İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi Yıl:19 Temmuz 2020 (Özel Ek)
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NUDGING IN BEHAVIORAL PUBLIC POLICIES IN TURKEY: A RESEARCH ON THE EFFECTS OF THE BIG-5 PERSONALITY TRAITS ON THE AUTOMATIC ENROLLMENT SYSTEM

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ABSTRACT

Behavioral economics studies explain that individuals can often make wrong decisions due to their inaccurate calculations, errors in their estimates, and cognitive bias. A kind of choice architecture, known as a *nudge*, is designed in such a way to generate individuals' behaviors in favor of both the state and themselves. The automatic enrollment system (AES) implemented in the public economic policies in Turkey is one of the nudging practices. This study aims to reveal whether or not The Big-5 Personality Scale personality traits of the public and private sector employees, which are specified in the sub-groups of conscientiousness/irresponsibility and agreeableness/inconsistency, are effective on preferring to remain in the AES. In this study, it is revealed by using a binary logistic regression model that the preferences of those who participated in the AES have a significant relationship with the specified personality traits, and the preferences of those who did not participate in the AES have a significant relationship with their income.

Keywords: Nudge, The Big-5 Personality Traits, Auto-Enrollment System, Behavioral Economics Applications.

JEL Codes: D15, D31, D9, H3, E7

TÜRKİYE'DE DAVRANIŞSAL KAMU POLİTİKALARINDA DÜRTME: OTOMATİK KATILIM SİSTEMİNDE BIG-5 KİŞİLİK ÖZELLİKLERİNİN ETKİSİ ÜZERİNE BİR ARAŞTIRMA

ÖZ

Bireylerin genellikle çok detaylı hesap yapmamaları, tahminlerindeki hatalar ve bilişsel ön yargılar nedeniyle yanlış kararlar alabildiğini davranışsal iktisat çalışmaları açıklamaktadır. Bireylerin davranışlarını hem devletin hem de kendilerinin faydalarına olacak şekilde dürtme adı verilen bir çeşit seçim mimarisi dizayn edilmektedir. Türkiye'de kamu iktisadi politikalarında uygulanan otomatik katılım sistemi dürtme uygulamalarından birisidir. Bu çalışmanın amacı kamu politikalarının küçük bir sosyal dürtmeyle dizayn edilebileceği yolundan hareketle kamu ve özel sektör çalışanlarının Beş Faktör Kişilik Ölçeği kişilik özelliklerinden sorumluluk/duyarsızlık ve uyumluluk/geçimsizlik alt grubunda belirtilen özelliklerinin otomatik katılım sisteminde kalma tercihinde etkili olup olmadığının ortaya çıkarılmasıdır. Bu çalışmada OKS'ye katılanların tercihlerinin belirtilen kişilik özellikleriyle, katılmayanların ise katılmama tercihlerinin gelirleriyle anlamlı bir ilişkisi olduğu binary lojistik regresyon modeli kullanılarak ortaya çıkarılmıştır.
Anahtar Kelimeler: Dürtme, Büyük Beşli Kişilik Özellikleri, Otomatik Katılım Sistemi, Davranışsal İktisat Uygulamaları.

JEL Sınıflandırma Kodları: D15, D31, D9, H3, E7

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1. INTRODUCTION

It is assumed that when calculating long-term benefits, people calculate their expected benefits in the standard economy model at a maximum level, rationally, considering their own interests. However, Kahneman and Tversky (1979) focused on the effects of psychological events on decision-making, laying the foundations of behavioral economics by claiming that people cannot be fully rational when calculating their benefits and that psychology should be included in economic models. Such situations may cause bounded-rational individuals, as eloquently put by Simon, to diverge from the optimal in their economic decisions and fail to maximize their benefits (Simon, 1982).

There are several reasons for inconsistencies in individuals' choices. Behavioral theory lists these reasons such as neglect, lack of self-control, procrastination, loss aversion, status quo bias, lack of pre-commitment, intuitive thinking, prejudice, and carelessness (Simon, 1982; Thaler & Benartzi, 2004; Kahneman, 2011; Thaler, 1980). It states that individuals cannot act rationally because of behavioral traits, that is, they may be inconsistent in their choices. In behavioral economics practices, it has been seen to cause great changes in behaviors by presenting choices or transferring information differently (Kahneman & Tversky, 1979).

Shefrin and Thaler (1988) emphasized the importance of self-control, mental accounting, and framing effect in individuals' saving behaviors. In self-control bias, it is explained that people prefer the present to the future and that they are not able to maintain full auto control about saving. According to this bias, consumption is always more attractive than retirement savings.

Self-control bias consists of three factors. The first of these involves an internal conflict implying a trade-off between individuals' future savings and their consumption in the present time. The second is the temptation that causes individuals with different levels of expenditure tendency to be driven towards different investment instruments. Finally, it is the willpower that causes internal conflicts with representing their resistance against the temptation of consumption regardless of their wealth during consumption (Thaler & Shefrin, 1988). Lack of self-control may cause individuals not to make retirement plans. Those who do not plan for retirement on this issue are more likely to have a more unsafe retirement period than those who plan. Self-control bias can cause an imbalance in asset allocation. Self-control bias can cause investors to neglect basic financial principles such as compounding of interest, monetary cost averaging, and similar disciplinary behaviors that help to accrue long-term wealth (Pompian, 2006). Another factor affecting individuals' saving behaviors is mental accounting. People may not hesitate to spend a large portion of their assets on an item they enjoy while doing mental accounting, but they avoid spending even a small portion of their assets on an item they do not care too much (Levin, 1998). Thaler and Shefrin (1988) stated in the behavioral life-cycle hypothesis that people classify their wealth mentally as current income, current assets, and future income. Consumption tendency of individuals is assumed to be highest for current income, whereas it is assumed to be lowest for future income. Therefore, consumers tend to save more with their current assets than they do so with their current incomes (Pompian, 2006).

In framing bias, the extent to which decision-makers frame and perceive the problems in various situations depends mainly on the way choices are presented (Tversky & Kahneman, 1981). Framing varies according to the education, intelligence level, upbringing, habits, and presentation of the problem. Different answers can be given to the same question depending on the way the question is asked (Kamilçelebi & Ünal, 2014). Individuals can often make wrong decisions when they do not make very detailed calculations and because of errors in their estimations. In their work entitled "Nudge", Thaler and Sunstein (2009) stated that individuals or institutions called "choice architects" that guide individuals' decisions, should construct various "nudges" for them to make the best decisions considering the cognitive limitations of individuals. Nudging is the gentle push given to the individuals in the direction of positive development, usually through public economic policies, without depriving them of their right to choose. It would be in the interest of both the government and the savers to explain the appropriate ways for people to rationalize their savings behavior. Therefore, in order to encourage people to save and improve their economic behavior, it is necessary to guide them in terms of their decisions. This enables the implementation of behavioral development policies. For example, if individuals choose to leave their retirement plans, the high tax they have to pay would cause them to give up on their desire to leave by doing their mental accounting (Prelec & Loewenstein, 1998).

Besides, the status quo bias is also influential on individuals' decision-making behaviors regarding savings. The status quo bias is the tendency of individuals to maintain what they have or their current state (Samuelson & Zeckhauser, 1988). Once individuals enroll in health insurance, private pension etc., such investments do not change much unless they are directed to a new plan. For this reason, a state that wishes to direct its citizens to investment or savings can choose plans that are automatically renewed each year. Behavioral economists made explanations regarding this agreeableness attitude in their experiments. Individuals can be heavily influenced by the status quo and, by believing that the best is considered for them, they develop a tendency to remain loyal. The status quo actually saves one from the cost of rethinking the decision.

Alternatively, it may be preferable to spend income now, instead of being included in an investment instrument that can use savings in the future, such as an automatic enrollment system. This situation, which is mentioned as a delayed discount between times, can be explained by the tendency and satisfaction of the individual who cannot control his self-control. People, in general, exhibit impatience behavior in the short-run and patience behavior in the long-run. A person with present-biased preferences may prefer to receive $10 today over $15 tomorrow. However, if this preference was $10 for thirty days from now and $15 for 31 days from now, they would seem to wait for an extra day (O'Donoghue & Rabin, 1999; Frederick et al., 2002).

The concept of present bias is more generally used to describe impatience in decision-making or present satisfaction. Along with the time variable, the current conditions also affect the decisions and happiness of people (Kamilçelebi, 2012; 2013). There are also studies claiming that the happiness of individuals is related to income, and even the expectation of earnings increases happiness (Kamilçelebi, 2018a; 2018b). To many

studies examining the relationship between income and happiness, it is generally accepted that there is a significant and positive relationship between absolute income and happiness (Karabulut, 2017; Hagerty & Veenhoven, 2003).

In another study where different methods were designed, such as the interactions of a person's future self with visual representations, an avatar was created indicating how people would have looked now and, in the future, according to their investments. The application was designed as a representation of 100 separate images after the participant was photographed. Using the software, the participants' images are aged and shown to them how they would have looked. It was tested whether or not the participants would change their investment behaviors when they see their future face images. The participants chose an investment that would be sufficient for them at first. How the investment would result was simulated. Persons were shown their pension status and appearance. If they started to save for retirement right away, their current image was unhappy, but their future image would have appeared happy. However, if they did not save at that moment, their current image became happier, whereas their older image in the future became sadder. Saving behaviors of those who have been exposed to their future images were enhanced (Hershfield et al., 2011; Kamilçelebi, 2019). Besides failing to save money due to lack of self-control and procrastination behaviors, situations such as not participating in physical activities, inability to attend education, not dieting, preferring comedy over documentary, and inability to quit smoking are frequently encountered (Read & van Leeuwen, 1998; Loewenstein et al., 1998; Read et al., 1999). According to Akay et al., (2015) low and high levels of religiosity do not change the contribution amount in standard public goods experiments. Therefore, upon assuming the share of participation in AES as a public goods, it supports our assumption that cooperation here may be related to personality traits rather than the level of religiosity. These behaviors also indicate that individuals may be associated with personality structures such as taking conscientiousness and agreeableness.

There are also studies that explore the interface of the Big-5 personality traits between personality psychology and economics and attribute them to concepts such as risk-taking, preferences (Borghans et al., 2008), empathy, and positional concern (Akay et al., 2019). For example, according to Akay and Karabulut (2020), agreeableness is negatively associated with positional concerns for most goods dealt with in their experiments, whereas positively associated with conscientiousness and neuroticism.

Although there are studies in the literature conducted on the measurement of personality traits with psychological and economic factors, there is no original study that relates the automatic enrollment system to personality traits. This research study, since the personality traits of prejudices and intuition, such as the status quo bias and present bias are effective on people's decisions in behavioral economics, would contribute to the literature both theoretically and practically and constitute a foundation for future studies to be conducted on the subject.

2. THE RELATIONSHIP OF AES AS ONE OF NUDGING POLICIES REGARDING SAVINGS WITH THE BIG-5 PERSONALITY TRAITS

For the past 20 years, we have been witnessing the growing impact of behavioral economics on the design and implementation of several public policies. Governments are increasingly adopting behavioral economics techniques to change individuals' behaviors pertinent to savings in line with their policy objectives and establish various nudging units (Benartzi et al., 2017). In many conducted studies, it has been revealed that considering behavioral effects helps in resolving policy problems. Governments have made major advances in healthcare, pensions, employment, energy savings, and economic growth through behavioral public policies (Halpern, 2015), developed nudging policies related to retirement savings plans (Choi et al., 2011), changed the annuity pension contributions for those in the top tax brackets (Chetty et al., 2014), increased the enrollment rate as a result of offering monetary incentives to those who would be informed about retirement savings plans (Duflo & Saez, 2003), provided tax convenience in retirement savings for those whose gross income fell below a certain threshold in the USA (Duflo et al., 2007), and increased pension savings in Canada utilizing intertemporal selection models (French, 2015). There are research studies that observed high probabilities of individuals' contributions to tax-deductible retirement contracts (Feenberg & Skinner, 1989; Bernheim & Rangel, 2016). As in many countries worldwide, a nudging unit has already been also in Turkey within the Ministry of Commerce since 2017 (Ministry of Trade).

In another study on saving, it has been observed that very different results can be obtained with only a small change in the retirement form. There are actually important problems with the extent to which people would earn during their employment and they would be paid whenever they retire. One of these problems is stated as assuming that people have the ability to solve a difficult problem like how much they should save, and the second involves the fact that people do not have enough control to execute these plans perfectly. A study on the subject is about changing the retirement planning preferences of employees working in a company. When a person gets employed by this company, he/she would be asked to fill out a form for the savings plan in which he/she wishes to join. If they indicate that they accept to participate in the retirement system, presented to the workers, they should tick the relevant box in the form, determine how much they would contribute, confirm the salary cuts and determine how the accumulated money would be allocated among the funds. Enrollment in the system is low as these forms are perceived as having many details by the employees. Instead, firms have altered only one statement in the pension contract. With the altered form, employees are asked not to tick the box if they do not wish to make three percent payment to pension funds. Because people usually do not read the forms very carefully due to inertia. Individuals are automatically included in the plan just because they fail to check the box. The inclusion of employees in the automatic enrollment plan by the employer increased the enrollment rate to this plan from 49 percent to 86 percent. Also, it has been observed that automatic enrollment increases the enrollment rates of younger or low- income groups with low inclusion rates in the retirement plan (Madrian & Shea, 2001). After the automatic enrollment system was launched in the USA as of 2006, the proportion of employees participating in retirement plans increased from 55% to 82% in 5 years. In the age group of 20-24, the rate of the automatic enrollment went up from 20% to 76% (IAOT). Conducted studies have shown that automatic enrollment in the

pension system and application to exit the system are among certain ways to keep people in the system. Datta and Mullainathan (2014) observed that, upon using this method, the total savings in the USA, that is, the rate of those kept in the system, increased by approximately 40%.

A similar application was made also in Turkey. The AES is observed as one of the nudging practices related to savings in public economic policies in Turkey. The Private Pension System was first implemented in Turkey as of 2001. Individuals' enrollment in this system involves a decision they need to make. Therefore, since the status quo was not being enrolled in the system, enrollment was low. Since 2013, a 25% portion of the state's contribution has been provided to the participants of the Private Pension System. By courtesy of the state's contribution, the number of participants, which was 3.1 million by the end of 2012, reached 4 million by the end of 2013. The enrollment rate increased by 30%. The Under secretariat of Treasury, as of April 2018, announced that the number of participants enrolled in the Private Pension System has reached 6.9 million; whereas the total fund size at 81.1 billion TRY; and the total contribution of the State at 10.4 billion TRY. In order to further increase the saving rate of individuals, the Automatic Enrollment System (AES) was launched on January 1, 2017.

With the new system, employees under the age of 45 and companies with 250 and 1000 employees are automatically included in the AES. Employees enrolled in this system are given the right to exit the system upon their request without incurring serious costs. Participants included in the system with the Automatic Enrollment System can also sign one or more voluntary private pension contracts with the pension companies of their choice. In both types of enrollments, the participant must complete the age of 56 if he/she wishes to remain in the system for at least 10 years and then retire. 25% of the contributions paid on behalf of the participant is paid as the state's contribution. Upon request, the participants can exit the system using the right of withdrawal within 2 months. Moreover, the system has the right to suspend contributions to both types of participation, transfer savings to different pension companies, and make changes in fund allocation. The automatic enrollment system is not an alternative but complementary to the social security system (PMC).

AES is an important example of behavioral economics practices in Turkey. While creating the system, it can be seen that human behaviors are based on certain biases, and the method of attaining the desired objectives is used by interfering with these biases. It is possible to think of various reasons such as financial impossibility besides various prejudices such as procrastination, irresponsibility, reluctance, and making decisions after the experience of others for individuals not enrolling in the AES. Therefore, the AES was designed by considering cognitive biases and personal traits such as procrastination, adaptation, and a sense of conscientiousness. Particularly agreeable people and people who wish to take conscientiousness can be easier to participate in the AES. The vast majority of people tend not to change the "predetermined" option, that is, to adapt. As can be seen in Table 1, the number of participants in the automatic enrollment system is increasing. Therefore, it can be thought that people with personality traits such as agreeableness and conscientiousness

can easily be included in the automatic enrollment system. Because, while biases take place in the infrastructure of people's behavior, sometimes personality traits loom large.

Table 1. Participants in the Automatic Enrollment System

Year of Joining AES	Number of Employees	Fund Amount of Employees (Million TRY)	Contribution Amount (Million TRY)	Number of Certificates
2017	3.420.618	1.793,1	1.724,8	3.501.427
2018	4.990.786	4.598,5	4.146,6	5.190.546
2019	5.354.242	8.194,4	6.357,5	6.389.681
Until 2020 June	5.446.727	9.853,4	7.823,6	6.722.155

Source: Pension Monitoring Center Website, https://www.egm.org.tr/, 04.07.2020.

The Big-5 is an important test in measuring personality traits. It contains five separate categories. These are agreeableness, conscientiousness, neuroticism, extraversion, and openness-to-experience (Costa & McCrae, 1992). Participants responded to each subdimension with a 5-point Likert scale, ranging from definitely disapprove to definitely approve. Conscientiousness sub-dimension consists of features such as self-discipline, dutifulness, having conscientiousness, orderliness, cautiousness, and rational decision-making. Individuals with a high level of conscientiousness are considered to be achievement-striving, determined, planned, and thinking before acting. Individuals with low levels of conscientiousness are regarded as undisciplined, lazy, unconscious, and less reliable individuals (Costa & McCrae, 1995).

Agreeableness sub-dimension includes personality traits such as altruism, forgiveness, kindness, tolerance, respectfulness, and flexibility. Individuals with a high level of agreeableness are considered as loving, donating, and compassionate individuals. Individuals with low agreeableness levels are considered as vindictive, arrogant, stubborn, competitive, incompatible, and difficult to reconcile (Costa & McCrae, 1995).

3. METHODOLOGY

The dataset used in this study was obtained through an online survey conducted on a voluntary basis for 586 people employed in the public and private sectors selected randomly and not included in the automatic enrollment system by the institution or company for which they work. We ran an online survey all across Turkey in March 2020. The whole protocol was carried out with complete anonymity. The aim of the research study is to determine whether or not these preferences of the people working in the selected public and private sectors and who are not included in the automatic enrollment system by the institution or company they work for are related to the conscientiousness/irresponsibility and agreeableness/inconsistency of the Big-5 personality scale. Public and private sector employees between the ages of 18-65 are included in the survey.

8 people aged 65 and over were excluded from this survey, which was responded by 586 people. The following formula is used to determine the sample size suitable for the dataset to be surveyed:

$$n= NPQZ^2/(N-1)d^2+PQZ^2$$

In this formula, n = sample size, N = population size (the number of participants of AES in 2019= 5,354,242), p = the probability of occurrence of the event under examination (0.5), Q= the probability of non-occurrence of the event under examination (0.5), Z = Test value (0.96), and d= error margin (5%). The sample size that can represent the population size a result of the formula is determined as 384. The number of questionnaires used in the research exceeds the targeted number.

Cross-sectional data obtained in the survey were analyzed with the help of SPSS 25 software and subjected to logistic regression analysis. The first part of the survey consists of demographic features such as gender, age, education, and marital status. Afterward, the participants were asked whether they were registered with the AES, their public-private working status, and the personality test scale indicating the agreeableness and conscientiousness behaviors of individuals, income satisfaction, and the reasons for not enrolling in the AES. The questions of the Big-5 personality inventory scale translated into Turkish by Tatar (2017) were used.

4. ANALYSIS AND FINDINGS

Two separate analyses were performed in the study. The "aesreg" dependent variable with a nominal scale, which indicates whether or not the survey participants are included in the automatic enrollment system, is considered in two categories. The question "Are you registered with the AES?" is coded as yes: 0, no, and deterred: 1. Another dependent variable (aesreg_2) consists of those who were not registered with the AES and the ones who were once registered then deterred. This variable is also coded as no: 1, deterred: 0. Gender, age, income, public-private sector employment status, marital status, age, salary satisfaction, conscientiousness, and agreeableness were taken into consideration as explanatory variables. The gender variable is coded as 1: female and 0: male. The marital status variable is coded as 1: married and 0: single. The income variable is coded as 1: 0-2324, 2: 2325-6000, 3: 6001-10.000, 4: 10,000 and above. Education variable is coded as 1: primary school, secondary school, and primary school graduate, 2: high school graduate, 3: college/faculty, 4: master's / Ph.D. graduate.

Table 2. Agreeableness and Conscientiousness Scale

Agreeableness	Conscientiousness
A-P1. I feel little concern for others. (-)	C-P1. I am always prepared. (+)
A-P2. I am interested in people. (+)	C-P2. I leave my belongings around. (-)
A-P3. I insult people. (-)	C-P3. I pay attention to details. (+)
A-P4. I sympathize with others' feelings. (+)	C-P4. I make a mess of things. (-)
A-P5. I am not interested in other people's problems. (-)	C-P5. I get chores done right away. (+)
A-P6. I have a soft heart. (+)	C-P6. I often forget to put things back in their proper place. (-)

A-P7. I am not really interested in others. (-)	C-P7. I like order. (+)
A-P8. I take time out for others. (+)	C-P8. I shirk my duties. (-)
A-P9. I feel others' emotions. (+)	C-P9. I follow a schedule. (+)
A-P10. I make people feel at ease. (+)	C-P10. I am exacting in my work. (+)

Source: Goldberg, L. R., (1992). "The development of markers for the Big-Five factor structure", *Psychological Assessment*, 4, 26-42.

Conscientiousness and agreeableness questions of the personality test presented in Table 2 are of a five-point Likert-type scale coded as 1. Very inaccurate, 2. Moderately inaccurate, 3. Neither accurate nor inaccurate, 4. Moderately accurate, and 5. Very accurate.

Table 3. Descriptive Statistics of Independent Variables Used in the Logit Model

	Frequency %
Sex	
Woman	26,0
Man	74,0
Marital Status	
Married	65,7
Single	34,3
Income (TRY)	
0-2324	2,8
2325-6000	25,1
6001-10.000	35,8
10,001 +	36,3
Education Level	
Primary school & secondary school	1
General, vocational or technical high school	4,8
Collage & Faculty	58
Doctorate & Master's degrees	36,2
Employment Status	
Public	55,2
Private	44,8
Salary Satisfaction	
Definitely not satisfied	17,4
Not satisfied	15,1
Neither satisfied nor dissatisfied	28,4
Satisfied	29
Very satisfied	10.1

According to Table 3, 74% of the respondents are male, whereas 26% are female. 65.7% of the participants are married, whereas 34.3% are single. Upon listing them according

to their income levels, the vast majority (36.3%) of the participants have incomes of 10.0001 TRY and above, whereas 35.8% between 6001-10.000 TRY, respectively. 25.1% of the participants have incomes between 2325-6000 TRY whereas 2.8% less than the minimum wage. Upon considering the education levels, a vast majority (58%) of the participants have undergraduate degrees. They are followed by ones with a doctorate and master's degree with 36.2%. Participants are employed in both the public sector (55.2%) and the private sector (44.8%). When asked about their income satisfaction ranging between 0-10 scales, 32.5% of the participants stated that they were definitely not satisfied and not satisfied with their salaries, whereas 39.1% stated that they were satisfied and very satisfied.

Table 4. AES and PPS Participation Statistics of Employees

AES Registration	Public %	Private %	Participation Rates to PPS - Public% - before AES	Participation Rates to PPS - Private%- before AES	Participation Rates to PPS - Public%	Participation Rates to PPS - Private%
Yes	23	15	27,3	44,6		
No	46	52	-	-	9,5	12,3
Deterred	31	33	-	-	6,3	9,9

It is seen in Table 4 that 23% of the individuals participating in the study and working in the public sector are registered with the AES, whereas 46% are not registered, and 31% are registered with the AES. It is seen that 15% of the participants working in the private sector are registered with the AES, whereas 52% are not registered, and 33% are registered and then deterred. It is observed that 27.3% of public employees registered in the AES and 44.6% of private-sector employees are also registered in the PPS before AES.

Table 5. Reasons of Who Were Not Included in The AES

Which would be included in the automatic enrollment system if it was better / advanced / more?	**Public %**	**Private %**
My trust in the retirement system	29,5	33,2
Option to leave the system early	11	7,3
Income	20,5	18,2
Retirement fund returns	18,4	15,4
State's contribution rate	7	9,4
Economic situation of the country	8,6	11
Age	0,8	2,2
Other	3,7	5

According to Table 5, the participants who were not included in the AES and who were announced were asked "Which would be included in the automatic enrollment system if it was better / advanced / more?", it is seen that the option of increasing the trust of the public sector employees in the pension system (29.5%) is in the first place. Then the options for improving income status (20.5%) and improving the return of pension funds

(18.4%) follow. Upon considering the private sector, it is seen that the trust in the pension system (33.2%) is in the first place. Then, it is seen that the options for improving the income status (18.2%) and improving the return of pension funds (15.4%) follow respectively. In our study, it is revealed that one of the most important reasons affecting the decision to participate in the AES participation system is the trust in the pension system.

Before performing the analysis, the Cronbach's Alpha value calculated to determine the reliability of the study was 0.706. According to the data obtained as a result of the VIF test to meet the assumption that there is no multicollinearity, no multicollinearity was detected in the model. The data obtained in this study were subjected to Binary Logistic Regression analysis using SPSS 25 analysis software.

Simple regression models used when the dependent variable is a continuous quantitative variable are insufficient in cases where the independent variable is categorical. The logistic regression model is used instead of simple regression models that are not enough in cases where the dependent variable is categorical, the logistic model is very similar to multiple regression analysis, except for that the dependent variable has two categories. The fact that the dependent variable has two categories and the categorical or continuous values of the independent variables prevents the linear probability model equation at all times. In order to eliminate this problem, logit transformation is applied to the responses given to the dependent variable.

The logit regression analysis, which has assumptions and requirements such as the examination of the loss and extreme values in the data, the determination of whether or not there are multicollinearity problems, and the independence of the errors, is widely used due to its conveniences such as not imposing any restrictions on the independent variables whether they are continuous or discontinuous, and not requiring a linear relationship between the dependent and independent variables (Hosmer Jr. et al., 2013).

According to the results of the analysis, 578 people responded to the questionnaire. 17 of them contain lost data. In the "Dependent Variable Encoding" tab, the dependent variable is coded as Yes: 0, No, and deterred: 1. In the "Categorical Variables Codings" section, frequency and coding of categorical variables are shown. Accordingly, 311 people working in the public sector and 250 people working in the private sector are in the "employstatus" variable that indicates the employment status in the public or private sector. In the "maritstatus" variable, 366 people are married, whereas 195 are single. In the "gender" variable, 418 people are male, whereas 143 are female. Information about the model, which can be created only if there is a constant term in the model, is included in the "Iteration History a, b, c" table.

Table 6. Information of the Model with Only Constant Term

Iteration History [a, b, c]

Iteration		-2 Log likelihood	Coefficients Constant
Step 0	1	561,488	1,209
	2	558,117	1,390
	3	558,108	1,400

4	558,108	1,400

a. Constant is included in the model.
b. Initial -2 Log Likelihood: 558,108
c. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table [a, b]

Observed			Predicted aesreg		
			Yes	No	Percentage Correct
Step 0	aesreg	Yes	0	111	,0
		No & Deterred	0	450	100,0
	Overall Percentage				80,2

a. Constant is included in the model.
b. The cut value is, 500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1,400	,106	174,443	1	,000	4,054

Table 6 presents the information about the model in which the constant term is included. For the logistic regression model in which only the constant is included, the -2LL value is calculated as 558,108. Classification Table results indicate that 80.2% of the model is estimated correctly. While 111 people who stated that they enrolled in the AES in the model were considered not to enroll in the AES, all those who responded "no" and "deterred" were correctly predicted.

In the model, in the "Variables in the Equation" tab, the coefficient of the constant of the model is shown. The fixed-term is calculated as 1,400. This value is statistically significant (p = 0.000). Since p = 0.000 in the "Variables not in the Equation" tab, this indicates that variables that are not included in the equation contribute to the model.

Table 7. Information of the Model with Constant Term and All Explanatory Variables

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	63,077	27	,000
	Block	63,077	27	,000
	Model	63,077	27	,000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	495,031[a]	,106	,169

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

Classification Table[a]

Observed		Predicted aesreg: Yes	No	Percentage Correct
Step 1 aesreg	Yes	16	95	14,4
	No & Deterred	8	442	98,2
Overall Percentage				81,6

a. The cut value is ,500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	90% C.I.for EXP(B) Lower	Upper
Sex	,341	,278	1,500	1	,221	1,406	,890	2,221
Age	**,061*** **	**,018**	**12,122**	**1**	**,000**	**1,063**	**1,033**	**1,094**
Marital status	**,619** **	**,286**	**4,677**	**1**	**,031**	**1,857**	**1,160**	**2,975**
Income	,214	,173	1,528	1	,216	1,239	,932	1,647
Employstatus	**-,466***	**,248**	**3,526**	**1**	**,060**	**,628**	**,417**	**,944**
Education	**-,454** **	**,225**	**4,087**	**1**	**,043**	**,635**	**,439**	**,919**
Salary satisfaction	**-,101** **	**,051**	**4,009**	**1**	**,045**	**,904**	**,831**	**,982**
A-P1	**-,284***	**,155**	**3,337**	**1**	**,068**	**,753**	**,583**	**,972**
C-P1	**,426** **	**,205**	**4,298**	**1**	**,038**	**1,531**	**1,092**	**2,146**
A-P2	,148	,196	,571	1	,450	1,159	,840	1,599
C-P2	-,070	,186	,142	1	,706	,932	,687	1,266
A-P3	-,217	,192	1,271	1	,260	,805	,587	1,105
C-P3	**,431***	**,221**	**3,811**	**1**	**,051**	**1,538**	**1,070**	**2,211**
A-P4	,175	,240	,533	1	,465	1,191	,803	1,768
C-P4	-,297	,203	2,146	1	,143	,743	,532	1,037
A-P5	,021	,209	,010	1	,922	1,021	,724	1,440
C-P5	,198	,200	,978	1	,323	1,219	,877	1,695
A-P6	**-,716*** **	**,272**	**6,932**	**1**	**,008**	**,489**	**,313**	**,764**
C-P6	,215	,185	1,354	1	,245	1,240	,915	1,680
A-P7	,029	,171	,029	1	,864	1,030	,777	1,364

C-P7	,213	,244	,764	1	,382	1,237	,829	1,847
A-P8	-,162	,246	,437	1	,509	,850	,567	1,274
C-P8	**,404***	**,243**	**2,748**	**1**	**,097**	**1,497**	**1,003**	**2,234**
A-P9	,035	,242	,021	1	,885	1,036	,696	1,541
C-P9	**-,504****	**,232**	**4,722**	**1**	**,030**	**,604**	**,412**	**,885**
A-P10	,163	,221	,539	1	,463	1,176	,817	1,694
C-P10	-,060	,286	,044	1	,835	,942	,589	1,508
Constant	,117	1,965	,004	1	,952	1,125	.	.

a. Variable(s) entered on step 1: sex, age, maritalsatus, income, employstatus, education, salarysatisfaction A-P1, C-P1, A-P2, C-P2, A-P3, C-P3, A-P4, C-P4, A-P5, C-P5, UK-6, C-P6, A-P7, C-P7, A-P8, C-P8, A-P9, C-P9, A-P10, C-P10,

*** = p < 0.01, ** = p <0.05, * = p < 0.10

Table 7 presents the information of the model with the constant term and all explanatory variables. The "Omnibus Tests of Model Coefficients" tab, which we obtain when we use the ENTER method where the constant term and all the explanatory variables are included in the model, is Chi-Square test that means the improvement in the model according to the previous step, the improvement chi-square statistic value is 63,077.

-2LL value is calculated as 495,031 in the "Model Summary" tab. When the only fixed value is considered in the model, this value is determined as 558,108. When all variables are included in the model, the obtained -2LL value is smaller than the -2LL value which is in the model only with the constant value. Improvement chi-square statistical value indicates the improvement value of the test. The value of 63,077 is equal to the difference of -2LL values in both models, and since p = 0.000, the H_0 hypothesis is rejected. So, our model is significant.

The "Classification Table" indicates that 103 people are estimated wrongly in the model. 95 people who stated that they were registered to the AES are estimated to be unregistered, whereas 8 people who responded "no" and "deterred" are estimated to be registered to the AES. Considering the percentage, 14.4% of the people who stated that they were registered to the AES are estimated correctly, whereas 98.2% of those who responded "no" and "deterred" are estimated correctly. 81.6% of 574 people who responded to the question "Have you enrolled in the AES?" are estimated correctly. It is observed that there is an increase in the explanatory rate compared to the model only with the fixed term. This situation indicates that the model is successful in terms of classification.

Enter Method was applied in the Logistic Regression Analysis. In the same Table, B parameters, the Wald statistical values, standard error, significance levels, the ODDS values, and the degrees of freedom are given. The "Variables in the Equation" tab gives us the B values and the constants of the explanatory variables. B values are used to create estimate functions in the multiple regression analysis, while in the logistic regression it is used to determine the probability of doing one job or another (Menard, 2002).

Upon examining the B values of the model, it is determined that the variable that affects enrollment in the AES is A-P6 (-0.716) (I have a soft heart), which is an agreeableness variable. Then marital status (0. 619), C-P9 (-0.504) (I follow a schedule), public-private sector employment status (-0.466), education level (-0.454), C-P3 (0.431) (I pay attention to details), C-P1 (0.426) (I am always prepared), C-P8 (0.404) (I shirk my duties), gender (0.341), C-P4 (-297) (I make a mess of things) affect the variables, respectively.

The sign (positive or negative) of B value indicates the direction of the relationship. Upon considering the significance levels of B values, age (0.000), maritstatus (0.031), education (0.043), income satisfaction (0.045), C-P1 (0.038) (I am always prepared), A-P6 (0.008) (I have a soft heart), and C-P9 (0.030) (I follow a schedule) variables are determined as significant at 5% significance level in the model.

C-P3 (0.051) (I pay attention to details), employment status (0.060), A-P1 (0.068) (I feel little concern for others), C-P8 (0.097) (I shirk my duties) are found statistically significant at 10% significance level. All other variables are not found statistically significant at 5% and 10% significance levels.

Table 8. Regression Model of Independent Variables

Independent Variable	Independent Variable	Coefficient Value
Age	X_1	0,061
Marital Status	X_2	0,619
Education Level	X_3	-0,454
Employment Status	X_8	-0,454
Salary Satisfaction	X_4	-0,101
C-P1	X_5	0,426
A-P6	X_6	-0,716
C-P9	X_7	-0,504
A-P1	X_9	-0,284
C-P3	X_{10}	0,431
C-P8	X_{11}	0,404

In order to present the binary logistic regression model briefly, the variables found significant are shown in Table 8. According to the equation, P(Y)= P(aesreg)=1/(1+e^(-Z)), $Z=0,117+0,061X_1+0,619X_2-0,454X_3-0,101X_4+0,426X_5-0,716X_6-0,504X_7-0,454X_8$ $0284X_9+0,431X_{10}+0,404X_{11}$.

Among the variables found to be significant, the probability of enrollment in the AES increases along with an increase in the age variable. A one-year increase in age increases the probability of enrollment in the AES by 1.063 times or 6.3% [(1.063-1) * 100]. It is seen that as people get older, their saving behaviors increase as mentioned in the literature. It is seen that marriage increases the probability of enrollment in the AES by 1.857 times or 85.7% [(1.857-1) * 100]. This may be due to the economic recovery caused by marriage. As the level of education increases, the probability of the individuals' enrollment in the AES decreases by 0.635 times or 36.5% [(1-0.635) * 100]. As income satisfaction increases, the probability of enrollment in the AES

decreases by 0.904 times or 9.6% [(1-0.904) * 100]. Since individuals are happy about their income, enrollment rates in the AES tend to decrease. As can be understood, the participants who feel happy about their incomes at present may be inclined to spend their incomes right away instead of saving according to the literature.

Upon considering whether or not personality traits such as agreeableness and conscientiousness behaviors increase enrollment in the AES, it is seen that the negative agreeableness behavior of "I feel little concern for others" decreases the probability of enrollment in the AES by 0.75 times or 24.7% [(1-0.753) * 100]. It is observed that the probability of enrollment in the AES increases by 1.538 times or 53.8% [(1.538-1) * 100] when the positive conscientiousness behavior of the conscientiousness personality traits "I am detail-oriented" increases by one unit. Another conscientiousness personality trait, "I am always prepared", seems to increase the probability of enrollment in the AES 1.531 times or 53.1% ((1.531-1) * 100) as the positive conscientiousness behavior increases by one unit. It is seen that the conscientiousness personality trait, "I shirk my duties", increases the probability of enrollment in the AES by 1.497 times or 49.7% [(1.497-1) * 100] as the negative conscientiousness increases by one unit. It is seen that the probability of enrollment in the AES decreases by 0.604 times or 39.6% [(1-0.604) * 100] as the positive conscientiousness personality trait, "I follow a schedule", increases by one unit. It is seen that the positive agreeableness behavior of "I have a soft heart", reduces the probability of enrollment in the AES by 0.489 times or 51.1% [(1-0.489) * 100]. According to the obtained results upon performing the binary logistic analysis for those who responded "no" and "deterred" among those who enrolled in the AES, 450 people are included in the model, whereas 128 people are excluded from the model. Upon examining the obtained results in this model, age (0.000) and income variables (0.061) are found significant in the model. As the income increases in the model, the possibility of deterring from the AES decreases.

4. CONCLUSION

Upon considering the variables found significant in the study, the age variable increases the probability of enrollment in the AES. As age increases, individuals' saving behaviors also increase in accordance with the literature. Marriage increases the likelihood of enrollment in the AES. Marriage can make a positive social and economic contribution to individuals. Therefore, the combination of economic returns may increase the possibility of enrollment in the AES. Nonetheless, as the income satisfaction of the people increases, the enrollment rate in the AES decreases. As can be understood, participants who feel happy about their incomes at present may be inclined to spend their income right away instead of saving as stated in the present bias. Upon examining whether or not the personality traits such as agreeableness and conscientiousness behaviors increase enrollment in the AES, the probability of enrollment in the AES increases by 1.538 times or 53.8% ((1.538-1) * 100%) as the positive conscientiousness behavior of the conscientiousness personality traits increases by one unit. It is seen that the probability of enrollment in the AES increases by 1.531 times or 53.1% ((1.531-1) * 100) as another conscientiousness personality trait, "I am always prepared", increases by one unit. It is seen that the probability of enrollment in the AES increases by 1.497 times or 49.7% [(1.497-1) * 100] as the conscientiousness

personality trait, "I shirk my duties", increases by one unit. As the positive conscientiousness personality traits, "I follow a schedule", increases by one unit, it is seen that the probability of enrollment in the AES decreases by 0.604 times or 39.6% [(1-0.604) * 100]. It is seen that one unit increase in the positive agreeableness behavior of "I have a soft heart", which is one of the agreeableness personality traits, reduces the probability of enrollment in the AES by 0.489 times or 51.1% [(1-0.489) * 100]. It is seen that one unit increase in the negative agreeableness behavior of "I feel little concern for others" decreases the probability of enrollment in the AES by 0.753 times or 24.7% [(1-0.753) * 100].

As it can be understood, the enrollment rates of individuals who pay attention to the details in the conscientiousness sub-category and who are always prepared tend increase, however, it is quite difficult to exit from the system for individuals who do not fulfill their duty responsibilities and cannot follow a schedule since they are automatically included in the system. Nevertheless, it is revealed that people are affected by the behavior of others to adapt. These preferences of those who did not enroll in the AES do not have a significant relationship with their personality traits, and one of the underlying reasons is positively associated with their income satisfaction. This study, which reveals the relationship between participation in the AES and personality traits such as agreeableness and conscientiousness, will shed light on future studies.

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