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Determinants of Household Saving Behaviour in Turkey[1]

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Türkiye'de Hanehalkı Tasarruf Davranışının Belirleyicileri[2]

Abstract

The study aims to detect demographics and economic factors and the factors related to residential properties and social-environmental indicators affecting household savings in Turkey. In the study, cross-sectional data was obtained from the Household Budget Survey conducted by the Turkish Statistical Institute between the years 2015-2017. Binary logistic regression and binary probit regression analyses determined household savings factors. According to the analysis results, the factors like the occupation of the household head, educational status, gender, age, marital status, household size, automobile ownership, and survey year were determined to affect the saving behaviour of households.

Keywords : Household Savings, Survey Data, Demographics and Economic Factors, Binary Logistic Regression, Binary Probit Regression, Turkey.

JEL Classification Codes : C25, C83, D14.

Öz

Bu çalışmanın amacı Türkiye'deki hanehalkı tasarruflarını etkileyen demografik, ekonomik faktörler ile konut özellikleri ve sosyal-çevresel göstergelere ilişkin faktörleri belirlemektir. Bu çalışmada, Türkiye İstatistik Kurumu tarafından 2015-2017 yılları arasında yapılan Hanehalkı Bütçe Araştırması anketinden elde edilen yatay- kesit verileri kullanılmıştır. Hanehalkı tasarruflarını etkileyen faktörleri belirlemek için binary lojistik regresyon ve binary probit regresyon analizleri uygulanmıştır. Analiz sonuçlarına göre, hane reisinin mesleği, eğitim durumu, cinsiyeti, yaşı, medeni durumu, hanehalkı büyüklüğü, otomobil sahipliği ve anket yılı gibi faktörlerin hanelerin tasarruf tutumları üzerinde etkili olduğu tespit edilmiştir.

Anahtar Sözcükler : Hanehalkı Tasarrufları, Anket Verisi, Demografik ve Ekonomik Faktörler, Binary Lojistik Regresyon, Binary Probit Regresyon, Türkiye.

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[2] *Bu çalışma Prof.Dr. Erkan Oktay'ın danışmanlığında tamamlanan Kübranur Çebi-Karaaslan'ın "Hanehalkı Tasarruf Tercihlerinin Kesikli Tercih Modelleriyle İncelenmesi" isimli doktora tezinden üretilmiştir.*

1. Introduction

Households apply to save when it is necessary to satisfy their needs. The primary force driving an economy to save is household savings. Although households' saving behaviour is determined by a combination of economic, social, demographic, and cultural factors, it is mainly affected by changes in the disposable income of households (Rodriguez-Palenzuela & Dees, 2016: 41-44). People save due to a variety of reasons like creating savings to use in unexpected situations, establishing a relationship between the future and the needs of individuals, increasing expenditures, conducting business projects, having a sense of independence and power, having wealth, buying houses, cars, goods, and similar products (Browning & Lusardi, 1996: 1797).

Savings are the main force encouraging growth. Assuring adequate savings is a central policy to prevent imbalances in the balance of payments and to create sufficient investment. Savings are, in a sense, a macroeconomic status where the economist's perception towards the current condition and the influence of the policymaker is the most uncertain (Schmidt-Hebbel et al., 1994: 21). Improvements in savings and investments are closely linked with the interaction of an economy with the rest of the world (Rodriguez-Palenzuela & Dees, 2016: 12).

Private domestic savings are fundamental to the economy of a country. Personal savings create the basis for private savings. These savings are the part of personal income remaining after spending on taxes, consumption expenditures, interest payments, net current transfers to the state, and the rest of the world. Personal savings represent individuals' contribution to national savings, which is the total amount that can be employed to finance investments in fixed assets, stocks, or foreign assets (Reinsdorf & Perozek, 2004: 17). On the one hand, households give precious contributions to the country's economy, such as increasing welfare on behalf of their countries, the necessary funding for investments, decreased foreign financing dependency, and economic stability. On the other hand, they provide financial assurance, lifelong welfare, and a permanent lifestyle for their future (TCMB, 2015; WB, 2011).

National savings are the constant source of financial need to realize a steady growth trend in the national economies. According to the national savings rates estimated through the European accounts system obtained by the International Monetary Fund, while the national savings rate of Turkey in 2009 was 21.4%, the national savings rate in 2018 increased to 26.6%. While the national savings rate across the world in 2009 was 23%, this rate rose to about 26.7% in 2018. It was determined that the saving rate estimated by the International Monetary Fund was 25.3 in 2019 for Turkey, the national savings rate across the world increased to about 26.5%, and that in the survey conducted by Ing Bank for the second quarter of 2019 concerning Turkey's saving tendencies, the rate of account ownership decreased to 13.4% and the rate of those planning to save decreased to 26.4% (ING, 2019).

Various studies were performed to examine the saving behaviour of individuals and countries. In a study, personal saving behaviours in five major industrialized countries (Canada, Germany, Japan, the United Kingdom, and the United States) were analysed. The effect of inflation on personal savings was evaluated, and it was determined that inflation increased savings (Howard, 1978). Also, in a study carried out in the United States, the effect of nuclear war expectancy on saving behaviour was examined. It was determined that nuclear war expectancy had a negative or adverse impact on saving behaviour; in other words, people's expectations about nuclear war decreased their ambitions and activities to save (Russett et al., 1994). In the study that examined the relationship between savings and economic growth in Asian countries, the causal relationship between economic growth and savings was detected (Agrawal, 2001). In the study where the impact of gender factors on personal saving behaviours was investigated, it was determined that the short-term and regular savings behaviour determinants differ according to gender. It was determined that the probability of the short-term savings is low when women's health status to be weak, and the educational status increases the saving probability and regular savings made by men in the short term (Fisher, 2010). In the study where the relationship between people's health and saving behaviours was analysed, it was determined that the diagnosis of critical health problems negatively affected people's enthusiasm to save (Ricketts et al., 2013). Another study examined the relationship between financial literacy and retirement planning and behaviour towards retirement savings. It was determined that welfare in retirement depended on savings, and individuals who did not produce sufficient savings for retirement had a comparatively low level of financial literacy (Barbić et al., 2016). In the study where the impact of receiving professional financial advice on household savings was examined, it was determined that receiving professional financial advice had a definite effect on saving (Liu et al., 2019).

Households constitute the basic level of national savings, which is crucial for the growth and development of an economy. On this basis, analysing and examining the behaviour of household savings, which is a prior stage to increase the ratio of Turkey's national savings rate, would contribute to economic development. The purpose of this paper is to detect the factors affecting household saving, which is the most crucial determinant of the concept of saving and very significant for the sustainable growth of an economy, especially a developing economy. Saving behaviours exhibited by decision-makers have been a subject of research for a long time and have been researched in various aspects. This study aimed to fill this gap in the literature by analysing saving behaviours on cross-sectional data sets and demographic and economic variables, and more specific variables for household habits. For this purpose, the factors affecting the saving behaviour of households are modelled through a comprehensive data set representing Turkey. Savings are affected by various conditions, like demographic features, economic features, and social features. Determining the impacts of these features would contribute to defining the household savings and to the policy-making process that would encourage household savings.

2. Methodology

2.1. Data

In the study, cross-sectional data obtained from the Household Budget Survey conducted by the Turkish Statistical Institute between 2015-2017 were employed. The scope of the survey consisted of individuals residing in households located within the boundaries of the Republic of Turkey. Those within the institutional and nomadic populations were not included in the study. The primary sampling frame employed in selecting the blocks, which constituted the first stage sampling unit in the Household Budget Survey, was the National Address Database. Later, the created blocks from urban areas, and rural areas and villages, which belong to municipal organizations, were determined with probability proportional to the size of the settlement, and households were systematically chosen from each block. The household in the sample address was defined as the final sampling unit. A stratified two-stage cluster sampling method was employed to collect the data (TÜİK, 2018).

2.2. Measure and Variables

The dependent variable of the study was the saving status of the household. The category "household saves" was generated by combining the answers belonging to the question "What is your method of assessing the savings made in the household?" like real estate (house, shop, land, field), housing cooperative membership, gold, currency, bank account, stocks, bill, bonds, fund certificate, investments in work, lending at interest, with other options of the category. While performing binary logistic regression and binary probit regression analysis, code one was used for households that save and 0 for those that do not hold.

The socio-demographic and economic factors held by the household born affect household savings in Turkey and influence household savings. The factors related to residential properties and environmental indicators were considered independent variables. Gender of the household head (male; female), educational status (not finishing a school; primary school; secondary school; high school; the university), marital status (never married; married; deceased spouse/divorced), profession (not working; manager; learned profession groups; technician, operator, and assistant knew profession groups; office workers; service and sales staff; qualified agriculture, forestry, and aquaculture workers; artisans and associated workers; facility and machine operators and assemblers; workers who work in elementary occupations), age (15-24; 25-34; 35-44; 45-54; 55-64; 65+) and household size (1-person; 2-person; 3-person; 4-person; 5-person; 6+) were the demographic factors.

The variables like car ownership (yes; no), homeownership (homeowner; tenant; tied cottage; not a homeowner but not paying rent), second-home right (yes; no), the presence of someone with private life insurance in the home (yes; no), the credit card ownership (yes; no) and annual household disposable income level (1^{st} income level; 2^{nd} income level; 3^{rd} income level; 4^{th} income level; 5^{th} income level) were economic factors.

House type (detached house; apartment), the heating system of the house (central heating system; floor standing boiler (combi, etc.); stove; electric heater), type of fuel employed for heating (conventional fuel type; advanced fuel type), type of fuel used for hot water (conventional fuel type; advanced fuel type) and residential area (60 m^2 or less; 61 m^2-90 m^2; 91 m^2-120 m^2; 121 m^2-150 m^2; 151 m^2+) were factors related to residential properties.

The variables, such as the presence of an individual who has a habit of smoking cigarettes, tobacco, and cigars (yes; no), the presence of an individual having a habit of eating out in the house (yes; no), the presence of an individual with a pattern of going to the cinema in the house (yes; no), the presence of an individual with a habit of going to market (yes; no), and the survey year (2015; 2016; 2017) were the social and environmental indicators.

Ordinal and nominal variables were defined as dummy variables to observe the effects of the categories belonging to all variables to be taken to binary logistic and binary probit regression models (Alkan et al., 2015: 60).

2.3. Research Method

Survey statistics in Stata 14 (Stata Corporation) were used to account for the complex sampling design and weights. Weighted analysis was performed. Firstly, frequency analyses were performed according to the saving status of the households participating in the study. A Chi-square independence test was performed to examine the relationship between household savings and independent variables. Then, the factors affecting households' saving and impact dimensions were determined by employing the binary logistics and binary probit regression analysis. The binary logit and binary probit models are discrete choice models used when the outcome variable is binary or dichotomous and only takes 0 or 1 (Hosmer et al., 2013: 1).

3. Result

3.1. Descriptive Statistic and Chi-Square Test

Demographic and economic factors that can be effective in savings made by households in Turkey are presented in Table 1. According to Table 1, 32.9% of household heads did not work in a permanent job, while 3.3% worked in-office services. Almost half of the household heads (43.1%) participating in the study were primary school graduates. It was determined that 86.3% of household heads participating in the study were male. While 24.3% of household heads were between 35-44 years old, 1.2% of them were between 15-24 years old. 83.1% of household heads were married. 23.1% of the households were 2-person households. 62.3% of the households owned their houses. 41.7% of the households had at least one car, and 8.1% had a second home. 9.9% of the households had an individual with private life insurance, and 50% of them had a credit card.

Table: 1
Demographic and Economic Factors That Can Affect Saving Status of Households

Variables		Saving Status		n (%)	P
		No	Yes		
Demographic Indicators					
Profession	Not working	9690 (35.9)	1470 (21.3)	11160 (32.9)	0.000
	Manager	922 (3.49)	724 (10.5)	1646 (4.9)	
	Learned profession member	1093 (4)	854 (12.4)	1947 (5.7)	
	Technician, operator	904 (3.3)	366 (5.3)	1270 (3.7)	
	Office workers	875 (3.2)	232 (3.4)	1107 (3.3)	
	Service and sales staff	3011 (11.2)	774 (11.2)	3785 (11.2)	
	Qualified agriculture	3196 (11.8)	1318 (19.1)	4514 (13.3)	
	Artisans and associated workers	2930 (10.9)	478 (6.9)	3408 (10.1)	
	Facility and machine operators	2195 (8.1)	411 (6)	2606 (7.7)	
	Elementary occupations	2175 (8.1)	260 (3.8)	2435 (7.2)	
Educational Status	Not finishing a school	3707 (13.7)	394 (5.7)	4101 (12.1)	0.000
	Primary school	12062 (44.7)	2539 (36.9)	14601 (43.1)	
	Secondary school	3616 (13.4)	750 (10.9)	43.66 (12.9)	
	High school	4445 (16.5)	1255 (18.2)	5700 (16.8)	
	University	3161 (11.7)	1949 (28.3)	5110 (15.1)	
Gender	Male	22994 (85.2)	6229 (90.4)	29223 (86.3)	0.000
	Female	3997 (14.8)	658 (9.6)	4655 (13.7)	
Age	15-24	347 (1.3)	49 (0.7)	396 (1.2)	0.000
	25-34	3599 (13.3)	982 (14.3)	4581 (13.5)	
	35-44	6517 (24.1)	1706 (24.8)	8223 (24.3)	
	45-54	6303 (23.4)	1684 (24.5)	7987 (23.6)	
	55-64	5065 (18.8)	1379 (20)	6444 (19)	
	65+	5160 (19.1)	1087 (15.8)	6247 (18.4)	
Marital Status	Never married	891 (3.3)	310 (4.5)	1201 (3.5)	0.000
	Married	22211 (82.3)	5933 (86.1)	28144 (83.1)	
	Divorced/Deceased spouse	3889 (14.4)	644 (9.4)	4533 (13.4)	
Household Size	1-person	2450 (9.1)	522 (7.6)	2972 (8.8)	0.000
	2-person	6204 (23)	1631 (23.7)	7835 (23.1)	
	3-person	5773 (21.4)	1714 (24.9)	7487 (22.1)	
	4-person	5971 (22.1)	1654 (24)	7625 (22.5)	
	5-person	3252 (12)	742 (10.8)	3994 (11.8)	
	6+	3341 (12.4)	624 (9.1)	3965 (11.8)	
Economic Indicators					
Home- Ownership Status	Homeowner	16171 (59.9)	4930 (71.6)	21101 (62.3)	0.000
	Tenant	6370 (23.6)	1086 (15.8)	7456 (22)	
	Tied cottage	369 (1.4)	207 (3)	576 (1.7)	
	Not a homeowner but not paying rent	4081 (15.1)	664 (9.6)	4745 (14)	
Second-Home Ownership	No	25192 (93.3)	5945 (86.3)	31137 (91.9)	0.000
	Yes	1799 (6.7)	942 (13.7)	2741 (8.1)	
Private Insurance	No	25038 (92.8)	5482 (79.6)	30520 (90.1)	0.000
	Yes	1953 (7.2)	1405 (20.4)	3358 (9.9)	
Credit Card Use	No	14415 (53.4)	2512 (36.5)	16927 (50)	0.000
	Yes	12576 (46.6)	4375 (63.5)	16951 (50)	
Income Level	1st income level (lowest)	6419 (23.8)	356 (5.2)	6775 (20)	0.000
	2nd income level	6123 (22.7)	653 (9.5)	6776 (20)	
	3rd income level	5644 (20.9)	1132 (16.4)	6776 (20)	
	4th income level	5110 (18.9)	1666 (24.2)	6776 (20)	
	5th income level (highest)	3695 (13.7)	3080 (44.75)	6775 (20)	
Car Ownership	No	16996 (63)	2745 (39.9)	19741 (58.3)	0.000
	Yes	9995 (37)	4142 (60.1)	14137 (41.7)	

The properties of the residents where the household resides and social-environmental variables that can be effective in the saving status of households are presented in Table 2. According to Table 2, the house type was the apartment for 52.4% of the households. 51.3% of the households employed the stove as a residential heating system, and the house size was between $91m^2$-$120m^2$ for 37.3% of the household. 55.5% of the households employed conventional fuel types for heating, 91.7% employed advanced fuel types for hot water. 53% of the households had at least one person with the habit of smoking cigarettes, tobacco,

cigars, and 6.7% of them had at least one person going to the cinema, theatre, sports competitions. It was seen that 27.1% of the households had eating out, and 62.9% of them went to the market.

Table: 2
Residential Properties and Factors That Can Affect the Saving Status of Households

Variables		Saving status		n (%)	P
		No	Yes		
Indications Related to Residents					
House Type	Detached	13410 (49.7)	2722 (39.5)	16132 (47.6)	0.000
	Apartment	13574 (50.3)	4164 (60.5)	17738 (52.4)	
Heating System	Central heating system	2608 (9.7)	1212 (17.6)	3820 (11.3)	0.000
	Floor standing boiler	7975 (29.5)	2809 (40.8)	10784 (31.8)	
	Stove	14777 (54.7)	2588 (37.6)	17365 (51.3)	
	Electric heater	1631 (6)	278 (4)	1909 (5.6)	
Fuel Type (For Heating)	Conventional fuel type	15625 (57.9)	3176 (46.1)	18801 (55.5)	0.000
	Advanced fuel type	11341 (42.1)	3709 (53.9)	15050 (44.5)	
Fuel Type (For Hot Water)	Conventional fuel type	2407 (8.9)	404 (5.9)	2811 (8.3)	0.000
	Advanced fuel type	24584 (91.1)	6483 (94.1)	31067 (91.7)	
House Size	$60m^2$ or less	1897 (7)	211 (3.1)	2108 (6.2)	0.000
	$61m^2$-$90m^2$	9212 (34.1)	1794 (26)	11006 (32.5)	
	$91m^2$-$120m^2$	10013 (37.1)	2632 (38.2)	12645 (37.3)	
	$121m^2$-$150m^2$	4193 (15.5)	1427 (20.7)	5620 (16.6)	
	$150m^2$+	1676 (6.2)	823 (12)	2499 (7.4)	
Social and Environmental Indicators					
Habit of Smoking	No	12292 (45.5)	3620 (52.6)	15912 (47)	0.000
	Yes	14699 (54.5)	3267 (47.4)	17966 (53)	
Habit of Eating Out	No	20567 (76.2)	4124 (59.9)	24691 (72.9)	0.000
	Yes	6424 (23.8)	2763 (40.1)	9187 (27.1)	
The habit of Going to The Cinema	No	25619 (94.9)	6001 (87.1)	31620 (93.3)	0.000
	Yes	1372 (5.1)	886 (12.9)	2258 (6.7)	
The habit of Going to The Market	No	10212 (37.8)	2368 (34.4)	12580 (37.1)	0.000
	Yes	16779 (62.2)	4519 (65.6)	21298 (62.9)	
Year	2015	8987 (33.3)	1938 (32.2)	10925 (32.2)	0.000
	2016	9053 (33.5)	2575 (7)	11427 (33.7)	
	2017	8951 (33.2)	6887 (7.6)	11526 (34.1)	

According to the chi-square independence test results in Table 1 and Table 2, a significant relationship was detected between households' saving status and factors related to demographic issues, economic issues, residential properties, and social-environmental indicators.

3.2. Estimation of Models

Binary logistics and binary probit regression models were employed to determine the factors affecting the saving behaviours of the households in the study. The established models were defined as statistically significant (P <0.000).

3.2.1. Goodness of Fit Test

The goodness of fit test results is shown in Table 3. Pseudo R^2 values for binary logistics and binary probit models were calculated as 0.178 and 0.179, respectively. The classification success of the models was calculated as 81.17% and 81.22%, respectively. The area under the ROC curve of models was calculated as 0.7875 and 0.7878, respectively.

Table: 3
The goodness of Fit Test of Estimated Model Results

Criteria	LOGIT	PROBIT
Pseudo R^2	0.178	0.179
Cox-Snell/M	0.165	0.165
AIC	28209.64	28178.28
BIC	28664.83	28633.47
Log-likelihood	-14050.82	-14035.14
Classification Success	81.17	81.22
Area under ROC Curve	0.7875	0.7878
Hosmer-Lemeshow Chi-Square (P-value)	26.11 (0.001)	10.04 (0.2620)
P-value	0.000	0.000
N	33843	33843
LOGIT: Binary logistic regression; PROBIT: Binary probit regression		

In Table 4, estimated model results associated with demographic and economic factors that can affect households' savings were presented.

Table: 4
Estimated Model Results Associated with Demographic and Economic Factors

Variables	Binary Logistic Regression				Binary Probit Regression			
	β	Std. Error	95% CI		β	Std. Error	95% CI	
			Lower	Upper			Lower	Upper
Constant	-3.600[a]	0.150	-3.894	-3.306	-2.034[a]	0.079	-2.188	-1.880
Demographic indicators								
Profession (reference category: not working)								
Manager	0.701[a]	0.081	0.543	0.860	0.419[a]	0.048	0.325	0.512
Learned profession member	0.453[a]	0.086	0.285	0.621	0.269[a]	0.050	0.171	0.368
Technician, operator	0.210[b]	0.093	0.029	0.392	0.123[b]	0.053	0.018	0.227
Office workers	-0.054	0.103	-0.256	0.147	-0.035	0.058	-0.149	0.079
Service and sales staff	0.292[a]	0.069	0.157	0.428	0.167[a]	0.039	0.091	0.243
Qualified agriculture	1.050[a]	0.065	0.923	1.117	0.611[a]	0.036	0.539	0.682
Artisans and associated workers	0.182[b]	0.077	0.032	0.333	0.106[b]	0.042	0.023	0.189
Facility and machine operators	0.065	0.081	-0.095	0.225	0.044	0.045	-0.044	0.132
Elementary occupations	0.088	0.094	-0.096	0.272	0.053	0.050	-0.046	0.152
Educational status (reference category: not finishing a school)								
Primary school	0.315[a]	0.083	0.153	0.478	0.172[a]	0.044	0.086	0.258
Secondary school	0.385[a]	0.096	0.196	0.573	0.209[a]	0.052	0.109	0.311
High school	0.322[a]	0.095	0.135	0.508	0.178[a]	0.051	0.078	0.279
University	0.352[a]	0.102	0.151	0.553	0.197[a]	0.056	0.087	0.307
Gender (reference category: male)								
Female	-0.178[b]	0.084	-0.343	-0.013	-0.101[b]	0.046	-0.192	-0.010
Age (reference category: 65+)								
15-24	-0.161	0.223	-0.597	0.275	-0.075	0.121	-0.312	0.162
25-34	0.051	0.083	-0.113	0.214	0.043	0.047	-0.048	0.135
35-44	-0.167[b]	0.077	-0.317	-0.016	-0.085[b]	0.043	-0.169	0.000
45-54	-0.315[a]	0.069	-0.450	-0.180	-0.176[a]	0.039	-0.252	-0.100
55-64	-0.235[a]	0.062	0.357	-0.112	-0.129[a]	0.035	-0.198	-0.060
Marital status (reference category: married)								
Never married	0.245[b]	0.112	0.024	0.466	0.134[b]	0.064	0.009	0.259
Divorced/Deceased spouse	0.086	0.091	-0.091	0.264	0.050	0.050	-0.048	0.149
Household size (reference category: 4-person)								
1-person	0.773[a]	0.096	0.584	0.962	0.444[a]	0.053	0.339	0.549
2-person	0.288[a]	0.055	0.179	0.395	0.166[a]	0.031	0.105	0.227
3-person	0.068	0.049	-0.282	0.165	0.044	0.028	-0.011	0.099
5-person	-0.094	0.062	-0.215	0.026	-0.540	0.035	-0.122	0.014
6+	-0.452[a]	0.069	-0.589	-0.316	-0.257[a]	0.039	-0.333	-0.181
Economic indicators								
Homeownership status (reference category: homeowner)								
Tenant	-0.416[a]	0.051	-0.515	-0.316	-0.240[a]	0.028	-0.296	-0.185
Tied cottage	0.117	0.123	-0.125	0.358	0.066	0.072	-0.075	0.208
Not a homeowner but not paying rent	-0.437[a]	0.059	-0.553	-0.321	-0.249[a]	0.032	-0.313	-0.187
Second-home ownership (reference category: no)								
Yes	0.268[a]	0.057	0.156	0.379	0.163[a]	0.033	0.098	0.229

Private insurance (reference category: no)									
	Yes	0.454[a]	0.052	0.352	0.556	0.276[a]	0.031	0.216	0.337
Credit card use (reference category: no)									
	Yes	-0.188[a]	0.044	-0.275	-0.102	-0.101[a]	0.025	0.008	0.094
Income level (reference category: 1st income level)									
	2nd income level	0.726[a]	0.091	0.547	0.904	0.369[a]	0.045	0.281	0.457
	3rd income level	1.369[a]	0.089	1.194	1.544	0.713[a]	0.044	0.625	0.799
	4th income level	1.836[a]	0.091	1.657	2.015	0.978[a]	0.046	0.886	1.067
	5th income level (highest)	2.577[a]	0.097	2.387	2.768	1.419[a]	0.049	1.321	1.517
Car ownership (reference category: no)									
	Yes	0.285[a]	0.039	0.207	0.363	0.161[a]	0.022	0.117	0.205

[a]p<.01; [b]p<.05

According to the binary logistic and binary probit model results given in Table 4, the variables like the profession of the household head (manager, learned profession member, technician/operator, and assistant knew professional jobs, service and sales staff, qualified agriculture/forestry and aquaculture workers, artisans, and associated workers), the educational status of the household head (primary school, secondary school, high school, college, undergraduate-graduate), the gender of the household head, the age of the household head (35-44 age group, 45-54 age group, 55-64 age group), the marital status of household head (never married) and household size (1-person, 2-person, 6- person or more) were determined as significant. Homeownership status of the household (tenant, not a homeowner but not paying rent), automobile ownership in the household, second-home ownership, private life insurance and the presence of an individual having a credit card, and annual household income level (2nd income level; 5th income level) were also determined as significant.

In Table 5, estimated model results associated with residential properties and social-environmental factors that may affect households' savings were presented.

Table: 5
Estimated Model Results Associated with Residential Properties and Social-Environmental Factors

Variables	Binary Logistic Regression				Binary Probit Regression			
	β	Std. Error	95% CI		β	Std. Error	95% CI	
			Lower	Upper			Lower	Upper
Indications related to residents								
House type (reference category: detached)								
Apartment	-0.985[c]	0.056	-0.208	0.011	-0.051	0.031	-0.112	0.01
Heating system (reference category: stove)								
Central heating system	0.226[a]	0.074	0.080	0.371	0.127[a]	0.042	0.044	0.209
Floor standing boiler	0.410[a]	0.074	0.265	0.556	0.231[a]	0.042	0.148	0.313
Electric heater	-0.075	0.108	-0.287	0.137	-0.030	0.059	-0.148	0.087
Fuel type (for heating) (reference category: conventional fuel type)								
Advanced fuel type	-0.281[a]	0.0681	-4.415	-0.147	-0.164[a]	0.038	-0.241	0.088
Fuel type (for hot water) (reference category: conventional fuel type)								
Advanced fuel type	-0.249[a]	0.082	-0.409	-0.088	-0.131[a]	0.044	-0.218	-0.045
House size (reference category: 60 m^2 or less)								
$61m^2$-$90m^2$	0.185[c]	0.104	-0.020	0.389	0.098[c]	0.055	-0.009	0.206
$91m^2$-$120m^2$	0.286[a]	0.104	0.082	0.491	0.159[a]	0.055	0.051	0.066
$121m^2$-$150m^2$	0.242[b]	0.108	0.029	0.455	0.128[b]	0.057	0.014	0.241
$150m^2$+	0.320[a]	0.117	0.090	0.549	0.176[a]	0.063	0.051	0.301
Social and environmental indicators								
The habit of smoking (reference category: no)								
Yes	-0.352[a]	0.037	-0.424	-0.280	-0.205[a]	0.021	-0.246	-0.164
The habit of eating out (reference category: no)								
Yes	0.172[a]	0.040	0.093	0.251	0.097[a]	0.023	0.051	0.142
The habit of going to the cinema (reference category: no)								
Yes	0.182[a]	0.061	0.062	0.302	0.112[a]	0.036	0.041	0.183
The habit of going to the market (reference category: no)								
Yes	0.085[b]	0.039	0.008	0.161	0.051[b]	0.022	0.008	0.094
Year (reference category: 2015)								
2016	0.208[a]	0.044	0.120	0.293	0.113[a]	0.025	0.065	0.162
2017	0.335[a]	0.044	0.249	0.421	0.189[a]	0.024	0.141	0.237

[a]p<.01; [b]p<.05; [c]p<.10

According to the model results given in Table 5, the variables like the type of house where the household resides, the heating system of the house (central heating system, floor standing boiler), the type of fuel employed for heating, the type of fuel used for hot water, and house size ($61m^2$-$90m^2$, $91m^2$-$120m^2$, $121m^2$-$150m^2$, $151m^2$ and more) were determined as statistically significant. The presence of an individual having the habit of smoking cigarettes/ tobacco/cigars, the presence of an individual having the habit of going to the places like cinema/theatre/sports competition, and the habit of the household to eat out and the habit of the household to go to the market and the survey year (2016, 2017) were also determined as statistically significant.

3.3. Average Direct Elasticity

In Table 6 and Table 7, the elasticity estimates of the factors that affect the saving status of the households and the variance inflation factor (VIF) values of the independent variables included in the model were presented. While the variance inflation factor between 5 and 10 indicates an average multicollinearity problem, a value greater than 10 shows a

high-level multicollinearity problem (Alkan & Abar 2020: 33). When the VIF values of the independent variables employed in the study were analysed, it was observed that no independent variables created the multicollinearity problem.

In Table 6, the average direct elasticity estimates of socio-demographic and essential economic factors in the saving status of households were presented.

Table: 6
Elasticity Estimates for Socio-Demographic and Economic Factors

Variables	Binary Logistic Regression		Binary Logistic Regression		VIF
	Elasticity	Std. Error	Elasticity	Std. Error	
Demographic indicators					
Profession (reference category: not working)					
Manager	0.549[a]	0.062	0.627[a]	0.068	1.39
Learned profession member	0.363[a]	0.067	0.420[a]	0.076	1.88
Technician, operator	0.172[b]	0.075	0.198[b]	0.084	1.31
Office workers	-0.045	0.085	-0.059	0.098	1.25
Service and sales staff	0.237[a]	0.056	0.267[a]	0.061	1.54
Qualified agriculture	0.795[a]	0.047	0.871[a]	0.05	1.54
Artisans and associated workers	0.149[b]	0.063	0.172[b]	0.068	1.57
Facility and machine operators	0.054	0.067	0.072	0.073	1.46
Elementary occupations	0.072	0.077	0.087	0.082	1.37
Educational status (reference category: not finishing a school)					
Primary school	0.257[a]	0.069	0.279[a]	0.073	3.36
Secondary school	0.311[a]	0.079	0.337[a]	0.084	2.40
High school	0.262[a]	0.078	0.288[a]	0.084	3.02
University	0.286[a]	0.084	0.316[a]	0.091	3.84
Gender (reference category: male)					
Female	-0.143[b]	0.068	-0.160[b]	0.075	2.33
Age (reference category: 65+)					
15-24	-0.127	0.176	-0.115	0.188	1.31
25-34	0.039	0.064	0.064	0.069	2.69
35-44	-0.131[b]	0.059	-0.130[b]	0.066	3.44
45-54	-0.250[a]	0.054	-0.276[a]	0.06	2.72
55-64	-0.185[a]	0.049	-0.200[a]	0.054	1.93
Marital status (reference category: married)					
Never married	0.192[b]	0.86	0.204[b]	0.094	1.55
Divorced/Deceased spouse	0.068	0.071	0.078	0.078	2.83
Household size (reference category: 4-person)					
1-person	0.582[a]	0.069	0.640[a]	0.073	2.40
2-person	0.227[a]	0.043	0.257[a]	0.048	1.98
3-person	0.549	0.039	0.070	0.045	1.61
5-person	-0.077	0.502	-0.088	0.057	1.37
6+	-0.377[a]	0.059	-0.441[a]	0.068	1.48
Economic indicators					
Homeownership status (reference category: homeowner)					
Tenant	-0.334[a]	0.041	-0.378[a]	0.045	1.38
Tied cottage	0.089	0.093	0.960	0.103	1.11
Not a homeowner but not paying rent	-0.351[a]	0.048	-0.394[a]	0.053	1.15
Second-home ownership (reference category: no)					
Yes	0.209[a]	0.0434	0.246[a]	0.048	1.08
Private insurance (reference category: no)					
Yes	0.351[a]	0.039	0.407[a]	0.043	1.17
Credit card use (reference category: no)					
Yes	-0.149[a]	0.035	-0.156[a]	0.038	1.54
Income level (reference category: 1st income level)					
2nd income level	0.671[a]	0.085	0.737[a]	0.092	1.82
3rd income level	1.229[a]	0.082	1.321[a]	0.09	2.07
4th income level	1.601[a]	0.083	1.705[a]	0.091	2.41
5th income level (highest)	2.114[a]	0.084	2.231[a]	0.092	3.16
Car ownership (reference category: no)					
Yes	0.226[a]	0.031	0.248[a]	0.034	1.33

[a]p<.01; [b]p<.05; VIF: Variance Inflation Factor

According to the binary logistics and binary probit regression models presented in Table 6, the expected saving probability of the household with a female head was 14.3% and 16% less than that of a household with a male lead, while the other variables were fixed. According to the binary logistic regression model, the fact that the household head was primary school graduate, secondary school graduate, high school graduate, or university graduate increased the expected saving probability by 25.7%, 31.1%, 26.2%, and 28.6%, respectively, compared to the reference group. The household head who has never married increased the expected saving probability by 19.2% and 20.4% compared to the reference group. The household head's age was between 35-44, 45-54, or 55-64, reduced by 13.1%, 25%, 18.5% in the logit model, and reduced by 13%, 27.6%, 20% in the probit model, respectively. The household size consisted of 1-person, or 2-people increased the expected saving probability by 58.2% and 22.7% in the logit model, and 64% and 25.7% in the probit model, respectively, compared to the reference group. On the other hand, the household size consisted of 6-person or more reduced the expected saving probability by 37.7% and 44.1%, respectively, compared to the reference group.

According to the binary logistic regression model, the fact that household head was a manager, a learned professional member, technician/operator and assistant learned professional member, a service and sales staff, a qualified agricultural/forestry and aquaculture worker, or an artisan and associated worker increased the expected saving probability by 54.9%, 36.3%, 17.2%, 23.7%, 79.5%, 14.9% respectively, compared to the reference group. According to the binary probit regression model, the fact that household head was a manager, a learned professional member, technician/operator and assistant learned professional member, a service and sales staff, a qualified agricultural/forestry and aquaculture worker, or an artisan and associated worker increased the expected saving probability by 62.7%, 42%, 19.8%, 26.7%, 87.1%, 17.2%, respectively, compared to the reference group.

According to the binary logistic regression model, the household was tenant, or not a homeowner but not paying rent reduced the expected saving probability by 33.4% and 35.1%, respectively, compared to the reference group. According to the binary probit regression model, the household was tenant, or not a homeowner but not paying rent reduced the expected savings probability by 37.8% and 39.4%, respectively, compared to the reference group. The predicted saving probability of second homeowners was 22.6% and 24.6% more. The expected saving probability of the household having private insurance was 35.1% and 40% more than that of those who did not have. The predicted saving probability of the household employing credit cards was 14.9% and 15.6% less than those who did not engage. The saving probability of the household that owned cars was 22.6% and 24.8% more than those who did not own. As the household's income level increased, the saving probability increased in binary logistics and binary probit regression models.

In Table 7, the average direct elasticity of the factors related to residential properties and social-environmental characteristics that are effective in household saving.

Table: 7
Elasticity Estimates for Residential Properties and Social-Environmental Factors

Variables	Binary Logistic Regression		Binary Probit Regression		VIF
	Elasticity	Std. Error	Elasticity	Std. Error	
Indications related to residents					
House type (reference category: detached)					
Apartment	-0.078[a]	0.0441	-0.079	0.048	2.35
Heating system (reference category: stove)					
Central heating system	0.182[a]	0.06	0.201[a]	0.067	1.99
Floor standing boiler	0.326[a]	0.059	0.357[a]	0.065	4.30
Electric heater	-0.062[a]	0.089	-0.501	0.099	1.84
Fuel type (for heating) (reference category: conventional fuel type)					
Advanced fuel type	-0.222[a]	0.023	-0.255[a]	0.060	4.22
Fuel type (for hot water) (reference category: conventional fuel type)					
Advanced fuel type	-0.194[a]	0.062	-0.199[a]	0.065	1.17
House size (reference category: 60 m^2 or less)					
61m^2-90m^2	0.150[c]	0.086	0.159[c]	0.090	4.43
91m^2-120m^2	0.231[a]	0.085	0.253[a]	0.090	4.83
121m^2-150m^2	0.196[b]	0.089	0.205[b]	0.095	3.47
150m^2+	0.257[a]	0.095	0.279[a]	0.102	2.32
Social and environmental indicators					
The habit of smoking (reference category: no)					
Yes	-0.279[a]	0.029	-0.318[a]	0.032	1.14
The habit of eating out (reference category: no)					
Yes	0.136[a]	0.032	0.149[a]	0.035	1.25
The habit of going to the cinema (reference category: no)					
Yes	0.143[a]	0.047	0.170[a]	0.054	1.19
The habit of going to the market (reference category: no)					
Yes	0.067[a]	0.031	0.079 [b]	0.034	1.11
Year (reference category: 2015)					
2016	0.167[a]	0.035	0.181[a]	0.039	1.37
2017	0.267[a]	0.035	0.296[a]	0.039	1.38

[a]p<.01; [b]p<.05; [c]p<.10; VIF: Variance Inflation Factor.

According to the binary logistics model presented in Table 7, the expected saving probability of the households living in apartments was 7.8% less than that of the households living in a detached house. The predicted saving probability of the households employing an electric heater as the heating system was 6.2% less than households using a stove for heating. According to the binary logistics and binary probit models, the central heating system employed for heating in the house where the household resides increased the expected saving probability to 18.2% and 20.01%, respectively, compared to the reference group. Likewise, the house's heating system where the household resides was based on the floor standing boiler increased the expected saving probability compared to the reference group by 32.6% and 35.7%, respectively. The predicted saving probability of the households employing advanced fuel type for heating in their houses was 22.2% and 25.5% less than that of the households using conventional fuel type for heating, respectively.

Similarly, the expected saving probability of the households employing advanced fuel types for hot water in their houses was 19.4% and 19.9% less than households using conventional fuel types, respectively. According to the binary logistic regression model, the expected saving probability of the households living in the houses with 61 m^2 -90 m^2, 91 m^2 -120 m^2, 121 m^2 -150 m^2, 150 m^2, and more sizes was 15%, 23.1%, 19.6% and 25.7% more than the reference group, respectively. According to the binary probit regression model, the expected saving probability of the households living in the houses with 61 m^2-90 m^2, 91 m^2-120 m^2, 121 m^2-150 m^2, 150 m^2, and more sizes was 15.9%, 25.3%, 20.5%, and 27.9% more

than the reference group, respectively. According to the binary logistics and binary probit regression models, the expected saving probability of a household that participated in the survey in 2016 and 2017 was 16.7% and 26.7% more than a household that participated in 2015.

4. Discussion

In the study, the demographics and economic factors of the household head and the factors related to residential properties and social-environmental indicators affecting household savings in Turkey were determined. The household savings trends survey was essential in increasing national savings rates and guiding economic development in policies and activities performed by decision-makers.

According to the study results, the household head's profession affected the household's saving status. Among the professional groups, household heads working as qualified agricultural, forestry, and aquaculture workers were determined to have the highest saving probability. Similar results were obtained in the studies on this issue (Beckmann et al., 2013; Şengür & Taban, 2016).

In the study, it was determined that the education level of the household head affected the tendency to save. Also, various studies determined that education affected saving status (Beckmann et al., 2013; Ceritoğlu & Eren, 2014; Denizer et al., 2002; Fisher, 2010; Khan et al., 2013; Zengin et al., 2018). The study determined that the secondary school graduates' household heads had the highest saving probability. The relation between educational status and the possibility of saving was also associated with financial literacy. Another study detected a relationship between financial literacy and saving status. Financial literacy increased as the educational status improved (Barbić et al., 2016).

It was determined that households with a female household head were less likely to make savings. Similar results were determined in some studies (Fisher, 2010; Ricketts et al., 2013). Unlike this paper, another study determined that women in other categories saved more than men, apart from the women with the highest income (Abdelkhalek et al., 2010). In a study where households' savings decisions in Bulgaria, Hungary, and Poland were investigated, it was determined that households with a female household head made more savings (Denizer et al., 2002).

When the age of the household head was examined, it was determined that the saving probability in the 35-64 age group decreased and that the group over 65 years held the highest saving tendency. Other studies presented similar results (Denizer et al., 2002; Kulikov et al., 2007). This situation may be linked with the fact that the group above 65 years increases the part of income to be saved due to the decrease in their expenses and that our culture is concerned with endowing the relatives. In other studies on saving, the life cycle hypothesis was discussed. The life cycle hypothesis, based on the fact that the expenditures of individuals in old age can be accomplished without deteriorating their living

standards, states that the relationship between age and savings is humpbacked and that middle-aged people make positive savings and retired people make negative savings (Modigliani, 2005). The results obtained from the study did not support the life cycle hypothesis. Still, studies support the literature's life cycle (Beckmann et al., 2013; Burney & Khan, 1992; Hurd & Lee, 1995; Liberda, 1999; Şenol, 2018).

The marital status variable influenced the saving status of the households. It was determined that single household heads were more inclined to save than married ones. Similar results were in the studies on this issue (Şengür & Taban, 2016; Temel-Nalın, 2013).

When the size of the households was analysed, it was determined that one-person households were more inclined to save, but the possibility of saving in the households composed of 6-person or more was low. Some studies accomplished similar results (Abdelkhalek et al., 2010; Denizer et al., 2002; Hurd & Lee, 1995; Liberda, 1999; Ricketts et al., 2013; Şengür & Taban, 2016). Besides, in the literature, there is a study determining that two-person households hold a higher saving probability compared to those who are composed of one-person, three-person, or more and that this situation is related to the fact that two-person households may have more earnings because two-person households are formed of two adults (Beckmann et al., 2013). The number of children in households can cause both a decrease and an increase in savings. On the one hand, having children can encourage parents to make more savings to finance their children's needs like education and comfortable life in the future. On the other hand, excessive household size can drive parents to decrease their savings.

One of the economic factors, the property ownership variable, influenced the household's savings. Households that were not tenants or were homeowners but did not pay rent were less inclined to make savings than homeowners. Other studies also confirmed these findings (Erdem, 2017; Şengür & Taban, 2016; Temel-Nalın, 2013).

Those who owned a second home were more inclined to save than those who did not. This situation may be related to the fact that the second-home owners belong to a higher income group. Some studies obtained similar results in the literature (Bozkuş & Üçdoğruk, 2007; Şengür & Taban, 2016; Temel-Nalın, 2013). Contrarily, in the literature, some studies determined that households with assets like a second home were less inclined to save (Erdem, 2017).

It was determined that households with private insurance were more inclined to save than those without insurance. When the study results were analysed, individuals with private insurance constituted a small proportion, approximately 10% of the sample. This situation can be defined by the fact that private insurance premiums are high, or the sector employees who present this opportunity are very few. From this point of view, we can deduce that individuals with private insurance had sufficient income and thus had a chance to save more. There are studies in the literature complying with this situation. The families with public health insurance household heads were more inclined to save less than other households

(Erdem, 2017). It was asserted that the household head had no health insurance and social security had low-level savings. This was because the health expenditures paid from the disposable income constituted a heavy burden on the household budget (Ceritoğlu, 2009).

Households using credit cards were less inclined to save than those who did not use credit cards. Let's analyse the data of the interbank bank centre. It is seen that the total number of domestic and foreign credit cards in domestic transactions and the transaction sum have risen continuously since 2011, and the transaction sum with credit cards in 2019 reached 955,342.47 million (BKM, 2020). The increase in a credit card may also decrease the share of revenue allocated to save. Some studies obtain similar results in the literature (Bozkuş & Üçdoğruk, 2007; Zengin et al., 2018). This situation may be related to increasing credit card ownership can cause unconscious shopping today.

The study determined that all income level variables affected the tendency to save. The increase in income level raised the possibility of households saving. In the literature, studies performed in developed countries and developing countries and primarily in Turkey presented similar results (Abdelkhalek et al., 2010; Agrawal, 2001; Çelik, 2009; Çolak & Öztürkler, 2012; Horioka & Terada-Hagiwara, 2012; Hüfner & Koske, 2010).

It was determined that the car owner households were more inclined to save than those who were not. Considering that the income levels of the car owner households were not too low, it would be reasonable for them to save more than those who did not own the car. Some studies obtained similar results in the literature (Temel-Nalın, 2013). Still, studies are determining that car owner households saved less (Denizer et al., 2002; Kulikov et al., 2007; Şengür & Taban, 2016) compared to those who did not own cars, and there was no relationship between car ownership and saving tendency (Zengin et al., 2018).

In the study, the fact that the indicators related to residential properties such as the heating system of the house and type of fuel (for heating or hot water), and the social and environmental indicators such as the habit of smoking and going to the market were included in the models contributes to the literature in determining savings preferences in Turkey.

Households with central heating or floor-standing boilers were more inclined to save than those with stoves. This situation may be related to the fact that the households living in houses with stoves belong to lower-income groups than other households. Households employing advanced fuel types for heating and hot water were less inclined to save than households using conventional fuel types. This situation may be related to the fact that advanced fuel types had a higher share of disposable income allocated to save. The house size affected the saving probability of households, and as the house size increased, the saving probability raised.

Factors related to social and environmental indicators affect the saving behaviour of households. It was determined that households with individuals having the habit of smoking were less likely to save than those who did not have. It has been determined that households

with individuals having the habit of going to the cinema were more inclined to keep than those who did not have. It was determined that households with individuals having the habit of eating out were more likely to hold than those who did not have. In the literature, a study determined that individuals with a high-level habit of eating out had a low tendency to save, contrary to the survey (Zengin et al., 2018). It was determined that households with individuals having the habit of going to the market were more inclined to save than those who did not have. The fact that the products in the market are more affordable than the shopping places like stores, shops, groceries may be associated with the efforts of the household to reduce the income allocated for consumption. Also, according to the results obtained from the study, it was determined that a household participating in the survey in 2016 and 2017 was more inclined to save than a household participating in 2015.

In the paper, factors affecting household saving, which is the most crucial determinant of the concept of saving and essential for the sustainable growth of an economy, especially a developing economy, were determined. The demographic and economic factors of household heads and the factors like residential properties and social-environmental indicators influenced household savings in Turkey. Choosing the effects of these features would contribute to the policy-making process that would encourage households to save and the description of household savings.

In the study, economic indicators, primarily the education, age, household size, and income of household head, were determined to be highly efficient in household saving behaviour. The results were essential for producing incentive policies such as individual retirement plans to enhance households' saving tendency. Sustainable economic development for each country, especially for developing countries, mainly like Turkey, can be supplied with sufficient savings because the savings assessed within the financial system are essential financial resources. Savings finance investments, investments finance economic growth. Insufficient savings would transform the country into a more foreign-dependent country with low financial accumulation. As a result of the study, it is advised to policymakers to improve financial literacy to raise awareness about what the savings of individuals contribute to the future and about evaluating the savings in the financial system rather than saving under the mattress.

The study had several limitations. First, the data in the study were secondary. The variables necessary for statistical analysis consisted of the variables in the dataset. Variables such as the place of residence of the household (rural/urban), the number of unemployed in the household, the financial literacy level of the household head could not be involved in the model. Second, since the data were cross-sectional, it was not probable to describe a definitive causal relation related to the factors affecting household savings. Third, the data obtained from the study were the household heads' answers. Hence, the data obtained from this data collection method may be biased.

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