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SOCIO-ECONOMIC DETERMINANTS OF FINANCIAL INCLUSION IN CENTRAL AND EASTERN EUROPE DURING THE COVID-19 PANDEMIC

Abstract: A society's financial inclusion – understood as possessing and actively using a bank or non-bank account – is one of many indicators of sustainable growth and economic development. The COVID-19 pandemic has accelerated the process of financial integration through the use of modern technologies in finance, financial innovation and the need to have an account to receive aid from government crisis shields or to confirm official activities through a trusted profile in a bank. Furthermore, EU regulations have accelerated the process of financial integration through the institution of a basic bank account and open banking solutions. Financial education programs and activities of financial institutions under the Corporate Social Responsibility (CSR)/Environment Social Governance (ESG) strategy have also contributed to improving financial literacy, which directly reduces financial self-exclusion. The aim of the article is to check whether financial inclusion has increased during the pandemic and to identify socio-demographic determinants of this inclusion such as sex, age, in or out labor force, education, and wealth level in selected CEE countries. The article uses statistical data from The Global Findex research conducted since 2011 and by the World Bank, covering the period 2011-2021. The empirical study confirmed that during the COVID-19 pandemic, the largest increases in the percentage of people aged 15+ with a bank account were recorded, and the studied Central and Eastern European countries differed in this respect. Selected socio-demographic variables differentiated the level of financial integration in the analysed countries. The level of financial inclusion in selected European countries increased in the considered period, especially in countries with the initially lowest level of financial inclusion (Ukraine, Bulgaria). Financial inclusion was positively influenced by professional activity, at least secondary education, age of 25 and above, and high income. The greatest degree of financial inclusion was differentiated by education, and then by professional activity. However, sex was not shown to differentiate the level of financial inclusion.

Keywords: financial inclusion, bank account, SARS-CoV-2 pandemic, CEE countries

Introduction

Bank account ownership is a fundamental measure of financial inclusion and a gateway to using financial services. Owners of formal bank accounts – whether those accounts are with a bank or regulated institution such as a credit union, microfinance institution, or a mobile money service provider – are capable of storing, sending, and receiving money. An account becomes a holistic means of personal finance control and management for saving, investing, financing consumption and investment, payment execution, risk management (including insurance), as well as accumulation of retirement capital and property succession. A bank and non-bank account allow for full participation in socio-economic life, as we have recently learned during the COVID-19 pandemic, where non-cash payments via a debit or credit card were preferred, and many official formalities, including applications for assistance, could be organised remotely by means of a trusted bank profile. The COVID-19 pandemic mobilised financial inclusion efforts across the world through several mechanisms, including the emergency relief payments that governments sent to accounts (Gentilini et al. 2020). COVID-19 boosted the adoption of digital financial services. According to World Bank data, about 40 percent of adults in developing economies (excluding China) who made a digital merchant payment with a card, phone, or on the internet, and more than one-third of adults in developing economies who paid a utility bill directly from an account, did so for the first time after the start of the pandemic (The Global Findex Database 2021).

In recent years, an increasing percentage of the population have a bank account or an account with a non-banking institution, assisted by the rapid development of internet and mobile banking, as well as EU regulations on the basic payment account (PAD, Payment Accounts Directive) and the development of non-banking institutions such as neobanks or PayTech (Payment Technology) facilitated by the implementation of the EU Directive PSD2 (Payment Services Directive 2), which initiated a new era of open banking (Waliszewski | Warchlewska 2021).

In many countries the phenomenon of approximation (convergence) of the percentage of those who have a bank or non-bank account to a level close to 100% – i.e. full saturation – means that every citizen has an account and is financially engaged. The phenomenon of saturation in terms of holding accounts is also observed in the studied countries of Central and Eastern Europe, because most of the countries surveyed in the last year of the analysis had levels over 90%, and some close to 100% (Slovenia, Estonia). Ukraine recorded a spectacular increase in financial inclusion, where in 2011-2021 the percentage of people with an account doubled from 41% to 84% (Chart 1).

The aim of the article is to present and analyse the socio-demographic determinants of financial inclusion in selected countries of Central and Eastern Europe. The article hypothesises that the COVID-19 pandemic accelerated

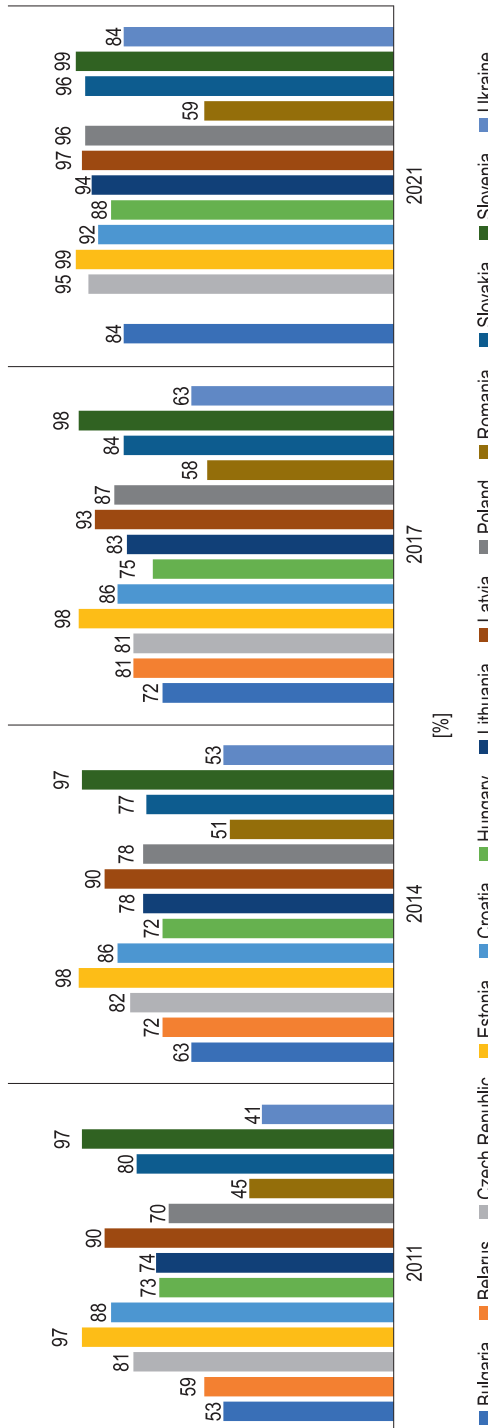

Chart 1. Percentage of people aged 15+ who have a bank or non-bank account in selected countries of Central and Eastern Europe in 2011, 2014, 2017 and 2021

Source: The Global Findex Database 2021.

the process of financial inclusion of households and the largest increase in financial inclusion was observed in 2017-2021, which was caused by many factors, and that socio-demographic variables influenced the geographical differentiation of financial inclusion in the studied countries of Central and Eastern Europe. The article consists of 5 parts: an introduction, a literature review, research methodology, research results and conclusions.

1. Literature review

Globally, in 2021, 76 percent of adults had an account at a bank or regulated institution such as a credit union, microfinance institution, or a mobile money service provider. Account ownership around the world increased by 50 percent within the 10 years from 2011 to 2021, from 51 percent to 76 percent of adults. From 2017 to 2021, the average rate of account ownership in developing economies increased by 8 percentage points, from 63 percent to 71 percent of adults. In Sub-Saharan Africa, this expansion largely stemmed from the adoption of mobile money (Demiruguc-Kunt | Klapper | Singer et al. 2022).

Financial inclusion called also financial integration plays an important role in creating jobs, improving access to credit for consumption and production purposes, increasing household expenditure, preventing exploitation caused by the informal financial system, increasing income and assets, developing human resources, as well as improving living standards. Therefore, it may lead to poverty reduction and economic and social development (Das 2012, 116). Evidence shows that households and businesses that have access to financial services are better able to withstand financial shocks than those that do not (Moore | Nizazi | Rouse et al. 2019).

Financial inclusion activities aim to ensure that all economic actors have access to appropriate financial services and the possibility to use them efficiently. Increasing financial inclusion has become a serious aim for both developed and developing countries. There are many indicators of financial inclusion, the most basic of which is having an account with a financial institution (Van | Linh 2019). The determinants of financial inclusion can be demand or supply driven. Factors that affect demand include socio-economic characteristics such as income, education, age and sex. On the other hand, supply is shaped by individual attitudes and perceptions which influence the decision to use financial services (Sanderson | Learnmore | Le Roux 2018). A visible feature differentiating countries in the world due to financial exclusion is the level of national income, because in developed countries this level is lower than in developing countries.

On the other hand, the lack of access to a bank account is treated as the main reason for financial exclusion, which may be due to geographic accessibility – lack of physical access to the divisions of financial institutions (located too far

away, incurring prohibitive travel costs). Alternatively, exclusion may be caused by the availability and terms of the offer—resulting from the level of risk accepted by the institution and the mismatch between the products and the actual needs of potential customers. People might be excluded because of the price when the costs of the service is too high. Compulsory exclusion or self-exclusion may occur when people themselves give up on financial services, including a bank account, because they believe that the institution will deny the access to them, or because they consider the fees excessive. Therefore, the search for the ways and means of encouraging financial inclusion is ongoing. Increasing importance among these factors is attributed to financial education that may ensure an appropriate level of knowledge, awareness and financial skills, which are the main elements of financial literacy (Frączek 2017). There are at least two mechanisms by which economic and financial competences influence the level of financial exclusion. The first one is the result of being unreasonable in the level of incurring liabilities, which results in the phenomenon over-indebtedness. The second mechanism concerns self-exclusion as an individual decision entities about not using financial services. (Kurowski | Laskowska 2016).

Therefore, in order to combat financial exclusion, to increase the scale of financial inclusion, national financial education strategies are developed, studied by the OECD, which also plays an important role in their development. The OECD and its International Network on Financial Education (INFE) conducts research and develops tools to support policymakers and public authorities to design and implement national strategies for financial education, which plays a major role in supporting effective forms of consumer protection by raising financial awareness of recipient groups and dealing with threats and damages (Musiał 2014, 837-848).

Microfinance institutions, which offer non-bank accounts for the poorer groups of society, previously excluded from the mainstream of socio-economic life, play an important role in mitigating financial exclusion (Milana | Ashta 2020; Pluskota 2020).

Modern information technologies (ICT tools), which reduce the costs of providing services and increase geographic accessibility through on-line services, also help in the fight against financial exclusion (Cichowicz 2018). Mobile banking is one of the most powerful ways to achieve financial integration in developing countries. The financial institutions themselves, as part of their social strategies (CSR) or more broadly sustainable development (ESG), work to reduce financial exclusion, because, thanks to a greater scale of financial inclusion, it is possible to borrow, save and invest responsibly (Úbeda | Mendez.| Javier et al. 2022). The lack of access to banking generates inequality; therefore, financial inclusion is a crucial objective of the United Nations Sustainable Development Goals (SDGs).

Cwynar's (2021) research results show that financial literacy in Eastern Europe is, on average, lower than in Western Europe. There is also a large heterogeneity

both in overall financial literacy and its partial scores (i.e., financial knowledge, confidence, attitudes) among East European countries. All of these phenomena appear to be a result of different political, social, economic, and culture-related experiences in these two parts of Europe after World War II. Being closed behind the Iron Curtain resulted in the fact that East and West European countries still differ, on average, in income and the amount of time an average person has had to become familiar with financial products, both of which are essential for empirical learning. These differences should be accounted for in financial education programs (Cwynar 2021).

In another research, it was proven that education, age, reasons and the period of registration at the labour office exert an impact on the selected areas of financial exclusion of the unemployed regarding the bank usage and the propensity to save (Nowacka | Szewczyk-Jarocka | Zawiślińska 2021).

In the context of the ability of households to withstand shocks – e.g., a pandemic shock – there is talk of financial resilience, which is an important aspect of financial inclusion and refers to the ability of people and firms to recover from adverse economic shocks, such as job loss or unanticipated expenses, without suffering a decline in living standards. One previous global review indicates that financial inclusion affects, and is influenced by, the level of financial innovation, poverty levels, the stability of the financial sector, the state of the economy, financial literacy, and regulatory frameworks which differ across countries (Ozilli 2021).

Despite many historical items in the literature on the phenomenon of financial inclusion and exclusion, a certain gap in this respect is the current article on socio-demographic determinants of financial inclusion in Central and East European countries, especially in the new operating conditions created by the COVID-19 pandemic; hence the author's motivation to deal with this issue.

2. Methodology of research

The aim of the study was to evaluate financial inclusion understood as the percentage of people aged 15 and over who have accounts in financial institutions, including banks in selected countries of Central and Eastern Europe in 2011-2021, taking into account characteristics such as sex, professional activity, age, education and income. In order to determine the extent to which socio-demographic variables influence the percentage of those who had an account in the analysed countries, non-parametric U Mann-Whitney tests were applied, and for further analyses, measures of descriptive statistics and Spearman's rank correlation analysis were performed. The data for 2011, 2014, 2017, and 2021 used in the empirical study came from the World Bank's cyclical Global Findex Database, which is the result of a study conducted among 140 countries around the world. Data for individual

countries were representative and concerned various aspects of financial behaviour – e.g., having an account, making payments, accumulating savings or getting into debt. The choice of countries for analysis was dictated by the availability of data for the whole studied period for the following socio-demographic variables: sex, professional activity (active, passive), age (young adults aged 15-24, older adults 25 and more), education (primary, secondary and higher), income groups (40% of the poorest, 60% of the richest).

3. Results of research

Table 1 presents descriptive statistics for financial inclusion in total and by selected features. Comparisons of financial inclusion by sex, activity, age, education and income were made using Mann-Whitney U tests.

The level of financial inclusion in 2011-2021 in selected European countries was 41.3-99.4% and the average was 80.5% with a deviation of ± 15.0%. Analyses with U Mann-Whitney tests showed that when analysing the total number of countries across time, economic inclusion had a statistically significant influence on professional activity $Z = 5.20$; $p < .001$; $r = .51$, age $Z = 3.37$; $p < .01$; $r = .33$, education $Z = 5.94$; $p < .001$; $r = .59$ and income $Z = 3.16$; $p < .01$; $r = .31$. Inclusion was positively influenced by professional activity, at least secondary education, age of 25 and above, and high income. The greatest degree of financial inclusion was differentiated by education, and then by professional activity. However, sex was not shown to differentiate the level of financial inclusion in selected countries over time.

Table 1. The results of the analyses with the Mann-Whitney U tests for the comparison of financial inclusion in terms of sex, professional activity, age, education and income

	Min	Max	M	SD	Me	Z	p	r
Account ownership	41.3%	99.4%	80.5%	15.0%	82.9%			
Male	43.9%	100.0%	81.3%	14.6%	84.2%	.45	.651	.04
Female	39.2%	99.6%	79.7%	15.5%	81.0%			
In labor force	48.5%	100.0%	88.5%	12.6%	93.0%	5.20	***	.51
Out of labor force	27.9%	98.2%	67.9%	20.8%	65.4%			
Young adults 15-24	32.6%	100.0%	67.3%	21.6%	62.6%	3.37	**	.33
Older adults 25+	40.2%	99.3%	82.8%	14.8%	86.2%			
Primary or lower education	12.4%	98.4%	57.2%	24.6%	50.7%	5.94	***	.59
Secondary or higher education	47.3%	99.6%	86.6%	12.6%	89.4%			
40% poorest	30.2%	99.5%	73.8%	18.8%	77.1%	3.16	**	.31
60% richest	48.6%	100.0%	84.9%	12.8%	86.2%			

Min – minimum, Max – maximum, M – mean, SD – standard deviation, Me – median, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences, * $p < .05$, ** $p < .01$, *** $p < .001$

Next, the study investigated whether the general level of financial inclusion in Poland differed from the level of financial inclusion in other countries. For this purpose, a series of analyses with the Mann-Whitney U tests was performed, and the results of the analyses are presented in Table 2. These analyses showed that there was a statistically significant difference in the level of financial inclusion between Poland and Estonia Z = 2.31; p <.05; r = .82, Romania Z = 2.31; p <.05; r = .82, Slovenia Z = 2.31; p <.05; r = .82 and Ukraine Z = 1.73; p = .083; r = .61 (result at the border of statistical tendency). Financial inclusion in Poland was on an average level of 82.63%, with the higher level in Estonia 97.97% and Slovenia 97.74%, and lower in Romania 58.08% and Ukraine 60.11%. There were no differences in the level of financial inclusion between Poland and other countries.

Table 2. The results of analyses with U Mann-Whitney tests for the comparison of financial inclusion between Poland and other countries

	M	*SD*	*Z*	*p*	*r*
Poland	82.63%	11.04%			
Belarus	70.58%	11.34%	1.06	.289	.40
Bulgaria	68.00%	13.27%	1.44	.149	.51
Croatia	88.09%	2.70%	0.58	.564	.20
the Czech Republic	84.69%	6.86%	0.29	.773	.10
Estonia	97.97%	1.06%	2.31	*	.82
Hungary	77.02%	7.56%	0.58	.564	.20
Latvia	92.43%	3.20%	1.44	.149	.51
Lithuania	82.02%	8.53%	0.00	1.000	.00
Romania	58.08%	10.19%	2.31	*	.82
Slovakia	84.16%	8.17%	0.00	1.000	.00
Slovenia	97.74%	0.89%	2.31	*	.82
Ukraine	60.11%	17.96%	1.73	.083	.61

M – mean, SD – standard deviation, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences, * p <.05

The main aim of the research was to assess which variables concerning citizens: sex, economic activity, age, education and income influence financial inclusion in each of the analysed countries. For this purpose, a series of analyses with the Mann-Whitney U tests was performed, and Table 3 presents the results of these analyses to compare financial inclusion in individual countries by sex. The results of these analyses turned out to be statistically insignificant p> .05, which means that no differences were found between men and women in the analysed countries in terms of the percentage of people having accounts in the 2011-2021.

Table 3. The results of analyses with the Mann-Whitney U tests for the comparison of financial inclusion in individual countries by sex

	Male		Female		*Z*	*p*	*r*
	M	*SD*	*M*	*SD*			
Poland	82.77%	11.10%	81.33%	6.37%	0.29	.773	.10
Belarus	70.73%	10.90%	70.46%	11.71%	0.22	.827	.09
Bulgaria	66.73%	14.12%	69.14%	12.57%	0.58	.564	.20
Croatia	89.43%	3.97%	86.88%	3.04%	0.87	.386	.31
the Czech Republic	86.51%	6.89%	82.98%	7.02%	1.44	.149	.51
Estonia	97.72%	1.17%	98.18%	1.07%	0.29	.773	.10
Hungary	78.02%	8.31%	76.15%	7.16%	0.00	1.000	.00
Latvia	91.65%	3.95%	93.08%	3.15%	0.29	.773	.10
Lithuania	84.19%	9.58%	81.22%	12.78%	0.29	.773	.10
Romania	62.19%	10.09%	54.32%	10.22%	0.87	.386	.31
Slovakia	84.32%	9.79%	84.01%	6.90%	0.29	.773	.10
Slovenia	97.94%	1.63%	97.54%	0.68%	0.58	.564	.20
Ukraine	62.50%	18.52%	58.23%	17.50%	0.58	.564	.20

M – mean, SD – standard deviation, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences

Similarly, using the Mann-Whitney U tests, comparisons of financial inclusion in selected countries were made in terms of economic activity. On the basis of the results of these analyses, presented in Table 4, it can be seen that professional activity differentiated financial inclusion in the analysed countries statistically significantly $p < .05$ or on the verge of statistical tendency. In each of the analysed countries, a greater percentage of the economically active people had an account as compared to the economically inactive.

The aim of the study was also to compare the level of financial inclusion of citizens in each country according to their age group. For this purpose, a series of analyses with U Mann-Whitney tests was also performed, and the results are presented in Table 5. These analyses showed that the age groups differed statistically significantly in terms of the percentage of people with an account in Belarus $Z = 1.96$; $p = .050$; $r = .80$, Croatia $Z = 2.31$; $p < .05$; $r = .82$ and Latvia $Z = 1.73$; $p = .083$; $r = .61$ (the result is at the limits of the statistical tendency). In Belarus, Croatia and Latvia, a greater percentage of people had accounts in the case of people aged 25 and over when compared with the group of people aged up to 24. In other countries, the trend was the same, but the results of the analyses turned out to be statistically insignificant.

Table 4. The results of the analyses with the Mann-Whitney U tests for the comparison of financial inclusion in individual countries in terms of economic activity

	In labor force		Out of labor force		*Z*	*p*	r
	M	*SD*	*M*	*SD*			
Poland	93.24%	5.77%	64.71%	15.18%	1.73	.083	.61
Belarus	81.43%	12.11%	42.94%	13.76%	1.96	.050	.80
Bulgaria	79.22%	9.92%	53.13%	20.82%	1.73	.083	.61
Croatia	94.89%	1.97%	79.59%	3.97%	2.31	*	.82
the Czech Republic	95.08%	2.28%	68.81%	15.24%	2.31	*	.82
Estonia	98.78%	1.08%	96.44%	1.64%	2.02	*	.71
Hungary	89.58%	3.62%	60.94%	12.40%	2.31	*	.82
Latvia	97.14%	1.51%	83.76%	6.82%	2.31	*	.82
Lithuania	92.75%	5.93%	68.29%	16.57%	2.02	*	.71
Romania	66.76%	10.99%	46.26%	8.15%	2.02	*	.71
Slovakia	93.44%	2.55%	68.16%	16.90%	2.02	*	.71
Slovenia	98.58%	1.24%	96.32%	1.64%	1.73	.083	.61
Ukraine	67.38%	16.15%	47.48%	21.85%	1.16	.248	.41

M – mean, SD – standard deviation, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences, * p <.05

Table 5. The results of analyses with U Mann-Whitney tests for comparing financial inclusion in particular countries by age

	Young adults 15-24		Older adults 25+		*Z*	*p*	*r*
	M	*SD*	*M*	*SD*			
Poland	58.28%	25.78%	86.79%	5.52%	1.16	.248	.41
Belarus	48.33%	6.74%	74.45%	11.46%	1.96	.050	.80
Bulgaria	52.47%	24.74%	69.99%	12.53%	1.16	.248	.41
Croatia	64.01%	14.22%	91.93%	1.74%	2.31	*	.82
the Czech Republic	64.49%	23.28%	88.00%	4.69%	1.16	.248	.41
Estonia	93.35%	4.47%	98.72%	0.53%	1.16	.248	.41
Hungary	63.57%	19.77%	79.24%	5.64%	1.16	.248	.41
Latvia	82.55%	8.18%	93.98%	2.57%	1.73	.083	.61
Lithuania	68.05%	21.27%	85.58%	9.31%	1.44	.149	.51
Romania	53.76%	14.35%	58.91%	9.46%	0.58	.564	.20
Slovakia	61.94%	24.59%	88.38%	5.44%	1.16	.248	.41
Slovenia	97.48%	4.08%	97.80%	0.90%	0.87	.384	.31
Ukraine	61.47%	20.16%	59.94%	18.25%	0.29	.773	.10

M – mean, SD – standard deviation, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences, * p <.05

Another analysis with the Mann-Whitney U tests gave statistically significant p <.05 results for comparing financial inclusion between people with secondary and higher education compared to people with below-secondary education. This means that education in each country influenced the percentage of account holders. A greater percentage of people who had accounts was in the group of people with higher or secondary education in each of the surveyed countries.

Table 6. The results of analyses using U Mann-Whitney tests for comparing financial inclusion in individual countries by education

	Primary education or less		Secondary or higher		*Z*	*p*	*r*
	M	*SD*	*M*	*SD*			
Poland	55.72%	15.09%	87.50%	7.36%	2.31	*	.82
Belarus	26.76%	11.32%	78.57%	11.03%	1.96	*	.80
Bulgaria	42.73%	19.99%	79.58%	9.13%	2.02	*	.71
Croatia	69.43%	7.97%	94.55%	2.19%	2.31	*	.82
the Czech Republic	55.48%	21.44%	91.79%	3.22%	2.31	*	.82
Estonia	93.04%	4.48%	99.30%	0.34%	2.31	*	.82
Hungary	54.68%	12.26%	85.69%	4.81%	2.31	*	.82
Latvia	79.76%	7.85%	96.10%	1.84%	2.31	*	.82
Lithuania	55.55%	16.38%	87.86%	6.73%	2.31	*	.82
Romania	32.70%	4.50%	67.34%	10.93%	2.31	*	.82
Slovakia	48.31%	19.10%	91.49%	4.05%	2.31	*	.82
Slovenia	94.07%	2.59%	98.73%	0.80%	2.31	*	.82
Ukraine	27.23%	13.96%	64.81%	15.89%	2.31	*	.82

M – mean, SD – standard deviation, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences, * p <.05

Also, using U Mann-Whitney tests, the level of financial inclusion in individual countries was compared in terms of income. The percentage of people with an account was compared between the group of 40% of the poorest and 60% of the richest citizens of each country. Based on the results of the analyses, using U Mann-Whitney tests, it was found that the level of income differentiated the financial inclusion of Croatian citizens Z = 2.31; p <.05; r = .82, Romanian Z = 2.02; p <.05; r = .71 and Slovenian Z = 2.31; p <.05; r = .82. In Croatia, Romania and Slovenia, statistically significantly more often accounts were held by people who were in the group of 60% of the richest citizens of these countries. In other countries, there was a similar trend, but the results of the analyses turned out to be statistically insignificant.

Table 7. The results of analyses using U Mann-Whitney tests for comparing financial inclusion in individual countries in terms of income

	40% poorest		60% richest		*Z*	*p*	*r*
	M	*SD*	*M*	*SD*			
Poland	76.93%	10.44%	85.40%	7.55%	0.87	.386	.31
Belarus	63.80%	12.23%	75.10%	10.81%	1.09	.275	.45
Bulgaria	53.66%	15.39%	77.53%	12.12%	1.73	.083	.61
Croatia	81.43%	2.29%	92.52%	3.14%	2.31	*	.82
the Czech Republic	79.08%	10.85%	88.42%	4.53%	1.44	.149	.51
Estonia	96.81%	2.13%	98.74%	0.63%	1.16	.248	.41
Hungary	70.83%	6.97%	81.14%	8.01%	1.44	.149	.51
Latvia	88.42%	4.09%	95.10%	2.71%	1.73	.083	.61
Lithuania	77.91%	13.99%	85.77%	9.11%	1.16	.248	.41
Romania	42.89%	10.89%	68.18%	10.40%	2.02	*	.71
Slovakia	77.86%	9.27%	88.34%	7.44%	1.44	.149	.51
Slovenia	95.90%	1.21%	99.00%	0.70%	2.31	*	.82
Ukraine	51.74%	20.91%	65.67%	16.05%	1.16	.248	.41

M – mean, SD – standard deviation, Z – Mann-Whitney U statistics, p – level of statistical significance, r – size of differences, * $p < .05$

It was also investigated whether financial inclusion in Poland differed from other countries, taking into account the breakdown by sex, economic activity, age, education and income. For this purpose, a series of analyses was performed with the Mann-Whitney U tests, and the results are presented in Table 8. Based on these results, it can be concluded that the financial inclusion in Poland differed statistically significantly from its level in Estonia, Romania and Slovenia, regardless of sex, occupation, age, education and income. This confirms earlier analyses which showed that the level of financial inclusion in Estonia and Slovenia was higher than in Poland, and in Romania lower than in Poland.

In the next step, the extent to which financial inclusion in countries increased in 2011-2021 was investigated. For this purpose, an analysis of Spearman's rho correlation was performed, and the results of these analyses for all countries are presented in Table 9. This analysis showed that in the analysed period there was a moderate increase in financial inclusion in the studied countries $\rho = 0.41$; $p < .01$. Analysing the increase in financial inclusion individually, broken down by sex, economic activity, age, education and income, it was shown that a faster increase in financial inclusion occurred in men $\rho = 0.47$; $p < .001$ than in women $\rho = 0.39$; $p < .01$ and in young people up to 24 years old $\rho = 0.51$; $p < .001$ than in people aged 25 and over $\rho = 0.37$; $p < .01$. Such significant differences were not shown when analysing the results broken down into professional activity, education and income.

Table 8. The results of analyses with the Mann-Whitney tests for comparing the financial inclusion in Poland and other countries, broken down by sex, professional activity, age, education and income

		Sex		Activity		Age		Education		Income	
		Male	Female	In labor force	Out of labor force	Young adults 15-24	Older adults 25+	Primary or less	Secondary and higher	40% poorest	60% richest
Belarus	*Z*	1.77	1.06	1.41	1.77	1.41	1.06	2.12	1.41	1.06	1.06
	p	0.077	0.289	0.157	0.077	0.157	0.289	0.034	0.157	0.289	0.289
Bulgaria	*Z*	1.73	1.15	2.02	1.44	1.44	1.73	1.15	1.15	1.73	0.87
	p	0.083	0.248	0.043	0.149	0.149	0.083	0.248	0.248	0.083	0.386
Croatia	*Z*	0.87	0.29	0.29	1.15	0.29	0.87	0.87	1.44	0.29	1.15
	p	0.386	0.773	0.773	0.248	0.773	0.386	0.386	0.149	0.773	0.248
the Czech Republic	*Z*	0.29	0.29	0.29	0.29	0.29	0.29	0.29	1.15	0.29	0.29
	p	0.773	0.773	0.773	0.773	0.773	0.773	0.773	0.248	0.773	0.773
Estonia	*Z*	2.31	2.31	2.02	2.31	1.44	2.31	2.31	2.31	2.31	2.31
	p	*	*	*	*	0.149	*	*	*	*	*
Hungary	*Z*	1.15	0.58	0.87	0.87	0.58	0.87	0.00	0.58	0.87	0.58
	p	0.248	0.564	0.386	0.386	0.564	0.386	1.000	0.564	0.386	0.564
Latvia	*Z*	1.15	1.44	0.87	1.44	1.15	1.44	2.31	1.73	1.44	1.44
	p	0.248	0.149	0.386	0.149	0.248	0.149	*	0.083	0.149	0.149
Lithuania	*Z*	0.29	0.29	0.00	0.29	0.58	0.00	0.00	0.29	0.29	0.00
	p	0.773	0.773	1.000	0.773	0.564	1.000	1.000	0.773	0.773	1.000
Romania	*Z*	2.02	2.31	2.31	2.02	0.87	2.31	2.02	2.31	2.31	2.02
	p	*	*	*	*	0.386	*	*	*	*	*
Slovakia	*Z*	0.00	0.29	0.00	0.00	0.87	0.29	0.87	0.87	0.00	0.29
	p	1.000	0.773	1.000	1.000	0.386	0.773	0.386	0.386	1.000	0.773
Slovenia	*Z*	2.31	2.31	1.73	2.31	2.03	2.31	2.31	2.31	2.31	2.31
	p	*	*	0.083	*	*	*	*	*	*	*
Ukraine	*Z*	1.44	1.73	2.02	1.15	0.87	1.73	2.02	1.73	1.73	1.73
	p	0.149	0.083	*	0.248	0.386	0.083	*	0.083	0.083	0.083

Z – Mann-Whitney U statistics, p – statistical significance level, * p <.05

In Poland, financial inclusion in 2011-2021 increased from 70.2% to 95.7%. The smallest increase was observed in Slovenia from 97.1% to 99.1%, in Estonia from 96.8% to 99.4%, in Croatia from 88.4% to 91.8% and in Latvia from 89.7% to 96.6%. The greatest change in 2011-2021 was observed in Ukraine from 41.3% to 83.6% and in Bulgaria from 52.8% to 84%.

Table 9. The results of the Spearman's rho correlation analyses for changes in the level of financial inclusion in 2011-2021

Account ownership	.41**
Male	.47***
Female	.39**
In labor force	.39**
Out of labor force	.44**
Young adults 15-24	.51***
Older adults 25+	.37**
Primary or lower education	.36**
Secondary or higher education	.37**
40% poorest	.40**
60% richest	.45***

**$p < .01$; ***$p < .001$

How financial inclusion changed between subsequent years was also checked in detail, as well as in which period the greatest changes were observed. Table 10 below presents descriptive statistics for changes in the level of financial inclusion in 2011-2021.

Table 10. Descriptive statistics for changes in the level of financial inclusion in 2011-2021

	2011		2014		2017		2021	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Account ownership	72.78%	18.71%	77.47%	13.58%	81.43%	12.12%	90.96%	8.66%
Male	72.85%	17.87%	78.20%	13.24%	82.78%	11.38%	92.35%	7.92%
Female	72.71%	19.57%	76.82%	14.20%	80.25%	12.96%	89.70%	9.50%
In labor force	82.20%	17.08%	87.02%	11.02%	90.55%	11.05%	94.55%	6.59%
Out of labor force	57.99%	23.64%	62.19%	19.70%	67.32%	16.19%	85.59%	12.22%
Young adults 15-24	59.27%	20.03%	58.71%	19.65%	61.56%	17.86%	91.39%	8.88%
Older adults 25+	75.43%	19.10%	80.71%	13.86%	84.50%	12.36%	91.01%	8.90%
Primary or lower education	48.62%	26.62%	50.12%	23.62%	56.73%	22.29%	74.49%	18.60%
Secondary or higher education	79.84%	16.79%	85.33%	11.49%	88.10%	10.00%	93.52%	6.97%
40% poorest	65.39%	22.15%	70.53%	17.26%	73.82%	17.12%	86.54%	12.12%
60% richest	77.70%	16.56%	82.10%	11.40%	86.49%	9.21%	93.90%	6.63%

M – mean, *SD* – standard deviation

Based on the results of the analyses with the Mann-Whitney U tests to compare changes in the level of financial inclusion in 2011-2021 presented in Table 11, it can be concluded that the largest differences were found between 2011 and 2021, then between 2014 and 2021, and between 2017 and 2021. However, no differences were found between the years 2011-2014-2017. This means that the biggest jump in the level of financial inclusion took place in 2017-2021.

Table 11. Results of analyses with U Mann-Whitney tests for comparison of changes in the level of financial inclusion in 2011-2021

	2011 vs 2014	2011 vs 2017	2011 vs 2021	2014 vs 2017	2014 vs 2021	2017 vs 2021
Account ownership	.555	.191	*	.369	*	*
Male	.457	.158	**	.343	*	*
Female	.778	.293	*	.397	*	*
In labor force	.817	.118	*	.228	*	.192
Out of labor force	.590	.249	**	.397	**	*
Young adults 15-24	.858	.489	**	.739	***	**
Older adults 25+	.489	.209	*	.397	*	.128
Primary or lower education	.898	.397	*	.427	*	*
Secondary or higher education	.457	.209	*	.489	.050	.128
40% poorest	.626	.270	*	.489	*	*
60% richest	.739	.144	**	.270	**	**

*$p < .05$, **$p < .01$, ***$p < .001$

4. Conclusions

Having an account referred to as a non-banking or a non-bank account, but monitored by a regulated institution, is the basic determinant of full participation in socio-economic life. In particular, it enables the holistic management of personal finances in various areas (payments, savings, investments, credits and loans, insurance, pensions). EU legal regulations such as the PAD and PSD2 directives, which were in force in some of the surveyed EU member countries – PAD from September 2016, PSD2 from September 2019 – were conducive to increasing the financial inclusion rate. In the period of 2011-2021, the percentage of account holders aged 15+ in the studied CEE countries has improved, which means the convergence of financial inclusion. In the analysed period, the greatest increase in financial inclusion was observed among the countries that initially had the lowest level – Ukraine 41% and Bulgaria 53%. On the other hand, countries with initially high bank account saturation slightly increased the level of financial inclusion in the

initial year (Estonia, Slovenia). A particularly rapid increase in financial inclusion was recorded in the period of 2017-2021, which resulted from the acceleration of the use of non-cash transactions and the development of neobanks such as Revolut, Aion Bank and dissemination of using modern technologies during the COVID-19 pandemic, which confirms the research hypothesis put forward at the beginning of the article. No differences were found between men and women in the analysed countries in terms of the percentage of people having accounts. There was a variation in financial inclusion between countries, which was, inter alia, determined by socio-demographic variables. Financial inclusion was positively influenced by professional activity, at least secondary education, age of 25 and above, and high income. To the greatest extent, financial inclusion was differentiated by education, and then by professional activity. In each of the analysed countries, a greater percentage of economically active people had an account, as compared to the economically inactive. A greater percentage of those with higher or secondary education in each of the surveyed countries tended to have accounts. Analysing the increase in financial inclusion individually, broken down by sex, professional activity, age, education and income, it was shown that a faster increase in financial inclusion occurred among men than in women and in young people aged 15-24 than in people aged 25 and more. Such significant differences were not shown when analysing the results broken down into professional activity, education and income.

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