

Z-INEQUALITY IN THE CONTEXT OF THE FORMATION OF A DIGITAL SOCIETY: INTERGENERATIONAL DIFFERENCES IN THE PERCEPTION OF NEW THREATS TO ECONOMIC SECURITY

Z-НЕРІВНІСТЬ В КОНТЕКСТІ ФОРМУВАННЯ ЦИФРОВОГО СУСПІЛЬСТВА: МІЖПОКОЛІННІ ВІДМІННОСТІ У СПРИЙНЯТТІ НОВИХ ЗАГРОЗ ЕКОНОМІЧНІЙ БЕЗПЕЦІ

Natalia Reznikova

Doctor of Economic Sciences, Professor, Professor of the Department of World Economy and International Economic Relations, Educational and Scientific Institute of International Relations
Taras Shevchenko National University of Kyiv. E-mail: nreznikova@knu.ua
ORCID: <https://orcid.org/0000-0003-2570-869X>

Oleksii Chugaiev

Doctor of Economic Sciences, Professor, Professor of the Department of World Economy and International Economic Relations, Educational and Scientific Institute of International Relations Taras Shevchenko National University of Kyiv. E-mail: alxcv@ukr.net
ORCID: <https://orcid.org/0000-0003-3315-2919>

Olena Bulatova

Doctor of Economic Sciences, Professor, First Vice-Rector, Mariupol State University.
E-mail: olena_bulatova@yahoo.com
ORCID: <https://orcid.org/0000-0001-7938-7874>

Olena Ptashchenko

Doctor of Economic Sciences, Professor, Professor of the Department of Entrepreneurship and Trade, West Ukrainian National University. E-mail: helenavaleriya@gmail.com
ORCID: <https://orcid.org/0000-0002-2413-7648>

Резнікова Н.В.

Доктор економічних наук, професор, професор кафедри світового господарства і міжнародних економічних відносин, НН інститут міжнародних відносин Київського національного університету імені Тараса Шевченка. E-mail: nreznikova@knu.ua
ORCID: <https://orcid.org/0000-0003-2570-869X>

Чугаєв О. А.

Доктор економічних наук, професор, професор кафедри світового господарства і міжнародних економічних відносин, НН інститут міжнародних відносин Київського національного університету імені Тараса Шевченка. E-mail: alxcv@ukr.net
ORCID: <https://orcid.org/0000-0003-3315-2919>

Булатова О. В.

Доктор економічних наук, професор, перший проректор, Маріупольський державний університет. E-mail: olena_bulatova@yahoo.com
ORCID: <https://orcid.org/0000-0001-7938-7874>

Птащенко О.В.

Доктор економічних наук, професор, професор кафедри підприємництва і торгівлі, Західноукраїнський національний університет. E-mail: helenavaleriya@gmail.com
ORCID: <https://orcid.org/0000-0002-2413-7648>

Abstract. *The presented work analyzes the peculiarities of the formation of modern intergenerational interaction and its impact on sustainable development. It should also be noted that the presented research can be used as a basis for the formation of consumer behavior under the*

conditions of digitalization. The rapid development of digital technologies, their penetration into all spheres of life led to the formation of the first digital generation in human history (Gen Z). The aim of the presented work is based on defining a new level of digital development and establishing the dependence of the development of new generations on the development of digital technologies. The use of the method of analysis, abstraction and synthesis, induction and deduction, as well as the system-structural method, the method of idealization made it possible to identify new forms of manifestation of inequality in the conditions of digitalization and establish characteristic manifestations of Z-inequality. Correlation and regression analysis was used to estimate the relationship between age, digital and economic indicators of countries. It is substantiated that Gen Z differs from other generations in its alienated attitude to the traditional value system and reorientation to post-material values, for which virtual reality combines the real and virtual worlds. The introduction of the “Z-inequality” categories into the scientific circulation is proposed, which helps to analyze the impact that digitalization processes provide on the formation and development of generations. Along with the politics and ideology that shape the causes of inequality, the impact of the digital divide increases, as access to modern information and digital technologies becomes a powerful source of inequality. As a result of the digital divide, digital inequality arises, unequal access to technology limits access to a significant number of goods. The importance of implementing national digitization strategies to ensure the competitiveness of national economies is substantiated. The research is based on categories of theoretical and empirical levels of knowledge. It was determined that despite the rapid spread of the digital economy, access to digital technologies remains asymmetric. Digitalization is most widespread in countries with a high and medium level of economic development that have completed the demographic transition. There is a deepening of the digital divide according to the criterion of fixed broadband Internet availability and rather convergence according to the availability of the general Internet. Practical implications mean that digitalization can become an efficient tool for enhancing accessibility of financial services, especially for youth.

Keywords: *economic security, digital inequality, digital divide, digital transformation, digital security, digital economy, digital labor market, digital migration, sustainable development, generation Z, mobility between generations, digital financial services, income distribution, consumer behavior, threats and risks*

Анотація. *У статті аналізуються особливості формування сучасних міжгенераційних взаємодій та їх вплив на економічний розвиток з точки зору економічної безпеки в контексті становлення цифрового суспільства. Представлене дослідження може бути покладено в основу управління споживчою поведінкою в контексті цифрової трансформації соціально-економічних систем, що дозволить підвищити рівень економічної безпеки особистості. Стрімкий розвиток цифрових технологій, їх проникнення в усі сфери життя призвело до створення першого в історії людства цифрового покоління (Gen Z). Метою даного дослідження є визначення нового рівня цифрового розвитку та визначення залежності розвитку нових поколінь від розвитку цифрових технологій, що дозволить переосмислити проблеми управління економічною безпекою. Використання методу аналізу, абстрагування та синтезу, індукції та дедукції, а також системно-структурного методу ідеалізації дозволило виявити нові форми нерівності в контексті оцифрування та визначити характерні прояви Z-нерівності як нової. загрози економічній безпеці не лише особистості, а й економічній безпеці країни. За допомогою методів регресійно-кореляційного аналізу проаналізовано зв'язок між віковими, цифровими та економічними показниками країн. Доведено, що покоління Z відрізняється від інших поколінь відчуженим підходом до традиційної системи цінностей і переорієнтацією на постматеріальні цінності, для яких віртуальна реальність поєднує реальний і віртуальний світи. Пропонується ввести в науковий обіг категорію «Z-нерівність», яка допомагає аналізувати вплив процесів цифровізації на формування та розвиток поколінь з точки зору економічної безпеки. Разом із політикою та ідеологіями, які формують причини нерівності, вплив цифрового розриву зростає, оскільки доступ до сучасної інформації та цифрових технологій стає потужним джерелом нерівності. В результаті цифрової нерівності створюється цифровий розрив, а нерівний доступ до технологій зменшує*

доступ до багатьох переваг. Обґрунтовано важливість запровадження національних стратегій цифровізації для забезпечення конкурентоспроможності національних економік, що частково сприятиме забезпеченню цифрової безпеки країни. Дослідження базується на категоріях теоретичного та емпіричного рівня знання. У ньому зазначено, що незважаючи на стрімке поширення цифрової економіки, доступ до цифрових технологій залишається асиметричним. Виявлено, що цифровізація найчастіше відбувається в країнах з високим і середнім рівнем економічного розвитку, які завершили демографічний перехід. Збільшується цифровий розрив щодо доступності високошвидкісного Інтернету, а точніше конвергенція щодо доступності універсального Інтернету. З практичної точки зору діджиталізація може стати ефективним способом покращити доступність фінансових послуг, особливо для молоді, що підвищить рівень економічної безпеки людини.

Ключові слова: економічна безпека, економічна нерівність, цифрова нерівність, цифровий розрив, цифрова трансформація, цифрова безпека, цифрова економіка, цифровий ринок праці, цифрова міграція, сталий розвиток, покоління Z, мобільність поколінь, цифрові фінансові послуги, розподіл доходів, демографічний перехід, загрози і ризики

Introduction. The economic security of the country is a fundamental component of national security, essentially the basis of the basic structure. At the same time, it is a relatively independent system that has its own structure, internal logic of development and functioning, ways of influencing all other aspects of the safe existence of the individual, society and the state. Global economic security is a set of measures aimed at ensuring sustainable world economic development, the purpose of which is to achieve maximum security and a high standard of living for every individual, regardless of nation or nationality, while maintaining peace for future generations. The economic security of the individual, in our opinion, is the main object of the system of economic security and represents the state of protection of its vital interests in the economic sphere. The economic integrity of the individual is expressed in the preservation of the most important interests of the individual included in socio-economic relations and forms the basis of his progressive development. In addition, it must be taken into account that the economic security of an individual acts as a set of economic, social, demographic, environmental, technological, scientific and information relations. Digitalization can radically change our lives: on the one hand, by providing new opportunities (access to educational platforms, digital migration opportunities, digital work opportunities); on the other hand, nullifying the existing skills and knowledge, specialization, sharpening the threats to economic security at all levels.

The process of determining generations is greatly influenced by social, cultural and economic conditions, which can vary greatly in different countries, which makes the definition of generational boundaries an insoluble task. After all, any turning point that affects the process of development of society can occur in different countries with a difference of decades. Research on intergenerational mobility is of interest, which is defined as the extent to which some key characteristics and outcomes of individuals differ from those of their parents (OECD, 2022). Structural intergenerational mobility is a consequence of differences in the hierarchical structure of professions: if a society is going through a period of changes in the professional structure, then its members experience mobility under the influence of external factors. It is not related to the openness or closeness of society, since it is based on the previous mechanisms for the distribution of opportunities. Relative intergenerational mobility is beyond the limits of structural changes (Piketty, 2000). This is what fully reflects the openness of the structure and the distribution of relative opportunities for upward mobility in children with different family backgrounds (Featherman, & Hauser, 2018). At the end of the 80s. 20th century in the United States, the first attempts were made to analyze the scope and direction of intergenerational mobility by comparing the situation of representatives of different generations on the basis of economic indicators (individual earnings or total family income). Representatives of this trend analyze mobility between generations using a special tool – the “Great Gatsby curve” (Corak, 2011). It shows what are the chances of young people from poor families to increase their incomes and how much the income of parents determines the future financial condition of their children. The higher the level of inequality, the lower the mobility between generations (Durlauf *et. al.*, 2022). The

digital transformation of world production and, in the broader context of the world economy, can radically transform the predetermination of intergenerational ties, but this transformation itself will not be unambiguous.

The purpose of the research is to identify new manifestations of the digital divide, designating it as "Z-inequality", and to assess the relationship between digital and economic inequality, taking into account the age structure of the population, which directly affects the threats to the country's economic security.

Recent literature review. The concept of "digital transformation" covers a wide range of changes associated with the following trends: 1) expanding the functionality of the "Internet of things" (in such areas as Edge Computing and 5 G technologies); 2) widespread development and dissemination of blockchain technologies; 3) the development of Artificial Intelligence not as a new one, but as an already defining trend. Of particular interest are studies of intergenerational inequality, that is of inequality between generations (Rubtsova, M., & Reznikova N., 2018, Björklund, A., Lindahl, M., Plug, E., 2006, Beller, E., 2009, Hansen, M., 2010).

If the development of "Gen Baby boomer", Gen X and "Gen Y (millennial)" coincided with the beginning of the formation of the digital economy (the active spread of digital innovations began in the 1960s), the formation of Gen Z actually coincided with the global spread (from the mid-1990s years) of mobile communications, the Internet, digital technologies, etc.

The influence of information technologies, digitization of many processes will directly determine the prospects for the development of the labor market (from local to global levels). This applies not only to changes in the structure of employment or directly to the organization of the labor process (Rubtsova, & Reznikova, 2018, Prenskey, 2001, Ewa Łaźniewska, Artur Boháč, Joanna Kurowska-Pysz, 2023). Representatives of Gen Z often become so-called "postmodern nomads", because their system of value orientations, as well as their location, is easily changed, therefore Gen Z, following Gen Y, chooses freelancing and digital migration, realizing themselves through digital information technologies.

Using the term "digital migrant", M. Prenskey (Prenskey, 2001) focused on the generational gap, which consists in the fact that the generation of the information age speaks a language different from the language of the older generation. The term "digital migrant" is used to define a new type of relationship that develops in the digital labor market – an international segment in which the demand for and supply of digital labor resources is established using information and computer technologies. Consequently, the concept of "migration of human capital" is being rethought, when access to the Internet determines the potential for the use of human resources and labor mobility (Corak, 2013). According to the results of a study of the global freelance market (Worksome. 2022), a significant segment of this market is formed by millennials – those who were born in 1983-1992 (Gen Y) – 33.85%, 26.23% of the market is formed by freelancers belonging to Gen X (those born in 1973-1982). Transformations in the labor market lead not only to the disappearance of professions or specialties. Significant problems are associated with the fact that in modern conditions, due to the loss of stable sources of income, there is a loss of life orientations (Pyshchulina, 2020). Therefore, one can witness changes in relations that affect the development of society.

B. Milanovich's approach to distinguishing three concepts of inequality (Unweighted International Inequality (Concept 1); Weighted International Inequality (Concept 2); "True" World Inequality (Concept 3)) received many followers (Milanovic, 2005). When assessing inequality within a single country (World Bank. 2005), it is characteristic to single out as a unit of analysis statistical groups of the country's population (for example, deciles or quintiles) within the working population. The inequality of income distribution at this level is affected by various factors: demographic (Galor, & Moav, 2004), structural, technological, institutional and other (IMF, 2015). The study of income inequality between individual countries involves comparing the average level of income in the country (Perotti, 1992, IMF, 2014, Elina Boichenko, Nataly Martynovych, Iryna Shevchenko, 2021). When it comes to global inequality, it examines income inequality on a global scale, the causes of income polarization (Duclos, Esteban, & Ray, 2004), while comparing individuals without taking into account their nationality (Claessens, & Perotti, 2007). A "zero concept of inequality" is sometimes used, when inequality between countries is measured on the basis of total income (rather than per capita income) (OECD, 2014). Paul Hufe, Ravi Kanbur and Andreas Peichl

proposed a new measure of unfair inequality that reconciles two widely-held normative principles, namely equality of opportunity and freedom from poverty, into a joint indicator (Hufe, Kanbur, & Peichl, 2020). When considering the problem of inequality, the category “wealth” is not reduced only to the actual ownership of some asset, but in the stratification analysis, property and income determine the inequality of individuals (Autor, 2014). A new direction in the study of inequality problems is not only the age approach, but also the gender approach (Thaning, 2018, Kleven, Landais, Søgaaard, & Egholt, 2018, Heise, Greene, Opper, & Stavropoulou, 2019). Kenneth Keniston distinguishes the “digital divide” as a unitary phenomenon: 1) The first divide is that which exists within every nation, industrialized or developing, between those who are rich, educated, and powerful, and those who are not; 2) A second digital divide, less often noted, is linguistic and cultural. In many nations this divide separates those who speak English or another West European language from those who do not; 3) The third digital divide follows inevitably from the first two – it is the growing digital gap between the rich and the poor nations; 4) The fourth divide is the emergence of a new elite group, which can be called the “digerati.” By “digerati” Kenneth Keniston means the beneficiaries of the enormous successful information technology industry and the other knowledge-based sectors of the economy such as biotechnology and pharmacology (Keniston, & Kumar, 2003). The proposed concept of Z-inequality does not imply a reference to either the concept of “digerati” or the concept of intergenerational inequality. A feature of the latter is the assessment of inequality through the analysis of the socio-economic situation of one of the parents. At the same time, the multidimensionality of the transmission of inequality between generations is ignored, and not only from the standpoint of material resources, which is directly related to the level of economic security of the country, but also from the standpoint of value and non-material guidelines that predetermine, among other things, the level of economic security of the individual, his self-perception of security.

Methods. Besides qualitative assessment of the phenomenon, quantitative analysis methods were applied. The annual data of the World Bank (World Bank, 2022) for 2015-21 were used. In particular the following variables were selected:

1. The share of younger generation in population (age structure): AD – Age dependency ratio, young (% of working-age population), i.e. a ratio of the number of persons under the age of 15 to persons aged 15-64.
2. Indicator of the level of economic development: GNIpc – GNI per capita, PPP (current international \$).
3. Indicators of digitalization (general and advanced): Inet – Individuals using the Internet (% of population); FBS – Fixed broadband subscriptions (% of population).
4. Indicator of population income growth: EG – GNI per capita growth (annual %).
5. Indicator of income inequality: GINI – Gini index.
6. Indicators of availability of financial services (overall and for population groups by income and age): Ac – Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+); AcP – Account ownership at a financial institution or with a mobile-money-service provider, poorest 40% (% of population ages 15+); AcY – Account ownership at a financial institution or with a mobile-money-service provider, young adults (% of population ages 15-24); AcO – Account ownership at a financial institution or with a mobile-money-service provider, older adults (% of population ages 25+).

Indicators of age structure and level of economic development were used exclusively as independent variables. The remaining variables can be both independent and dependent variables. 3 variants of values are used: static values for the middle of the period (2018) – marked with the index *m*; static values at the end of the period (2021 for most indicators, 2020 for digitization indicators) – marked with the index *e*; dynamic values (the difference between 2021 and 2017 for indicators of the availability of financial services, the difference between 2021 and 2015 for most other indicators, and the average growth rates of GNI per capita during 2015 – 2017 for EG) – marked with the index *g*.

Static values are not relevant for EG and dynamic ones are not used for GNIpc. For GINI, the period may start in 2015 or 2016, end in 2020 or 2019, depending on data availability. It was assumed that dynamics indicators can depend on both dynamic and static indicators (medium-term influence), static indicators – only on static ones (long-term influence), which is especially important to consider when determining the economic security management system.

Correlation analysis was used for the initial selection of potential factors. The possibility of the interaction effect of factors, when one factor affects the effect of another factor, was also checked. This was achieved by using the product of factors as a term in the model.

The selected factors were used in the regression analysis. Inspection of the final models showed significance of regression coefficients, normal distribution of residuals, absence of multicollinearity, and overwhelmingly absence of significant heteroscedasticity and autocorrelation. In the case of a non-linear relationship, the variables were transformed. The removal of statistical outliers from the residuals showed the stability of the regression coefficients and their significance.

Main research results. A generation is most often understood as the totality of all those born in a time period corresponding to a specific phase of the historical cycle and covering a period of approximately 20 years. Using a span of birth years to define generations under the conventions Gen X (those born from 1960-1979), Gen Y (those born from 1980-1994) and Gen Z (those born from 1995-2012) (Twenge, 2017) without reference to specific countries or regions can be an extremely vulnerable approach, although representatives of the same generation undergo socialization within a common historical context, and are also characterized by the presence of common beliefs, similar behavior, and a sense of belonging to the same social community. Most often, the “generation” obviously acts as a built-up theoretical construction that does not pretend to accurately reflect reality and is used for further empirical analysis. In this case, however, it is no longer possible to speak of any clear boundaries of this generation or that, with age, its representatives will retain the specificity of their psyche and thinking that is characteristic of them.

The key problems underlying the destabilization of the current model of “global capitalism” are social in nature, and above all, it is the growth of inequality (Piketty, 2014). One of the arguments of the proponents of neoliberal economic policies has been that they can increase income inequality, but by removing restrictions on economic growth and stimulating entrepreneurship, such policies also create opportunities for social mobility. However, in the most developed countries, more and more people believe that their generation lives worse than the generation of their parents, with more skepticism characteristic of young people.

Fully agreeing that politics and ideology shape the causes of inequality, as they determine the essence of property and distribution relations, access to modern information and digital technologies should not be underestimated as a source of inequality (digital inequality resulting from the digital divide). Unequal access to technology limits the possibilities of access to a significant number of benefits (low-quality Internet has prevented access to quality education provided remotely, or limited access to the Internet closes access to modern telemedicine, etc.). It is because of this that national governments are developing appropriate digitization strategies, realizing that the competitiveness of countries will depend on their implementation. On the other hand, the Internet economy favors natural monopolies, and due to the lack of a competitive environment, there is actually an increase in concentration. The lack of effective institutions (transparent and accountable) that ensure state investment in the development of digital technologies will contribute to the influence of elites, which, as noted by World Bank experts in the “Digital Dividends” Report, can lead to increased state control and the subordination of politics to the interests of the establishment World Bank (World Bank, 2016).

Regulatory perceptions of Gen Z capital are critical to shaping tax policy preferences toward greater progressivity, when inequality is perceived as unfair, society creates a demand for progressive taxation. Economic crises more often lead to a situation where the burden of instability falls more on the poorer sections of society, which for Gen Z is a manifestation of injustice. In response, they are willing to support the government’s policy of increasing taxation and, as a result, reducing consumption. The perception by representatives of “Gen Z” of representatives of “Gen Baby boomer”, “Gen X” and “Gen Y (millennial)” as guilty of building an unfair world and an international economic system prone to crises forms a negative perception of the economic elite. In part, this behavior contributed to the formation of government policy in the context of the corona crisis, when aid and financial support were redistributed to the population, and not limited to helping banks and financial institutions from the “too big to fail” category (which happened after the 2008-2009 crisis). Therefore, according to the position of representatives of Gen Z, wealth should perform a social function, and therefore the world elite should ideologically go beyond shareholder capitalism and abandon the perception of property as sacred.

At the quantitative analysis stage, first, the digitalization factors were considered (Table 1). In the long term, there is a non-linear effect of economic development: the countries with a high and medium level of development are the most digitized. Economic growth affects the dynamics of the spread of fixed broadband Internet, but the dynamics of the spread of the general Internet in the considered medium-term period does not significantly depend on economic growth. A high birth rate is de facto associated with a lower level of digitization according to static models. A high birth rate has a negative effect on the dynamics of the spread of high-speed Internet, but not on the dynamics of general digitalization. In static models, it is not possible to completely exclude the cross influence of fertility and economic development, because as a rule, it is the poorest countries that are at the early stage of the demographic transition.

Table 1.

Models of digitization factors

Dependent variable	Inet_e	FBS_e	Inet_g	Inet_g	Inet_g	FBS_g
Y- crossing	-89.2*** (16.5)	-74.9 *** (12.1)	21.0*** (1.01)	20.8*** (0.98)	1.44 (2.36)	4.69*** (1.23)
AD _e	-0.215*** (0.077)					
AD _m						-0.055*** (0.019)
1/ AD _e		397*** (135)				
GNIpc _m			-0.000087** (0.000044)			
Ln(GNIpc _e)	17.1** (1.42)	9.09*** (1.46)				
GINI _e		-0.186* (0.11)				
Inet _m					0.823*** (0.096)	
Inet _m ²					-0.0068*** (0.00090)	
FBS _m			-0.209*** (0.071)	-0.188*** (0.068)	-0.385*** (0.067)	0.052** (0.029)
EG						0.224** (0.111)
Inet _m * GNIpc _m				-0.0000011** (0.0000004)		
R ²	0.87	0.82	0.26	0.28	0.49	0.28
p	0.000	0.000	0.000	0.000	0.000	0.000
N	144	61	142	142	145	145

Notes: e – end of period values, m – values in middle of the period, g – growth. Standard errors are in parentheses. Significance of coefficients: * for p<0.1, ** for p<0.05, *** for p<0.01, according to the t-criterion.
Source: authors' calculations based on the data from World Bank (2022)

Economic inequality within the country has a negative impact on the prevalence of high-speed Internet, that is, it is an obstacle to in-depth digitalization and a factor of the digital divide. Digital stratification between countries occurs in such a way that fast Internet develops the most where it already has high availability indicators. At the same time, at the global level, digital inequality is decreasing in the provision of basic digital services. Thus, in recent years, the prevalence of the

general Internet has been increasing in countries with less availability of high-speed Internet, which is confirmed by models with three different specifications. The influence of the accessibility of the general Internet on its dynamics is nonlinear in the form of an inverted parabola: according to the 5th model, general digitalization develops the fastest in countries where 40-65% of the population are Internet users. In one of the specifications of the model of the growth of general Internet availability, an interaction of factors is observed: The Internet spreads more slowly in developed countries, where it is already sufficiently widespread, which probably indicates the saturation of demand.

Next, the impact on per capita income and income distribution was considered (Table 2). The dynamics of the average income of the population is faster in countries with low income inequality. The insufficient level of social cohesion is an obstacle to further development at the current stage. Per capita incomes are also growing more slowly in countries that have not begun the demographic transition, since countries with high birth rates lack capital accumulation and have a smaller share of the working population that can make savings. However, indicators of digitization do not have a separate significant impact.

Table 2.

Models of population income factors

Dependent variable	EG	GINI _e	GINI _e	GINI _e	GINI _g
Y- crossing	3.05*** (0.57)	41.0*** (0.69)	39.9*** (1.61)	40.9*** (1.56)	-1.18** (0.55)
AD _m	-0.048*** (0.071)				
GNIpc _m					0.000026* (0.000014)
GNIpc _e			-0.00016*** (0.00005)		
GINI _g	-0.217** (0.101)				
FBS _e		-0.248*** (0.066)			
Inet _m *FBS _m				-0.0031*** (0.00076)	
EG					-0.329** (0.162)
R ²	0.20	0.19	0.15	0.23	0.13
p	0.003	0.000	0.002	0.000	0.029
N	54	62	61	58	54

Notes: e – end of period values, m – values in middle of the period, g – growth. Standard errors are in parentheses. Significance of coefficients: * for $p < 0.1$, ** for $p < 0.05$, *** for $p < 0.01$, according to the t-criterion.

Source: authors' calculations based on the data from World Bank (2022)

The influence of the level of economic development on the inequality of income distribution is controversial. In developed economies, inequality is lower, but it is growing more often. In poorer economies, it is higher, but usually shrinks more. The prevalence of high-speed Internet may limit inequality, but since this is confirmed only by models based on static data, it is quite possible that it is a reverse effect, because digitalization actively developed later than the stratification of countries into more and less socially oriented economies had taken place. Finally, inequality increases usually in countries with worse economic dynamics, which becomes a new challenge for the economic security of individuals.

The dynamics of the availability of financial services (in general and for older adults or persons with lower income) negatively depends on the level of economic development, which also indicates the saturation of demand (Table 3). But the influence of the level of development on accessibility for young people depends on the age structure of the population: the negative influence is weaker under a small share of children in the population.

Table 3.

Models of financial services availability factors

Dependent variable	Ac _g	Ac _g	Ac _g	AcP _g	AcY _g	AcY _g	AcO _g
Y- crossing	10.2*** (1.11)	7.34*** (1.10)	6.61*** (1.17)	10.44*** (1.42)	13.6*** (2.88)	13.9*** (3.13)	8.89*** (1.06)
GNIpc _m	- 0.00015* ** (0.00004)	- 0.00012* ** (0.00003)	- 0.00013* ** (0.00003)	- 0.00018* ** (0.00004)			- 0.00016* ** (0.00003)
FBS _g		0.392* (0.201)		0.587*** (0.239)	1.03** (0.41)		
EG*AD _g	0.326*** (0.074)			0.340*** (0.093)	0.484*** (0.164)	0.473** (0.186)	0.383*** (0.083)
EG*AD _m							0.0129* (0.0069)
AD _m *GNIpc _m					- 0.0000063 ** (0.000003)	- 0.0000075 ** (0.000003)	
Inet _g *FBS _m			0.011*** (0.0040)			0.023** (0.0087)	
R ²	0.22	0.11	0.14	0.24	0.17	0.19	0.25
p	0.000	0.002	0.000	0.000	0.000	0.000	0.000
N	109	113	105	104	104	99	109

Notes: e – end of period values, m – values in middle of the period, g – growth. Standard errors are in parentheses. Significance of coefficients: * for p<0.1, ** for p<0.05, *** for p<0.01, according to the t-criterion.

Source: authors' calculations based on the data from World Bank (2022)

There are also several interaction effects with the age structure of the population. All indicators of the availability of financial services depend on the product of the economic growth rate (usually positive) and the growth rate of the share of children in the population (usually negative). The availability of financial services for older adults grows stronger under the rapid growth of the population's income and the higher share of children in the population.

There is a positive impact of digitalization on the availability of financial services in general and for the considered categories of the population, except for older adults. In various model specifications, either the speed of the spread of high-speed Internet or the general Internet under the conditions of developed high-speed Internet are important. For GenZ, this effect is 2-2.5 times greater than average indicators (see coefficients for FBS_g and Inet_g*FBS_m in models for Ac_g and AcY_g in Table 3), which can be explained by the greater adaptability of young people to digital technologies, which have become a modern access channel to financial services.

In comparison to most previous studies, this paper uses later data. We also apply an age dependency ratio as a proxy variable reflecting the share of Gen Z in the population in various

countries. Financial services accessibility divide is also considered as one of the dimensions of inequality, besides intra- and international income inequality and digital services accessibility.

Like in Keniston & Kumar (2003), this study confirms that income inequality leads to a digital divide inside a country, but when it is measured with access to high-speed internet and not the internet in general. Income inequality between the rich and poor countries also is associated with existing digital divide between them. But the results in this paper do not support the view of Keniston & Kumar (2003) about growing digital gap between the rich and the poor nations. Moreover, this gap is decreasing since the advanced economies have largely reach saturation in internet access, while developing economies provide better demand growth for the market. The digital divide exists between the poor economies and the rest of the world, while there is already no substantial digital divide between high-income and middle-income economies. The difference in results may be explained by the later period that we analyze, while Keniston & Kumar (2003) used the period when the Gen Z has not entered even education.

Contrary to Galor & Moav (2004) we have found no evidence that the demographic indicator (age dependency considering the share of youth) affected income inequality in the analyzed period of time, although we considered only one demographic variable. There may be potentially other demographic factors affecting it. No significant effect of income inequality on availability of financial services for the poor also indirectly contradicts the statement by Durlauf et. al. (2022) that youth from poor families has lower chances to improve financial conditions under large inequality. But the difference in the specification of the dependent variable may be a possible explanation.

Conclusions. If belonging to a digital reality is a key marker of the generation of Gen Z, then it is necessary to avoid interpreting the concept of “inequality” through a comparison of material and financial assets, which, in fact, is typical for “Gen Baby boomer” and “Gen X”. **Z-inequality** – is a concept that goes beyond comparing social, economic or environmental asymmetries between individuals, groups or countries in the results and opportunities provided. **Z-inequality** – is an inequality that increases the asymmetries of outcomes and opportunities for representatives of different generations. The results of the digital revolution experienced by Gen Z affect the reduction of opportunities for previous generations and, moreover, lead to the transmission of inequality from generation to generation in countries where the digital transition is limited due to the technological and economic backwardness of countries. **Z-inequality** describes differentiated access to opportunities to introduce new technologies and gain access to new opportunities in education and healthcare. The digitalization of employment has the potential to increase inequality of opportunity within and between societies.

The digital economy has influenced the migration of human capital, and digital migration and freelancing fully correspond to the interests of Gen Z representatives. Despite the rapid spread of the digital economy, access to digital technologies remains asymmetric (“Z-inequality”). Having a mobile phone does not guarantee access to high-quality Internet, and access to the Internet does not mean the ability to pay for it. Along with the politics and ideology that shape the causes of inequality, because they define the nature of property and distribution relations, the impact of the digital divide increases. Access to modern information and digital technologies is becoming a powerful source of inequality under modern conditions. The digital divide results in digital inequality, as unequal access to technology limits access to a large number of goods, which becomes a new challenge for the economic security of the country and individuals in particular.

At the current stage, the dynamics of the average income of the population and the dynamics of the income stratification of the population are negatively related: as a rule, rapid economic growth is accompanied by a decrease in income inequality, but the direction of the causal relationship cannot be precisely determined. Also, the traditionally higher inequality in poorer economies tends to decrease. Rich and poor countries are converging on the level of accessibility of financial services. It is also influenced by the age structure of the population and economic growth rate, but the interpretation of the effect is complicated by a number of interaction effects between these factors. Thus, evidence is provided for a link between digital and economic inequality. At the same time, it can be said with sufficient confidence that digitalization contributes to the greater accessibility of financial services in general, and in particular for the poorer segments of the population and young people.

Digitalization strategies implemented by national governments to address this issue are essential to ensuring the competitiveness of national economies. On the other hand, the Internet economy can strengthen the influence of natural monopolies and promote concentration, which, in the absence of effective and transparent institutions in society, can lead to increased state control and subordination of politics to the interests of the relevant elites.

References

1. Twenge, J.M. (2017). *iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy and Completely Unprepared for Adulthood – and What That Means for the Rest of Us*. New York: Atria Books.
2. OECD. (2022). Glossary of Statistical Terms. Intergenerational Mobility. Retrieved from <https://stats.oecd.org/glossary/detail.asp?ID=7327>
3. Piketty, T. (2000). Theories of Persistent Inequality and Intergenerational Mobility. Retrieved from <http://piketty.pse.ens.fr/fichiers/public/Piketty2000HID.pdf>
4. Featherman, D.L., & Hauser, P.M. (2018). A Refined model of Occupational Mobility. Retrieved from https://www.researchgate.net/publication/331764493_A_Refined_Model_of_Occupational_Mobility
5. Corak, M. (2011). How to Slide Down the “Great Gatsby Curve”. Retrieved from <https://mileskorak.files.wordpress.com/2012/12/corakmiddleclass.pdf>
6. Durlauf, S.N., Kourtellos, A., & Tan, C.M. (2022). The Great Gatsby Curve. Retrieved from https://bfi.uchicago.edu/wp-content/uploads/2022/02/BFI_WP_2022-29.pdf
7. Thaning, M. (2018). Multidimensional Intergenerational Inequality: Resource and Gender Specificity. Retrieved from <https://su.diva-portal.org/smash/get/diva2:1224178/FULLTEXT01.pdf>
8. Rubtsova, M., & Reznikova, N. (2018). The problem of human's labor productivity enhancement and the development of his competencies in the conditions of robotization in production and service sectors. *Efektivna ekonomika*, 9. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=6634>.
9. Rubtsova, M., & Reznikova, N. (2018). The problem of human's self-determination and deepening of his competencies in the conditions of inclusive development of the global economy: the relationship with global problems of the humanity. *Efektivna ekonomika*, 8. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=6633>.
10. Prensky, M. (2001). Digital Natives, Digital Immigrants. Retrieved from <https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>
11. Corak, M. (2013). Income Inequality, Equality of Opportunity, and Intergenerational Mobility. *Journal of Economic Perspectives*, 27 (3), 79-102.
12. Worksome. (2022). Global Freelancer Survey Report 2022. Retrieved from <https://www.worksome.com/post/global-freelancer-survey-report-2022>
13. Pyshchulina, O. (2020). *Digital economy: trends, risks and social determinants*. Kyiv: Publishing House “Zapovit”.
14. Milanovic, B. (2005). The Three Concepts of Inequality Defined. Retrieved from <https://eldis.org/document/A43390>
15. World Bank (2005). Inequity within Countries: Individuals and Groups. Retrieved from https://documents1.worldbank.org/curated/ar/435331468127174418/841401968_200508263001642/additional/322040World0Development0Report02006.pdf
16. Galor, O., & Moav, O. (2004). From Physical to Human Capital Accumulation: Inequality and the Process of Development. *Review of Economic Studies*, 71 (4), 1001-1026.
17. IMF (2015). Causes and Consequences of Income Inequality: A Global Perspective. Retrieved from <https://www.imf.org/external/pubs/ft/sdn/2015/sdn1513.pdf>
18. IMF (2014). Redistribution, Inequality, and Growth. Retrieved from <https://www.imf.org/external/pubs/ft/sdn/2014/sdn1402.pdf>

19. Perotti, R. (1992). Income Distribution, Politics, and Growth. *American Economic Review*, 82 (2), 311–316.
20. Duclos, J., Esteban, J., & Ray, D. (2004). Polarization: Concepts, Measurement, Estimation. *Econometrica*, 72 (6), 1737–1772.
21. Claessens, S., & Perotti, E. (2007). Finance and Inequality: Channels and Evidence. *Journal of Comparative Economics*, 35 (4), 748–773.
22. OECD (2014). Focus on Inequality and Growth. Retrieved from <https://www.oecd.org/social/Focus-Inequality-and-Growth-2014.pdf>
23. Hufe, P., Kanbur, R., & Peichl, A. (2020). Measuring Unfair Inequality: Reconciling Equality of Opportunity and Freedom from Poverty. Retrieved from <https://www.ifo.de/DocDL/wp-2020-323-hufe-kanbur-peichl-measuring-unfair-inequality.pdf>
24. Autor, D. H. (2014). Skills, Education, and the Rise of Earnings Inequality Among the “Other 99 Percent”. Retrieved from <https://dspace.mit.edu/handle/1721.1/96768>
25. Kleven, H. J., Landais, C., Sogaard, J. E., & Egholt, J. (2018). Children and Gender Inequality: Evidence from Denmark. *American Economic Journal: Applied Economics*, 11 (4), 181–209.
26. Heise, L., Greene, M.E., Opper, N., & Stavropoulou, M. (2019). Gender Inequality and Restrictive Gender Norms: Framing the Challenges to Health. Retrieved from https://www.researchgate.net/publication/333492678_Gender_inequality_and_restrictive_gender_norms_framing_the_challenges_to_health
27. Keniston, K., & Kumar, D. (2003). The Four Digital Divides. Retrieved from http://web.mit.edu/~kken/Public/PDF/Intro_Sage_1_.pdf
28. World Bank (2022). World Development Indicators. Updated: 12/22/2022. URL: <https://databank.worldbank.org/source/world-development-indicators#>.
29. Piketty, T. (2014). Capital in the Twenty-First Century: A multidimensional approach to the history of capital and social classes. *British Journal of Sociology*, 65 (4), 736–747.
30. World Bank (2016). World Development Report 2016: Digital Dividends. <https://www.worldbank.org/en/publication/wdr2016>
31. Łaźniewska, E., Boháč, A., & Kurowska-Pysz J. (2023). Asymetria jako czynnik osłabiający odporność i integrację w zrównoważonym rozwoju polsko-czeskiego pogranicza w kontekście sporu o Kopalnię Turów. *Problemy ekorozwoju – problems of sustainable development*, 18(1), 139-151.
32. Boichenko, E., Martynovych, N., & Shevchenko, I. (2021). Cognitive Modeling Concepts of Sustainable Development of Society. *Problemy ekorozwoju – problems of sustainable development*, 16(2), 158-165.