

FINANCIAL LITERACY AND FINANCIAL WELL-BEING: THE CASE OF EASTERN, CENTRAL, AND NORTHERN EUROPE

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Abstract: Nowadays, financial literacy is an integral part of education in many countries because of its positive influence on financial inclusion, and financial well-being of households is supposed. In this study, attention is focused on finding out which components of financial literacy (knowledge, behaviour, and attitude) determine the financial well-being of individuals to a greater extent, as well as the link between subjective and objective financial well-being and financial literacy. The Global Findex Database of the World Bank correlation and regression analysis was used inline with the principal components method to process data samples for Ukraine, Georgia, Czechia, Hungary, Croatia, Poland, Austria, Lithuania, and Estonia from OECD/INFE. Cross-country differences indicate that the more economically developed a country is, the higher its financial literacy level can be observed. Also, countries with lower financial literacy levels have more significant growth potential, with Poland and Ukraine as examples. The contribution of knowledge, behaviour, and attitude, in general, can be considered as uniform in terms of financial literacy index formation that corresponds to the index logic. It should be noted that in economically developed countries higher correlation dependency between financial literacy and knowledge and attitudes can be spotted than behaviour. At the same time, behaviour determines households' financial well-being level. It was detected that subjective financial well-being and financial literacy level equally, by approximately 63%, are driven by savings and sound budgeting. The wartime experience of Ukraine shows that depositors' behaviour can be quite different and depending on a set of factors, such as banking system development level, level of trust in the banking system, and financial literacy level.

Keywords: financial health, savings, sound budgeting, financial behaviour, financial knowledge, financial attitude

JEL classification: I31, G51, G53

INTRODUCTION

Financial education and its result financial literacy, have become the focusing point for research in the last two decades. During this time, the concept of financial literacy has acquired a clear outline both in terms of the purpose, why it is necessary, and content - the components of financial literacy. If talking about the financial literacy necessity, in most cases, it will be the achievement of financial well-being (OECD/INFE, 2018; Brueggen et al., 2017; Netemeyer et al., 2017), or financial health, as another interpretation (Huston, 2015). When discussing the content, it is necessary to divide it into two components. Firstly, content, in the context of educational outcomes, relies on the definition (OECD/INFE, 2018), where such components as "combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions" (p. 4) stand out. Secondly, content in the context of its components, namely financial planning and

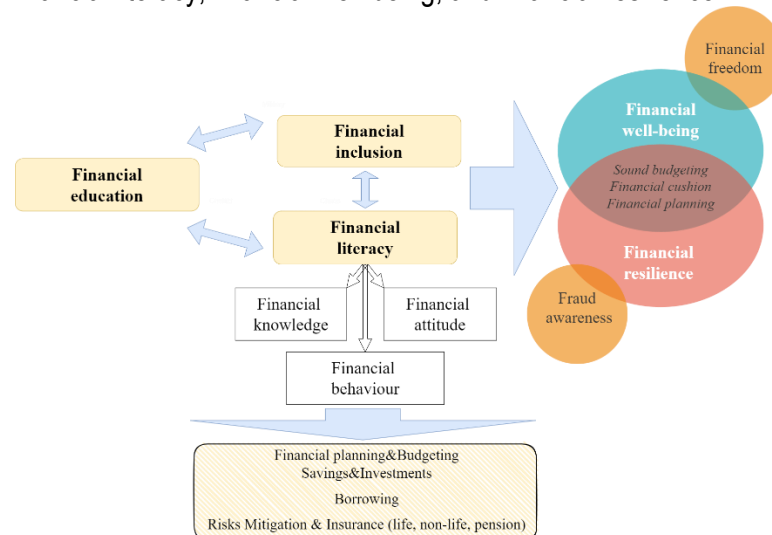
budgeting, savings, investments, debts, insurance, etc. Such an approach allows, in turn, to investigate how each component can ultimately affect individuals' financial well-being.

Financial well-being can also be subjective, objective, or subjective-objective. Objective financial well-being is determined by financial indicators of the households' finance current state. Interest in subjective financial well-being research has skyrocketed in the last five years (Nanda, Banerjee, 2021). It is considered a households' assessment of its finance compared with other households or specific average indicators of a particular country. At the same time, financial well-being, as will be shown below, can combine these two components: objective and subjective. This research is held to answer some questions. How to present financial well-being taxonomy in the context of financial literacy? What is the financial literacy index trend in Eastern and Central European countries according to the OECD/INFE methodology? What is the contribution of each component of financial literacy to the final value of the financial literacy index? What is the value of each component in ensuring financial well-being? Is there any relationship between subjective and objective financial well-being? In addition, the war in Ukraine brought another vital issue: how do households behave to maintain financial well-being in extreme conditions? The case of Ukraine is revealing because in a short period Ukrainians faced two wars: in 2014 and 2022, and therefore the experience gained in 2014-2015 should actually predetermine behavioral patterns in 2022.

1. LITERATURE REVIEW AND TAXONOMY OF FINANCIAL LITERACY AND FINANCIAL WELL-BEING

In our study, we emanate from the fact that financial education leads to increased financial inclusion and financial literacy. These theses have been proven in a number of works. Thus, Bartholomae and Fox (2021) point out the importance of financial education in improving financial literacy, emphasizing that this education should be systemic and supported at the national level, mainly through national strategy development. Atkinson and Messy (2013) show that there is a correlation between the level of financial literacy and the level of financial inclusion, in particular, individuals with higher levels of financial literacy have better awareness and do use financial services. In addition, the authors emphasize that financial education, particularly financial consumer protection, leads to overcoming financial exclusion. Hasan, Le, and Hoque (2021) also point out that financial education is crucial for financial inclusion, and understanding and familiarity with financial services lead to its growth. Grohmann, Klühs, and Menkhoff (2018) show a relationship between financial literacy and financial inclusion, but it depends on the level of financial depth when comparing countries. At the same time, this relationship can be reversed: the growth of financial inclusion can stimulate the necessity of financial education growth and, accordingly, boost financial literacy. This issue has not yet been sufficiently covered in the financial literature. However, it is the rationale that opening an account, insurance, and especially investments can encourage individuals to deepen and expand their financial knowledge and skills. Ultimately, financial inclusion growth in collaboration with financial literacy should lead to financial well-being and financial resilience increase, which are quite strongly intertwined (Fig. 1), considering the OECD report, INFE, 2020.

Fig. 1 Link between financial literacy, financial well-being, and financial resilience



Source: Authors

So, financial planning, sound budgeting, financial cushion, and financial freedom are essential components of financial well-being. However, let us dwell on the definition of financial well-being in more detail since it is necessary to understand that, firstly, the contextual approach to determining its essence is critical, and secondly, the assessment approach, which, due to its specificity, includes both objective and subjective assessment. The necessity to highlight objective and subjective indicators is stated in most considered works. Objective indicators are indicators that reflect specific financial characteristics of an individual in some quantitative values. Thus, Greninger et al. (1996) research presents a wide range of such indicators and benchmarks, namely: liquidity indicators (the ratio of liquid assets to monthly expenses, current debt), savings (the ratio of savings to gross income, net income), asset allocation, inflation protection, tax burden, housing expenses, insolvency. Headey & Wooden (2004) points to two factors that determine well-being: income (indicating a job or assets) and wealth (savings as a financial cushion). So, if talking about objective evaluation, it is mainly about financial indicators that characterize an individual. Accordingly, there is a need to search and select indicators that show the individuals' financial well-being level at the country level. For example, central banks, state statistical bodies, and other regulators systematically collect and evaluate income per capita, savings per capita, and other indicators.

However, why are subjective indicators of financial well-being important? Because we consider this concept in the context of financial literacy, financial well-being becomes a more complex concept, as it goes beyond objective indicators and takes into account the subjective nature, that is, how individuals evaluate their financial well-being. Interestingly, these two estimating approaches can and most likely will differ. The study by Brueggen et al., 2017 proposes to define financial well-being as a state when it is possible to have sufficient living conditions and financial freedom from the individual's point of view. It should be emphasized that this work introduces a framework of financial well-being, which allows a relatively broad interpretation of this definition and, accordingly, implies variability in assessment. In particular, this is related to the concept of financial freedom introduced in this definition, which is extremely important from our point of view but can be assessed using objective and subjective indicators.

Kempson, Finney, and Poppe (2017), as well as the previously mentioned authors, point to the fact that there is no well-established, generally accepted definition of financial well-being, and there is also no unified assessment approach. As a result, an assessment model based on objective and subjective indicators in such areas as knowledge, skills, and experience; psychological factors is proposed. These areas determine the behavior of individuals, which determines financial well-being. It should be emphasized that this study relies on the survey's results, which creates a subjective imprint even in assessing the objective indicators. Netemeyer et al. (2017) propose a financial well-being model based on several indicators: current money management stress (late and minimum payments, lack of self-control, materialism, perceived financial self-efficacy), expected future financial security (perceived financial self-efficacy, positive financial behaviors, willingness to take investment risks, and plan for money long-term). This division approach allows us to consider financial well-being in a complex way since indicators can affect negatively and positively.

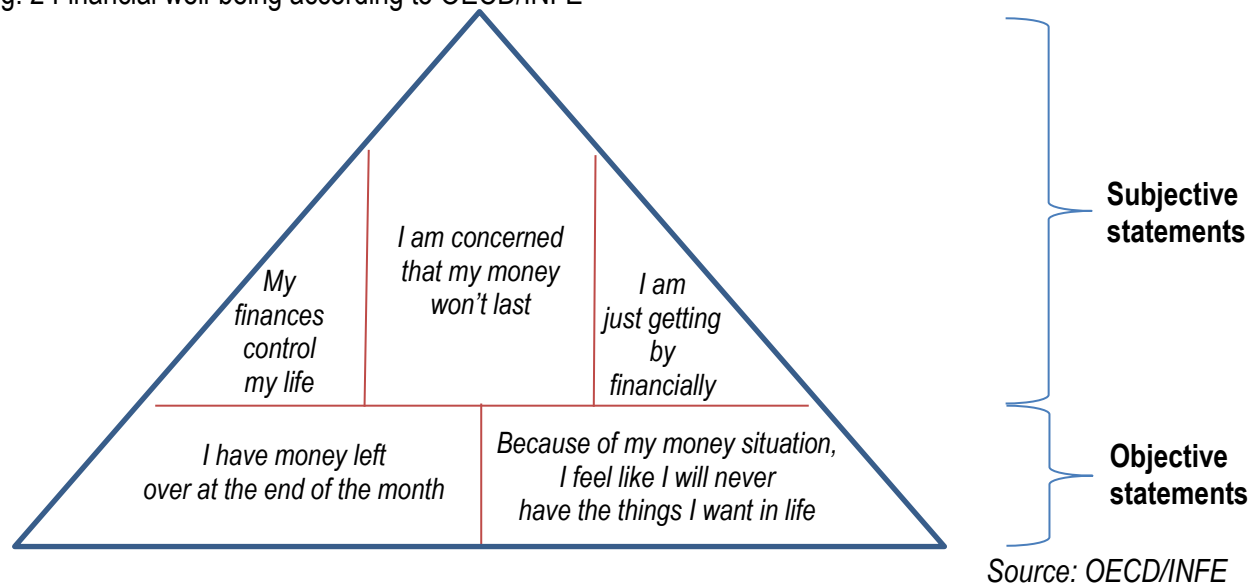
There are few studies of the war's impact on the individual's behavior in the context of ensuring financial well-being. Osiichuk and Shepotylo (2019) focus on the well-being of individuals in Ukraine and Russia as a result of the 2014 war. The apparent conclusion indicates a deterioration in financial well-being, highlighting such features as a decrease in financial well-being closer to the epicenter of hostilities and the expectations' impact on financial behavior and financial well-being as a consequence. Shemyakina and Plagnol (2013) consider the case of Bosnia-Herzegovina, which examines the impact of military actions on subjective well-being, concluding that the most negative impact was on displaced individuals during the war.

The literature review shows that financial well-being is a complex concept that implies the existence of an individual's healthy financial condition and his ability to ensure financial freedom. Financial well-being assessment can be based on a system of objective (financial indicators that can be calculated for an individual) and subjective indicators (a verbal assessment of one's financial condition by an individual based on a questionnaire). At the same time, financial well-being can be simultaneously considered from the point of view of the influence of negative factors, such as overdebtiness, late payments, etc. The impact of war on financial well-being will undoubtedly be negative. However, at the same time, there are practically no studies on the relationship "financial literacy - financial inclusion - war - financial well-being".

2. DATA AND METHODOLOGY

In this research, we propose to build an assessment of financial well-being based on publicly available data that can be used for cross-country comparison. For the study, we have chosen such databases. These are OECD / INFE survey data, which are reflected in the reports for 2016 and 2020, data for Ukraine for 2018 and 2021, collected according to the OECD / INFE methodology, Global Findex Database (Findex) of the World Bank for 2014 and 2017, as well as data on indicators of financial well-being World Bank and IMF. Since many data are not mandatory for countries to provide, when forming a sample of countries, we primarily focused on the availability of data in two periods (the first period t_0 is the OECD / INFE report for 2016, the report of Ukraine for 2018; the second period t_1 is the OECD / INFE report for 2020, report of Ukraine for 2021), as well as their belonging to the indicated regions. As a result, the following countries were selected in Eastern Europe: Ukraine and Georgia, in Central Europe - Czechia, Hungary, Croatia, Poland, Austria, Northern Europe - Lithuania, and Estonia. The first database is OECD/INFE. The assessment of financial well-being is based on answers to five questions: 'Because of my money situation, I feel like I will never have the things I want in life; I am just getting by financially; I am concerned that my money won't last; I have money left over at the end of the month; My finances control my life' (Fig. 2).

Fig. 2 Financial well-being according to OECD/INFE



At least three of the five questions determining financial well-being are subjective. However, based on Fig. 1, the concept of financial well-being needs to be disclosed more comprehensively in order to conduct a more meaningful cross-country analysis. That is why we assume that it is necessary to analyze a set of indicators

from the Findex, which are mostly objective. These indicators can be combined into two groups: indicators that characterize the state of savings and sound budgeting indicators.

The state of savings indicators. Savings are both a financial cushion in unforeseen circumstances and the basis of financial freedom. The difference between a financial cushion and financial freedom is that in the first case, we are talking about using savings to cover unforeseen expenses, and in the second - for self-realization, investment in the future, etc. Regarding the financial cushion, these indicators are the primary source of emergency funds: savings. If talking about financial freedom, these indicators include: saved for old age; saved at a financial institution; saved any money in the past year.

Sound budgeting indicators: coming up with emergency funds: possible; paid utility bills in the past year; received wages in the past year. In turn, the main source of emergency funds indicator: loan from a bank, employer, or private lender must be considered as an inverse indicator. At the same time, we did not include indicators related to lending from this database since they do not reflect the actual situation with the lending impact on the individual's well-being. For example, housing loans may positively impact welfare in countries with middle and high incomes, where government support programs and interest rates are affordable for borrowers. In turn, in countries with lower-middle income and low-income housing loans can significantly worsen the individual's well-being due to devaluation risks, high-interest rates, etc. (Kaminskyi, Versal, 2018). The research was carried out using multidimensional statistical methods, and each corresponds to a particular stage of the research: to identify the existence and establish statistically valid relationships (statistical validity) between indicators, the method of correlation analysis was applied; to carry out factor analysis: establishing the number of available factors and identifying their properties, the principal components method is used; linear regression was used to assess the impact of selected factors on financial literacy index and financial well-being.

3. TRENDS IN FINANCIAL LITERACY INDEX (FLI) AND FINANCIAL WELL-BEING (FWB) IN CENTRAL, NORTHERN AND EASTERN EUROPE

First, let us analyze the main components of financial literacy according to OECD/INFE methodology. It is reasonably expected that the level of financial literacy will be higher in the countries of Northern & Central Europe (NCE) than in the countries of Eastern Europe (EE) (Table 1). This is due to several reasons, including a low level of financial depth, insufficient (although increasing) level of financial inclusion, limited attention to the financial services consumers' rights protection and financial literacy promotion. Secondly, the trend towards the growth of financial literacy and its components, such as knowledge and behavior, is observed in both regions, again with a prevalence in NCE countries. The gap between these regions in terms of FLI increases: 0.7 (t_0) and 0.9 (t_1). However, if considered countries, not regions, we will see significant differences. Particularly interesting are the growth indicators of outsider countries according to the OECD / INFE report, 2016, Ukraine, 2018, - Poland and Ukraine. These two countries were able to significantly improve their positions in a relatively short period and show a jump in scores of FLI of 1.5 and 0.7, respectively. In Ukraine was a positive change in attitude, which is not so easy to implement, as an increase in financial literacy knowledge. Third, it is also understandable that FWB is rated higher in developed countries and lower in developing countries. However, we see that if the gap in FLI between NCE and EE is 0.9 scores in t_1 , then in financial well-being (FWB) it is 2.5 scores. Perhaps there is a relationship here: an insufficient level of financial literacy does not allow to have a sufficient level or to correctly assess FWB.

Tab. 1: Financial literacy index, its components and well-being in Eastern, Central Europe, and Northern Europe according to OECD/INFE methodology, scores

Countries	t_0				t_1					Changes, points			
	FLI	K	B	A	FLI	K	B	A	FWB	FLI	K	B	A
	21	7	9	5	21	7	9	5	20	-	-	-	-
Northern & Central Europe													
Estonia	13.4	5.3	4.9	3.2	13.3	4.9	5.3	3.1	9.1	-0.1	-0.4	0.4	-0.1
Austria	14.2	4.9	6.0	3.3	14.4	5.3	6.0	3.1	11.4	0.2	0.4	0.0	-0.2
Czechia	12.6	4.4	5.0	3.1	13.0	4.5	5.3	3.1	11.4	0.4	0.1	0.3	0.0
Hungary	12.4	4.7	4.3	3.5	12.3	4.6	4.5	3.3	10.8	-0.1	-0.1	0.2	-0.2

Croatia	12.0	4.3	4.8	3.0	12.3	4.5	5.0	2.8	8.7	0.3	0.2	0.2	-0.2
Poland	11.6	4.4	4.4	2.8	13.1	5.0	5.5	2.6	9.1	1.5	0.6	1.1	-0.2
<i>Average</i>	<i>12.7</i>	<i>4.7</i>	<i>4.9</i>	<i>3.2</i>	<i>13.1</i>	<i>4.8</i>	<i>5.3</i>	<i>3.0</i>	<i>10.1</i>	<i>0.4</i>	<i>0.1</i>	<i>0.4</i>	<i>-0.2</i>
Eastern Europe													
Ukraine	11.6	4.0	5.2	2.4	12.3	4.3	5.5	2.5	8.3	0.7	0.3	0.3	0.1
Georgia	12.4	4.6	5.0	2.8	12.1	4.5	5.1	2.5	6.9	-0.3	-0.1	0.1	-0.3
<i>Average</i>	<i>12.0</i>	<i>4.3</i>	<i>5.1</i>	<i>2.6</i>	<i>12.2</i>	<i>4.4</i>	<i>5.3</i>	<i>2.5</i>	<i>7.6</i>	<i>0.2</i>	<i>0.1</i>	<i>0.2</i>	<i>-0.1</i>
<i>Gap between regions</i>	<i>0.7</i>	<i>0.4</i>	<i>-0.2</i>	<i>0.6</i>	<i>0.9</i>	<i>0.4</i>	<i>0.0</i>	<i>0.5</i>	<i>2.5</i>	<i>0.2</i>	<i>0.0</i>	<i>0.2</i>	<i>-0.1</i>

Source: OECD/INFE, 2016, 2020, Ukraine, 2018, USAID (2021)

4. FINANCIAL LITERACY COMPONENTS, FINANCIAL LITERACY INDEX AND FINANCIAL WELL-BEING

In the base period for the sample of analyzed countries, we observe that the FLI components are evenly related, which corresponds to the concept of this indicator (Table 2).

Tab. 2: Pairwise correlation coefficients of the FLI components for a sample of countries, t_0

Indicators	Means	Std.Dev.	FLI(0)	K(0)	A(0)	B(0)
FLI(0)	12,52500	0,894028	1,000000	0,794736	0,655976	0,644349
K(0)	4,57500	0,399106	0,794736	1,000000	0,143526	0,689186
A(0)	4,95000	0,523723	0,655976	0,143526	1,000000	-0,051529
B(0)	3,01250	0,344083	0,644349	0,689186	-0,051529	1,000000

$p < ,10000$

Source: Authors' calculations, based on OECD/INFE, 2016, Ukraine, 2018

However, our research presents two fundamentally different groups of countries according to the level of financial literacy: Northern and Central Europe (NCE) and Eastern Europe (EE), where the level of financial literacy can be determined by different factors and, therefore, the levels of contributions of the three factors for each group should be compared. However, the EE group is represented in the study by only two countries, which is not enough to apply the correlation analysis, so conclusions about the differences in the influence of the two groups will be made by comparing the deviations of the correlation coefficients of the NCE group from all groups correlations (Table 3).

Tab. 3: Pairwise correlation coefficients of the FLI components in NCE countries, t_0

Indicators	Means	Std.Dev.	FLI(0)	K(0)	A(0)	B(0)
FLI(0)	12,70000	0,952890	1,000000	0,745350	0,844215	0,561661
K(0)	4,66667	0,382971	0,745350	1,000000	0,327133	0,516000
A(0)	4,90000	0,606630	0,844215	0,327133	1,000000	0,190024
B(0)	3,15000	0,242899	0,561661	0,516000	0,190024	1,000000

$p < ,10000$

Source: Authors' calculations, based on OECD (2016), USAID (2019)

It can be observed in the table that in the NCE group, there is a high correlation dependence of financial literacy from knowledge and attitudes, but there is no significant relationship with behavior. The difference in the NCE group's score from the group of all countries may be due to a more significant influence of the importance of the behavioral factor for EE countries when calculating the score for all countries.

The difference may be due to the fact that the NCE countries have a higher level of economic development, due to which the influence of the behavioral factor may not have a significant manifestation, in contrast to less developed countries, in which in order to generate a satisfactory income, households have to implement various types of digital financial instruments more actively. A similar study was carried out for the second period - t_1 and the FWB indicator was added to test the well-being hypothesis (Table 4).

Tab. 4: Pairwise correlation coefficients of the FLI components for a sample of countries, t_1

Indicators	Means	Std.Dev.	FLI(1)	K1(1)	A(1)	B(1)	FWB(1)
FLI(1)	12,85000	0,770899	1,000000	0,888231	0,755323	0,417560	0,609754
K1(1)	4,70000	0,333809	0,888231	1,000000	0,568382	0,339547	0,423649
A(1)	5,27500	0,436708	0,755323	0,568382	1,000000	-0,223206	0,147148
B(1)	2,87500	0,315096	0,417560	0,339547	-0,223206	1,000000	0,822110
FWB(1)	9,46250	1,606182	0,609754	0,423649	0,147148	0,822110	1,000000

$p < ,10000$

Source: Authors' calculations, based on OECD (2020), USAID (2021)

In the second period, we observe changes in the importance of FLI components. The level of financial literacy is formed under the influence of knowledge and attitudes to a greater extent than in the previous period. Instead, the contribution of the "behavior" component became insignificant, although this component is determining in the achievement of FWB, although a partial explanation for this may be the fact that both the FWB and behavior assessments take into account the fact of control over personal finances, namely such statements as 'My finances control my life' and 'I have money left over at the end of the month'.

Thus, two blocks are distinguished: theoretical-behavioral, which is based on knowledge and attitude, that determines the household's potential opportunity to achieve financial well-being; practical-behavioral, which characterizes already implemented steps of applying theoretical knowledge: planning budgets, issuing loans, implementing personal savings programs, etc. The correlation model evaluation within only the NCE countries once again confirms the thesis that the theoretical-behavioral block determines financial literacy in these countries, however, it has no connection with financial well-being. At the same time, in these countries, there is no dependence between the practical-behavioral block and, accordingly, financial literacy, and with regard to financial well-being, this dependence is insignificant. Thus, in Eastern European countries, the practical-behavioral block plays a more critical role (Table 5).

Tab. 5: Pairwise correlation coefficients of the FLI components in NCE countries, t_1

Indicators	Means	Std.Dev.	FLI(1)	K1(1)	A(1)	B(1)	FWB(1)
FLI(1)	13,06667	0,776316	1,000000	0,878754	0,917647	0,061102	0,394628
K1(1)	4,80000	0,322490	0,878754	1,000000	0,792766	-0,122573	0,118953
A(1)	5,26667	0,500666	0,917647	0,792766	1,000000	-0,300017	0,180909
B(1)	3,00000	0,252982	0,061102	-0,122573	-0,300017	1,000000	0,663406
FWB(1)	10,08333	1,251266	0,394628	0,118953	0,180909	0,663406	1,000000

$p < ,10000$

Source: Authors' calculations, based on OECD (2020), USAID (2021)

We can conclude that a slight change in financial behavior variations estimation in countries with a higher level of economic development does not lead to a significant change in the FWB level because of high levels of the already realized factors; the correlation coefficients cannot reflect this dependence sensitively. In countries with a lower level of economic development, the opposite situation can be observed: even a slight change in a behavioral factor can significantly change the level of financial well-being.

5. LINK BETWEEN SUBJECTIVE FINANCIAL WELL-BEING, INDICATORS OF OBJECTIVE FINANCIAL WELL-BEING AND FINANCIAL LITERACY

Calculating pairwise correlations between savings, personal finance, FWB and FLI indicators highlights dependencies (Table 6). Correlation coefficients in table 6 show a significant relationship between many pairs of indicators. This situation can be explained by the fact that the selected factors are only a surface reflection of deeper factor components. Therefore, to provide a more accurate assessment of the influence of objective factors on FLI and FWB, the Principal components method should be applied, which involves identifying the real number of components and their relationship with FLI and FWB.

Tab. 6: Pairwise correlation coefficients of the savings indicators, sound budgeting, FWB i FLI

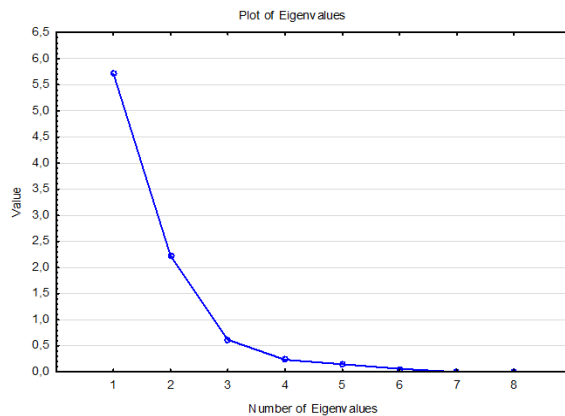
Savings indicators and sound budgeting	FWB, t_1	FLI, t_1
Saved for old age (% age 15+)	0,8082	0,8548
Saved at a financial institution (% age 15+)	0,7313	0,8354
Saved any money in the past year (% age 15+)	0,7335	0,8750
Coming up with emergency funds: possible (% age 15+)	0,4273	0,5051
Coming up with emergency funds: not possible, income, poorest 40% (% age 15+)	-0,2873	-0,3852
Coming up with emergency funds: not possible, income, richest 60% (% age 15+)	-0,2284	-0,4496
Main source of emergency funds: savings (% able to raise funds, age 15+)	0,8082	0,6814
Paid utility bills in the past year (% age 15+)	0,7176	0,5996
Received wages in the past year (% age 15+)	0,6253	0,6288

$p < ,10000$

Source: Authors' calculations, based on OECD (2020), USAID (2021), Demirgüç-Kunt et al. (2018)

As shown in fig. 3, it is enough to use only two components to evaluate the impact of savings and personal finance indicators, which will be considered as two factors influencing FLI and FWB.

Fig. 3 Plot of Eigenvalues



Source: Authors' calculations, based on Demirgüç-Kunt et al. (2018)

Due to the high pair correlation levels, it is difficult to determine the clear affiliation of savings and personal finance indicators to each factor and to describe their properties. In this regard, the Varimax procedure was applied, which made it possible to determine the profile of the two factors in a more precise way (Table 7).

Tab. 7: Factor loadings

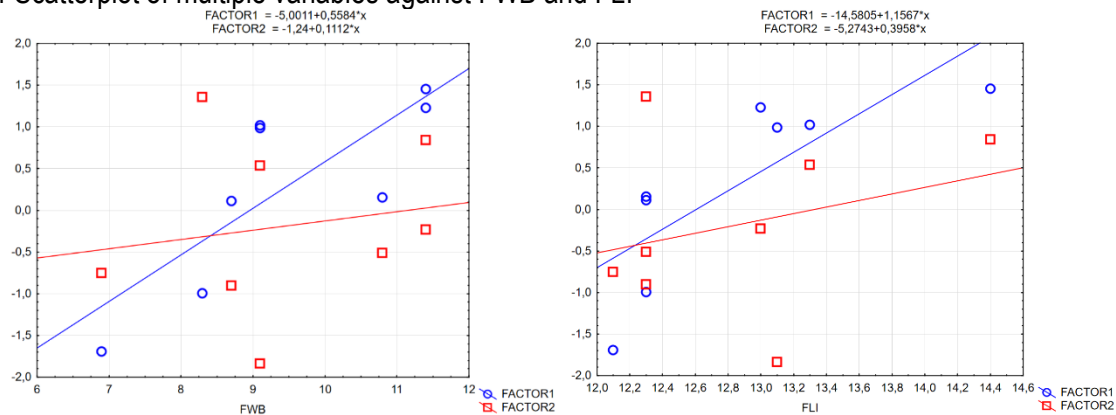
Savings indicators and sound budgeting	Factor Loadings	
	Factor 1	Factor 2
Saved for old age (% age 15+)	0,8739	0,2999
Saved at a financial institution (% age 15+)	0,9234	0,2224
Saved any money in the past year (% age 15+)	0,8884	0,4044
Coming up with emergency funds: possible (% age 15+)	0,2696	0,9501
Coming up with emergency funds: not possible, income, poorest 40% (% age 15+)	-0,1911	-0,8887
Coming up with emergency funds: not possible, income, richest 60% (% age 15+)	-0,1585	-0,9409
Main source of emergency funds: savings (% able to raise funds, age 15+)	0,6533	-0,2395
Paid utility bills in the past year (% age 15+)	0,5507	0,6263
Received wages in the past year (% age 15+)	0,8132	0,1984

Source: Authors' calculations, based on OECD (2020), USAID (2021), Demirgüç-Kunt et al. (2018)

According to the results of the Varimax procedure, the profile of both factors was determined. Factor 1 included: savings indicators (Saved for old age (% age 15+), Saved at a financial institution (% age 15+), Saved any money in the past year (% age 15+)) and previous period income indicator. In fact, it is a financial

cushion. Factor 2 includes three indicators of unforeseen situations: coming up with emergency funds: possible (% age 15+), coming up with emergency funds: not possible, income, poorest 40% (% age 15+), coming up with emergency funds: not possible, income, richest 60% (% age 15+). Regression models were constructed to evaluate the relationship of the identified factors with FLI and FWB (Fig. 4).

Fig. 4 Scatterplot of multiple variables against FWB and FLI



Source: Authors' calculations, based on OECD (2020), USAID (2021), Demirgüç-Kunt et al. (2018)

By the relationship between FWB and Factor 1 examination, it was established that 63.4% of the financial well-being level variation can be explained by the Factor1 variation ($p < 0.05$). However, there is a complete absence of a significant relationship with Factor 2 ($p > 0.05$), which is most likely explained by the fact that individuals do not separately create savings in unforeseen situations.

Investigating the relationship between FLI and Factor 1, it was established that 62.7% of the variation in the level of FLI is explained by the variation in Factor 1 ($p < 0.05$) and, just like above, there is no significant relationship with factor 2 ($p > 0.05$). Thus, having savings can be a factor in a higher level of financial literacy, and vice versa. It should be emphasized that Factor 1 plays a significant role in both cases.

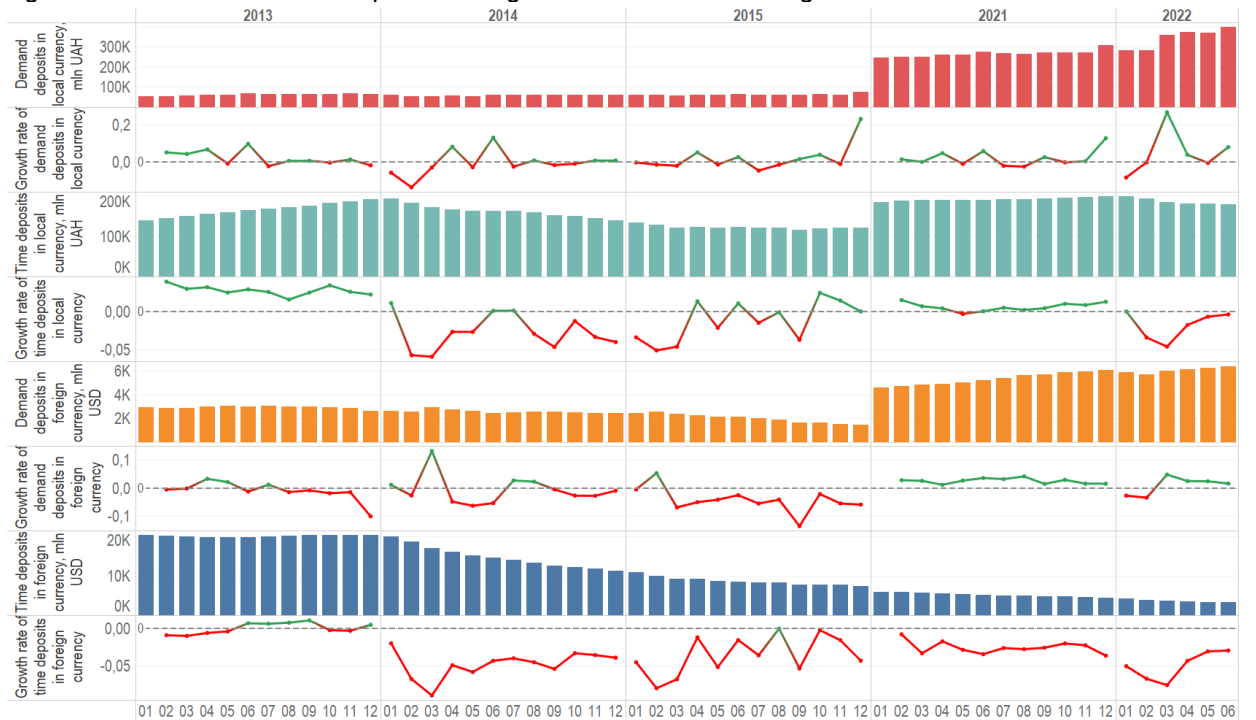
6. WHAT IS THE HOUSEHOLDS' WARTIME FINANCIAL BEHAVIOR?

Ukrainians survived two stages of the war, the first of which was a kind of a hybrid war; the behavior of depositors in 2022 differs significantly from the reaction in 2013-2014.

During the protests at the end of 2013 and at the beginning of the war in 2014, there was a sharp outflow of funds from the banking system. Term and on-demand deposits, regardless of currency, were rapidly declining, and the situation stabilized only closer to the summer of 2014 when the deposits outflow rate decreased. This households' reaction was caused by the fact that Ukraine faced open hostilities for the first time in its modern history. The banking system was also weak, and as a result, the war, among other things, became a catalyst for cleaning up the banking market: in 2014, 33 banks were declared insolvent, and in 2015, another 35 banks. Under such conditions, the households focused on the experience of the events of 1990-1991 (the USSR collapse), when most of the households lost their savings deposits, which can explain the rapid decline in deposits and the outflow of funds from accounts.

During the second stage of the war in February 2022, the volume of on-demand deposits continued to grow, contrary to the first stage of the war decreasing tendency. A slight outflow in deposits could be observed during the first month of the war due to information pressure. However, starting from March 2022, the outflow of funds was offset by a new increase that resulted in updating the historical maximum for the Ukrainian banking system (Fig. 5).

Fig. 5 Trends in households' deposits during the first and second stages of the war in Ukraine

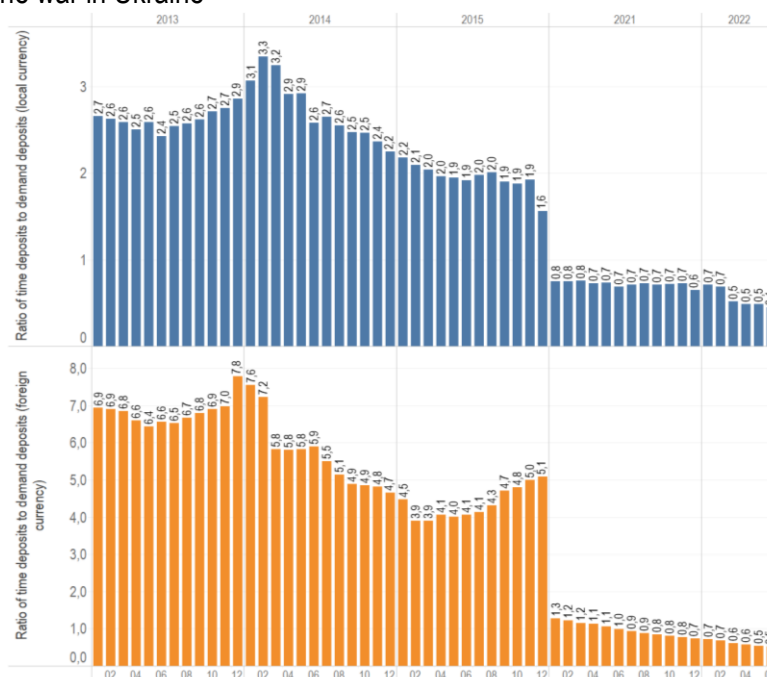


Source: Authors' calculations, based on NBU (2022)

At the same time, it is quite logical that with the start of a full-scale invasion of the Russian military forces into the Ukrainian territory, fixed-term deposits are declining every month. But it should be noted that the rate of their reduction decreases monthly, which indicates a panic decrease among households.

To better understand the situation, we propose considering the ratio of term deposits to on-demand deposits. The dramatic change in the trend of the predominance of term deposits over on-demand deposits can be observed over the research period. The gap increase between on-demand and term deposits can be explained by declining term deposits while on-demand deposits continued to grow during the second stage of the war (since February 2022). The determining factor in the predominance of on-demand deposits over term deposits was quick money access in the face of uncertainty and high inflationary and devaluation expectations (Fig. 7)

Fig. 7 Trend in the ratio of time deposits to demand deposits in local and foreign currencies during the first and second stages of the war in Ukraine



Source: Authors' calculations, based on NBU, 2022

The persistence of on-demand deposits can also be explained by the fact that keeping cash in the house is not the safest way for Ukrainians due to the possibility of a missile attack, the likelihood of looting and the need for easy transportation of large sums.

A significant confidence factor in deposits was the innovation that during wartime and three months after its cancellation, the Deposit Guarantee Fund of Ukraine (DGF) guarantees the entire deposit amount to the depositor in case of a bank failure (before the war, the DGF in Ukraine guaranteed only UAH 200,000). This is the first-time implementation experience for Ukraine; it was encountered during the 2008 crisis in Ireland, Denmark, Iceland, and Germany.

Ukrainian banking system task in wartime conditions remains the necessity to use incentives for gradual money transfer from current accounts to term deposits. At the same time, under war issues, the attractiveness of term deposits is not so strongly determined by the size of the interest rate.

It can be considered that such profound differences in the behavior of depositors at different stages of the war in Ukraine (the first stage - 2014-2015, the second stage - starting from February 2022) can be explained by several factors. Firstly, in 2022, the NBU reacted very quickly to the events and tried to support the stable operation of the payment infrastructure and the liquidity of banks as much as possible, which saved the financial system from panic and increased confidence in the banking system, it was not done in 2013-2014. Secondly, the widespread online banking and cashless settlements and payments among the Ukrainians, as well as a high level of financial literacy, saved the Ukrainian banking system from bank run and, as a result, banks from liquidity problems.

CONCLUSION

This article is aimed to examine the link between financial literacy and financial well-being on the case of Eastern, Central, and Northern Europe. Particular attention was paid to the relationship between subjective and objective financial well-being and the households' savings as a financial cushion for it. The study was conducted using data from OECD/INFE, the Global Findex Database of the World Bank. The sample of countries is due to data availability in two periods. It was found that the country's economic development determines the level of financial literacy. Thus, the level of financial literacy in the countries of Central and Northern Europe is higher than in the countries of Eastern Europe. However, as the experience of Ukraine has shown, the level of financial literacy in Eastern Europe is rapidly increasing.

The study shows that the weight of knowledge, behavior, and attitude in the financial literacy index is almost the same. However, at the same time, in the countries of Central and Northern Europe, knowledge and attitude rather than behavior have a higher weight, although the study shows that behavior determines the level of the financial well-being of individuals.

A further study of subjective and objective financial well-being showed that 63.4% of subjective financial well-being depends on the availability of savings and sound budgeting. It was also shown that the level of financial literacy by 62.7% is explained by the same factors. Thus, once again, we observe a close relationship between the level of financial literacy and financial well-being.

The level of financial literacy remains significant in determining the households' behavior as investors and during force majeure. The analysis of the Ukrainian case provided evidence during the two stages of the war. During the first stage of the war in 2014, with poor financial literacy, the households succumbed to information pressure and panic, leading to an extended outflow of deposits. During the second stage of the war in 2022, despite its more extensive scale, the bank run was short-lived and changed to a rapid growth in deposits, the volumes of which reached historical highs in Ukraine. At the same time, taking into account the importance of the operational availability of funds under a high level of uncertainty, the dynamics of a significant decrease in the ratio of term deposits to demand deposits can be traced.

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