

An Analysis of the Factors Affecting Real Estate Taxes Literacy in Türkiye¹

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Türkiye’de Emlâk / Gayrimenkul Vergileri Okuryazarlığını Etkileyen Faktörler Üzerine Bir Analiz²

Abstract

This research aims to determine taxpayers’ literacy level about the financial obligations related to real estate, an important investment instrument in Türkiye, and the factors determining literacy. In this context, primary data were collected through surveys administered to 500 people who resided in Istanbul, Ankara, and Izmir. Primary data analysis was carried out using two methods. First, the real estate tax (RET) literacy was calculated through percentage analysis. Second, using discrete selection models, variables likely to affect the literacy of real estate taxes collected could be estimated. As a result, the primary data show that RET in Türkiye is 30%. According to the estimation results, the gender, age, and income variables are effective regarding fiscal rights related to property in Türkiye.

Keywords : Real Estate Taxes, Tax Literacy, Discrete Selection Model, Türkiye.

JEL Classification Codes : H20, H21, H24.

Öz

Bu araştırmada, Türkiye’de önemli bir yatırım aracı olan gayrimenkullere ilişkin mali yükümlülükler konusunda mükelleflerin okur-yazarlık düzeyi ve okuryazarlığını etkileyen faktörlerin belirlenmesi amaçlanmaktadır. Bu kapsamda İstanbul, Ankara ve İzmir’de ikamet eden 500 kişi ile saha çalışması yapılarak birincil veriler toplanmıştır. Birincil veri analizi iki yöntem kullanılarak gerçekleştirilmiştir. İlk olarak, gayrimenkul vergileri okuryazarlığı (RET) yüzde analizi ile hesaplanmıştır. İkinci olarak, kesikli seçim modelleri (probit ve/veya logit) kullanılarak, emlak vergilerine ilişkin okuryazarlığı etkilemesi muhtemel değişkenler tahmin edilebilmiştir. Sonuç olarak, birincil veriler Türkiye’de RET okuryazarlığının %30 olduğunu göstermektedir. Tahmin sonuçlarına göre, cinsiyet, yaş ve gelir değişkenleri Türkiye’de mülkiyetle ilgili mali haklar açısından etkilidir.

Anahtar Sözcükler : Gayrimenkul Vergileri, Vergi Okuryazarlığı, Kesikli Seçim Modeli.

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1. Introduction

Fiscal obligations, especially taxes, constitute a large part of public revenues and are present in every aspect of our lives. We can encounter the concept of tax and tax-related transactions at every stage of life and at every age. Real estate is one of the areas in which the tax relationship between the tax administration and the taxpayer arises. In 2020, the ratio of real estate taxes to GDP was 1.1% of the OECD average, while it was 0.2% in Türkiye. The three countries with the highest property tax ratio are Canada (3.3%), the USA, and the UK (2.9%) (OECD, 2023). According to the World Bank, one of the indicators of property tax revenue performance is the revenue-to-GDP ratio (Kelly et al., 2020).

This study uses property as an investment tool in Türkiye, the second real estate tax knowledge dimension. In a study conducted by the Presidency of the Republic of Türkiye Finance Office and involving the participation of 15,041 people, real estate emerged as one of the most reliable instruments for savings valuation. The main reason for this result is that real estate, similar to gold, is a tangible asset, and the physical transformation of savings into an asset increases people's sense of trust and is seen as an investment that will always increase in value. It was found that as an investment tool, real estate ranks first among current investments at 44%, and if it is considered together with previous ownership, this ratio rises to 51% (TR Presidency Finance Office, 2023). The perception that the taxation of these assets will also alleviate the discontent that may arise in lower-income groups (MHUV, 2002) is another dimension of these taxes. For this reason, in the property market, the taxation not only of rental income but also of rents arising from sudden and rapid increases in the value of property and the taxation of income arising from property are important both for investors to make the right investment decision and for public authorities to tax income. While this research initially focuses on the factors that determine tax literacy, it also examines the tax awareness of property as an investment tool. Although there are many financial regulations related to real estate in Türkiye, these regulations are scattered in different laws and seem complex. The legislation also has specific tax regulations due to using real estate as an investment tool.

Tax literacy is a broad concept. It involves knowing, adapting to, and acting on that knowledge. Different definitions of tax literacy encompass all dimensions. A conceptual discussion is presented in the next section. However, studies show that the essential dimension of tax literacy is knowledge (cognitive dimension) (McCaffery, 1994; Türegün et al., 2021: 75; Hariyani & Sofiani, 2021: 1735). For this reason, this study examines the factors determining the knowledge level about real estate taxes. Although studies generally focus on tax education, studies on the factors that influence the level of taxpayers' knowledge are limited. This study seeks to answer the question of which taxpayer groups should be targeted to increase tax knowledge.

This study aims to identify the factors determining taxpayers' knowledge of all financial obligations that affect many taxpayers. Studies on tax literacy can be divided into two groups: studies aimed at measuring the tax literacy of a group, such as accountancy

professionals and university students, and studies aimed at measuring the awareness of a particular tax among the taxpayers concerned. The first group of studies has generally been conducted with data collected from field studies performed with university students (Bakırtaş & Yaşa, 2020: 756; Türegün et al., 2021; Teyyare, 2018: 327; Koban & Bulu, 2017: 28; Chardon et al., 2016: 100; Moučková & Vitek, 2018; Fallan, 1999: 176). These studies were conducted on the field research on tax education conducted by the OECD in 2015 and 2021 (OECD, 2021). The second group of studies, which are quite limited, consists of research measuring the literacy of a current tax rather than a specific group of participants, as in this research (Yardımcıoğlu et al., 2014; Lyon & Catlin, 2020). In this respect, this group significantly differs from the studies conducted in Türkiye. Another feature that distinguishes this study from others is that it not only calculates the level of tax literacy but also estimates the factors that determine it. The research results can guide the implementation of tax literacy policies.

The study consists of 5 parts. The following section explains the concepts used in the research and discusses the literature. Next, the methodology of the study is presented. The fourth part presents the findings, followed by the discussion section. Finally, this study's policy implications, limitations, and future research are discussed in the conclusion section.

2. A Conceptual / Theoretical Framework: Tax Literacy

The conceptual discussion is conducted regarding two dimensions. While the first dimension relates to the content of real estate taxes (tax on property) with more definite boundaries, the second dimension relates to the more controversial concept of tax literacy. We then summarise studies by considering their standard sizes.

The OECD defines property tax as "current and noncurrent taxes on the use, ownership or transfer of property" (OECD, 2021). This definition includes recurrent taxes such as income tax, taxes on rent and capital gains, and taxes on changes in ownership such as inheritance. In this study and Türkiye, taxes related to changes in ownership, such as inheritance and gifts, are not included within the scope of tax on property. The reason is that inheritance and transfer taxes are classified separately in Türkiye. For this reason, according to the "Interpretative Guide" in the OECD Revenue Statistics, personal income tax includes income codes 1100, 1120 and 1220 and income codes 4100 and 5200. These taxes are classified in Turkish legislation as income tax, capital gains tax, which is levied on income resulting from a change in ownership of real estate within a short period (5 years), and real property income tax (RPIT), which is levied on income resulting from the rental of real estate. A title deed fee is levied as a fee on a change in property ownership; sometimes, VAT is levied as an expenditure tax. Finally, property tax is imposed by local governments based on property ownership. This study aims to investigate the factors that affect the literacy of these five taxes. This study will use real estate taxes as an umbrella term to cover these five taxes.

The second dimension that we need to clarify conceptually is the concept of tax literacy. In this study, tax literacy is defined as the state of being aware of the existence of a tax. Awareness of the existence of the tax, that is, the cognitive dimension, including the definition of the tax and its types, legislation, rates, payment dates, etc., can be explained as knowing the elements (Yılar & Akdağ, 2017: 366). Knowing the existence of taxes plays an important role in calculating the investment cost of real estate as an investment vehicle. The most common definition of tax literacy includes the elements of being aware of the existence of a tax, being able to fulfil formal tax-related obligations, and being able to make calculations considering tax-related exceptions and exemptions (Kuhuparuw et al., 2022; Kamaluddin & Madi, 2005). In this study, the ability to calculate the economic impact of a tax is an important element. While tax literacy is defined, many studies, such as this research, do not explain the concept in a way that includes its economic consequences (Fallan, 1999; Madi et al., 2010). The calculation of the economic dimension of tax is sometimes determined as tax awareness in the literature. The concepts of tax awareness and literacy are used very often in the literature in a mutually inclusive way (Yardımcıoğlu et al., 2014; Bulu, 2018; Hatuti, 2014: 84). Tax literacy and tax awareness can also be seen as different concepts. Knowing the financial obligations related to property, which is the subject of this study, is tax literacy, knowing the amount of tax to be paid as a result of the rental or sales income to be obtained when buying a property, especially for investment purposes, and other financial obligations that will be encountered and analysing the economic consequences can be referred to as tax awareness. As mentioned above, tax awareness at a cognitive level is the most basic element of both concepts.

In addition to these definitions, studies define tax literacy more broadly. These definitions are generally used under the concept of tax compliance and cover the approach to the tax system, attitudes and behaviours toward taxes and the tax system, and voluntary compliance with taxes (Bornman & Wassermann, 2018; Clercq, 2023: 507; Kumar & Tanwar, 2020: 85).

Many empirical studies show that high tax literacy in society or individuals reduces tax evasion behaviour and increases voluntary tax compliance and the perception of tax justice in society, that tax planning and tax management come to the fore in these societies, or that low tax literacy reveals these behaviours (Cvrlje, 2015: 165; Kumar & Tanwar, 2020: 85; Nichita et al., 2019: 418; Agusti & Rahman, 2023; Lyon & Catlin, 2020; Bornman & Wassermann, 2018; Hayat et al., 2022: 12; Ogorodnikova et al., 2020).

There are empirical findings in the literature that tax literacy is influenced by demographic variables such as people's gender, age, and income level (Kumar & Tanwar, 2020: 95; Bhushan & Medury, 2013: 76; Chardon et al., 2016). Depending on the characteristics of the group in which the field study was conducted, there is empirical evidence that the gender variable is insignificant, as in the studies of Koban & Bulu (2017: 28) and Teyyare (2018: 327), but there are also qualitative studies in which the direct effect of gender is significant (Chardon et al., 2016: 100). However, these studies were generally conducted with limited homogeneous student groups. In (Yardımcıoğlu et al., 2014),

although the participant group was more homogeneous, no significant differences were found in terms of people's gender or income status, while significant differences were found in terms of people's age, educational level, occupation, and years of work. Some studies show that men are taxed more than women (Fallan, 1999: 176).

Studies have concluded that academic success is effective in the context of tax literacy or awareness, as it generally works with student groups (Teyyare, 2018: 327). In this regard, the effect of tax education on tax literacy has been demonstrated in other studies conducted with student groups (Koban & Bulu, 2017: 28; Moučková & Vitek, 2018).

In a study measuring tax literacy for citizens in a city (Kahramanmaraş) of Türkiye, the rate of those who know the names of taxes is 65.36%, while the rate of those who know the principles and rates of these taxes is 42.49% (Yardımcıoğlu et al., 2014: 116). Another field study directly applied to taxpayers, and tax office staff concluded they had a general knowledge of tax procedures, principles and rates, and tax and financial obligations (Aslan & Öz-Yalaman, 2009: 128). In studies conducted in Malaysia, the level of tax awareness was calculated to be between 60% and 75% (Latiff et al., 2005; Madi et al., 2010: 223). Although the tax literacy rate has been calculated to be over 50% as a result of field research conducted with small businesses in Australia (Freudenberg et al., 2017: 40), there are also studies claiming that this rate is lower (Isle et al., 2022: 65). Finally, in a survey conducted in the USA, tax literacy was measured at a level of (Lyon & Catlin, 2020) 44.9% with a simple average.

Studies either measure awareness directly or investigate the factors that influence the tax awareness of groups created with a specific classification, especially student groups. This research used a stratified population sample with no restrictions on group dynamics and examined the factors influencing tax literacy using this sample. The aim was to contribute to the literature.

In the literature, tax literacy is typically measured using primary data collected through surveys (Chardon et al., 2016; Lyon & Catlin, 2020; Chardon et al., 2016). While field studies on tax literacy are generally articulated with descriptive statistics, it can be seen that variance analyses such as ANOVA are frequently used in the literature (Bhushan & Medury, 2013: 76; Teyyare, 2018: 320; Koban & Bulu, 2017; Yardımcıoğlu et al., 2014: 117; Chardon et al., 2016). In the literature, more detailed results on tax literacy have been obtained from regression-based tests. For example, Lyon & Catlin (2020) show that tax literacy is higher among older men, who are more educated and have a higher household income.

Due to the complexity of tax on property legislation in Türkiye, legal reviews of both the development of the legislation and the expansion of the tax base can be found in the literature (Kızılot et al., 2011; Yıldız et al., 2016; Kıldış, 2009; Aşçı-Akıncı, 2022). At the same time, since real estate is used as an investment tool, studies on real estate taxes, commercial income and capital gains (Çelik & Güllü, 2015), ground rents arising from the

urban planning process (Yayğır & Hacıköylü, 2018; Saraçoğlu et al., 2015; Ökmen & Yurtseven, 2010), and tax problems and legislative deficiencies regarding losses and evasion (Cenkeri, 2012; Doğrusöz, 2010; Yücel, 2022) are also frequently found in the literature.

3. Methodology

The number of RPIT taxpayers was used to determine the sample for this study. RPIT is one of the taxes included in real estate taxes, as described in the previous section. There are approximately 2 million RPIT taxpayers in Türkiye. The field study aims to determine the factors that determine the literacy of real estate taxes. In 2021, 38% of RPIT taxpayers were located in Istanbul, followed by Ankara with 11% and İzmir with 16% (GİB, 2023). Since 65% of all taxpayers live in three metropolitan cities, this research was carried out in these three metropolitan cities, and 800 questionnaires were collected, of which 500 were usable.

In the field studies, the participants were asked about their level of knowledge from 5 different perspectives, as described in the previous section. In field studies, stratified sampling is preferred. The five different perspectives are the financial liabilities related to the purchase of real estate from natural persons (RERP), the financial liabilities related to the purchase of real estate from legal entities (RECC), the financial liabilities related to the ownership of real estate (REOW), the financial liabilities related to the rental of real estate (RERE) and, finally, the financial liabilities arising from the purchase and sale of property with the time limits established by law (RECG). First, each tax's real estate tax literacy (RETL) index was calculated in this context: $(\sum 1^{n_{i}} \text{[[Taxcode]}_i])/n$. The relevant variables take the value of 1 if the respondents know the relevant tax liabilities correctly and 0 if they are wrong. Total_RETL is calculated by taking the simple average of the total score for each tax. The index is calculated as in Equation 1.

$$Total_{RETL}Index = \frac{\sum_1^n RERP_t}{n} + \frac{\sum_1^n RECC_t}{n} + \frac{\sum_1^n REOW_t}{n} + \frac{\sum_1^n RERE_t}{n} + \frac{\sum_1^n REDA_t}{n} \quad (1)$$

Second, taxpayers' literacy of the financial obligations related to real estate was analysed using discrete choice models (probit and/or logit). In the literature, probit and logit models are generally preferred in regression analyses when the dependent variable is qualitative. The difference between the two models is mainly due to the different distributions of the error term. In a logit model, the error term is assumed to have a logistic distribution, whereas in a probit model, it is assumed to have a normal distribution (Greene, 2012). Discrete choice variables are used in the literature to measure tax literacy (Torgler, 2006). Although surveys are used as a data collection technique in studies on tax literacy, 79% of the analyses in the literature are carried out using the quantitative method (Yelman, 2021: 305). This study estimated a separate model for each tax using the explanatory variables obtained from the primary data (see Equations 3, 4, 5, 6, 7, and 8). Finally, to estimate the literacy of all taxes in a single model, the Pers_RETA index was calculated as shown in Equation 2, and the dependent variable $\text{[[REDP]}]$ was created by assigning the

value of 1 to participants with a value of 2.5 or more and 0 to participants with a value of less than 2.5. The model was also estimated with this variable removed to see the distorting effect of the property ownership variable.

$$Pers_RETA\ Index = \sum_{i=0}^n (RERP_i + RECC_i + REOW_i + RERE_i + RECG_i) \quad (2)$$

$$RERP_i = \beta_0 + \beta_1 gender_i + \beta_2 age_i + \beta_3 educode_i + \beta_4 employment_i + \beta_5 income_i + \beta_6 owner_i \quad (3)$$

$$RECC_i = \beta_0 + \beta_1 gender_i + \beta_2 age_i + \beta_3 educode_i + \beta_4 employment_i + \beta_5 income_i + \beta_6 owner_i \quad (4)$$

$$REOW_i = \beta_0 + \beta_1 gender_i + \beta_2 age_i + \beta_3 educode_i + \beta_4 employment_i + \beta_5 income_i + \beta_6 owner_i \quad (5)$$

$$RERE_i = \beta_0 + \beta_1 gender_i + \beta_2 age_i + \beta_3 educode_i + \beta_4 employment_i + \beta_5 income_i + \beta_6 owner_i \quad (6)$$

$$RECG_i = \beta_0 + \beta_1 gender_i + \beta_2 age_i + \beta_3 educode_i + \beta_4 employment_i + \beta_5 income_i + \beta_6 owner_i \quad (7)$$

$$REDP_i = \beta_0 + \beta_1 gender_i + \beta_2 age_i + \beta_3 educode_i + \beta_4 employment_i + \beta_5 income_i + \beta_6 owner_i \quad (8)$$

sex_i is an explanatory variable in determining the literacy of real estate taxes. The distribution of the variable was defined as 60% to 40%, regardless of whether it was male or female, and took the value of 1 for females and 0 for males. age_i was defined as a continuous variable from the primary data collected such that the age groups were 18-35, 35-45, 45-55, and 55 and above; the group distribution was 25% (+- 5) and was included in the model logarithmically. The variable $educode_i$ was defined based on four categories: primary school, high school, university and postgraduate. The education variable with a normal distribution was defined as primary level 1, high school level 2, university level 3, and postgraduate level 4 and was included in the estimates categorically. $employment_i$ was included in the estimates, taking 1 for those who have a job and 0 for those who do not. The $income_i$ variable was defined as a continuous variable and was included in the model logarithmically. The $owner_i$ variable took 1 for property owners and 0 for those who do not own property. The descriptive statistics of the variables are presented in Table 1.

Table: 1
Descriptive Statistics

Variable	Obs	Mean	Std. Dev	Min	Max
no	500	250,5	144,4818	1	500
gender	500	0,6	0,4904	0	1
age	500	44,362	11,3667	19	74
edu	500	3	0,6267	1	4
educode	500	3	0,6267	1	4
employment	500	0,65	0,4774	0	1
income	500	34308,27	33821,0700	5000	200000
owner	500	0,6	0,4904	0	1
l_income	500	1.013.889	0.7393	8,5172	12,2061
l_age	500	3.758.493	0,2639	2,9444	4,3041
RERP	500	0,3525896	0,4783	0	1
RECC	500	0,147706	0,3552	0	1
REOW	500	0,644716	0,4791	0	1
RERE	500	0,1	0,3003	0	1
RECG	500	0,233539	0,4235	0	1
REDP	500	0,4262948	0,4950	0	1

4. Empirical Results

The first finding of this research concerns real estate taxes. The results of the literacy index (RET) calculations are as follows. The literacy of the financial obligations related to the purchase of real estate by natural persons is 35%; the literacy of the financial obligations related to the purchase of real estate by legal entities is 15%; the literacy of the financial obligations related to the ownership of real estate is 65%; the literacy of the financial obligations related to the rental of real estate is 10%; and the literacy of the financial obligations related to the purchase and sale of real estate within the time limits set by the law is 23%. Finally, the tax literacy rate calculated for the sample is 30%. Assuming that real estate taxes are better known in the case of ownership if literacy is calculated only for those who own real estate among those who participated in the field research, the literacy of the financial obligations related to real estate is 41% in the case of purchases from natural persons, 18% in the case of purchases from legal entities and 18% in the case of real estate ownership. Literacy of the financial obligations arising from the lease of real estate was found to be 70%, literacy of the financial obligations arising from the rental of real estate was found to be 14%, and literacy of the financial obligations arising from the purchase and sale of real estate within the terms established by law was found to be 28%. The level of literacy of property tax among property owners is 34%.

Table 2
The Factors Affecting Real Estate Taxes Literacy by Tax (Probit Models)

Variables	RERP	RECC	REOW	RERE	RECG	RERPwr	RECCwr	REOWwr	RERewr	RECGwr
gender	-0.388**	-0.628**	-0.041	-0.318+	-0.293*	-0.359**	-0.607**	-0.028	-0.273	-0.273*
	(0.127)	(0.157)	(0.125)	(0.174)	(0.137)	(0.126)	(0.155)	(0.125)	(0.169)	(0.136)
l_age	0.508*	1.321**	0.572*	0.601+	1.016**	0.633**	1.410**	0.658**	0.709*	1.105**
	(0.245)	(0.354)	(0.237)	(0.362)	(0.281)	(0.241)	(0.350)	(0.233)	(0.350)	(0.277)
2.educode	-0.720	0.144	0.582	-0.721	0.564	-0.596	0.214	0.647	-0.511	0.662
	(0.440)	(0.594)	(0.436)	(0.531)	(0.597)	(0.430)	(0.584)	(0.434)	(0.522)	(0.603)
3.educode	-0.706+	0.245	0.412	-0.651	0.688	-0.580	0.311	0.483	-0.435	0.792
	(0.421)	(0.569)	(0.414)	(0.496)	(0.579)	(0.411)	(0.559)	(0.413)	(0.487)	(0.585)
4.educode	-1.032*	-0.000	0.395	-0.672	0.739	-0.950*	0.046	0.414	-0.542	0.800
	(0.445)	(0.596)	(0.436)	(0.529)	(0.595)	(0.436)	(0.587)	(0.435)	(0.521)	(0.602)
employment	-0.037	0.075	-0.167	-0.182	-0.136	-0.053	0.053	-0.179	-0.208	-0.153
	(0.144)	(0.186)	(0.141)	(0.200)	(0.156)	(0.143)	(0.183)	(0.141)	(0.194)	(0.154)
l_income	0.135	0.189+	0.192*	0.273*	0.172+	0.171*	0.213*	0.217*	0.308**	0.198*
	(0.089)	(0.107)	(0.088)	(0.115)	(0.094)	(0.087)	(0.106)	(0.087)	(0.113)	(0.093)
reality	0.363**	0.278+	0.258*	0.586**	0.284*	-3.618**	-8.548**	-4.635**	-6.389**	-7.434**
	(0.127)	(0.161)	(0.123)	(0.194)	(0.139)	-1.283	-1.833	-1.268	-1.801	-1.519
Constant	-2.893*	-8.083**	-4.154**	-5.827**	-6.922**					
	-1.315	-1.851	-1.291	-1.845	-1.537					
Observations	500	500	500	500	500	500	500	500	500	500
LR chi2(8)	35.12	45.33	24.50	27.53	35.87	26.89	42.29	20.11	17.47	31.66
Prob > chi2	2.54e-05	3.19e-07	0.00189	0.000572	1.85e-05	0.000349	4.56e-07	0.00535	0.0146	4.69e-05
Pseudo R2:	0.0540	0.108	0.0377	0.0847	0.0659	0.0414	0.101	0.0309	0.0537	0.0582

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

The results of the probit and logit models estimated to determine the factors influencing tax literacy are shown as follows. Both estimations gave similar levels of significance and results. It was concluded that the first factor likely to affect tax literacy is gender, with men being more likely to be aware. The second finding is that the likelihood of being aware of tax on property increases with age. No significant relationship was found between educational level and tax literacy regarding the employment variable. Finally, as expected, a significant and positive relationship exists between property ownership and tax literacy. Looking at the other estimates that were made to eliminate the bias of property ownership, no differences were found in the explanatory variables' significance levels.

Table: 3
The Factors Affecting Real Estate Taxes Literacy by Tax (Logit Models)

Variables	RERP	RECC	REOW	RERE	RECG	RERP _{wr}	RECC _{wr}	REOW _{wr}	RERE _{wr}	RECG _{wr}
gender	-0.630** (0.209)	-1.178** (0.287)	-0.076 (0.207)	-0.619+ (0.331)	-0.494* (0.234)	-0.585** (0.206)	-1.117** (0.283)	-0.057 (0.206)	-0.512 (0.323)	-0.454+ (0.232)
l_age	0.858* (0.407)	2.456** (0.661)	0.947* (0.387)	1.074 (0.709)	1.747** (0.496)	1.037** (0.401)	2.578** (0.656)	1.081** (0.380)	1.352+ (0.695)	1.907** (0.489)
2.educode	-1.175 (0.717)	0.320 -1.162	0.936 (0.708)	-1.316 (0.959)	0.914 -1.113	-0.996 (0.709)	0.524 -1.165	1.038 (0.703)	-0.945 (0.931)	1.065 -1.110
3.educode	-1.149+ (0.686)	0.450 -1.116	0.666 (0.672)	-1.193 (0.882)	1.165 -1.082	-0.962 (0.679)	0.646 -1.120	0.780 (0.667)	-0.840 (0.855)	1.318 -1.080
4.educode	-1.686* (0.729)	0.089 -1.158	0.629 (0.708)	-1.267 (0.949)	1.255 -1.109	-1.582* (0.724)	0.230 -1.163	0.665 (0.703)	-1.034 (0.928)	1.340 -1.108
employment	-0.046 (0.238)	0.190 (0.340)	-0.294 (0.236)	-0.312 (0.383)	-0.227 (0.267)	-0.079 (0.235)	0.151 (0.334)	-0.316 (0.235)	-0.343 (0.370)	-0.257 (0.264)
l_income	0.226 (0.144)	0.340+ (0.191)	0.324* (0.149)	0.512* (0.213)	0.295+ (0.159)	0.282* (0.142)	0.386* (0.189)	0.369* (0.147)	0.584** (0.208)	0.340* (0.157)
realty	0.594** (0.211)	0.570+ (0.300)	0.412* (0.200)	1.121** (0.396)	0.497* (0.244)					
Constant	-4.890* -2.167	-14.858** -3.468	-6.899** -2.147	-10.601** -3.569	-11.841** -2.725	-5.935** -2.127	-15.604** -3.447	-7.715** -2.109	-11.952** -3.487	-12.728** -2.694
Observations	500	500	500	500	500	500	500	500	500	500
LR chi2(8)	35	45.68	24.64	26.54	35.55	26.89	41.91	20.43	17.17	31.30
Prob > chi2	2.68e-05	2.74e-07	0.00179	0.000849	2.12e-05	0.000349	5.41e-07	0.00471	0.0163	5.47e-05
Pseudo R2:	0.0539	0.109	0.0379	0.0816	0.0653	0.0414	0.100	0.0314	0.0528	0.0575

Standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

As a result of this research, Table 4 provides an estimate of the total scores, showing the factors likely to influence the literacy of tax on property. According to the results of the overall model estimation, as expected with gender, age and income status, owning a property increases the likelihood of knowing about real estate taxes. Being male increases the possibility of knowing about taxes, and being older increases the likelihood of learning. As in other estimates, the possibility that education and employment status affect tax literacy was not found. Consistent results were obtained from 24 predictions made in 3 groups in this study.

Table: 4
The Factors Affecting Real Estate Taxes Literacy by RETA Index
(Probit&Logit Models)

Variables	DP_Probit	DP_Logit	DP_Pwr	DP_Lwr
gender	-0.402**	-0.657**	-0.367**	-0.599**
	(0.126)	(0.209)	(0.125)	(0.205)
l_age	0.856**	1.409**	1.001**	1.625**
	(0.244)	(0.403)	(0.239)	(0.396)
2.educode	-0.411	-0.656	-0.282	-0.448
	(0.448)	(0.720)	(0.443)	(0.710)
3.educode	-0.460	-0.730	-0.322	-0.502
	(0.430)	(0.691)	(0.425)	(0.681)
4.educode	-0.760+	-1.220+	-0.681	-1.092
	(0.453)	(0.731)	(0.449)	(0.722)
employment	-0.203	-0.321	-0.218	-0.360
	(0.142)	(0.234)	(0.140)	(0.231)
l_income	0.205*	0.331*	0.246**	0.400**
	(0.088)	(0.144)	(0.087)	(0.142)
reality	0.441**	0.721**		
	(0.125)	(0.206)		
Constant	-4.903**	-8.044**	-5.726**	-9.320**
	(1.314)	(2.173)	(1.288)	(2.134)
Observations	500	500	500	500
LR chi2(8)	56.97	56.74	44.45	44.26
Prob > chi2	1.82e-09	2.03e-09	1.75e-07	1.90e-07
Pseudo R2:	0.0836	0.0832	0.0652	0.0649

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

5. Discussion

Discussing the first indices calculated was considered appropriate in light of the results. Within the framework of this study, the literacy of real estate taxes was found to be 30%. This rate has been calculated to be higher in other studies conducted in Türkiye (Yardımcıoğlu et al., 2014: 116; Aslan & Öz-Yalaman, 2009: 128). The most important reason for the low literacy index may be that property taxes are generally learned with ownership. However, the increase in literacy scores calculated for property owners was limited to 3-5 points. The complexity of the tax structure in Türkiye (Kızılot et al., 2011; Yıldız et al., 2016; Kıldış, 2009) and the problem of excessive tax loss leakage (Doğrusöz, 2010; Yücel, 2022) may be the most important reasons for the lower-than-expected literacy. Comparing our results with studies conducted in other countries, we see that literacy remains at the bottom (Latiff et al., 2005; Madi et al., 2010: 223; Freudenberg et al., 2017: 40; Isle et al., 2022: 65; Lyon & Catlin, 2020). However, comparing these results with each other may not lead to very sound inferences. First, these taxes do not allow for a direct comparison, as the types of taxes differ, and the probability of encountering a property tax is low in some countries.

Second, suppose we have to evaluate the results within the framework of the five subitems of real estate taxes. In that case, the tax with the highest literacy within these taxes is the financial obligations arising from property ownership. This finding is a highly expected result for this research. 60% of respondents are property owners and face this tax once a year. The fact that local governments collect real estate taxes in Türkiye is another reason for the relatively high literacy level. As with all policy elements, local governments

are more effective in reaching citizens and ensuring awareness in terms of both taxes and services (Day, 1992: 123; Pinar, 2017: 131).

In this context, the second finding we can focus on is that literacy of taxes related to the purchase and sale of real estate in Türkiye is below average. As mentioned in the previous sections, the tax liabilities of real estate, frequently bought and sold for investment purposes in Türkiye, are not fully known. These liabilities can cause significant deviations in calculating investment costs (Holland et al., 2009; Cummins et al., 1995). The taxes paid at the time of purchase and sale vary between 6% and 18% of the investment cost, depending on various factors (GİB, 2023). A deviation of 10% from the total cost will significantly affect the expected profitability of the investment. The reason why the taxes paid on purchases from legal entities are not known is that there is much tax loss and evasion in the construction industry (Bay, 2019; Dođru, 2011; Yardımcıođlu & Dođrul, 2011).

According to the results of the estimation of the probit model, the probability of the gender factor affecting tax literacy is similar to other studies (Kumar & Tanwar, 2020: 95; Bhushan & Medury, 2013: 76; Chardon et al., 2016). The results show that men are likelier to be tax literate than women, which aligns with Fallan's (1999: 176) study. This result is consistent with other studies and is an expected finding. Another factor that has a significant relationship and is often found in the literature is age (Yardımcıođlu et al., 2014: 117; Bhushan & Medury, 2013: 76; Chardon et al., 2016). As expected, the likelihood of higher tax literacy increases with age. Real Estate taxes, owning or buying property, etc., appear in transactions, i.e., they require capital accumulation. It can also be assumed that the literacy of real estate taxes increases with age and is related to the ability of individuals to build up capital for these transactions. Contrary to the literature, the possibility that the education factor affects tax literacy was statistically nonsignificant. The reason may be that studies on tax literacy are usually conducted on student groups (Bakırtaş & Yaşa, 2020: 756; Türeğün et al., 2021; Teyyare, 2018: 327; Moučková & Vitek, 2018).

6. Conclusion

We consider it appropriate to evaluate the results under two headings. The first is the evaluation of the results obtained within the framework of the property tax and the income tax on real estate rental; the second is the results we have obtained regarding the level of literacy of real estate taxes in Türkiye and the factors determining this level.

When the results of the field studies are analysed separately for property tax and real estate rental income tax, the results are quite different in terms of literacy of the two taxes. This is so much so that while 70% of the field study participants who own a property are aware of the property tax paid due to owning a property, this rate drops to 14% when it comes to real estate rental income tax. For those who do not own property, this rate drops to 56% for property tax literacy and 5% for real estate rental income tax. Based on these data, it can be said that property tax literacy is relatively high among property taxes in Türkiye, especially when comparing the rental income tax of real estate and the property tax. This

may be because local governments collect property tax, the low tax rate compared to real estate rental income tax, and the idea that the tax paid may have a local equivalent. Furthermore, although real estate is considered an investment vehicle in Türkiye, there is a lack of information on the taxation of the income derived from the investment. Although taxes on property ownership are known, the lack of information on the taxation of investment income will lead to a significant discrepancy in calculating the rate of return on investment.

This research shows that although many studies have been conducted in Türkiye to increase tax literacy, real estate tax literacy is influenced by variables independent of education, such as ownership, age and gender. Although many tax literacy studies have been carried out in Türkiye, they must focus on the tax and its addressee. Instead of aiming to reach the entire society through billboards, public spots, etc., we conclude that raising literacy directly with the taxpayer group will increase real estate taxes.

Three metropolitan cities with 65% of all taxpayers were selected for field studies as part of the research. We expect a lower literacy level in a field study conducted across Türkiye. Therefore, the first limitation of this study is the geographical limitation. The second and more important limitation is that the subdimensions of employment were not collected from the field; thus, no estimates can be made based on occupational classification.

Few studies focus specifically on taxation. We believe that more tax-focused studies are needed to make predictions about tax literacy. Finally, studies that reflect the general society and cover all regions rather than specific groups, such as students and accountants, are likely to provide more horizon-oriented results in terms of tax literacy in Türkiye.

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