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THE NATURE AND DETERMINANTS OF HIGH-VALUE HOUSEHOLD DEPOSITS IN THE EURO AREA*

Abstract

This paper analyses the occurrence and nature of high-value deposits in selected euro area countries and the determinants of a household's propensity to possess them. The analysis is conducted on household-level data and based on logistic regression. Due to the rarity of high-value deposits in euro area households, the sample of households surveyed is balanced in accordance with G. S. Maddala's approach. The results reveal considerable diversification in high-value deposits as a proportion of total deposits in euro area households. Some of the features of households and reference persons, such as attitudes to financial risk, saving aims, overall investment preferences, and the priority accorded to deposits compared to other financial assets, suggest that high-value deposits are of a long-term nature. The study finds that wealth, and certain socio-demographic characteristics, have a statistically significant influence on the likelihood of holding high-value deposits.

Keywords: high-value household deposits, deposit outflows, credit institution funding, liquidity standards.
JEL Classification: G21, D14, G01.

1. Introduction

Following the recent financial crisis, greater importance has been attached to stable funding for credit institutions. The new approach has been reflected in European Union regulations developed since 2013.

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The introduction of the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) provides a powerful indication of the importance of stable funding for credit institutions in both the short and long run. Funding must be sufficient to ensure that, even in periods of stress, these institutions perform safely. EU provisions (EU 2013a, 2013b) concentrate on retail deposits and on household deposits in particular. Not all deposits are, however, defined in the same way. The shocks experienced in 2008–09 revealed certain features of deposits that make them more vulnerable. One such feature is that deposits of at least EUR 500,000 are regarded as very high value deposits. Regardless of local resistance to shocks, local standards of living, or the financial investment preferences of local households, this threshold now applies throughout the EU. Does it make sense to apply uniform regulation to a group of heterogeneous countries?

Based on household-level data from the Eurosystem Household Finance and Consumption Survey (HFCS), the aim of this paper is to investigate high-value household deposits and their determinants in 15 euro area countries. Respondents' propensity to possess deposits of this kind are analysed using a logistic regression model with reference to Maddala's approach to balancing the sample in the case of rare events (Maddala 2006).

Attempts are made to find answers to the following questions:

1. What proportion of household deposits in the euro area countries are high-value deposits?

2. With respect to financial standing and socio-demographic features, do the owners of high-value deposits form a single group in the euro area?

3. What are the determinants of a household's propensity to possess high--value deposits in the euro area?

The following hypothesis is tested: Households with high-value deposits are associated with a particular financial standing and with specific socio--demographic features. Though the frequency of households with high-value deposits is not identical for each state in the euro area, it is still possible to identify common sets of characteristics which influence their propensity to possess high-value deposits. It may be the case that, while the EU's uniform regulatory framework makes domestic credit institutions more resilient, the benefits of the "one size fits all" approach are limited due to heterogeneity.

Following the introduction, the paper presents a survey of the related literature, before proceeding to an account of the regulatory approach to high-value household deposits. There follows a description of the data and methodology employed to study the occurrence of high-value household

deposits in the euro area and the determinants of households' propensity to possess them. The results are then set out and conclusions are drawn.

2. Related Literature

The literature on the funding stability of credit institutions discusses matters of importance during short-term crises and over longer periods of time. They include sources of funding for banks (Diamond & Rajan 2001, Borio 2009, Huang & Ratnovski 2011), financial assets held by households (Du Caju 2013), the connections between the limits of deposit insurance systems (DIS) and the way that individuals perceive risk (Karas, Pyle & Schoors 2013, Brown, Guin & Morkoetter 2013, Acharya & Mora 2015), the relationship between deposit outflows and incidents of financial turmoil (Cussen, O'Leary & Smith 2012), the links between downturns on commercial paper markets and deposit transfers (Pennacchi 2006, Gatev, Schuermann & Strahan 2009), the impact of interest rates on deposit outflows (Acharya & Mora 2012) and the correlation between deposit outflows and loan availability (Acharya, Almeida & Campello 2013). Some papers compare countries according to the purposes of household saving, with a focus on deposits as a component of household financial asset portfolios (Teppa et al. 2015).

In view of the implementation of the EU's uniform post-crisis regulations, the question of the stability of household deposits has lost none of its relevance. The paper is among the first to investigate the uniform regulation from the perspective of high-value household deposits and their determinants.

3. The Regulatory Approach to High-Value Household Deposits

The EU regulatory framework on the funding stability of credit institutions was based on the Basel III Accord of December 2010 (BCBS 2010). For LCR, it distinguished stable deposits as those with low rates of outflows of 5% or 3% and less stable deposits as those with outflow rates of 10% (BCBS 2013). In both cases, the run-offs were assumed as minimum floors. The adoption of increased outflow proportions was left to individual jurisdictions, which would have a sharper picture of the behaviour of local depositors in a period of stress. Though the high-value deposits could be counted among the less stable, the Basel Committee on Banking Supervision did not indicate any particular threshold for them (BCBS 2013).

The framework of the EU regulations on the funding stability of credit institutions is available in the in the package "Capital Requirements Directive IV and Capital Requirements Regulation" issued in 2013. The quality of funding was discussed within the terms of LCR and NSFR.

In 2013, the package was supplemented by the European Banking Authority (EBA) guidelines on the assessment of LCR at the EU credit institutions (EBA 2013a). They listed the factors determining higher outflows of retail deposits, pointing out the significance of their value. If the sum of deposits held by one client at one entity was in excess of EUR 100,000, or above the limit of a local deposit guarantee scheme (and in any case no higher than EUR 500,000), the deposit was to be regarded as of high value. The EBA also proposed a category of very-high deposits exceeding EUR 500,000. The conclusion could be drawn that there was a high risk of outflows of high-value deposits and a very high risk of outflows of very high value deposits.

The detailed information regarding less stable retail deposits, including household deposits, in periods of stress was presented by the European Commission (EC) in its delegated act in 2014 (EU 2015). Deposits exceeding EUR 500,000 were defined as high-value deposits and presented as the ones liable to increased volatility. The additional category proposed by the EBA was therefore not adopted.

The evolution of the EU definition of deposits with increased outflows, and the lack of formal empirical analysis in the individual countries regarding this issue, raised doubts about the appropriateness of the adopted limit of EUR 500,000 and thereby prompted the present study.

4. Data and Methodology

Fifteen euro area states were studied: Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain. They were selected due to the availability of the required information. The study was based on quantitative and qualitative data from the Eurosystem HFCS and was focused on households possessing high-value deposits. It should be noted that the database did not provide information on whether the sums above EUR 500,000 were held in one or more credit institutions. The sets of variables were organised as follows:

1. Quantitative, describing the household's:

– size (N): number of household members (NHM), number of members in employment (NME), number of members aged 16+ (NM16+);

– wealth (W): gross income (WGI), net wealth[1] (WNW), high-value deposits (WHD), value of sight deposits (WSD), value of savings deposits (WVD), value of total real assets (WRA) such as real estate, vehicles and valuables; value of total financial assets excluding deposits (WFA);

2. Qualitative[2], describing the household's:

– investment attitude (IA): willing to take substantial financial risks and expecting to earn substantial returns (IA1), willing to take above average financial risks and expecting to earn above average returns (IA2), willing to take average financial risks to earn average returns (IA3), unwilling to take any financial risks (IA4);

– reasons for saving (S): purchase of own home (SPH), other major purchases (SOP) such as residences, vehicles and furniture; setting up a private business or financing investments in an existing business (SFB), investing in financial assets (SFA), providing for unexpected events (SUE), paying off debts (SPD), provision for old-age (SOA), education/support for children and grandchildren (SES), bequests (SBQ), taking advantage of state subsidies (SAS);

– wealth (W'), possession of: mutual funds (W'MF), publicly-traded shares (W'TS), bonds (W'BO), collateralised loans (W'CL), gifts or an inheritance (W'GI);

3. Quantitative, describing a reference person:

– age (A);

4. Qualitative, describing a reference person:

– the highest level of education completed (E): tertiary (ETR), upper--secondary (EUS), lower-secondary (ELS), primary or below (EPR);

– marital status (M): married (MAR), single/never married (MSI), consensual union on legal basis (MCU), widowed (MWI), divorced (MDI);

– labour status (L): doing regular work for pay/self-employed/working in family business (LSW), on sick leave, maternity leave or another type of leave (LSL), unemployed (LSU), student/pupil/unpaid intern (LSS), retired or in early retirement (LSR), permanently disabled (LSD), compulsory

[1] Net wealth is defined as the difference between total (gross) assets and total liabilities. Total assets consist of real assets and financial assets.

[2] The qualitative variable takes the value 1 or 0 to indicate the presence or absence of a categorical effect that can be expected to change the outcome.

military service or equivalent social service (LSM), fulfilling domestic tasks (LST), other: not working for pay (LSO);

– gender (G): male (GMA); female (GFE);

– wealth (W'), possession of: public pension plans (W'PP), a voluntary pension scheme (W'VP);

5. Qualitative, describing country of residence (C): Austria (AT), Belgium (BE), Cyprus (CY), Germany (DE), Spain (ES), Finland (FI), France (FR), Greece (GR), Italy (IT), Luxembourg (LU), Malta (MT), the Netherlands (NL), Portugal (PT), Slovenia (SI), Slovakia (SK).

The first part of the study elicited answers to the following questions: What is the position of large deposits among all household deposits in the euro area countries? Regarding their financial standing and socio--demographic features, do the owners of high-value deposits represent a single group in the euro area? A number of the above variables were used to identify the characteristics of households and reference persons with high--value deposits. The variables also had the potential to reveal whether the deposits were stable or unstable. The variables from the following sub-sets were applied: size (N): NHM, NME; wealth (W and W'): WRA, WFA, WHD, WSD, WVD, W'GI; declared attitudes to risk (IA): IA 1-4; saving aims (S): SPH, SOP, SFB, SFA, SUE, SPD, SOA, SES, SBQ, SAS; age of reference person (A).

The second part of the study attempted to answer the following question: What are the determinants of the propensity of euro area households to hold large deposits? A number of variables were employed to identify them. As well as numerical variables: wealth (W) and household size (N), these were dummies from the following subgroups: age (A), education (E), gender (G), declared attitudes to risk (IA), labour status (L), marital status (M), countries (C) and wealth (W'). The variables were applied in the logit model described by the following formula:

$$y_i^* = \beta_0 + \sum_{j=1}^{k} \beta_j x_{ij} + u_i,$$

where: y_i^* – latent variable; x_{ij} – explanatory variables ($i = 1, 2, \ldots, n$; $j = 1, 2, \ldots, k$); β_j – regression parameters (β_0 – constant); u_i – random component.

All of the observations of high-value deposits were enabled to form a dummy Y, which represented the fact that households owned high-value deposits (if the household has a large deposit $Y = 1$, otherwise $Y = 0$). Hence, the variable y_i^* could be defined as a household's propensity to hold a deposit exceeding EUR 500,000 (Maddala 2014) or as the probability that

a household possesses a high-value deposit resulting from the occurrence of particular characteristics (Ulman 2011).

The first wave of HFCS includes 265 households with large deposits. The significant difference between that number and the remaining households, which did not possess such deposits, prompted the decision to balance the sample (Maddala 2006). As a result, a random subset of a further 265 households, this time without large deposits, was taken. The final sample considered in the analysis therefore consisted of 530 households.

Both types of variable – quantitative and qualitative – were applied in this part of the study. Some of the quantitative variables were converted into categorical variables, that is: total real assets (WRA), gross income (WGI), net wealth (WNW), total financial assets excluding deposits (WFA) and age of reference person (A) (Podolec, Ulman & Wałęga 2008). As the levels of these features were highly diverse, they were divided into three categories: low, medium and high. The boundaries of the assignment of characteristics to a particular category were determined by the values of quantile 0.33 ($q_{0.33}$) and quantile 0.66 ($q_{0.66}$). The levels were defined as follows (Table 1): low level of the feature: $x < q_{0.33}$; medium level of the feature: $q_{0.33} \leq x \leq q_{0.66}$; high level of the feature: $x > q_{0.66}$.

Table 1. Numerical Characteristics of Selected Household Characteristics (in EUR)

	$q_{0.33}$	$q_{0.66}$
WRA	245,000	979,300
WGI	38,100	97,100
WNW	268,992	2,008,625
WFA	1,320	139,444

Source: author's own calculations based on Eurosystem HFCS data.

Table 1 shows that variables for 33% of the euro area households depicted values not exceeding the quotations for $q_{0.33}$, while the remaining 67% depicted at least these sums. The quantile $q_{0.66}$ means that the characteristics of 66% of the households represented the values up to the specified level and the remaining 33% of households represented at least these values. In the next step, the categorical variables were converted into dummies, which were applied in the logit model. They referred to the low and high levels of the characteristics. The medium level was adopted as the base for comparison. As a consequence, total real assets (WRA) were converted into:

WRA LOW with a value of 1 when WRA < 245,000 and 0 in all other cases; WRA MEDIUM with a value of 1 when 245,000 ≤ WRA ≤ 979,300 and 0 in all other cases; WRA HIGH with a value of 1 when WRA > 979,300 and 0 in all other cases. The remaining variables, except age (A), were treated in the same way. The quantiles for age indicated only the boundaries deciding the assignment of households to particular categories. The variable A LOW took a value of 1 when A ≤ 50 years old and 0 in all other cases; A MEDIUM took a value of 1 when A ≤ 65 years old and 0 in all other cases; A HIGH took a value of 1 when A > 65 years old and 0 in all other cases.

Parameter estimates from multiple regression models[3] were used as initial values of the parameters in the logit models.

5. Results

The first part of the study analysed the significance of high-value deposits (WHD) and the characteristics of the depositors in individual countries.

The data disclosed that only small proportions of households declared high-value deposits in the national samples which, in the Slovakian and Slovenian cases, revealed no high-value deposits whatsoever. The proportion of households holding high-value deposits was greatest in the Spanish case (2%). These proportions were consistent with the share of all high-value deposits in total deposits at the domestic level (Figure 1). In some member states, however, the impact of high-value deposits on the overall total was significant. In Spain, for example, high-value deposits constituted 41.3% of total household deposits, while they made up 25.9% of total household deposits in Belgium and 22.7% in Luxembourg. The proportion of high--value deposits in total deposits was, at 10–15%, also notable in Cyprus, France, Austria and Portugal. These results indicate that high-value deposits play an important role in the funding of selected MFI sectors in the euro area. Building detailed profiles of the people who hold them could be the key to understanding the volatility of high-value deposits in the individual euro area states.

There was considerable diversification in the amounts of high-value deposits held in the euro area (Table 2), which was expressed in a coefficient of variation (CV) of 12–124%. The highest amounts were noted in Belgium and Luxembourg and the lowest in Cyprus and Finland. The median for high-value deposits varied from EUR 550,000 in Cyprus to EUR 833,357 in Spain. The minimum levels were close to the adopted threshold almost

[3] The explanatory variables were selected based on stepwise regression.

everywhere, while the maximum levels lay in a range from EUR 700,000 in Cyprus and EUR 7,050,000 in Spain.

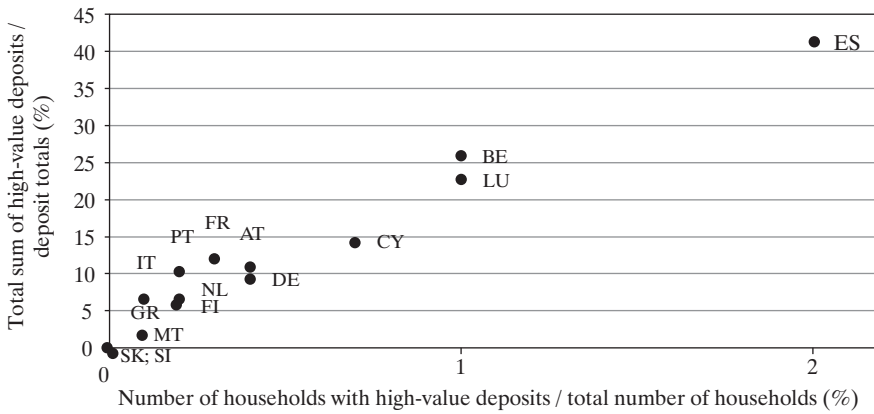

Fig. 1. Sum of High-value Household Deposits/Household Deposit Totals (%) and Number of Households with High-value Deposits/Total Number of Households (%) in Individual Eurozone Countries

Source: author's own study based on Eurosystem HFCS data.

It can be assumed that at least some proportion of the diversity between countries was the result of the heterogeneity of households, which was described by characteristics such as size (NHM, NME), wealth (WRA, WFA, WSD, WVD, W'GI), declared attitudes to risk (IA), saving aims (S) or age of the reference person (A). The variables are summarised in Table 3 and Table 4.

The average number of household members did not exceed three in any of the countries studied. In only a few of them, however, was there more than one person in employment. The most frequent attitudes to risk were "willing to take average financial risks" and "unwilling to take any financial risks". These outlooks could suggest that high-value deposits are stable. If that were so, the regulatory approach may not be appropriate. The most common saving aims of the households surveyed – provision for old--age and bequests – also revealed the long-term nature of the deposits. The households demonstrated considerable diversification in the total real assets and total financial assets they held. It should be noted that past gifts and inheritances accounted for the financial position of a large proportion of households, which was therefore not the result of wise investment decisions. Deposits dominated financial assets in Belgium, Finland, France, Italy,

Table 2. Summary Statistics of High-value Deposits in Households in Selected Eurozone Countries

	Number of observations	Household deposits						
		WHD					WSD	WVD
		mean*	median*	min*	max*	cv**	mean*	mean*
AT	9	791,853	630,200	527,000	1,444,834	45	49,957	741,896
BE	25	1,162,651	620,800	500,000	5,003,000	107	132,085	1,030,566
CY	9	561,144	550,000	500,000	700,000	12	72,255	488,889
DE	13	846,154	603,000	500,001	2,550,000	69	86,615	759,538
ES	118	1,066,683	833,357	500,000	7,050,000	80	275,905	790,778
FI	18	670,661	599,159	588,409	820,831	16	670,661	****
FR	51	924,385	762,114	500,600	2,683,490	45	577,374	347,010
GR	1	1,300,000	***	***	***	***	1,300,000	0
IT	10	723,757	607,187	501,484	1,226,905	37	409,161	314,596
LU	12	1,093,965	606,809	515,000	5,286,768	124	119,252	974,713
MT	1	515,142	***	***	***	***	15,141	500,001
NL	2	1,731,256	***	597,012	2,865,500	***	5,251	1,726,005
PT	7	1,065,571	787,500	516,000	1,935,000	57	77,571	988,000
EA	276	979,816	700,247	500,000	7,050,000	80	315,196	710,989

Note: cv (coefficient of variation) – standard deviation/arithmetic mean. * In EUR. ** In %. *** Number of responding households was too small to estimate statistics. **** No information available in the database.

Source: author's own calculations based on Eurosystem HFCS data.

Table 3. Summary Statistics of Selected Household Characteristics in Eurozone Countries

	Number of observations	Household characteristics										
		N (mean)			IA		WGI*				S	
		NHW	NME	NM16+	IA3 & IA4**	GI yes**	mean	median	min	max	SOA yes**	SBQ**
AT	9	3	1	3	33	78	215,177	100,500	53,401	515,762	78	22
BE	25	2	0	2	76	32	87,005	76,320	18,100	310,000	48	36
CY	9	3	2	3	89	67	151,734	91,000	55,050	432,000	56	22
DE	13	2	1	2	92	62	432,088	336,000	49,000	1,350,000	54	0
ES	118	2	1	2	92	67	375,621	108,349	0	8,760,318	19	11
FI	18	2	2	2	****	****	265,666	12,683	85,425	1,080,636	****	****
FR	51	2	0	2	****	69	236,388	125,848	18,822	1,833,944	****	****
GR	1	3	2	2	0	0	2,110,000*	***	****	***	0	0
IT	10	2	1	2	70	****	87,234	79,068	9,531	194,300	****	****
LU	12	3	1	3	100	50	252,234	250,100	31,200	520,560	42	42
MT	1	2	0	2	100	0	51,000*	***	***	***	0	100
NL	2	2	1	2	100	0	185,861*	***	128,734	242,988	100	100
PT	7	3	2	2	86	29	189,660	125,000	38,930	604,600	33	33
EA	276	2	1	2	64	55	289,909	122,741	0	8,760,318	23	13

* In EUR. ** In %. *** Number of responding households was too small to estimate statistics. **** No information available in the database.

Source: author's own calculations based on Eurosystem HFCS data.

Table 4. Summary Statistics of Household Wealth in Selected Eurozone Countries

	Number of observations	W							
		WFA*				WRA*			
		mean	median	min	max	mean	median	min	max
AT	9	983,046	944,798	617,784	1,448,877	1,404,053	870,000	499,747	3,412,000
BE	25	684,117	400,750	0	2,100,000	1,266,706	574,500	0	6,402,814
CY	9	565,327	139,444	500	3,100,000	7,579,859	6,492,000	2,674,169	13,065,000
DE	13	2,812,856	1,040,000	600,000	13,555,000	6,402,577	1,804,000	685,000	62,750,000
ES	118	1,656,513	253,389	0	33,000,000	7,065,044	1,964,102	128,400	94,003,000
FI	18	265,376	251,591	7,503	651,102	1,620,517	721,795	148,828	11,225,655
FR	51	703,298	275,558	0	4,427,245	1,701,840	1,175,115	33,593	16,397,098
GR	1	300,000	**	**	**	10,100,000	**	**	**
IT	10	288,503	22,500	0	1,762,784	1,098,864	572,000	72,000	5,540,000
LU	12	375,582	150,205	0	1,580,133	2,190,750	1,460,000	453,500	5,877,000
MT	1	872,058	**	**	**	25,000	**	**	**
NL	2	665,613	**	1,010,780	320,446	377,258	**	225,000	529,516
PT	7	550,679	143,750	0	2,498,000	5,796,214	1,900,000	210,300	210,300
EA	276	1,084,573	255,764	0	33,000,000	4,483,733	1,424,852	0	94,003,000

* In EUR. ** Number of responding households was too small to estimate statistics.

Source: author's own calculations based on Eurosystem HFCS data.

Luxembourg, the Netherlands and Portugal. Other than in the Netherlands and Malta, the average value of real assets exceeded the average value of financial assets (excluding deposits). This may suggest that lower-risk investment in real estate, vehicles or valuables – rather than in riskier mutual funds, bonds or publicly-traded shares – was the priority of households holding high-value deposits. The low-volatility of high-value deposits over the long term would appear to be confirmed by the average age of the reference persons and the reasons for saving that were most often given. The age of the reference persons was 49–66 in almost all of the countries[4] and, following modifications adopted in recent years, was lower than the retirement age.

The first part of the study demonstrated that the role of high-value deposits in the funding of credit institutions was based on individuals at the domestic level. Furthermore, some of the characteristics of households suggested that this role was relatively stable. Insofar as it may prevent credit institutions from treating the deposits as stable and compel a report of reduced stability of funding to be submitted, the implementation of a uniform threshold of EUR 500,000 may become a burden in countries where high-value deposits account for the greatest proportion of total deposits.

The priority of the second part of the study was to identify sets of common features influencing the probability that a euro area household will possess a high-value deposit. These features can also be understood as ones that affect the propensity to hold a large deposit (Ulman 2011).

The insufficient number of households with high-value deposits in some of the national samples forced the removal from the study of countries with less than nine such cases. A group of nine euro area countries, made up of Austria, Belgium, Cyprus, Germany, Spain, Finland, France, Italy and Luxembourg, remained to be analysed.

The study implemented four versions of the logit model, in which the potential factors describing the probability that a euro area household will possess a high-value deposit were:

1. WNW LOW, WNW HIGH – highlighting the significance of net wealth;

2. WNW LOW, WNW HIGH, WGI LOW, WGI HIGH, A LOW, AT, BE, CY, ES, FI, FR, IT, LU – taking account of net wealth and gross annual

[4] AT – 51, BE – 65, CY – 58, DE – 64, ES – 66, FI – 59, FR – 71, GR – 41, IT – 60, LU – 61, MT – no data available, NL – 71, PT – 63.

income (the main driver of net wealth), the lowest and highest values for the age for reference persons, and country affiliation;

3. WRA LOW, WRA HIGH, WFA LOW, WFA HIGH, A LOW, A HIGH, AT, BE, CY, ES, FI, FR, IT, LU – this is a modification of version 2 that refers to age, country of residence[5], and to real and financial assets instead of net wealth and gross income;

4. MEM 16+, ETR, MAR, GMA, A LOW, A HIGH, AT, BE, CY, ES, FI, FR, IT, LU – referring to the socio-demographic features of a household and the country that it is in[6].

The first version of the logit model was the simplest. It tested the influence of household net wealth on the probability that a household would possess a high-value deposit. The WNW HIGH appeared as a statistically significant explanatory variable (Table 5). A household's propensity to possess a high-value deposit increased when it appeared in the highest range for net wealth. This indicates that a way of living that places a high value on asset collection, while being wary of consumption and debt, was the favoured tendency. It can also be concluded that high-value deposits were an attribute of the most affluent households.

Table 5. Summary of Logistic Regression Analysis for Variables Predicting the Incidence of High-value Deposits in Households (Version 1)

	B	*SE B*	*t*(517)	*p*-value
Constant	–1.0312	0.1214	–8.4917	0.0000
WNW HIGH	4.2386	0.4043	10.4848	0.0000

Odds ratio = 69.31; correctly classified households – 81.32%; chi-square (11) = 272.34; $p < 0.0000$

Source: author's own calculations based on Eurosystem HFCS data.

The odds ratio[7] confirmed that the classification of households in the analysed category was more precise than a random selection (the probability of correctly classifying households by this model was 69.31 times higher than of incorrectly classifying them). More than 80% of households were correctly classified. The likelihood ratio (LR) Chi-Square test confirmed the significant influence on the propensity to possess a high value deposit of

[5] Germany was the base for comparison.

[6] See footnote 5.

[7] The odds ratio is defined as a multiplication of correctly classified observations in relation to a multiplication of incorrectly classified ones, with a given vector x_i of explanatory variables.

the variable under consideration and thus rejected the hypothesis that such an effect was absent.

The second version of the logit model, which employed a set of potential explanatory variables that included net wealth, gross income (the primary driver of net wealth), age of reference person and country of residence, confirmed the conclusions of the first. It was found that the propensity to possess a high-value deposit was weakest among households with low gross income and low net wealth. Whereas the probability of holding a high-value deposit decreased significantly where the reference persons were young, it increased where the factors of high net wealth and high gross income were present. Assuming that other independent variables hold constant, high-value deposits were more frequent in Spanish, Belgian and Austrian households than in those of the remaining countries analysed. It can be stated that the wealthiest households, that is, those in Spain, Belgium and Austria, whose reference persons were 51 years old, had the strongest propensity to possess high-value deposits. The results for version 2 of the logit model are presented in Table 6.

Table 6. Summary of Logistic Regression Analysis for Variables Predicting the Incidence of High-value Deposits in Households (Version 2)

	B	*SE B*	*t*(517)	*p*-value
Constant	–0.0767	0.2754	–0.2787	0.7806
WNW HIGH	2.4103	0.4481	5.3788	0.0000
WNW LOW	–27.6137	5530.3410	–0.0050	0.9960
WGI HIGH	0.8041	0.3853	2.0869	0.0374
WGI LOW	–1.3380	0.4250	–3.1485	0.0017
A LOW	–1.3665	0.3963	–3.4483	0.0006
ES	1.5464	0.4118	3.7554	0.0002
BE	2.1583	0.6625	3.2576	0.0012
AT	3.0382	1.2213	2.4877	0.0132

Odds ratio = 61.63; correctly classified households – 88.68%; chi-square (8) = 482.67; $p < 0.0000$

Source: author's own calculations based on Eurosystem HFCS data.

In this version, the odds ratio confirmed that the classification of households was better than a random classification with regard to the presented categories. More than 90% of households were correctly classified. The likelihood ratio (LR) Chi-Square test confirmed that the

set of variables under consideration had a significant influence on the propensity of households to hold high-value deposits. The hypothesis of the absence of such effects was thus rejected.

It was found in the third version of the logit model that not all of the potential explanatory variables (components of net wealth: real and financial assets excluding deposits) entered the model. Only WRA HIGH, WRA LOW, WFA HIGH, A LOW, ES, BE, and AT were statistically significant. The results are set out in Table 7. It should be noted that the dummies indicated that the same countries of residence as in version 2 had a positive impact on propensity to hold a high-value deposit. This means that the probability of possessing a high-value deposit appeared to be greater in those countries than in the remaining member states. The same conclusion could be drawn from the WRA HIGH and WFA HIGH variables. The propensity to possess a high-value deposit increased when a household had high real and financial assets. Conversely, if households did not tend to accumulate real assets, the probability of holding a high-value deposit decreased. Explanatory variable A LOW demonstrated that the willingness to possess high-value deposits among young reference persons was lower than in the other groups. This version of the logit model told us that real and financial assets in the highest range of classification, reference persons aged over 50 and residence in Spain, Belgium or Austria were the variables most strongly related in the euro area to holding high-value deposits. The results are set out in Table 7.

Table 7. Summary of Logistic Regression Analysis for Variables Predicting the Incidence of High-value Deposits in Households (Version 3)

	B	*SE B*	*t*(517)	*p*-value
Constant	–0.8077	0.2463	–3.2798	0.0011
WRA HIGH	1.9047	0.3499	5.4434	0.0000
WRA LOW	–1.5571	0.3432	–4.5367	0.0000
WFA HIGH	1.9627	0.3263	6.0149	0.0000
A LOW	–1.4526	0.3345	–4.3426	0.0000
ES	1.2556	0.3292	3.8140	0.0002
BE	1.8107	0.5309	3.4104	0.0007
AT	1.5036	0.6419	2.3425	0.0195

Odds ratio = 49.39; correctly classified households – 87.52%; chi-square (7) = 379.25; $p < 0.0000$

Source: author's own calculations based on Eurosystem HFCS data.

As in previous versions, the odds ratio informed us that better results were obtained from households that had been classified rather than randomly classified. The probability of carrying out a correct classification of households based on this model was 49 times higher than of carrying out an incorrect one. Almost 90% of households were classified correctly. The likelihood ratio (LR) Chi-Square test confirmed that the set of variables under consideration had a significant influence on the propensity of households to hold high-value deposits and rejected the hypothesis that such effects were absent. It can therefore be concluded that all of the household characteristics implied in the model – real and financial assets in the highest range of classification, reference persons aged over 50 and residence in Spain, Belgium or Austria – had a significant impact on the propensity to possess high-value deposits in the area analysed.

The fourth version concerned only the impact of socio-demographic features on the willingness of households to hold high-value deposits. The following potential explanatory variables were statistically significant: NM16+, ETR, LSR, GMA, A LOW, A HIGH, ES, AT, BE, LU, CY, and FR. It should be noted that the dummies for these countries of residence had a positive impact on the probability that a household would possess a high-value deposit[8]. This means that the likelihood of possessing a high--value deposit was greater than in Germany, Finland and Italy. Because there was a greater chance that more of its members would be in employment, the probability of possessing a high-value deposit was boosted when the number of household members aged 16 or over was greater. The propensity to possess a high-value deposit also increased if the gender of the household's reference person was male and that person was at least 65 years old. Where the reference persons were young, though, the probability of holding a high-value deposit was lower. The probability was higher where reference persons had completed tertiary education. The propensity to hold high-value deposits among retired reference persons was lower than for groups belonging to other employment classifications. This version of the logit model told us that households with a greater number of members aged over 16 who are well-educated, male, aged over 65 and still in employment were most likely to hold high-value deposits. The results of the analysis are presented in Table 8.

The odds ratio confirmed that the classification of households into the listed categories yielded better results than random classification.

[8] In relation to the countries that formed the base for comparison.

The probability of carrying out a correct classification of households by this model was 16 times greater than of performing an incorrect classification. Eighty per cent of households were classified correctly. The likelihood ratio (LR) Chi-Square test confirmed that the set of variables under consideration had a significant influence on the propensity of households to hold high-value deposits and rejected the hypothesis that such effects were absent. In conclusion, the socio-demographic features of households examined in this version of the model had a significant influence on the willingness of euro area households to hold high-value deposits.

Table 8. Summary of Logistic Regression Analysis for Variables Predicting the Incidence of High-value Deposits in Households (Version 4)

	B	*SE B*	*t*(517)	*p*-value
Constant	–2.7030	0.4882	–5.5377	0.0000
ES	1.9893	0.3242	6.1346	0.0000
AT	2.3697	0.6077	0.8997	0.0001
BE	1.7913	0.4772	3.7534	0.0002
CY	1.4646	0.3345	1.9873	0.0473
FR	0.6655	0.3137	2.1215	0.0343
LU	2.1608	0.6735	3.2084	0.0014
NM16+	0.5087	0.1554	3.2719	0.0011
LSR	–0.9675	0.3664	–2.6401	0.0085
ETR	1.6854	0.2493	6.7602	0.0000
GMA	0.6954	0.2469	2.8121	0.0051
A LOW	–2.2266	0.3507	–6.3495	0.0000
A HIGH	0.9877	0.3634	2.7179	0.0068
Odds ratio = 16.00; correctly classified households – 80.00%; chi-square (12) = 272.41; $p < 0.0000$				

Source: author's own calculations based on Eurosystem HFCS data.

Though all of the versions of the logit model identified characteristics of euro area households likely to possess high-value deposits, it was difficult to point to the one with the best fit in the statistical sense: they all described the problem very well and from different perspectives. The results confirm the major impact of household wealth on the probability of holding a high-value deposit. Versions two, three and four detected that the youngest age category had a negative impact, and the two older categories a positive impact, on the propensity to hold high-value deposits. Of the countries under

consideration, it was found that the households of Belgium, Austria and Spain had a significantly stronger propensity to possess high-value deposits. Version four of the logit model told us that households with the bracketed socio-demographic characteristics (a greater number of members aged over 16 who are well-educated, male, aged over 65 and still in employment) were most likely to hold high-value deposits.

6. Conclusions

The last financial crisis revealed the importance of stable funding if credit institutions are to be resilient and able to dispose of liquidity shocks. The current EU regulations describe household deposits of up to EUR 500,000 as stable. As they may impose unnecessary limits in countries where funding is reported as stable by supervisory authorities, such precise guidelines may, however, prove ineffective. The uniform threshold may thus become merely a needless benchmark serving only to make the regulation more complicated.

The first part of the study identified considerable diversification of high--value deposits in the households of the group of countries analysed. The proportion of respondents who declared that they held them was small: no greater than 2%. In some member states, however, the impact of high--value deposits on the overall total was significant. In Spain, for example, high-value deposits constituted 41.3% of total household deposits, while they made up 25.9% of total household deposits in Belgium and 22.7% in Luxembourg. The scale of these shares in funding did not imply, though, that household deposits were of poor quality. Particular features of households and reference persons, such as attitudes to financial risk, saving aims, a focus on real rather than financial assets, the prioritising of deposits among financial assets and the age of the reference persons, suggested instead that high-value deposits were of a long-term nature.

The second part of the study, which presented certain sets of features thought likely to increase the propensity of euro area households to possess high-value deposits, clearly demonstrated the significance of household wealth and socio-demographic characteristics for the occurrence of this propensity. Net wealth and its components appeared as features of primary importance, which leads to the conclusion that a style of life that places great value on accumulating financial and real assets was responsible for the availability of large deposits for credit institutions. The tendency to hold high-value deposits was relatively low among households with young

reference persons. However, the need to possess large deposits in the other age subgroups may have been caused by the decreasing incomes that characterise later life. The logit model informed us that households in Belgium, Spain and Austria had a greater propensity, or capacity, to accumulate high-value deposits. It should be noted that the euro area states identified in the first part of the study were those whose credit institutions held the greatest amount of high-value deposits as a proportion of total household deposits. It is assumed that as a consequence the EUR 500,000 threshold may have a more negative influence on the funding stability of Belgian, Spanish and Austrian entities than it does on credit institutions in the remaining states.

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Abstract

Jakość dużych depozytów detalicznych i determinanty ich występowania w krajach strefy euro

W artykule zaprezentowano jedną z regulacyjnych kategorii depozytów detalicznych – tzw. duże depozyty gospodarstw domowych i podjęto próbę oceny ich wrażliwości na odpływ. W pracy opisano także czynniki determinujące skłonność gospodarstw domowych do posiadania takich aktywów.

Analizę przeprowadzono na podstawie danych jednostkowych o gospodarstwach domowych pochodzących z bazy Eurosystemu Household Finance and Consumption Survey. W celu identyfikacji determinant występowania dużych depozytów zastosowano metodę regresji logistycznej. Ze względu na fakt, że depozyty należące do opisywanej kategorii stanowią rzadką cechę gospodarstw domowych, badanie przeprowadzono na próbie zbilansowanej, zgodnie z podejściem proponowanym przez G. S. Maddalę.

Uzyskane wyniki wskazują na zróżnicowane udziały dużych depozytów w ogóle depozytów deklarowanych przez gospodarstwa domowe w poszczególnych krajach strefy euro. Ponadto pozwoliły one określić cechy gospodarstw domowych odnoszące się do sytuacji finansowej oraz cech społeczno-demograficznych, które istotnie wpływają na prawdopodobieństwo posiadania dużych depozytów.

Słowa kluczowe: depozyty gospodarstw domowych, duże depozyty, normy płynności, źródła finansowania banków.