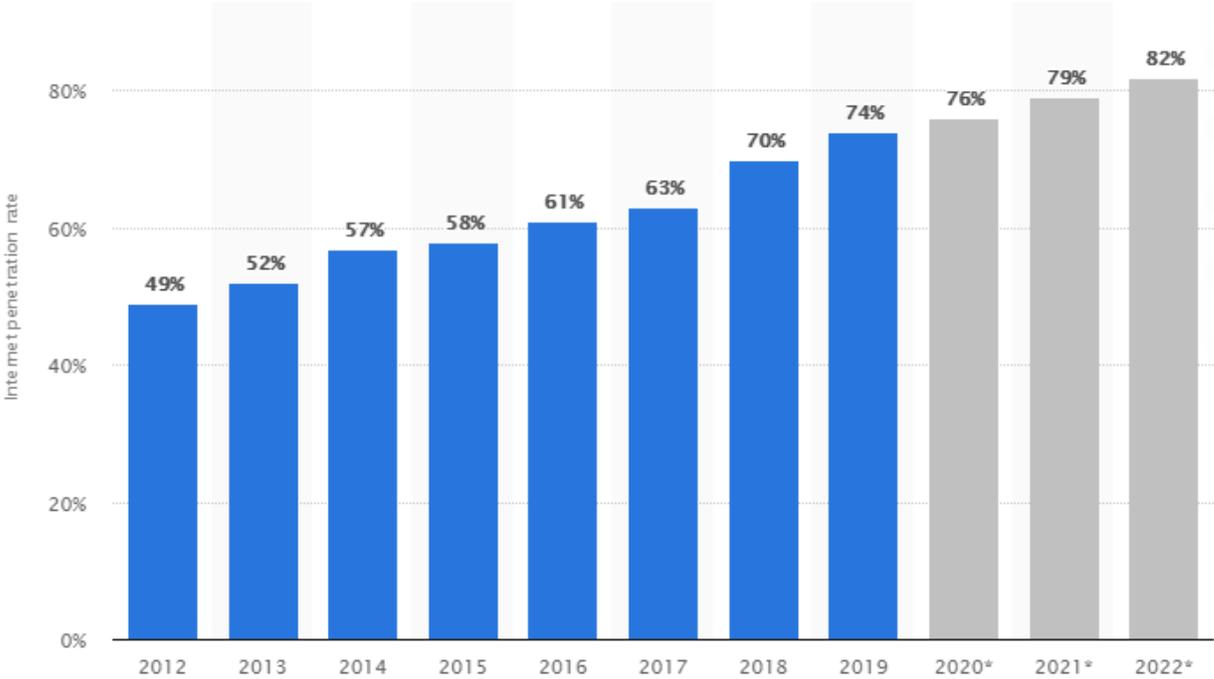


Fig. Internet penetration rate in Ukraine from 2012 to 2019 with a forecast until 2022
Source: [1].

Internet penetration in 2019 is about 74% (about 25 million) of the country's population (63 % in 2017). Most users are Ukrainians aged 25 to 44. 66% of Internet users use a smartphone to access the Internet, 40% – a home laptop, 36% – a desktop home computer, 5% – a desktop computer at work [1]. Compared to 2017, when Ukraine accounted for 23.6 million customers, growth accounted for wireless networks. Over the year, about 2.5 million people connected to wireless networks.

As of February 2018, Ukraine ranked 47th among the world's countries by the fixed broadband Internet access speed, with an average download speed of

34,89 Mbit/s, and 117th by the mobile network Internet access speed with 7.35 Mbit/s.

The Internet penetration rate in Ukraine was expected to reach 82 percent by 2022, according to “Newage” – Digital Solution Agency [2].

In total, nowadays, there are 26 million Internet users in Ukraine and this number includes subscribers of mobile and wired connections. The vast majority (25.3 million people) use broadband access. Among such, wireless connections account for 20 million users, and 5.3 million users for fixed access.

Also, the State Statistics Service of Ukraine has calculated that in Ukraine there are about 53.9 million mobile subscribers and about 2.2 million cable TV users [3].

Thus, data above as well as forecast show the positive dynamics in necessary background developing for remote work throughout the country. Accordingly, the positive effects of virtualization, mentioned before, have more chances to be implemented in socio-economic system of Ukraine.

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PROBLEMS OF PENSION REFORM IN UKRAINE DURING A PANDEMIC COVID-19

During the epidemic, COVID-19 the main delusion, which is still present in the minds of the population, is that under the solidarity system, we earn our retirement during our work. “I have paid much more contributions in my life than I will receive pensions,” “I would have been better off saving for a deposit in the bank – I would have received more money”, – these are common opinions about the

imperfection of the Ukrainian pension system. In fact, we are not currently saving up for our pension – we are paying it to those who have grown old and cannot work.

This is the essence of the first level of the pension system. It is essentially helping a generation of children to a generation of parents. For a country that is developing, where inflationary surges and crises are frequent, such a system provides at least minimal protection against the fact that savings "burn out". Therefore, the connection between generations is especially important – after all, the salaries of the generation of "children" will react to the rise in prices or changes in the dollar exchange rate – and accordingly the volume of their assistance to the generation of "parents" will react, and the depreciated savings may simply disappear. That is why a balanced pension fund is important.

It makes no sense for the generation of "children" to pay separately for pensions to the generation of "parents" – and once again separately to the budget – to cover the deficit of the pension fund (PF). And now, something like this is happening: the costs of the pension fund, planned for 2017, amount to UAH 283 billion own revenues – UAH 142 billion, the rest of the PF receives from the budget, partly as legal payments (UAH 57 billion), partly – as covering the deficit (UAH 84 billion). Budget payments are not taken out of nowhere – they are either taxpayers' money or expensive loans. The level of the national debt is already going through the roof. The state is already spending an amount comparable to half of the total budget of the pension fund to pay interest on debts, so financing pensions from new loans is a road to nowhere.

It is important that the society as a whole begins to form an understanding of this problem, and, consequently, the relevance of the reform. Thus, according to a public opinion survey conducted by the CES in July-September 2017 as part of the “Critical Thinking against Populism” project with the support of the Czech government and with the help of GFK, 79% of respondents believe that it is impossible to balance the costs of the pension fund through permanent loans. Even if this requires raising the retirement age, which was avoided in the proposed version of the pension reform.

So, in order to sell something unnecessary, you first need to buy something unnecessary, and in order to balance the pension fund, you need to either receive more or spend less in the future.

To get more, you can increase taxes. But the tax burden is already high (although the government slightly expanded the tax base through the pension reform), and the unified social contribution was lowered quite recently, just in order to relieve business at least a little during the crisis, to give an impetus to investment and economic growth.

An acceptable option, on which the government should start working immediately after the adoption of the reform, is to de-shadow employment. According to official statistics, we have 12 million people who pay contributions to the pension fund. At the same time, there are twice as many citizens of working age (from 20 to 60 years old) – 24 million. Some of them have a disability; some are sitting with a child. But surely there is a significant part of those who work in the shadows. The growth of official jobs, the attractiveness of the official sector over the shadow sector should become the priorities of the government in the coming years.

This is even more important that in the next decade will come out of retirement numerous generations born in the late Soviet Union, and contributions to the pension fund will pay people born in 1990-2000 whose number of which is one and a half times lower. There were two ways to reduce the future costs of the pension fund – by lowering future pensions in comparison with how much people would receive without reform, or by reducing the number of those who would retire in comparison with how much would have retired without reform. Both of them were implemented in the reform, firstly, by increasing the requirements for seniority and cancelling a number of benefits upon retirement, and secondly, by cancelling the seniority ratio of 1.35, which was previously taken into account when calculating pensions.

At the same time, due to the fact that pensions have not been indexed as expected for a long time, the absolute size of the pension will not decrease compared to the previous one, but will grow – the average wage indicator, on which the pension is calculated, will be increased ("modernized"). In general, even a forced reduction in future expenses should take into account the interests of the least protected

pensioners. In this case, the increase in requirements for seniority is about this and achieves: those who have worked longer will receive a pension earlier; and those who, due to their age, can no longer work as before (after 65 years) will receive higher pensions than they would receive without increasing the requirements for seniority.

It is important not to confuse this with absolute values and changes in relation to the current situation: due to the demographic situation, the number of pensioners is unlikely to decrease, rather, on the contrary, and in the same way, the average hryvnia pension payments will not decrease, but increase. In total, after the reform, the expenditures of pension and social funds will grow from 10.8% to 11.7% of GDP.

This is a consequence of modernizing and raising social standards for pensioners. At the same time, it is not at all a fact that without the reform, pensions would have grown more significantly – the state budget and the pension fund could simply not have enough money to pay everyone, and pensions would be frozen again, as has happened more than once. Indexation "on paper" would turn into depreciation in reality.

Moreover, indexation is an extremely important component of a fair pension system. It is critical for 90% of those we interviewed. Already several times "breaking their heads" on the depreciation of savings after crises, people are well aware of the value of such indexation. And the government is obliged to do everything in this direction so as not to lose the remnants of trust. Otherwise, there will be no trust at all for further reforms and actions.

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REGULATION OF THE EMPLOYMENT AND SOCIAL PROTECTION SPHERES IN THE COVID-19 PANDEMIC: EXPERIENCE OF UKRAINE AND THE EU

The sectors of employment and social protection of the population, along with health care, have been at the epicenter of the crisis that is associated with the spread of the COVID-19 pandemic since March 2020 at a global level. We can observe the large-scale negative effects of the coronavirus pandemic related to working conditions and human welfare. According to the latest estimates of the International Labor Organization (ILO), the COVID-19 pandemic had a devastating impact on the world of work – in the second quarter of 2020, compared to the pre-crisis fourth quarter of 2019, the global reduction in working time reached 14.0% (in full-time equivalent with a 48-hour work week equals to the loss of 400 million jobs). At the same time, in the regions of Northern, Southern and Western Europe, this reduction amounted to 15.7%, which is equivalent to the loss of 24 million jobs. And in the region of Eastern Europe, employment losses were equal, respectively, 11.6% of working time and 12 million jobs [1, p. 4-6].

Almost all countries across the world affected by the COVID-19 pandemic continue to implement various government regulatory measures to mitigate the impact of shocks for manufacturing, employment and social protection, especially for the most vulnerable groups. These countries are the European Union and Ukraine, which are united by the Association Agreement ratified in 2014.

Key approaches and features of the state policy of the EU and Ukraine during the COVID-19 pandemic. The European Union is implementing a number of special initiatives and financial mechanisms to job conservation, support national labor markets, provide social protection and support its citizens in the context of the coronavirus crisis. As of mid-July 2020, not taking into consideration the ECB's Pandemic Emergency Purchase Program with a funding of € 1.35 trillion, total

support in the fight against the COVID-19 pandemic of the population and business in EU member states has exceeded € 4.2 trillion, including within the frame of [2]:

- programs of national governments to ensure the financial sustainability of business and provide state support, including on the basis of Temporary Framework to enable Member States to further support the economy in the COVID-19 outbreak – € 3.045 trillion;
- anti-crisis fiscal and debt policies of national governments – € 575 billion;
- safety nets of participating countries through the ESM Pandemic Crisis Support to provide them with budgetary funding for health expenditures in connection with the COVID-19 pandemic – € 240 billion;
- European Investment Bank anti-crisis programs for business lending – € 200 billion;
- an EU programme of Support to mitigate Unemployment Risks in an Emergency (SURE) aimed at protecting jobs for the self-employed and businesses affected by the COVID-19 pandemic, including special government part-time and casual employment programs – € 100 billion.

Thus, at the level of EU member states, the introduction of the Short-time work Scheme has become widespread. Within the framework of this Scheme the National Employment Services (NES) pay employers compensation in the amount of 50% – 100% for the payment of wages to workers who due to restrictions in connection with a coronavirus infection work only partially or are forcibly idle.

The measures taken by the EU to protect production, employment and socially vulnerable groups from the shock effects of the coronavirus crisis have proved to be quite effective. According to the results of macroeconomic modelling, the implementation of the EU measures to support part-time employment and liquidity of enterprises (not taking into account other types of anti-crisis measures) will reduce the fall in real GDP of the united Europe in 2020 up to 8.7% with a potential 13.0% loss [3, p. 22].

However, the effectiveness of the EU's policy to overcome the negative effects of the COVID-19 pandemic may not be as high as expected, broadly speaking. This is evidenced by the results of the thematic study of the European Fund [4, p. 9-16], as

well as the deterioration of forecast estimates of socio-economic dynamics of the EU, published by the European Commission in May and July this year.

In its July forecast, the European Commission emphasizes that under the influence of the coronavirus pandemic, the EU economy will face a deeper decline in 2020, accompanied by greater divergence in the macroeconomic indicators of the participating countries than previously expected. According to May forecast of the European Commission the reduction of real GDP of the EU-27 in 2020 was expected at the level of 7.4%, and the euro area countries – 7.7%, later in July this year these figures deteriorated up to 8.3% and 8.7%, respectively [5]. The revised forecasts of the European Commission are more realistic, taking into account official Eurostat data; in the second quarter of 2020 the decline in real GDP of the EU-27 and the Eurozone in annual terms (compared to the second quarter of 2019) was 14.4% and 15.0% respectively.

To overcome the deepest economic "corona-crisis" in the history of the EU, the European Council on 21 July 2020 approved the creation of a special fund of € 750 billion to rebuild the European economy in the post-pandemic period. This fund will be formed taking into account the new initiative of the European Commission "Next Generation EU", and will also be directly related to the programs of the pan-European budget for the period 2021-2027.

Whether the use of the newly formed fund will be highly efficient remains to be seen. Experts point out that, unlike the European Commission's initial proposals, the method of allocating the funds among EU countries has changed in favor of stronger economies, and the share of financial grants has significantly decreased and the share of loans has increased [6]. As a result, it may serve to reinforce divergence trends in the EU, as these approaches do not guarantee for weaker economies accelerated recovery and outpacing growth following the COVID-19 pandemic.

Ukraine, unlike most EU countries, has not yet been able to effectively counteract the shocks of the "corona-crisis" in the areas of employment and social protection. Firstly, this is due to the shortcomings and failures of Ukrainian state policy in these areas, implemented not only in recent months but also in recent years [7, p. 101-105]. Secondly, with the obviously misuse of the Fund to fight against the

COVID-19 pandemic, created by the resolution of the Cabinet of Ministers of Ukraine on April 22, 2020 No 302.

This resolution provides that the fund amounts may be directed exclusively for:

- the implementation of measures aimed at preventing the occurrence and spread, localization and elimination of COVID-19 outbreaks;
- fringe benefits in addition to the salaries of medical and other workers immediately involved in the work to eliminate COVID-19, as well as fringe benefits to other categories of workers (police, the military) who support the livelihood of the population during the quarantine period;
- providing cash assistance to the families of medical and other healthcare workers who died from COVID-19;
- providing cash assistance to citizens, including the elderly, taking into account the negative effects of the spread of COVID-19 in Ukraine;
- providing cash assistance to the Social Insurance Fund and the Compulsory State Social Insurance Fund in case of unemployment (on a repayable or non-repayable basis).

Despite clear legal definitions, the targeted use of the Fund's budget to combat the COVID-19 pandemic in Ukraine is not observed. According to the Ministry of Finance of Ukraine, as of the end of July 2020 out of UAH 66 billion UAH 35 billion (53%) was aimed at repairing and building roads (!). And only UAH 16 billion (24%) was allocated for the national health care system and another UAH 7 billion (11%) – to finance unemployment benefits [8].

Additional evidence of the low effectiveness of anti-crisis measures implemented by Ukraine in the fight against the COVID-19 pandemic, including the spheres of employment and social protection, are the forecast estimates of international organizations for 2020. IMF forecast for the decline in real GDP of Ukraine in June this year was worsened from 7.7% to 8.2% [9]. According to the UNICEF forecast, as a result of the "corona crisis" Ukraine expects almost twofold increase in poverty (according to absolute criteria) – from 27.2% to 50.8% [10, p. 5].

The main risks for achieving the social goals of the Association Agreement between Ukraine and the EU. Due to the COVID-19 pandemic and the

ineffectiveness of state policy to overcome its consequences, there are a number of potential risks to improve social dynamics in Ukraine and the EU, as well as achieving the social goals of the Association Agreement between our countries.

For the European Union, in the context of the current pandemic-driven crisis, the main risks for the medium term (2020-2024) have been identified by experts from the European Commission and the European Parliament [5], [11, p. 77-83] such as: Scope and duration of the COVID-19 pandemic; Stagnation of the European labor market; Relations with Britain after Brexit; Single Market unraveling; Schengen acquis unravelling; EU – Member State cooperation eroding; Lack of genuine new EU own-resources; Sovereign debt crisis; Global economic depression; International financial instability; Excessive turning away from global production chains; Escalating trade protectionism; Energy risks; Climate action failure; Health system crisis; Rising poverty and inequalities; Profound social instability; Rise of nationalism and populism; Massive disinformation against EU; New migration crisis; US-China escalating tensions; Destabilisation of EU neighbourhood.

For Ukraine, according to the consensus forecast of the Ministry of Economic Development, Trade and Agriculture of Ukraine, the most significant risks against the background of the coronavirus pandemic are [12, p. 19-22]: Significant growth of the state budget deficit and cash gaps in the Pension and other state social insurance funds; Significant decline in effective demand of the population; Significant increase in unemployment; A sharp deterioration in the quality of life of the population, especially the most vulnerable groups; Mass bankruptcy of medium and small businesses; Deep protracted recession and acceleration of inflation; Strengthening the insolvency of the real sector of the economy; Maintaining a high level of corruption; Lack of external financing and limited access to international capital markets; Narrowing of foreign markets due to high competition; A new global crisis (due to the destruction of established production ties, the bankruptcy of a number of industrial producers in the EU and the world as a whole).

The above mentioned main risks to the development of the EU and Ukraine in the short and medium term are serious barriers to achieving the economic and social goals of the Association Agreement between the EU and Ukraine and should be taken

into consideration by both parties in shaping European integration, macroeconomic and social policies.

General recommendations for optimizing the state policy of Ukraine in the spheres of employment and social protection in the post-pandemic period. The list of the most effective strategies for overcoming the shock social consequences of the COVID-19 pandemic, which is based on the recommendations of major international institutions, may seem to be the basis for improving Ukraine's approaches to state regulation in the spheres of employment, labor market and social protection. Namely [13, p. 1]:

- creation and / or adaptation of reliable job retention schemes, including Short-time work Schemes;
- increasing citizens' access to social protection systems in order to ensure a basic minimum level of protection and income for all, regardless of their employment status;
- providing additional state support to socially vulnerable groups so that the crisis does not exacerbate poverty and existing social inequality, does not create new forms of inequality and social isolation of people;
- restricting the freedom of movement of persons necessary to overcome the coronavirus health crisis in order not to deprive workers of access to their workplaces;
- compliance with the relevant safety and health requirements in order to ensure the safety of all employees in pandemics;
- stimulating the digitalization of the economy, reducing the digital divide, adapting employees to future challenges due to the processes of digitalization of society;
- intensification of social dialogue as a tool to ensure effective coordination and cooperation in the development of measures to respond to the crisis and post-crisis recovery of the socio-economic sphere.

In addition, the recommendations for improving the state policy of Ukraine, which are important for the effective development of its social and labor sphere for the long run period relate to [7, p. 105-106]:

- the adoption of a new Labor Code of Ukraine or labor law that will meet the interests of the laborer and the norms of ILO conventions ratified by Ukraine, as well as regulate social and labor relations and support various forms of employment in extraordinary conditions;
- the introduction, including through public-private partnership mechanisms, programs of preservation of existing workplaces and creation new ones, youth employment support, labor migrants' employment who have returned to the internal labor market;
- strengthening the institutional role of the State Employment Service, focusing its activities on active rather than passive measures of employment policy;
- the formation of a competitive domestic market of vocational education services, which will ensure the replenishment of the labor market of Ukraine with qualified and competitive personnel in the era of digitalization.

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У збірнику міжнародних наукових праць узагальнено основні результати наукової дискусії, проведеної у рамках міжсекторального наукового семінару, організованого ДУ «Інститут економіки та прогнозування НАН України» та Ланчжоуським університетом (Китай) наприкінці липня 2020 року.

У доповідях українських та китайських учених представлено наукові підходи до вирішення актуальних проблем соціально-економічного розвитку та міжнародного співробітництва, викликаних впливом пандемії COVID-19 на макроекономічні та політичні умови у різних державах. Науковцями надано обґрунтовані оцінки впливу пандемії коронавірусу на динаміку та стан економічної, фінансової, соціальної, освітньої, охорони здоров'я та інших сфер суспільного розвитку України та Китаю, висвітлено перспективи міжнародної співпраці та розвитку світової економіки.

Матеріали збірника зацікавлять науковців, викладачів, студентів та всіх, кого хвилюють питання соціально-економічного розвитку та міжнародних відносин.

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