

ANALYZING FACTORS AFFECTING TAX MORALE LEVELS IN TURKEY USING ALTERNATIVE ORDERED RESPONSE MODELS

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Abstract

The concept of tax morale is introduced to measure the reason of paying taxes by subjects. The main objective of this paper is twofold. Firstly, the present paper examines potential factors that may influence the degree of tax morale in Turkey. Secondly, the paper aims to determine the best model to explain the determinants of the degree of tax morale by a comparison of alternative ordered response models. For these purposes, a written-questionnaire was administered to 943 subjects in three cities of northern Turkey, namely, Erzurum, Erzincan, and Bayburt. Standard ordered probit (OPROBIT) and alternative ordered response models including generalized ordered logit model (GOLOGIT), partial proportional odds (PPO) model and heteroskedastic ordered logit (HOLOGIT) model were performed to determine the best model fit. Results reveal that marital status, monthly income, and operation time were positively correlated with higher degrees of tax morale. The empirical findings also indicated that higher educated subjects were more likely to have lower degrees of tax morale. Tax amnesty, higher tax load, tax system, tax policies, previous negative experiences, and efficient use of public expenditures were found to have statistically significant impact on the degree of tax morale among subjects.

Keywords: tax morale, tax evasion, tax compliance, discrete choice models.

1. Introduction

Tax morale is commonly described as taxpayers' intrinsic motivation to pay taxes (Frey and Torgler, 2007; Lubian and Zarri, 2011; Lago-Peñas and Lago-Peñas, 2010). Therefore, the degree of tax morale is commonly considered to explain the reason of paying taxes by individuals (Russo, 2013; Slemrod, 2007). Similarly, tax morale is also regarded as an important determinant of explaining the high degree of tax compliance in many country cases with low deterrence level (Lisi, 2015), while some earlier research (Baldry, 1986; Cummings *et al.*, 2009; Blaufus *et al.*, 2015) highlights the relationship between the concept of tax morale and its significant role in explaining observed tax evasion. A recent study (Lubian and Zarri, 2011) indicates that individuals pay taxes due to their willingness, namely the sense of moral obligation, and the corresponding evidence is discussed under positive hedonic effects. However, as an individual attitude, the high degree of tax morale does not always guarantee the high degree of tax compliance as an individual behavior (Lisi, 2015). Frey and Torgler (2007) argue that since the behavior of other taxpayers may be crucial to better understanding tax compliance, pro-social behavior theories may be valuable to explain the corresponding behavior. In fact, as individuals' willingness to pay taxes increases, the other taxpayers' behavior as being honest also increases. Torgler and Schneider (2009) find strong evidence that higher degrees of tax morale and institutional quality provide a smaller shadow economy.

Prior studies find evidence that tax morale is not dependent on an individual's economic situation. Particularly, Blaufus *et al.* (2015) concentrate on whether tax morale is directly associated with individuals' economic situation or there exists a self-serving bias and their empirical analysis concludes that tax morale is subject to a self-serving bias. Their results also reveal that individuals consider tax evasion as a less unethical behavior when they have an opportunity to evade. On the contrary, Lago-Peñas and Lago-Peñas (2010) find that individuals' income and the degree of tax morale are positively correlated. They also indicate a negative correlation between self-employment and the degree of tax morale in line with other empirical research (Torgler, 2004; Frey and Torgler, 2007; Kountouris and Remoundou, 2013). Filippin, Fiorio and Viviano (2013) explore the association between tax enforcement and tax morale with a motivation to analyze the relationship between formal and informal institutions. The empirical findings of a relatively large microdata conducted in 2004 by the Bank of Italy put forward that there exists a positive correlation between tax enforcement and tax morale. Besides, the impact of tax enforcement and social environment appears to be more influential in the case of low tax morale.

The degree of tax morale is considered to be significantly associated with individuals' several demographic characteristics including age-group, religiosity, gender, income and educational level, occupational and marital status (Lago-Peñas and Lago-Peñas, 2010; Kountouris and Remoundou, 2013; Filippin, Fiorio and Viviano, 2013). For instance, a country-comparison study (Sipos, 2015) carried out on Hungarian and Romanian samples indicates the significant role of the age-group of the respondents

since younger respondents are less likely to have a high degree of tax morale. The low degree of tax morale among younger individuals were also found in other empirical research (Torgler, 2004; Torgler, 2005b; Alm and Torgler, 2006; Frey and Torgler, 2007; Cummings *et al.*, 2009; Martinez-Vazquez and Torgler, 2009; Lago-Peñas and Lago-Peñas, 2010; Kountouris and Remoundou, 2013; Russo, 2013). The results of a recent study (Gungor Goksu and Izgi Sahpaz, 2015) that compares the tax morale attitudes between university students in Turkey and Spain reveal that religious belief is an important factor that separates the respondents' perceptions on tax evasion between these two countries. Other studies (Torgler, 2005a, 2005b; Alm and Torgler, 2006; Torgler, 2006; Martinez-Vazquez and Torgler, 2009; Lago-Peñas and Lago-Peñas, 2010; Kaynar Bilgin, 2011; Kountouris and Remoundou, 2013) also highlight the significant role of religious belief on tax morale and they were found as positively correlated. Particularly, Torgler and Schneider (2007) find the statistically significant positive impact of religiosity on the higher degree of tax morale only in Belgium and Switzerland, for a three-country comparison.

Earlier studies (Torgler, 2005b; Alm and Torgler, 2006; Frey and Torgler, 2007; Torgler and Schneider, 2007) indicate that women tend to have a higher degree of tax morale than men. On the contrary, Lago-Peñas and Lago-Peñas (2010) unexpectedly reveal that male respondents have a relatively higher tax compliance than female counterparts. Previous studies (Torgler, 2005b; Alm and Torgler, 2006; Kountouris and Remoundou, 2013) find evidence that married people tend to have a higher degree of tax morale. Particularly, Frey and Torgler (2007) indicate that divorced and separated persons have the lowest tax morale in Western and Eastern European countries. The positive correlation between the degree of tax morale and respondents' educational level is also experienced in previous studies (Torgler, 2005a; Kountouris and Remoundou, 2013). On the contrary, Frey and Torgler (2007) find evidence that educational level and tax morale is negatively correlated. Along with commonly used determinants of tax morale in the existing literature, Russo (2013) seeks the relationship between tax morale and immigration and finds evidence that tax morale and immigration are positively correlated. In addition, the results of the corresponding study indicate that other determinants of tax morale are social capital, political participation, unemployment, and essential public services. Kountouris and Remoundou (2013) find evidence that if immigrants originate from countries with higher degrees of tax morale, they tend to have a higher moral attitude to pay taxes in a European sample. Moreover, their results reveal a statistically significant relationship between tax morale and cultural background. Among other significant variables, trust in government (Kaynar Bilgin, 2011; Torgler, 2012), politicians (Lago-Peñas and Lago-Peñas, 2010), the justice system (Torgler, 2012) or European Union (Torgler, 2012) were also found as statistically significant determinants of tax morale. Many earlier studies have performed standard or weighted OPROBIT (Alm and Torgler, 2004; Frey and Torgler, 2007; Kaynar Bilgin, 2011; Kountouris and Remoundou, 2013), standard or multi-level OLOGIT (Lago-Peñas and Lago-Peñas, 2010) models for the analysis of datasets, although as far

as is known, no earlier studies consider alternative ordered response models as their estimation.

As of December 31, 2017, the number of tax subjects has reached approximately 10.6 million people in Turkey (Turkish Revenue Administration, 2018). As a developing country, successful return of tax payments as an increasing tax revenue plays a crucial role for the Turkish economy to maintain its economic development and to achieve further economic goals. In that context, a better understanding of the behavior of taxpayers may give valuable information in terms of increasing tax revenues. The main objective of this paper is to examine the behavior of subjects in Turkey by concentrating on a specific sample area, namely, northern Turkey. The determinants of the degree of tax morale were considered as the basis that best explains the behavior of Turkish taxpayers. This paper performs OPROBIT and other alternative ordered response models to analyze the obtained data. The following sections introduce the sample area, present the estimation results, and deal with the discussion of the empirical findings with substantial recommendations for future tax policies and future research.

2. Results

2.1. Data description and pre-estimation tests

This paper aims to examine factors influencing the tax morale attitude of subjects in Turkey. Another purpose of this study is to determine the best model fit that explains the determinants of tax morale. For this purpose, a well-established written questionnaire was administered to 943 subjects in three northeastern cities of Turkey, namely, Erzurum, Erzincan, and Bayburt in July 2015. The corresponding questionnaire mainly follows earlier research (Blaufus *et al.*, 2015; Gungor Goksu and İzgi Sahpaz, 2015) in the tax morale literature on selecting distinguishing questions. The questionnaire included three main sections. The first section involves questions about subjects' opinions about the current condition of the taxation system in Turkey. The second section involves detailed questions about subjects' opinions on tax morale, tax compliance, and tax evasion. The third section involves questions about subjects' non-confidential demographic characteristics. A simple random sampling methodology was followed in regard to the total population of three selected cities. According to the Nomenclature of Territorial Units for Statistics (NUTS) 2 classification of Turkey, the three selected cities are located in TRA1 sub-region of Turkey. Erzurum is the most populous city of this sub-region with almost 761 thousand inhabitants, while Erzincan city hosts approximately 232 thousand people. Bayburt is the least populous city of Turkey with almost 80 thousand inhabitants (TurkStat, 2018). To the best of our knowledge, no earlier studies have been made in this specific sub-region, which makes it one of the main reasons for selecting this sub-region as target sample. A pre-estimation test of reliability of the questionnaire can be used for estimation purposes with a Cronbach alpha value of approximately 0.72 which is over the recommended value of 0.70 by Nunnally (1978).

Table 1 represents the total number of subjects in the selected three cities during the sample period. As seen in Table 1, there are in total 42,562 subjects in TRA1 sub-region (Turkish Revenue Administration, 2015). When the distribution of total subjects regarding the cities is separately considered, the shares of Erzurum, Erzincan, and Bayburt cities were 64.9%, 26.5%, and 8.6%, respectively. Accordingly, the weights of each city in terms of the number of subjects were considered for the minimum sample size. Particularly, the number of sample size for Erzurum city was determined as 584 subjects with respect to its share of 64.9%, and the number was increased to 606 subjects due to possible tolerance to be caused. Similarly, the number of subjects for the share of 26.5% was 239 subjects and the questionnaire was conducted to 253 subjects in Erzincan city with an increased tolerance. Finally, the number of questionnaires conducted in Bayburt city was 84, which exceeds the share of the city in terms of subjects, namely 77 subjects. In addition, the minimum sample size for a total population of 42,562 subjects regarding a simple random sampling method can be calculated as 381 subjects (Yamane, 1967). Since the total number of 943 subjects exceeds the minimum sample size being calculated (see Yamane, 1967, for details about calculation since it was not presented for brevity), one can argue that the sample size of the present study is statistically representative.

Table 1: The number of total subjects in the sample area

Type of taxes	TRA1 sub-region cities			Total
	Erzurum	Erzincan	Bayburt	
Income tax	9,797	3,987	1,015	14,799
Real property income tax	6,969	3,962	1,220	12,151
Single entry income tax	8,025	2,455	1,108	11,588
Corporate tax return	2,848	886	290	4,024
Total	27,639	11,290	3,633	42,562
The share of city (in percent)	64.9	26.5	8.6	100.0

Note: The subjects of withholding and value added taxes are included.

Source: Authors

As tax morale is commonly measured as an ordinal categorical variable, an ordered disaggregate modeling approach was performed in the existing tax morale literature, and mostly a standard or a weighted-OPROBIT model. This paper differs from the existing literature in terms of model estimation. Particularly, this paper takes advantage of alternative ordered response models which can be utilized when the restrictive parallel lines assumption of a standard OLOGIT model is violated. Following a consensus on earlier literature (e.g., Blaufus *et al.*, 2015), the dependent variable of this study was an ordered categorical variable for subjects' responses on the item 'I can cheat taxes if one had the chance' which was measured by a five-point Likert-type scale from 'I definitely disagree' to 'I definitely agree'. Due to some low frequencies that may affect estimation results, the dependent variable categories were reduced

to three categories by combining disagreements (i.e., I disagree, I definitely disagree) and agreements (i.e., I agree and I definitely agree), while keeping the neutral category as the same. In other words, the three categories of the dependent variable were transformed into 1 = I definitely disagree/ I disagree, 2 = Neutral, 3 = I agree/ I definitely agree. In this study, 14 independent variables were utilized that may possibly influence subjects' tax morale levels. These variables include some items about the subjects' tendency to evade taxes, current tax system, trust in government, and demographic characteristics as well. The gender variable was excluded in the final estimated models to avoid the over-representation issue that may produce biased results since most of the subjects were male. The multicollinearity test confirms that there is no serious multicollinearity issue among independent variables. See Gujarati (2004) for detailed information about the multicollinearity issue, as it was not presented for brevity.

2.2. Descriptive statistics

Table 2 represents the descriptive statistics for the dependent variable and independent variables being utilized for the estimated models. As shown in Table 2, a remarkable number of subjects (91.20%) declared that they would tend to cheat taxes when they had a chance. More than 75% of subjects (77.09%) were married; approximately half of them (48.46%) were secondary educated. More than 30% of the subjects had monthly income between ₺1,001 and ₺2,000 (₺ = Turkish lira), while more than 40% of subjects operated in their current sectors for less than six years (42.84%). Age was the only quantitative variable of the estimated models, and numerically, the mean of subjects' age was almost 39 years. Many of the subjects (66.81%) stated their agreement on their belief that tax evasion is an intrinsic attitude due to high governmental tax rates. However, they claimed their strong trust in government with a 75.51% total agreement. Many of the subjects under the sample (73.81%) believe that tax amnesty has a serious negative impact to maintain tax justice. More than half of the subjects (52.28%) responded that they would not have a tendency to pay less if they knew they will not encounter with a tax penalty. More than 75% of the subjects (76.56%) have declared their concerns on the efficient use of public expenditures as they think that some of the public expenditures can be considered as extravagance. Similarly, most of them (86.64%) are concerned about the high national tax burden in Turkey. Almost 60% of the subjects (59.28%) stated that they sometimes think about cheating taxes if one of their relatives evades taxes but is not penalized. Most of the subjects (87.91%) do not think that current tax policies in Turkey do not encompass subjects' needs before implementation. The large majority of the subjects (89.82%) claimed that the tax evasion behavior can be thought of as theft, while more than 70% of them (71.58%) think that the tax system in Turkey generally conforms to economic development.

Table 2: Descriptive statistics of the dependent variable and independent variables

Variable	Frequency (Percent)	Variable	Frequency (Percent)
Categorical Variables		Neutral	61 (6.47)
<i>Tax morale (dependent variable)</i>			
I definitely disagree/I disagree	83 (8.80)	I agree	612 (64.90)
Neutral	33 (3.50)	I definitely agree*	84 (8.91)
I agree/I definitely agree*	827 (87.70)	<i>If I knew I will not receive any tax penalty, I would tend to pay less tax</i>	
<i>Sample location</i>			
Erzurum	606 (64.26)	I definitely disagree	55 (5.83)
Erzincan	253 (26.83)	I disagree	438 (46.45)
Bayburt	84 (8.91)	Neutral	49 (5.20)
		I agree	359 (38.07)
		I definitely agree*	42 (4.45)
<i>Marital status</i>			
<i>Some public expenditures in Turkey can be considered as extravagance</i>			
Married	727 (77.09)	I definitely disagree	12 (1.27)
Single*	216 (22.91)	I disagree	127 (13.47)
<i>Educational level</i>			
<i>National tax burden is relatively high in Turkey</i>			
Literate/Primary*	254 (26.94)	Neutral	82 (8.70)
Secondary/High school	457 (48.46)	I agree	528 (55.99)
Tertiary	232 (24.60)	I definitely agree*	194 (20.57)
<i>Monthly income</i>			
<i>If one of my relatives evades tax and is not caught, this sometimes stimulates me to evade tax as well</i>			
Less than ₺1,000	131 (13.89)	I definitely disagree	8 (0.85)
₺1,001 – ₺2,000*	324 (34.36)	I disagree	83 (8.80)
₺2,001 – ₺3,000	148 (15.69)	Neutral	35 (3.71)
₺3,001 – ₺4,000	49 (5.20)	I agree	609 (64.58)
More than ₺4,000	72 (7.64)	I definitely agree*	208 (22.06)
Does not want to give information	219 (23.22)		
<i>Operation time</i>			
Less than 6 year(s)*	404 (42.84)	I definitely disagree	33 (3.50)
6 – 10 years	150 (15.91)	I disagree	311 (32.98)
More than 10 years	389 (41.25)	Neutral	40 (4.24)
		I agree	482 (51.11)
		I definitely agree*	77 (8.17)
Quantitative variable		<i>Tax policies in Turkey do not take subjects' needs into account</i>	
Age	Mean (Std. Error)	I definitely disagree	3 (0.32)
		I disagree	72 (7.64)
<i>Likert-type scale items</i>			
<i>Tax evasion is an intrinsic attitude due to high governmental tax rates</i>			
<i>Tax evasion can be thought of as theft</i>			
I definitely disagree	17 (1.80)	Neutral	39 (4.14)
I disagree	241 (25.56)	I agree	669 (70.94)
Neutral	55 (5.83)	I definitely agree*	160 (16.97)
I agree	571 (60.55)		
I definitely agree*	59 (6.26)	I definitely disagree	4 (0.42)
		I disagree	66 (7.00)

Variable	Frequency (Percent)	Variable	Frequency (Percent)
<i>I trust in government</i>		Neutral	26 (2.76)
I definitely disagree	27 (2.86)	I agree	670 (71.05)
I disagree	117 (12.41)	I definitely agree*	177 (18.77)
Neutral	87 (9.23)	<i>Tax system in Turkey generally conforms to economic development</i>	
I agree	552 (58.54)	I definitely disagree	8 (0.85)
I definitely agree*	160 (16.97)	I disagree	169 (17.92)
<i>Tax amnesty seriously damages tax justice</i>		Neutral	91 (9.65)
I definitely disagree	14 (1.48)	I agree	606 (64.26)
I disagree	172 (18.24)	I definitely agree*	69 (7.32)

Note: *denotes base category for the corresponding variable.

Source: Authors

2.3. Estimation results

In this study, the determinants of tax morale levels of subjects were explored using ordered response models due to the ordinal nature of the tax morale variable. Standard OLOGIT and OPROBIT models were the most commonly used ordered response models in tax morale literature. This paper aims to contribute to the existing tax morale literature by the use of alternative ordered response models. In this study, initially, standard OLOGIT and OPROBIT models were estimated before estimating alternative ordered response models. However, the standard OLOGIT model was found to violate parallel lines assumption by Brant (1990) test and therefore, alternative ordered response models including GOLOGIT, PPO, and HOLOGIT models were later estimated for a comparison with standard OPROBIT models. All models were estimated in Stata 13.0/MP and user-written programs (-gologit2- and -oglm-) were utilized to estimate GOLOGIT, PPO, and HOLOGIT models (Williams, 2006, 2010). The second objective of this study was to determine the most parsimonious model with the best model fit on explaining the determinants of tax morale levels. Table 3 introduces estimation results for OPROBIT, GOLOGIT, PPO, and HOLOGIT models. See Powers and Xie (2000), Borooah (2001), Greene and Hensher (2010), Pindyck and Rubinfeld (1981), and Williams (2006, 2009, 2010, 2016) for methodological framework about ordered response models, as they were not presented for brevity.

As seen in Table 3, all estimated models were statistically significant at 99% confidence level. In terms of adjusted rho-square values, GOLOGIT and PPO models have relatively better fit than other models with respect to recommended values by Washington *et al.* (2003). Moreover, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) values were employed to determine the best model fit among others. As shown in Table 3, the PPO model has the most parsimonious model among all estimated models with the lowest AIC and BIC values. Thus, the PPO model was found to be the best model to explain the determinants of tax morale

Table 3: Estimation results for OPROBIT, GOLOGIT, PPO, and HLOGIT models

Independent variable	OPROBIT		GOLOGIT		PPO		HOLOGIT
	Coefficient	Threshold between 1 and 2	Threshold between 2 and 3	Threshold between 1 and 2	Threshold between 2 and 3	Threshold between 1 and 2	Coefficient
Factors affecting the ordinal categorical choice							
Marital status; married		-1.617*				-1.553*	
Education level; secondary/high school						0.717***	
Educational level; tertiary		2.289*	-0.963**			2.251*	-0.934**
Monthly income; less than ₺1,000		2.222*				2.048*	
Monthly income; ₺3,001 – ₺4,000			-0.799***				
Monthly income; more than ₺4,000						-2.326*	
Monthly income; no information		0.275***	1.039*				1.153*
Operation time; 6 – 10 years						-1.912*	
Tax evasion is an intrinsic attitude due to high governmental tax rates		-0.121***	-0.867**			-0.690*	-0.242***
Tax burden is relatively high in Turkey						1.084*	
Tax amnesty seriously damages tax justice		0.176*	-0.300**			-0.321**	-0.321**
I trust in government		0.146*	0.408*			0.346*	0.346*
If I knew I will not receive any tax penalty, I would tend to pay less tax						0.649*	
If one of my relatives evades tax and is not caught, this sometimes stimulates me to evade tax as well		0.222*	0.445*			0.397*	0.397*
Tax policies in Turkey do not take subjects' needs into account						1.562*	-0.689*
Tax evasion can be thought of as theft		0.197*	0.482*				0.473*
Some public expenditures in Turkey can be considered as extravagance						0.567*	
Constant term						-5.107**	
Cutpoint 1		-0.487					-0.657

Cutpoint 2	-0.268	—	—	—	-0.616
Factors affecting the error variance					
Educational level; secondary/high school	—	—	—	—	-0.510**
Educational level; tertiary	—	—	—	—	-0.822*
Tax evasion is an intrinsic attitude due to high governmental tax rates	—	—	—	—	-0.142***
If I knew I will not receive any tax penalty, I would tend to pay less tax	—	—	—	—	-0.138**
Tax system in Turkey generally conforms to economic development	—	—	—	—	0.166***
Tax policies in Turkey do not take subjects' needs into account	—	—	—	—	-0.408*

Summary statistics

Number of observations	943	943	943	943	943
Log-likelihood at convergence	-376.597	-317.398	-321.096	-359.940	
Adjusted rho-square	0.1053	0.2459	0.2371	0.1448	
Significance of the model	0.0000	0.0000	0.0000	0.0000	
AIC	803.194	730.796	722.193	799.880	
BIC	924.420	963.551	916.156	993.843	

Note: *significant at 99% confidence level; **significant at 95% confidence level; ***significant at 90% confidence level; blank cells mean that the relevant coefficient is not statistically significant for the model; – denotes that the relevant coefficient is not applicable for the corresponding model.

Source: Authors

and only their findings would be utilized for interpretation for brevity. On the other hand, this evidence explicitly puts forward that the PPO model outperforms the commonly-used standard OPROBIT model in terms of explaining tax morale attitude. However, estimated coefficients are only able to give the direction of the relationship between the dependent variable and independent variables. To better understand the corresponding association numerically, marginal effects (or average direct pseudo-elasticity values in this study) should be calculated.

Table 4 presents average pseudo-elasticities for potential factors that may influence subjects' tax morale attitude in northern Turkey. As seen in Table 4, marital status and tax morale were found as positively correlated. Particularly, married people were more likely to have higher tax morale levels. Numerically, married subjects were 107.1% more likely to have disagreement on cheating taxes if they had a chance. This evidence is in line with previous findings (Torgler, 2005b; Alm and Torgler, 2006; Kountouris and Remoundou, 2013) in the tax morale literature. The estimation results reveal that there exists a statistically significant association between higher educational level and lower levels of tax morale. Accordingly, higher educated subjects were 49.53% less likely to disagree on cheating taxes. The same holds for secondary-educated subjects, but with a relatively lower percentage (31.07%). This evidence is in line with the results of Frey and Torgler (2007); however, it contradicts some other studies (Torgler, 2005a; Kountouris and Remoundou, 2013). The estimation results indicated that subjects with relatively higher monthly income were more likely to have higher tax morale. Accordingly, they were 15.88% more likely to have higher tax morale levels when they have more than ₺4,000 monthly income. On the contrary, subjects who have less than ₺1,000 monthly income were 25.44% less likely to have lower tax morale. This result shows consistency with Lago-Peñas and Lago-Peñas (2010).

Table 4 indicates that higher numbers of operation time had a statistically significant positive association with higher levels of tax morale. When the operation time was between six and ten years, they were 27.20% more likely not to cheat taxes. Interestingly, subjects who consider tax evasion is an intrinsic attitude due to high governmental tax rates were found to have higher levels of tax morale. In contrast, subjects who complain about high tax load in Turkey were found to have lower levels of tax morale. Subjects who consider tax amnesty as a barrier on tax justice were less likely to have a tendency to cheat taxes. Trust in government was also found as a statistically significant factor of the level of tax morale in line with earlier evidence (Kaynar Bilgin, 2011; Torgler, 2012). However, subjects who claim their trust in government were, interestingly, more likely to cheat taxes but with a relatively low likelihood. Subjects who tend to pay less if they knew they would not receive any tax penalty were less likely to have higher levels of tax morale. Similarly, subjects who stated that if one of their relatives evades tax and is not caught, stimulates them to evade tax as well, were less likely to have higher levels of tax morale. Subjects who think that the tax system in Turkey conforms to economic development were more likely to have higher levels of tax morale. Subjects who are concerned about tax policies in Turkey not taking

Table 4: Average pseudo-elasticities for determinants of tax morale attitude using the PPO model

Independent variable	Pseudo-elasticity	z-value
Marital status; married [1]	107.1*	3.62
Educational level; secondary/high school [1]	-31.07***	-1.72
Educational level; tertiary [1]	-49.53*	-4.43
Monthly income; less than ₺1,000 [1]	-25.44*	-3.85
Monthly income; more than ₺4,000 [1]	15.88*	3.95
Operation time; 6 – 10 years [1]	27.20*	3.26
Tax evasion is an intrinsic attitude due to high governmental tax rates [1]	212.2*	3.39
Tax evasion is an intrinsic attitude due to high governmental tax rates [3]	-5.50***	-1.74
Tax load is relatively high in Turkey [1]	-386.0*	-4.53
Tax amnesty seriously damages tax justice [1]	103.7**	2.29
Tax amnesty seriously damages tax justice [3]	-7.67**	-2.31
I trust in government [1]	-115.7*	-3.20
I trust in government [3]	8.55*	3.12
If I knew I will not receive any tax penalty, I would tend to pay less tax [1]	-168.8*	-3.77
If one of my relatives evades tax and is not caught, this sometimes stimulates me to evade tax as well [1]	-116.2*	-3.71
If one of my relatives evades tax and is not caught, this sometimes stimulates me to evade tax as well [3]	8.59*	3.74
Tax system in Turkey generally conforms to economic development [1]	151.1***	1.84
Tax policies in Turkey do not take subjects' needs into account [1]	-554.1*	-4.85
Tax policies in Turkey do not take subjects' needs into account [3]	-18.1*	-3.17
Tax evasion can be thought of as theft [3]	12.5*	3.17
Some public expenditures in Turkey can be considered as extravagance [1]	193.4*	2.79

Note: *significant at 99% confidence level; **significant at 95% confidence level; ***significant at 90% confidence level; [1] response to 'cheating on taxes if one had a chance' as I definitely disagree/I disagree; [3] response to tax morale 'cheating on taxes if one had a chance' as I agree; I definitely agree

Source: Authors

their needs into account were less likely to have higher levels of tax morale. Interestingly, subjects who consider tax evasion as theft were more likely to have lower levels of tax morale. Finally, subjects who considered that some public expenditures were extravagant were still more likely to avoid tax evasion.

3. Conclusion

Tax revenues and tax policies take their respectable place in current and future fiscal policies and sustainable economic growth since the amount of tax revenues can be systematically increased through efficient tax policies. In that sense, governments encourage taxpayers to pay their taxes timely without cheating. Tax morale is introduced to the taxation literature to represent taxpayers' intrinsic motivation to pay taxes. Tax morale's popularity is overwhelmingly increasing by courtesy of

facilitating better understanding of taxpayers' behavior. Since the degree of tax morale gives valuable information about taxpayers' current and future tax compliance and tax evasion perception, the government may benefit from the determinants of tax morale for future taxation policies. In this sense, better understanding of the determinants of the degree of tax morale may shed light on how to formalize future tax policies efficiently.

This paper aimed at determining factors that may possibly influence the degree of subjects' tax morale in a specific region of Turkey. The present paper also intends to contribute to the existing tax morale literature by performing alternative ordered response models to compare their results with commonly-used OPROBIT model. As far as is known, this paper is the first attempt to use alternative ordered response models, namely GOLOGIT, PPO, HOLOGIT, for the estimation of tax morale determinants. The results of this paper precisely suggest that GOLOGIT and PPO outperform the OPROBIT model to explain the determinants of tax morale in Turkey. Additionally, the PPO model was determined as the best model to explain factors affecting the degree of tax morale. The empirical evidence obtained from the PPO model was used for the interpretation of the results.

The most noteworthy evidence of the estimation results was the relatively higher agreement of cheating tendency if one had the chance that refers to lower levels of tax morale among subjects. This evidence designates the lack of tax compliance, in a sense, and that future tax policies should seriously concentrate on awareness of benefits of paying taxes for themselves and their country. The relevant auditing procedures of paying taxes should be more rigorously accomplished since the probability of tax evasion may tend to increase. The estimation results revealed that married subjects were more likely to have higher levels of tax morale than single counterparts in line with the many empirical results of the existing literature. In fact, there are significant differences between married and single people in terms of the level of responsibility and risk-taking behavior. Married subjects are more likely to consider tax cheating as a crucial risk that should not be experienced even once, since they are assumed to have more important responsibilities to their family than single subjects. On the other hand, future taxation policies may concentrate on increasing the degree of single subjects' tax morale rather than positively stimulating their levels of tax compliance by increasing their responsibility levels to the governmental duties. The estimation results in regard to the PPO model indicated that higher monthly income was positively associated with higher levels of tax morale. This result shows consistency with the numerous prior empirical evidence. This can also be explained by lower risk-taking behavior of subjects with higher income as they may recognize the risk of losing their current favorable financial position if they are caught when cheating. More experienced subjects in terms of operation time were also found more likely to have higher tax morale. Future taxation regulations may include some encouraging developments that maintain more experienced subjects and provide tax payment awareness to unexperienced subjects.

The estimation results of the present study exhibited that subjects were generally concerned with high tax loads and rates. The results also underlined that subjects who claimed their concerns on high tax loads were more likely to evade tax when they had a chance, whereas they were not likely to cheat tax even though they think tax evasion may be considered as an intrinsic attitude. At that point, further taxation policies adopted by decision- and policy-makers should assert the negative outcome of tax evasion and they should tend to increase tax compliance of taxpayers. The empirical evidence of the present study gives information about the impact of further tax amnesty on tax justice. In that context, further tax amnesty policies should be carefully projected by taking the negative impact on tax justice balance into account. The results of this study highlighted that subjects were expecting that their needs should be taken into account before implementation of policies that may decrease their tendency to cheat taxes. A particular committee among policy-makers of taxation may periodically provide an efficient communication channel between decision- and policy-makers and tax subjects. Thus, a successful feedback system between both sides may be constituted in order to enable a sustainable tax payment.

The findings of this study indicated that subjects think that the current tax system in Turkey operates in regard to economic development. In this circumstance, the requirements of the Turkish economy on the way to sustainable economic development should be explicitly explained to subjects and the crucial role of tax compliance should be particularly addressed. The estimation results of the present study put forward that subjects were more likely to cheat taxes if they had a chance though they consider tax evasion as a theft. In that sense, more attempts should be made for future tax policies to carefully explain the negative outcomes of tax evasion under both ethical and religious dimensions. In particular, recent studies (Kaynar Bilgin, 2011; Gungor Goksu and Izgi Sahpaz, 2015) successfully exhibited the crucial role of religious belief on maintaining high degrees of tax morale. Further tax policies should concentrate on the role of both ethics and religion to avoid further tax evasion tendency of subjects. Results of this study reveal that some public expenditures can be considered as extravagance by selected subjects. Further policies may include some additional explanations on public expenditures that successfully convince subjects that public expenditures were not accomplished extravagantly. In that context, the main reasons for each public expenditure should be explained in detail. Although the tendency of these subjects towards tax cheating was found to be relatively low, further explanations on future public expenditures may also avoid their future tax evasion tendency.

The estimation results indicated that trust in government does not guarantee to maintain higher levels of tax morale. Subjects were more likely to cheat on taxes if one of their relatives was not caught. Similarly, they had a tendency to pay less if they did not receive a penalty. Future policies may pay attention to the tax payment behavior of subjects who trust in government as well and tax penalties may be re-organized to increase their deterrence level.

This study was conducted to a limited sample in a specific area of Turkey. Further studies are inherently needed to better understand the degree of tax morale and its sig-

nificant determinants. Further studies that aim to contribute to the tax morale literature may consider the results of the present study and, especially, they may take the advantage of alternative ordered response models for their estimation. The authorized institutions may take responsibility to conduct more comprehensive surveys throughout the country that may enable a successful cross-country comparison. Further attempts on determining tax morale will always give valuable information, especially for developing countries like Turkey, as a milestone step on achieving sustainable economic growth by courtesy of a potential increase of tax revenues. In fact, timely obtained tax revenues may bring a significant contribution to the Turkish economy on its forthcoming goals of converging to developed countries. A multinomial logit model may even be performed to compare its outcome with ordered response models as it is a less restrictive and also less parsimonious model. However, the introduction of the multinomial logit model can be made with caution since the degree of tax morale is an ordinal categorical variable in nature.

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