The Heterogeneity of the Eurozone Populations in Deposits' Possession and Its Implications for Credit Institutions' Funding Stability

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Abstract — **The European Union single liquidity standards - *Liquidity Coverage Ratio* and *Net Stable Funding Ratio* – point out household deposits as preferred, stable funding for credit institutions, under normal and stress conditions. The introduction of standards affects not only funding stability of entities, but also their future development opportunities. In countries with populations of low propensity to hold deposits this impact is expected to be negative.**

The implementation of common standards in a group of diverse countries of the Eurozone seems to be a task of compromised effectiveness. During the last financial and economic crises individual populations were unequally capable to place deposits with credit institutions, leading to significant differences in their average levels per capita in the member states.

The aim of this paper is to identify the determinants of the Eurozone's geographic disparities in the populations' ability to provide deposits to domestic credit institutions, in selected years: 2006, 2008 and 2012. The indicated periods refer to significantly different macroeconomic background.

The results of empirical analysis demonstrate the priority impact of precise variables, referred to the financial market and national economies on the formation of the levels of household deposits per capita in the Euro area. The variables representing household features appear as less important for the considered problem.

***Keywords* — household deposits; banks; credit institutions; monetary financial institutions; liquidity standards; funding stability; LCR; NSFR**

I. Introduction

Before 2007, European banks were characterized by clear tendency to finance their increasing assets with short-term funds from wholesale markets. Such activity weakened their ability to deal with liquidity crisis and intensified systemic risk. Its result was the banking crisis, which led to the involvement of central banks to stabilize money markets, as well as governments - to rescue individual credit institutions and to strengthen national deposit guarantee schemes. The final outcome was the belief that an access to stable funding is a guarantor of entities' safety during the turmoil.

The new liquidity standards of the package CRDIV/CRR [1], [2] - *Liquidity Coverage Ratio* (LCR) and *Net Stable Funding Ratio* (NSFR) - pay special attention to household deposits, emphasizing their stable nature, under both: normal and stress conditions. This is reflected in announced low "outflow rates" of LCR and proposed high "stability weights" of NSFR. The standards brought equal significance of household deposits across the Eurozone in reporting on credit institutions' funding stability. Until now, the deposits' shares in balance sheet totals of domestic sectors have remained differentiated [3]. It means that in some countries, the fulfillment of supervisory requirements, as well as the future development of credit institutions will require intense deposit inflow – from local sources or from abroad. This may lead to the increased competition (including cross-border) for household deposits. The comparison of the member states in terms of the availability of this stable funding can be based on average levels of household deposits per capita, which reflect individuals' willingness and/or ability to possess deposits.

The aim of this paper is to identify the stimuli of the geographical differentiation of average levels of household deposits per capita placed in monetary financial institutions (MFIs) in 17 Euro area member states. The research period covers the time: prior to the financial and economic crises (2006); banking crisis (2008); sovereign debt crisis, economic breakdown and common works on new supervisory arrangements (2012). The year 2008 refers to the assumptions of LCR – unexpected liquidity shortage during the banking crisis, while the others may be related to NSFR. It is important to examine whether the constant set of factors (informing about the financial market, national economies, and socio-economic characteristics of households) was responsible for the spatial differentiation of the levels of household deposits per capita in all pointed years or whether the specified factors emerged as decisive in individual periods. Proving the correctness of any of above variants allows to assess the significance of the changing environment for the availability of analyzed funds.

The selection of the Eurozone countries (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain) is due to the availability of the data in the European Central Bank's and the Eurostat's databases [4], [5].

The paper is organized as follows: (II) related literature; (III) regulatory approach to the problem of household deposits' stability; (IV) description of research methods and variables

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applied in the study; (V) the results of empirical analysis on the determinants of the levels of household deposits per capita in the Eurozone; conclusions (VI).

II. Related literature

The ongoing debate on post-crisis amendments to banking regulations has its place in the literature, but it is primarily dedicated to capital adequacy and its macroeconomic impact. The liquidity regulations has remained in the background of this discussion, resulting with papers focused mainly on: the impact of liquidity risk on financial market [6], [7]; the necessity of the introduction of supervisory liquidity standards [8], [9]; the significance of different bank funding sources [10], [11].

The problem of the heterogeneity of credit institutions' access to household deposits in the Eurozone and its determinants in the context of the single regulatory solutions is new and has not been described in the literature. The main reason is a lack of common liquidity standards in the Euro area in the period preceding the financial crisis (the Netherlands was the only member state with its own national equivalent [12]). This problem should be regarded as particularly important due to the entities' obligation to fulfill the liquidity standards within next few years, as well as the impact of the standards on their future development opportunities in individual countries.

III. Regulatory approach to the stability of household deposits

The package CRD IV / CRR have set the framework for the single supervisory regulations in terms of funding stability of credit institutions. The process of developing detailed technical solutions has not been completed yet. Those already adopted relate to the *Liquidity Coverage Ratio* and define adequate liquidity of entities during 30-day period, assuming a scenario of idiosyncratic and market-wide stress. They emphasize the stability of household deposits by assigning them lower outflow rates than other liabilities of credit institutions. For the second liquidity standard - *Net Stable Funding Ratio*, the detailed guidance has not been announced yet. It imposes on credit institutions the obligation of having adequate and stable funding structure in long term. Its important elements are retail deposits with proposed high "stability weights", which quality depends (as in LCR) on conditions of their placement and relationship between credit institution and depositor.

According to the decision of the European Commission (EC) on the LCR [13], the "outflow rate" for stable household deposits in the EU is established at the level of 5%, with the possibility of its reduction to 3% from 1st January 2019. However, it refers to the funds covered by deposit guarantee schemes that meet additionally one of the following criteria:

- They constitute a part of established relationship with clients making withdrawals highly unlikely i.e.: depositor has a contractual relationship with the credit institution of at least 12 months duration; depositor has a borrowing relationship with the credit institution for residential loans or other long term loans; depositor has at least one active product, other than loan, with the credit institution;
- They are held on transactional accounts.

The future application of the underestimated "outflow rate", is made dependent on the decision of the European Commission and the quality of the national deposit guarantee scheme. The latter must be characterized by: the features described in Article 10 of Directive 2014/49/EU [14]; ready access to additional funding (from public and private sources) in the event of a large call on its reserves; seven working day repayment period as referred to in Article 8 (1) of Directive 2014/49/EU. The remaining stable household deposits, including those covered by the guarantee schemes, but not satisfying the additional criteria, are attributed with the outflow rate of 10%.

The scales of outflows for sensitive household deposits are defined in rates ranging from 10% to 20%. Despite their higher levels, they stand out against the outflow assigned to other liabilities of credit institutions. According to the EC, the conditions significantly limiting the stability of household deposits are as follows: 1. the sum of all client's deposits in credit institution exceeds EUR 500 000; 2. the deposit is an internet only account; 3. the deposit offers an interest rate that fulfils any of the following conditions: the rate significantly exceeds the average rate for similar retail products, or its return is derived from the return on a market index or set of indices or its return is derived from any market variable other than a floating interest rate; 4. the deposit was originally placed as fixed-term with an expiry date maturing the 30 calendar day period or the deposit presents a fixed notice period shorter than 30 calendar days, in accordance with contractual arrangements; 5. depositor is not a resident of the European Union; currency - other than EUR or domestic currencies of the member states. In case of the characteristic indicated in point 1 or two features from points 2-5, the outflow rate for deposit is assumed to range from 10% to 15%. However, if the deposit corresponds to point 1 and additionally at least one of the features from points 2-5, or it has at least three features from points 1-5, the stated outflow rate vary from 15% to 20%. The same range is adopted for deposits of non-recognized features. The highest outflow rate of 100% is established only for cancellable deposits with a residual maturity of less than 30 calendar days and where payouts have been agreed to another credit institution.

Comparing the above rates with the rates characterizing other debt sources of credit institutions, it can be concluded that the new regulatory environment highlights household deposits as the decisive funding for the future safety and development of these entities.

IV. Data and methodology

The analysis of the determinants of heterogeneity of average levels of household deposits per capita in the Euro area is related to the entire set of 17 countries, and it is focused on selected years: 2006, 2008 and 2012.

The proposed variables for each member state are divided into 4 groups referred to: household deposits, households' characteristics, national economies, and financial market in 17 member states. Their annual values come from the ECB's and the Eurostat's databases. Some of the values are calculated *per person*, to eliminate the impact of significant differences in the sizes of populations.

The first set of variables expresses average annual levels of different categories of household deposits per person, placed with MFIs, such as: total deposits per capita, deposits redeemable up to 3 months per capita, deposits redeemable over 3 months per capita, deposits with agreed maturity up to 2 years per capita, deposits with agreed maturity over 2 years per capita, overnight deposits (ON) per capita. The average annual values are calculated on the basis of monthly data available in the ECB's database. The division of total deposits into above subtypes corresponds with the European Banking Authority's (EBA's) [15] statement, that the lowest volatility during the banking crisis happened to overnight deposits, slightly larger – to saving deposits (redeemable at notice), and the most significant – to those with agreed maturity. The selection of data for MFI sectors is due to a lack of core data for credit institutions. However, the dominant part of household deposits is placed with credit institutions.

Annual information on households is provided by the following variables: average size of a household, total household consumption expenditure per capita, household consumption expenditure on durable goods per capita, household consumption expenditure on semi-durable goods per capita, household consumption expenditure on non-durable goods per capita, household consumption expenditure on services per capita, household debts from loans per capita, households at risk of poverty or social exclusion (% of population), average net income, saving rate. Some of them take the form of dummy variables i.e.: intention of buying a car over the next 12 months, intention of buying or building a house within the next 12 months, intention of renovating a house/flat during the next 12 months. The data come from the Eurostat's database.

The national economies are characterized by the variables, such as: GDP per capita, general government debt/GDP, net saving per capita, unemployment rate, employment rate, rate of inflation (HICP), population of the country. All above are annual data from the Eurostat's database.

Financial market is described by means of: MFIs' assets per capita (average annual values calculated on the basis of the ECB's monthly data), MFIs' average interest rate for ON deposits, share price indices and long term government bond yields (annual data from the Eurostat's database).

The linkages between variables are analyzed on the basis of Pearson's correlation coefficients. Using regression models [16], [17], I make an attempt to identify the variables, statistically significantly affecting the average levels of household deposits per capita in the Eurozone, in the years: 2006, 2008 and 2012. The research relates to the entire set of countries (the country is a statistical unit). Testing linear and exponential models, the best results, in statistical sense, are obtained for linear models in two following variants:

- variant A – simple regression model for particular type of household deposits per capita:

$$y_i = \beta_0+\beta_1 x_i+\varepsilon_i \tag{1}$$

where:

y_i –value of analyzed type of household deposits per capita in i-th member state; x_i - value of selected explanatory variable in i-th country; ε_i – residual;

- variant B – multiple regression model for specific type of deposit (stepwise regression determines the input of explanatory variables):

$$y_i = \beta_0+\beta_1 x_{i1}+ \beta_2 x_{i2}+\ldots+ \beta_k x_{ik}+\varepsilon_i \tag{2}$$

where:

x_{ij} - value of j-th explanatory variable in i-th country (i=1,2,…,17).

V. RESULTS OF EMPIRICAL ANALYSIS

The correlation coefficients confirm strong linkages between selected types of deposits per capita: total; with agreed maturity up to 2 years; ON. They result from the fact, that the total levels of household deposits in the Euro area were formed mainly by those latter forms. The relationship between ON deposits per capita and total deposits per capita in all years remains positive and close to one. It should be noted that for the last year, the correlation coefficient of deposits with agreed maturity up to 2 years per capita and total deposits per capita is significantly lower (0.63) than for previous years.

The above categories of deposits also appear as statistically correlated (Table 1) with some variables from the groups 2-4 which are proposed as explanatory variables to the regression models. They refer to the economic situation of the country (GDP per capita, net saving per capita), the living conditions (average net income, saving rate, average household size) and the financial market (MFIs' average interest rates for ON deposits, share price indices and MFIs' assets per capita).

TABLE I. PEARSON'S CORRELATION COEFFICIENTS FOR HOUSEHOLD DEPOSITS PER CAPITA (BY TYPE) AND SELECTED VARIABLES, IN THE YEARS 2006, 2008 AND 2012

		Household deposits per capita					
		TD pc	**DR1 pc**	**DR2 pc**	**DAM1 pc**	**DAM2 pc**	**ON pc**
TD pc	2006	1.00	-	-	0.95	-	0.94
	2008	1.00	-	-	0.97	-	0.96
	2012	1.00	-	-	0.63	-	0.92
DR1pc	2006	-	1.00	-	-	-	-
	2008	-	1.00	-	-	-	-
	2012	-	1.00	-	-	-	-
DR2pc	2006	-	-	1.00	-	-	-
	2008	-	-	1.00	-	-	-
	2012	-	-	1.00	-	-	-
DAM1 pc	2006	0.95	-	-	1.00	-	0.92
	2008	0.97	-	-	1.00	-	0.94
	2012	0.63	-	-	1.00	-	-
DAM2 pc	2006	-	-	-	-	1.000	-
	2008	-	-	-	-	1.000	-
	2012	-	-	-	-	1.000	-
ON pc	2006	0.94	-	-	0.92	-	1.00
	2008	0.96	-	-	0.94	-	1.00
	2012	0.92	-	-	-	-	1.00
GDP pc	2006	0.93	-	-	0.82	-	0.92
	2008	0.94	-	-	0.85	-	0.93
	2012	0.93	-	-	-	-	0.93
ANI	2006	0.79	-	-	0.63	-	0.73
	2008	0.75	-	-	0.61	-	0.71
	2012	0.80	-	-	-	-	0.69

MFI ON%	2006	0.69	-	0.54	0.68	-	0.57
	2008	0.63	-	-	0.61	-	0.60
	2012	-		0.62	0.74	-	-
SPI	2006	0.56	-	-	0.56	-	0.55
	2008	-	-	-	-	-	-
	2012	-	-	-	0.61	-	-
MFI A pc	2006	0.96	-	-	0.93	-	0.98
	2008	0.96	-	-	0.93	-	0.98
	2012	0.93	-	-	-	-	0.98
SR	2006	-	-	-	-	-	-
	2008	-	-	-	-	-	-
	2012	0.53	-	-	-	-	-
NS pc	2006	0.88	-	-	0.74	-	0.87
	2008	0.89	-	-	0.78	-	0.88
	2012		-	-		-	0.86
AHS	2006	-	-	-	-	-	-
	2008	-	0.50	-	-	-	-
	2012	-	0.50	-	-	-	-

TD pc – total deposit per capita; DR1 pc - deposits redeemable up to 3M per capita; DR2 pc - deposits redeemable over 3M per capita; DAM1 pc - deposits with agreed maturity up to 2 Y per capita; DAM2 pc - deposits with agreed maturity over 2 Y per capita; ON pc - ON deposits per capita; GDP pc - GDP per capita; ANI - average net income; MFI ON% - MFIs' average interest rates for ON deposits; SPI - share price indices; MFI A pc - MFIs' assets per capita; SR - saving rate; NS pc - net saving per capita; AHS - average size of household.

(-) statistically insignificant values.

Source: Own calculations based on ECB's and Eurostat's data.

The econometric models (1) and (2) allow to explain the geographical differentiation of the average levels of household deposits per capita across the Eurozone, in the years: 2006, 2008 and 2012 (Table 2). The results from the single regression model are presented in order of the values of coefficient of determination (R^2). In all cases, the significant impact of the explanatory variable on the analyzed category of household deposits per capita is confirmed (p-level). In the second model (2), a part of explanatory variables remains correlated with each other, causing their reduction. The explanatory variables are presented in the order of the strength of their impact on the dependent variable.

A. Total deposits per capita

The results from regression model (1) show that the average levels of total deposits per capita in the Eurozone in all years used to remain under significant influence of the following variables: MFIs' assets per capita; GDP per capita; net saving per capita; ON deposits per capita; deposits with agreed maturity up to 2 years per capita; average net income. Individual regression equations explain from 40% to 93% of the total geographical diversification of the dependent variable. The impacts of ON deposits per capita and deposits with agreed maturity up to 2 years per capita are due to their high share in the total deposits per capita within all three years. The influence of this second category is highlighted, in particular, in equations for the years: 2006 and 2008. For 2012, this impact becomes reduced due to the dynamic growth of total deposits, caused by the interest of the Eurozone residents in shorter-term deposits. The results confirm the importance of the condition of the financial market (measured by MFIs' assets per capita and MFIs' average interest rate for ON deposits - 2006), and the economic condition of the countries (defined as GDP per capita, net saving per capita) for the formation of the dependent variable. In addition, household characteristics, e.g. average net income, significantly affected the geographical diversification of total deposits per capita in the Eurozone.

Multiple regression equations prove different mechanisms of the formation of total deposits per capita across the Eurozone in analyzed periods. The results for 2006 display, that the dependent variable has remained under the influence (in order of its strength) of: deposits with agreed maturity up to 2 years per capita, the MFIs' assets per capita and average net income per capita. The equation explains 97.5% of the divergence of the analyzed variable in a group of surveyed countries. It should be noted that the intercept is statistically insignificant. In the equation for 2008, there are two statistically significant explanatory variables: deposits with agreed maturity up to 2 years per capita and GDP per capita. It explains 98% of the geographical differentiation in total household deposits per capita. The parameter BETA (for standardized variables) indicates the dominant role of the deposits. The regression equation for 2012 recognizes the importance of the same variables as the previous one, but with reverse influence (GDP per capita is decisive). The equation interprets 95.7% of the diversity of total deposits per capita in the Eurozone. Statistical criteria (high significance of the estimated structural parameters and the parameters of stochastic structures) indicate that it thoroughly explains the formation of the dependent variable across the Eurozone.

Concluding, the models (1) and (2) allow to identify a group of variables, positively affecting the average levels of total deposits per capita in the Eurozone in analyzed years. Higher values of the regressand characterized those member states that distinguished in the studied periods with relatively higher levels of economic and financial development, but also living standards. This denies a popular theorem that in developed countries, households are focused on more sophisticated forms of savings and they marginalize their deposits in banks. Strong interactions of deposits with agreed maturity up to 2 years per capita and ON deposits per capita result from their dominant position in the structure of total deposits per capita. The variant A of the regression model shows that before the financial crisis, the dependent variable was influenced by MFIs' average interest rate for ON deposits. The appearance and intensification of financial and economic destabilization contributed to the loss of importance of returns on investments and drew households' attention to other deposits' feature –safety.

B. ON deposits per capita

It is worth remembering that the EBA defines this category as the most stable under stress. The regression model in variant A (1) points out that during the years: 2006, 2008 and 2012, the levels of overnight deposits per capita across the Eurozone remained under influence of: MFIs' assets per capita; total deposits per capita; GDP per capita; net saving per capita; average net income. The regression equations explain from 36% to 97% of the diversity of the dependent variable. In the years 2006 and 2008, the regressand was also under the influence of the levels of deposits with agreed maturity up to 2 years per capita. However, the changes in economic condition of the countries and investment preferences of the populations in 2012 caused a lack of correlation between these variables. Moreover, during the banking crisis in 2008, the ON deposits per capita remained under the influence of MFIs' average interest rates, but the intercept of the regression equation turned out to be statistically insignificant. This is the only year from the three analyzed, in which households considered the profitability as a decisive factor in placing the deposits with MFIs despite their short-term nature. The highest levels were observed in the countries of relatively high interest rates. In the equations for the years: 2006 and 2008, in which the explanatory variables are: total deposits, deposits with agreed maturity up to 2 years and average net income, intercepts remain statistically insignificant, thus the informational value of the equations is limited. In the equation for 2012, the impact of deposits with agreed maturity up to 2 years on the formation of ON deposits per capita is not proved. In other equations for the last year all parameters are found to be statistically significant. All identified explanatory variables positively influenced the levels of ON deposits per capita in the Eurozone, in all years. This means that, among others, the maturity of the MFI sectors (measured by the values of their assets) fostered the growth of these short-term deposits. The economic situation of the countries also constituted the factor positively affecting the willingness of individuals to keep a part of their incomes in the form of liquid deposits.

The variant B of linear model (2) allows to explain more than 97% of geographic diversity of the levels of ON deposits per capita during the banking crisis (Table 2). Dominant influence is found in MFIs' assets per capita, with additional impact of MFIs' average interest rates for ON deposits. The trials to construct a multiple regression model of ON deposits per capita for the years: 2006 and 2012 prove a failure.

C. Deposits with agreed maturity up to 2 years per capita

In 2006 and 2008, the average levels of deposits with agreed maturity up to 2 years per capita in the Eurozone remained under the influence of: total deposits per capita; GDP per capita; MFIs' assets per capita; ON deposits per capita; net saving per capita. The regression equations explain from 54% to 93% of the differentiation of deposit values per capita across the Eurozone (Table 2). They point out a significant impact of domestic economic and financial conditions on the dependent variable, as well as selected categories of deposits.

The results for 2012 confirm the importance of the MFIs' ON interest rates and the situation on the major stock exchanges. These equations explain respectively 55% and 44% of the analyzed geographical differentiation of deposits' levels per capita. It should be noted that the value of the dependent variable was under a negative influence of the prevailing situation on the capital market in 2012. Visible signs of recovery in a part of the countries favored redirecting there the sums previously located on bank accounts.

The construction of regression model in variant B turns out to be unsuccessful in statistical sense.

D. Other categories of household deposits per capita

The regression equations in variant A of other, less important categories of household deposits in the Eurozone reveal only a weak influence of some explanatory variables. Noteworthy are the models describing the formation of deposits redeemable up to 3 months per capita and deposits redeemable over 3 months per capita. These two categories are assessed by the EBA as moderately stable under stress. In 2006 and 2012, the latter was affected by MFIs' ON interest rates, but the coefficients of determination are only 29% and 38%. In 2008 and 2012, the deposits redeemable up to 3 months per capita were under the influence of an average size of a household. In both cases the impact of the explanatory variable proves to be negative and relatively poor (R^2 = 25%).

TABLE 2. REGRESSION RESULTS (VARIANT A AND B) FOR SELECTED TYPES OF HOUSEHOLD DEPOSITS PER CAPITA IN THE EUROZONE (2006, 2008, 2012)

	B	Std. error	t-Statistic	p-value
TD pc - 2006 (variant A)				
Constant	11116.31	1472.29	7.550	0.0000
MFI A pc	0.03	0.00	12.680	0.0000
R-squared 0.92; S.E. of regression 5462.3				
Constant	3832.99	2072.19	1.850	0.0855
ON pc	2.07	0.19	10.726	0.0000
R-squared 0.89; S.E. of regression 6357.4				
Constant	7350.61	1828.25	4.021	0.0013
DAM1pc	1.71	0.16	11.046	0.0000
R-squared 0.89; S.E. of regression 6192.3				
Constant	-24366.70	4749.04	-5.131	0.0002
GDP pc	371.90	38.67	9.617	0.0000
R-squared 0.87; S.E. of regression 6998.1				
Constant	-11437.60	4906.49	-2.331	0.0352
NS pc	4.20	0.62	6.829	0.0000
R-squared 0.77; S.E. of regression 9273.7				
Constant	-17264.20	7911.38	-2.182	0.0466
ANI	2.20	0.45	4.819	0.0003
R-squared 0.62; S.E. of regression 11837.0				
Constant	-2589.93	6843.56	-0.378	0.7108
MFI ON %	21269.00	6038.86	3.522	0.0034
R-squared 0.47; S.E. of regression 14054.0				
TD pc – 2008 (variant A)				
Constant	5845.29	1695.02	3.449	0.0036
DAM1 pc	1.59	0.11	14.668	0.0000
R-squared 0.93; S.E. of regression 5734.0				
Constant	3485.49	2004.52	1.739	0.1025
ON pc	2.46	1.19	13.045	0.0000
R-squared 0.92; S.E. of regression 6392.6				
Constant	11968.07	1693.56	7.067	0.0000
MFI A pc	0.03	0.00	12.849	0.0000
R-squared 0.92; S.E. of regression 6482.0				
Constant	-32241.40	5273.72	-6.114	0.0000
GDP pc	467.70	44.10	10.605	0.0000
R-squared 0.88; S.E. of regression 7704.5				
Constant	-15895.40	5456.04	-2.913	0.0107
NS pc	5.10	0.69	7.429	0.0000
R-squared 0.77; S.E. of regression 10383.0				
Constant	-17258.90	9292.21	-1.857	0.0830
ANI	2.10	0.49	4.360	0.0006
R-squared 0.56; S.E. of regression 14916.0				
TD pc – 2012 (variant A)				
Constant	-20262.40	4656.83	-4.351	0.0006
GDP pc	377.60	39.17	9.640	0.0000
R-squared 0.86; S.E. of regression 7302.7				
Constant	13441.02	1964.03	6.844	0.0000
MFI A pc	0.04	0.00	9.549	0.0000
R-squared 0.86; S.E. of regression 7362.1				
Constant	10408.16	2195.03	4.742	0.0003
ON pc	1.19	0.13	9.166	0.0000
R-squared 0.85; S.E. of regression 7623.5				
Constant	-3606.76	4231.72	-0.852	0.4074
NS pc	3.57	0.51	6.999	0.0000
R-squared 0.77; S.E. of regression 9484.1				
Constant	-14812.10	7577.29	-1.955	0.0695
ANI	2.00	0.38	5.139	0.0001
R-squared 0.64; S.E. of regression 11788.0				
Constant	10456.15	5022.15	2.082	0.0549
DAM1 pc	1.69	0.54	3.160	0.0065
R-squared 0.40; S.E. of regression 15177.0				
ON pc - 2006 (variant A)				
Constant	3646.05	518.31	7.034	0.0000
MFI A pc	0.02	0.00	16.691	0.0000
R-squared 0.95; S.E. of regression 1923.0				
Constant	-902.01	1024.90	-0.880	0.3937

TD pc	0.43	0.04	10.726	0.0000
R-squared 0.89; S.E. of regression 2895.6				
Constant	-12221.50	2331.86	-5.241	0.0001
GDP pc	167.30	18.99	8.811	0.0000
R-squared 0.85; S.E. of regression 3436.2				
Constant	2122.06	1012.22	2.096	0.0547
DAM1 pc	0.76	0.09	8.835	0.0000
R-squared 0.85; S.E. of regression 3428.4				
Constant	-6404.35	2324.88	-2.755	0.0155
NS pc	1.90	0.29	6.483	0.0000
R-squared 0.75; S.E. of regression 4394.2				
Constant	-8054.56	4000.32	-2.013	0.0637
ANI	0.91	0.23	4.025	0.0013
R-squared 0.54; S.E. of regression 5985.1				
ON pc - 2008 (variant A)				
Constant	3519.96	497.66	7.073	0.0000
MIF A pc	0.01	0.00	17.353	0.0000
R-squared 0.95; S.E. of regression 1904.8				
Constant	-755.61	832.93	-0.907	0.3787
TD pc	0.37	0.03	13.045	0.0000
R-squared 0.92; S.E. of regression 2488.8				
Constant	1380.42	917.81	1.504	0.1533
DAM1 pc	0.60	0.06	10.197	0.0000
R-squared 0.87; S.E. of regression 3104.8				
Constant	-7110.72	2209.39	-3.218	0.0057
NS pc	1.97	0.28	7.062	0.0000
R-squared 0.77; S.E. of regression 4204.7				
Constant	-13402.20	2218.78	-6.040	0.0000
GDP pc	180.00	18.55	9.704	0.0000
R-squared 0.86; S.E. of regression 3241.5				
Constant	-6962.96	3865.27	-1.801	0.0918
ANI	0.78	0.20	3.846	0.0016
R-squared 0.50; S.E. of regression 6204.6				
Constant	-1340.78	3265.83	-0.411	0.6872
MFI ON %	8251.59	2851.20	2.894	0.0111
R-squared 0.36; S.E. of regression 7004.8				
ON pc - 2012 (variant A)				
Constant	2695.45	725.62	3.715	0.0021
MFI A pc	0.03	0.00	21.251	0.0000
R-squared 0.97; S.E. of regression 2720.0				
Constant	-23072.00	3585.10	-6.436	0.0000
GDP pc	292.80	30.16	9.709	0.0000
R-squared 0.86; S.E. of regression 5622.1				
Constant	-6045.58	2188.27	-2.763	0.0145
TD pc	0.71	0.08	9.166	0.0000
R-squared 0.85; S.E. of regression 5905.5				
Constant	-9845.43	3435.54	-2.866	0.0118
NS pc	2.72	0.41	6.577	0.0000
R-squared 0.74; S.E. of regression 7699.7				
Constant	-15053.40	7050.03	-2.135	0.0496
ANI	1.30	0.36	3.702	0.0021
R-squared 0.48; S.E. of regression 10968.0				
DAM1 pc – 2006 (variant A)				
Constant	-3205.74	1212.55	-2.644	0.0193
TD pc	0.52	0.05	11.046	0.0000
R-squared 0.90; S.E. of regression 3425.8				
Constant	2552.05	1092.95	2.335	0.0350
MFI A pc	0.02	0.00	9.115	0.0000
R-squared 0.86; S.E. of regression 4054.9				
Constant	-1419.03	1357.35	-1.045	0.3135
ON pc	1.12	0.13	8.835	0.0000
R-squared 0.85; S.E. of regression 4164.3				
Constant	-14317.30	4178.85	-3.426	0.0041
GDP pc	180.30	34.02	5.301	0.0001
R-squared 0.67; S.E. of regression 6157.8				
Constant	-7421.57	3829.28	-1.938	0.0730
NS pc	1.96	0.48	4.059	0.0012
R-squared 0.54; S.E. of regression 7237.7				
DAM1 pc – 2008 (variant A)				
Constant	-2863.37	1170.72	-2.446	0.0273
TD pc	0.59	0.04	14.668	0.0000
R-squared 0.93; S.E. of regression 3498.2				
Constant	-891.47	1525.57	-0.584	0.5677
ON pc	1.47	0.14	10.197	0.0000
R-squared 0.87; S.E. of regression 4865.2				
Constant	4177.83	1322.39	3.159	0.0065
MFI A pc	0.02	0.00	9.744	0.0000
R-squared 0.86; S.E. of regression 5061.4				
Constant	-19975.10	4909.23	-4.069	0.0010
GDP pc	258.80	41.05	6.305	0.0000
R-squared 0.73; S.E. of regression 7172.1				
Constant	-10213.00	4546.46	-2.246	0.0402
NS pc	0.58	0.58	4.756	0.0003
R-squared 0.60; S.E. of regression 8652.4				
DAM1 pc – 2012 (variant A)				
Constant	-1340.37	2161.01	-0.620	0.5443
MFI ON %	20848.20	4875.02	4.277	0.0007
R-squared 0.55; S.E. of regression 49071				
Constant	7836.40	1396.69	5.611	0.0000
SPI	-24531.70	7178.82	-3.417	0.0038
R-squared 0.44; S.E. of regression 5481.5				
DR1 pc - 2008 (variant A)				
Constant	21588.61	8399.20	2.570	0.0213
AHS	-7347.04	3309.60	-2.220	0.0423
R-squared 0.25; S.E. of regression 3671.4				
DR1 pc – 2012 (variant A)				
Constant	31533.20	12352.54	2.553	0.0221
AHS	-11326.90	5008.89	-2.261	0.0390
R-squared 0.25; S.E. of regression 5259.0				
DR2 pc - 2006 (variant A)				
Constant	-151.62	149.30	-1.016	0.3271
MFI ON %	313.80	131.74	2.382	0.0320
R-squared 0.29; S.E. of regression 306.60				
DR2 pc – 2012 (variant A)				
Constant	-141.43	113.90	-1.242	0.2339
MFI ON %	777.44	256.94	3.026	0.0085
R-squared 0.38; S.E. of regression 258.63				

TD pc - 2006 (variant B)						
	Beta	**Std. error**	**B**	**Std. error**	**t-Statistic**	**p-value**
Constant			-914.35	2888.31	0.317	0.757011
MFI A pc	0.34	0.14	0.01	0.01	2.525	0.026688
DAM1 pc	0.47	0.12	0.86	0.22	3.887	0.002161
ANI	0.25	0.07	0.68	0.18	3.762	0.002711
R-squared 0.98; S.E. of regression =3319.1						
TD pc - 2008 (variant B)						
	Beta	**Std. Error**	**B**	**Std. error**	**t-Statistic**	**p- value**
Constant			-12344.40	2964.69	-4.165	0.0010
DAM1 pc	0.61	0.07	1.00	0.11	9.260	0.0000
GDP pc	0.42	0.07	209.90	32.66	6.427	0.0000
R-squared 0.98; S.E. of regression =2986.2						
TD pc – 2012 (variant B)						
	Beta	**Std. Error**	**B**	**Std. error**	**t-Statistic**	**p- value**
Constant			-20424.20	2675.15	-7.635	0.0000
GDP pc	0.80	0.06	327.20	24.23	13.504	0.0000
DAM1 pc	0.33	0.06	0.90	0.16	5.609	0.0001
R-squared 0.96; S.E. of regression =4194.8						
ON pc - 2008 (variant B)						
	Beta	**Std. Error**	**B**	**Std. error**	**t-Statistic**	**p- value**
Constant			1602.59	720.51	2.224	0.0409
MFI A pc	0.90	0.05	0.01	0.00	17.653	0.0000
MFI ON %	0.16	0.05	2224.47	700.76	3.174	0.0068
R-squared 0.97; S.E. of regression =1503.5						

TD pc – total deposit per capita; DR1 pc - deposits redeemable up to 3M per capita; DR2 pc - deposits redeemable over 3M per capita; DAM1 pc - deposits with agreed maturity up to 2 Y per capita; DAM2 pc - deposits with agreed maturity over 2 Y per capita; ON pc - ON deposits per capita; GDP pc - GDP per capita; ANI - average net income; MFI ON% - MFIs' average interest rates for ON deposits; SPI - share price indices; MFI A pc - MFIs' assets per capita; SR - saving rate; NS pc - net saving per capita; AHS - average size of household.

Source: Own calculations based on ECB's and Eurostat's data.

VI. CONCLUSIONS

The study identifies the variables responsible for the heterogeneity of average levels of household deposits per capita across the Eurozone in 2006, 2008 and 2012. The research periods refer to the assumptions in the single liquidity standards: LCR focuses on credit institutions' funding stability in time of stress like the one observed in 2008, while NSFR focuses on entities' liquidity in longer periods of time, so it relates to the remaining years.

The results of regression equations of total household deposits per capita in variant A show that their different average levels in the Eurozone countries in all years were influenced by the disparities in the average levels of some deposit subtypes per capita, including: ON deposits (assessed by the EBA as the most stable under stress) and deposits with agreed maturity up to 2 years (rated by the EBA as the least stable under stress). Their impact resulted from their dominant share in total deposits per capita.

The equations in variant A of the following deposits per capita: total, ON, and with agreed maturity up to 2 years for 2006, 2008, and 2012 provide similar set of explanatory variables. Thus, during the banking crisis there were no specific features influencing the average levels of household deposits per capita. Apart from some types of deposits, the regressands refer to the conditions of national economies (e.g. GDP per capita, net saving per capita), and the financial market (e.g. MFIs' assets per capita). According to the above, the identified explanatory variables can be perceived as constant stimuli of the diversified average levels of these deposits per capita in the Eurozone, regardless of the prevailing conditions. However the strength of their impact in each year was not homogenous, but always positive. The only exception from the above conclusion are deposits with agreed maturity up to 2 years per capita in 2012. The disparities in their average levels were caused by the differences in: MFIs' ON rates and stock price indices. It is worth noted that the geographical differentiation of the levels of total deposits per capita and ON deposits per capita in all years were also under the influence of one household feature – average net income.

According to the results from the model in variant B, the disparities in the average levels of total household deposits per capita in the Eurozone in all years were caused by the differences in the average levels of deposits with agreed maturity up to 2 years per capita. Additionally, the heterogeneity of total deposits per capita in selected years is explained by the differences in: MFIs' assets per capita and average net incomes (2006); GDP per capita (2008 and 2012). Regarding the average levels of ON deposits per capita in 2008, their differentiation is explained by the financial market features – MFIs' assets per capita and MFIs' average ON rates.

Concluding, the household characteristics appear in the models of both variants as explanatory variables of lesser significance. The positive impact of the economic condition of the countries, as well as the situation on the financial market on the average levels of household deposits per capita in the Eurozone abolishes popular theorem that deposits, which represent the simplest form of financial assets are characteristic mostly for households' portfolios in emerging countries with weak financial markets. This allows to assume, that the future recovery of the member states in both defined dimensions may lead to the increased availability of household deposits to credit institutions and to easier compliance with NSFR. In case of LCR, during the liquidity shortages in the Euro area, the most stable funding should characterize credit institutions in those developed countries which financial markets are the most resilient. Moreover, the results show that the heterogeneity of populations' propensity to place deposits with credit institutions may persist as long as the economic condition of the Eurozone is spatially diverse and the single financial market is under development. Leveling the conditions of countries is a difficult and lengthy task. On this background, the implementation of the single funding stability requirements may favor in the next years the credit institutions from selected Euro area member states.

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