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Digital Transformations Tracks of Current International Economic Relations in the Context of Human Activity

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Abstract. Political, social, technological, cultural conditions and factors originating from various spheres of human activity impact international economic relations (IER), and this gives each stage of their development a pronounced originality. Digitalization as one of the most important tracks of the scientific and technological progress development actually reshapes international relationships by optimizing the use of resources to increase the sustainability and inclusiveness of the economy, building new digital industries, transforming economic relations and accelerating the promotion of goods and services. The changing competition nature in the international digital environment has actualized the problems of regulating foreign economic activity and strengthened the role of the state. To a greater extent, digitalization had an impact on such forms of IER as international trade and cross-border capital movement. The main vectors of digital transformations that have emerged include a change in the trade structure towards increasing the share of high-tech goods and services, primarily related to the information and communication group; the flow of business processes from traditional form to digital one; the expansion of digital inequality between market players and people from various countries due to different opportunities for access to digital ecosystems; the emergence of new forms of international division of labor. The article focuses on the regulatory aspect of the digitalization impact on the IER and emphasizes that the new “rules of the game” are in the active shaping stage in parallel with the development of digital technologies themselves.

Keywords: human activity, digitalization, international economic relations, regulation of foreign economic activity, foreign trade, transformation of regulatory environment, ICT, digital inequality.

Research area: global economy.

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Векторы цифровых трансформаций современных международных экономических отношений в контексте деятельности человека

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Аннотация. Международные экономические отношения (МЭО) испытывают влияние условий и факторов, относящихся к политической, социальной, технологической, культурной сферам деятельности человека, что придает каждому этапу их развития явно выраженное своеобразие. Цифровизация как одно из важнейших направлений развития научно-технического прогресса фактически переформатирует международные взаимодействия через оптимизацию использования ресурсов для повышения устойчивости и инклюзивности экономики, формирования новых цифровых отраслей, трансформацию системы хозяйственных связей и ускорение процессов продвижения товаров и услуг. Изменение характера конкуренции в международной цифровой среде актуализировало проблематику регулирования внешнеэкономической деятельности и усилило роль государства. В большей степени цифровизация оказала влияние на такие формы МЭО, как международная торговля и трансграничное движение капитала. К числу основных сформировавшихся векторов цифровых трансформаций можно отнести изменение структуры торговли в направлении повышения доли высокотехнологичных товаров и услуг, прежде всего относящихся к информационно-коммуникационной группе; перетекание бизнес-процессов из традиционной в цифровую форму; расширение цифрового неравенства между субъектами рынка и людьми из разных стран за счет разных возможностей доступа к цифровым экосистемам; появление новых форм международного разделения труда. В статье фокусируется внимание на регуляторном аспекте воздействия цифровизации на МЭО и подчеркивается, что новые «правила игры» находятся в стадии активного формирования параллельно развитию самих цифровых технологий.

Ключевые слова: деятельность человека, цифровизация, международные экономические отношения, регулирование внешнеэкономической деятельности, внешняя торговля, трансформация регуляторной среды, ИКТ, цифровое неравенство.

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Introduction

International economic relations (IER) are one of the most actively developing areas of human activity. Their distinctive feature is the dynamic nature of changes, consisted in the acceleration of evolutionary changes and in the presence of non-periodic bifurcation processes, under the influence of which the existing prerequisites and disparate conditions form a new scheme of economic cooperation between countries. Although these processes are often called revolutionary in the political and economic literature, it is difficult to unequivocally consider them as such, however.

One of the factors affecting international relations, including economic ones, are information and communication technologies (ICT) of the Fourth Industrial Revolution, which are being actively introduced into all spheres of human life. Not only the essence of globalization processes is changing under their influence, but also their specific aspects. The ever-increasing cross-border transfer of digital data, information, technologies and services has entailed the need to create and develop new forms and methods of international cooperation, as well as to improve regulatory tools for international activities of economic entities.

Theoretical framework

The underlying processes of the IER transformation at the present stage are largely based on the innovative component of the international division of labor. Singling out digitalization as one of the innovative development factors of the global economy in no way means detracting from the importance of other areas of technological progress. Given that digital innovations are cross-cutting, they can be exploited in all industries, facilitating to connect disparate manufacturing processes and functions into a single network. This property gives new features to the international division of labor, reinforces the trend towards the intellectualization of economic activity.

Specialized international organizations and some researchers pay attention to the digitalization of the economy and international economic relations. Thus, the digitalization and digital transformation of current IER, in

particular the key parameters of changes in the international mobility of production factors and possible approaches to improving the system regulation of international trade and capital movement, is explored by Smirnov (2019). He draws attention to such recent changes as an increasing technological gap between countries, the relationship between digitalization and the imbalances in the global economy, the impact of global value chains on the international exchange driven by digital technologies.

The impact of digitalization on foreign economic activity during the pandemic was explored by Shkalenko and Fadeeva (2020). In their opinion, innovative dynamics and high innovativeness, increased transparency and market fragmentation, reduced market entry, and customers empowerment become key driving factors related to the digitalization. Based on the analysis Strelkova (2020) came to the conclusion that digitalization contributes to increasing efficiency of production and sales of goods, improving their quality, but triggers new risks, disrupts the business stability, reforms relations between developed and developing countries, changes the existing global value chains.

The impact of digitalization on the development of foreign trade was explored by Krasnykh (2020). He concludes that, on the one hand, digital technologies create new business processes, reduce transaction and logistical costs, increase the effectiveness of international production, but on the other hand, they negatively affect employment, increase the technological gap between developed and developing countries.

The definition, measurement, and policy effects of digital trade were explored by González and Jouanjean (2017). In their view, data flows are a key enabler of the new trading environment. Accordingly, “the role of data flows in digital trade and the measures that need to be taken to ensure the benefits of digital commerce should be further explored”.

The impact of digitalization on international trade was analyzed by Ahmedov (2020). He believes that “international trade is on the verge of a new stage in the development of

its regulation and liberalization. This process requires the development of general rules for working in a digital environment and the use of digital technology”.

The analyzes of the ICT introduction impact on the international trade was carried out by Strelets and Chebanov (2020). They conclude that this entails the inclusion of goods and services in international turnover, and setting the stage for resolving bottlenecks in world trade and the global economy as a whole.

The impact of digital technologies on the IER is multiple. Its most significant areas are optimization of the use of resources to increase the sustainability and inclusiveness of the economy, acceleration of promotion of goods and services, transformation of the economic relations system, creation of new digital industries and a new regulatory environment.

The need and opportunity to use digital technologies to ensure sustainable development comes out of seventeen Sustainable Development Goals until 2030 (SDG). Thus, implementation of SDG-2 (2015) on achieving zero hunger requires increasing the productivity of all types of resources, introducing the latest technologies, and simultaneously optimizing regulation. SDG-9 (2015) provides for the development of innovative infrastructure, especially ICT one, which is essentially digital. SDG-13 (2015), which proposes to take measures to tackle climate change, also provides for reliance on technological solutions, taking into account new regulations and rules, without which it is impossible to optimize the use of resources.

Statement of the problem

Given the cross-cutting nature of ITC in the present context, there is a pronounced conflict of interests in relation to obtaining competitive advantages when exercising foreign economic activity. In this regard, foreign trade regulation becomes very topical at the present stage of the technological progress development.

Today, when the turbulence of the processes of cross-border cooperation between the countries is high, each of them can fill the niche in the deforming competitive environment. Accordingly, it is important to comprehend the

main trends of the IER transformation affected by digital technologies.

Theoretical approaches to the modern IER transformation are characterized by a variety in the scope of vectors of such changes and in their prioritizing. The authors focused on the general vectors of such changes, basically on the regulatory aspects of this process.

Methods

The methodology for studying the vectors of current IER digital transformations, used in this article, is based on a set of concepts. These are, on the one hand, traditional concepts of the development of economic cooperation between countries in the context of globalization, on the other hand, up-to-date development theories and hypotheses of the Fourth Industrial Revolution of the last decade.

Since international legal, economic, technological, and social aspects converge in this topic, the basis of this approach is interdisciplinarity. The comprehensive analysis included the use of trend research methods, comparison and systematization, historical comparative studies. When analyzing certain areas of current IER digital transformation, the authors used the methods of logical and historical unity, as well as substantive, qualitative analysis.

The theoretical support is based on the works of Russian and foreign researchers of new trends in the relations between countries in the context of the digitalization of the global economy. Primacy is given to practice-oriented research on international economic relations. The use of analytical information from international organizations, national government agencies and expert groups is methodically justified to sum up the ideas on the development of the object under study.

Discussion

When analyzing the impact of digitalization on various IER forms, priority in the theoretical discourse is given to considering the transformation processes of international trade and cross-border capital movement, and it is fair to say, since they account for the bulk of the market entities activity. The direct cor-

relation of these processes with the economic growth is obvious.

There were assessments of the relationship between development indicators and digitalization before the pandemic. For example, indicators of improving the global trade efficiency due to digital innovations and its contribution to growth were estimated at 1.8–2.0 points annually (DDG Wolff stresses ..., 2018). However, some researchers, for example Afontsev (2019), believe that it is difficult to quantify the digitalization impact on economic growth, and this indicator is an important, but not the only condition for the global economic development. He estimates the ICT contribution to the acceleration of global GDP growth at a level not higher than 0.15–0.25 points.

Focusing on the regulatory aspect of the digitalization impact on the IER seems important because the lack of clear rules for the interaction between countries in any economic sphere can significantly slow down the introduction of digital innovations and neutralize the positive effects of their use. Ultimately, the absence or imperfection of regulatory measures appropriate to the economic development stage distort the competitive environment and complicate international business operations.

The digital age has not only mitigated many barriers, but also triggered a wave of adoption of new norms and regulatory measures by many countries, both tightening and facilitating international economic cooperation (Schwab, 2016). The rethinking of the concepts of current IER regulation did not happen immediately, it matured evolutionarily, in stages and continues today.

Having analyzed the impact of the Fourth Industrial Revolution on the transformation of the world economy, Spartak (2018) came to the conclusion, based on the theoretical concepts of the last decade of Russian and foreign authors, that a new stage in the development of rules of economic activity in the digital environment will be characterized by simplified procedures and reduced restrictions. He also believes that the simplification of business processes in the digital environment is one of the motives for the implementation of mega-regional trade and economic projects.

States should be at forefront of transforming the regulatory environment, primarily in creating a favorable environment for the introduction of digital technologies through the legislative framework. The creation of a publicly accessible digital infrastructure and a free educational environment is another pillar of the state participation in supporting the introduction of this group of technologies. These measures are legal under the existing multilateral trading system.

The main problem of regulating international trade caused by the digitalization of the global economy is the legitimization of ensuring, firstly, a fair competitive environment and, secondly, government support for companies that do not have their own capabilities to integrate into the digital ecosystem. The controversial nature of the problem is obvious.

It should be noted however that there is a wide range of opinions on the deepening contradictions on changing trade regulations in the context of digital transformation (Burri, Cottier, 2015). As a rule, national digitalization programs provide for support measures related to the “green box”, i.e. research, marketing and market promotion, consulting services, training (Brink, 2018), but conflicts often arise that are not resolved within the existing regulatory environment.

The pace of digital transformation in a number of countries was accelerated under the impact of the pandemic COVID-19, but this happened only where the basis for acceleration was already established. The effects of the “zero base” were noted at the sectoral, but not at the country level. The UN experts stress that “the crisis has accelerated the digitalization of many businesses and services, including teleworking and video conferencing systems in and out of the workplace, as well as access to healthcare, education and essential goods and services” (SDG-9, 2015).

The research studies emphasize that the future belongs to the creation of digital ecosystems, not to disparate technologies, but this is a rather long process. In this regard, the creation of advanced local networks and the achievement of proficiency in the business environment is possible after a while, not immediately

(Storper et al., 2015). Therefore, it is already necessary to develop today rules for the functioning of subjects in ecosystems.

Computer services, accounting for 81 % of telecommunications, computer and information services (they account for about 20 % of total exports of commercial services) increased by 8 per cent in 2020 compared to the previous year (World Trade Statistical..., 2020: 13; World Trade Statistical ..., 2021: 98).

According to WTO experts, the digital technologies that have the most significant impact on trade costs and international trade in general are artificial intelligence, the Internet of Things, blockchain and 3D printing. Therefore, it is not surprising that the main works and discussions on the developing “rules of the game” both within the framework of foreign trade policy at the multilateral level and the development of industrial policy are carried out in these areas, and this is important for producers of goods and services at the national level. Since the use of digital technologies makes it possible to decrease distribution costs by reducing shipping and storage expenses, which account for the bulk of total commercial expenses, and transportation time, they fundamentally change the competitive environment and, accordingly, require the development of new regulatory rules.

According to WTO experts, technologies will have the greatest impact on trade in services and an increase in exports of developing countries by 2030. Particularly essential modifications due to the ICT use are taking place in the services sector, since their number in digitalized form has increased significantly, and consumers are able to buy them abroad via the Internet. The trade structure is also changing, as the supply of goods is increasingly replaced by the supply of services. It can be assumed that over time, ICTs will change the current foreign trade patterns.

The structure of exports is also changing driven by digital technologies. Since the development of foreign trade is hindered by rather high costs of logistics, transportation, communication and control over the implementation of supplies, the ICT use fosters an increase in trade within global value chains (GVC). ICTs

also increase the availability and quality of services that stimulate GVCs. In addition, the ICT use creates additional opportunities for both developed and developing countries. Developed states can widen their lead in sectors of the economy that require the use of highly skilled employees, while developing countries can gain their advantage in sectors that have experienced the most significant changes due to the transition from physical trade to digital one.

It is important for the subjects of the global economy that sharp disparities do not arise in a competitive environment and a destructive loosening of the existing system does not occur, including due to the so-called digital inequality, which means different access to digital technology opportunities by individual countries, companies, individuals. Some indicators characterizing the digital inequality of the countries are set out in Table 1. It shows, that there is a large variance between developed, developing and least developed countries in almost all indicators.

According to the UN estimates made in the context of sustainable development, digital inequality exists for 3.6 billion people. They are unable to access the Internet and, accordingly, are limited in access to many services, and 16 per cent of the world’s population does not have access to broadband Internet (SDG-9, 2015). Despite these discrepancies in estimates, the scale of the problem is quite indicative.

The reasons of digital inequality lie primarily in the level of countries’ economic development. This implies the whole spectrum of social problems from the level of literacy to readiness for transformation at the mental level. In the meantime, different starting conditions for digital transformation and the ability of countries to economically support a digital breakthrough or system evolution are basic in the context of the digital inequality.

Another package of government support for national entities involved in international economic relations is the legislation enforcement on the protection of intellectual property rights. The cross-border movement of its subject matters is an important element of the IER digitalization and, according to Soldaten-

Table 1. Selected indicators of digital inequality

	World	Developed countries	Developing countries	Least developed countries
Percentage of urban households with computer at home	63 %	84 %	54 %	17 %
Percentage of rural households with computer at home	25 %	66 %	17 %	3 %
Percentage of urban households with Internet access at home	72 %	87 %	65 %	25 %
Percentage of rural households with Internet access at home	37 %	81 %	28 %	10 %
Population coverage by 4G network	84,7 %	90,0 %	82,2 %	40,5 %
Population coverage by 3G network	8,5 %	1 %	10,0 %	35,7 %
Population coverage by 2G network	6,8 %	2,0 %	7,8 %	23,8 %
Active-mobile broadband telephone subscriptions per 100 inhabitants, 2020	75	125	65	33
Fixed-broadband telephone subscriptions per 100 inhabitants, 2020	15	34	12	1
Mobile-cellular telephone subscriptions per 100 inhabitants, 2020	105	133	99	74

Source: Measuring Digital Development: Facts and Figures 2020. (2020). Geneva, p. 4–6, 9. Available at: <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2020.pdf>

ko (2016), largely depends on the general state of the economy, the level of infrastructure and institutions development, and government support for scientific activities. In this regard, the intensification of contacts between countries within multilateral institutions for the protection of intellectual property rights, together with the change in the structure of the economy towards increasing the share of high-tech industries contributes to the shaping of a new regulatory digital environment.

New models of inclusion of economic entities in the IER digitalization context are being formed on the phased basis. As before, TNCs are not only the most actively transforming international business, expanding horizontal ties through digitalization, but also changing the verticals of production and sales processes, involving entities that do not belong to the corporation, due to new, aimed at optimizing functionality. Some researchers note changes in the relationship between TNCs and their counterparties along the value chains (Structural information..., 2019). Such a policy contributes

to increasing the mobility of production factors and deepening the structural transformation of the economy.

The problem that creates the risk of imbalances is the technological and/or mental inability of a large group of economic entities to adapt to digital reality, and this distorts relations at the national and international levels. International cooperation on the development of a new regulatory environment, taking into account the SDG achievement, provides opportunities to smooth out this basic contradiction at the stage of the introduction of disruptive digital technologies.

To a large extent, digital platforms activate new mechanisms of cross-border communications. They increase the transparency of the digital ecosystem and business, thus speeding up the cross-country interaction (Revenko, Revenko, 2019). In some industries, for example, in the agricultural sector, they perform the role of integrators of large and small businesses, which was previously considered an impossible task (Revenko, Revenko, 2021).

The costs associated with customs clearance, especially of industrial goods and perishable products, is a limiting factor in the development of international trade. Platforms created in many countries, including Russia, in particular Single Window, make it possible to reduce them, increase confidence in international transactions, and provide access to information.

One of the most important challenges requiring new regulation is the disproportionate impact of global digital platforms on users. The wish to change the balance in favor of users, according to some researchers, stimulated the creation of personal data markets (Lanier, 2014; Arrieta-Ibarra et al., 2018). However, the value of the information posted on them depends on how reliable and complete it is (Beauvisage, 2017). In addition, difficulties arise such as determining the person who has ownership of personal data and the high cost of administrative expenses. Finally, personal data belongs to the category of confidential information, and the creation of markets turns it into a commodity (Digital Economy Report, 2019: 132).

Information is becoming more and more publicly available and actually acquires a collective character. In this context, such a factor as trust in information is of great importance, stimulating the establishment of trust-based relationships between companies, individuals and government agencies (Hardinges, 2018). This can be done within the framework of both a reproducible integrated environment created to enhance trust between data owners and users, and a permanent managed structure (AI in the UK..., 2018). In both cases, trust is possible only under the conditions of regulatory transparency of the platform's activities. The regulation of the platform economy is carried out in fact in these two ways.

Furthermore, according to some researchers, data is a publicly available resource (Mazzucato, 2018; Singh, 2018; Lawrence, Laybourn-Langton, 2018), and it should belong to the territorial entity within which it was collected, and collective ownership of data can be in the form of a collective database (Mazzucato, 2018; Morozov, 2017). At the same time, personal data containing, in particular, infor-

mation about people's health and financial transactions are confidential and for this reason must be anonymous. In addition, people should be able to control the collection and use of their personal data. This regulatory problem has not yet been resolved and is one of the most acute in negotiations within multilateral institutions.

Many researchers believe that data transfer should be regulated. For example, according to Ferrakein (2017), Ciuriak and Ptashkina (2018), it is necessary to provide for the development of laws on data protection and restrictions of its cross-border movement, the introduction of a ban on its trade, as well as on localization of data, that is, its storage and placement of processing centers on the national territory.

Newman (2014) advocates that when investigating cases of unfair competition, the emphasis should be placed on the control of personal data by platforms, but, according to Pascal (2013) and Khan (2017), given the close relationship between market share and control of data, privacy and competition policies need to be changed.

As for the possibility of applying WTO rules to data flows, experts' opinions differ. Burri (2016) and Crosby (2016), for example, believe that the annex of the General Agreement on Trade in Services (GATS) on telecommunications is applicable, since governments must allow telecommunication networks and services to transmit data or access databases hosted abroad in order to provide services.

Conclusion

Current international economic relations are affected by the digital wave of technological progress. At the national level, digital technologies help to overcome problems and eliminate weaknesses in industrial and economic development of the previous stage of industrialization, namely, leveling the lack of infrastructure and inefficient use of resources. In this regard, the degree of involvement of countries and economic entities in the international division of labor is growing, which is actually adequate to the intensification of their participation in international economic relations. New cross-border forms of interaction between market actors have emerged and continue to develop,

based on the opportunities provided by digital technologies.

With the acceleration of the introduction of digital technologies in all areas of current international economic relations, the global ecosystem has not yet settled down. A global digital space is being actively shaped, in which new alliances of economic entities are being created and the nature of their relationships is changing. This creates new opportunities for the countries that do not fully use their potential at the “pre-digital” stage of development. The risks of losing positions in traditional industries are also growing.

Such a transformational state of current international economic relations presupposes the development of new approaches to regulating the processes of cross-border interaction between the countries. These processes are parallel to the development of digital technologies themselves in the countries in the environment of a new alignment of economic forces. Government programs, sectoral strategies and other documents

of many countries contain common approaches to regulating digital processes, as well as details on certain types of technologies. However, approaches to the international regulation of the digital components of economic cooperation have not yet been finalized.

The shaped contours of such regulation suggest that the development and adjustment of the most important international “rules of the game” of the digital era can become a permanent process due to the peculiarities of the disruptive technologies themselves, their active development and cross-cutting nature.

The main paradigm for regulating the digitalization of international economic relations is currently a relatively non-destructive approach to the development of new rules. However, the deepening of contradictions between economic actors in the new conditions of competition, by which we mean the updating of tools, measures, and methods of regulation, will inevitably entail the emergence of new trends in international economic cooperation.

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