

## Factors Affecting People's Entrance To Individual Pension System In Bursa

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### ABSTRACT

Choice of retirement plan determines one's choice on retirement income and its financing. Once one decides about a retirement plan, one has to abide by it. Early in one's career, one may be in a low-paying job, struggling to make ends meet. Consequently, the individual may feel that he or she does not have enough income. Individual Pension System (IPS) is an additional income for retirement. This study aims to analyze the factors affecting the decision to join IPS in Bursa province in Turkey. A questionnaire was administered using simple random sampling to 350 people asking what their plans were, what they were doing at the moment for retirement and what they were thinking about IPS. Four factors have been found to be important for the decision to join the IPS. These were marital status, risk-taking character, financial knowledge and investment/spending ratio. The findings of the study demonstrated that an individual, who had the above-mentioned features, had a possibility of approximately 76% to join IPS.

**Keywords:** Individual Retirement, Behavioral Economics, Financial Economics.

**Jel Classification:** G02, G11, G22.

### Bursa'da Kişilerin Bireysel Emeklilik Sistemine Girişini Etkileyen Faktörler

#### ÖZET

Emeklilik planı, kişilerin ne kadar emekli geliri istedikleri ve bu geliri nasıl finanse edeceklerini belirlemek için yaptıkları plandır. Bu nedenle kişiler çalışma hayatları boyunca emeklilik dönemine dair plan yapmak zorundadırlar. Diğer taraftan, çalışma hayatlarında kişiler düşük maaşlı işlerde çalışabilir ya da işsiz kalacaklarını düşünebilirler. Bu gibi durumlarda kişiler sıkıntıya düşmemek için "extra" gelire ihtiyaç duyarlar. Bireysel Emeklilik Sistemi kişilere "extra" gelir imkânını sunar. Bu çalışma, kişilerin Bireysel Emeklilik Sistemine girip girmeme kararlarını etkileyen faktörleri belirlemeyi amaçlamaktadır. Basit rassal örnekleme tekniği ile Bursa'da 350 kişiye anket uygulanmış ve kişilerin emeklilik dönemi için plan yapıp yapmadıkları ve sistem için düşüncelerinin neler olduğu tespit edilmiştir. Dört faktörün, kişilerin sisteme giriş kararlarını etkilediği belirlenmiştir. Bunlar; medeni durum, risk-sever olup olmama, finansal bilgi düzeyi ve kişilerin yatırım/harcama oranı değişkenleridir. Kişi eğer evliyse, yatırım kararlarında riski göze alabiliyorsa, finansal bilgi düzeyi yüksekse ve harcamalarının önemli bir kısmını yatırıma yönlendiriyorsa, Bireysel Emeklilik Sistemine girme olasılığı %76'dır.

**Anahtar Kelimeler:** Bireysel Emeklilik, Davranışsal Ekonomi, Finansal Ekonomi.

**JEL Sınıflandırması:** G02, G11, G22.

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## 1. INTRODUCTION

Pension is a social citizenship right earned after people leave their careers. Thanks to retirement; officers, employees and freelancers, who have paid their premiums; earn a monthly payment without a service provision at the end of the period set with a low. Pension is part of the social security system. Thus, the social security system is scrutinized in this study initially.

Today in most developed countries, social security system was improved to prevent the aggravation of people due to advancing age and because of leaving the labor force. Social security, in essence, is a public spending program initially created to provide people income and to guard them against social and economic risks. Social security includes all safeguards which provide to alleviate the negative situations due to poverty, unemployment, old age, disease and any economic uncertainty related to the future. Mainly; social security system, social services and social securities are utilized in the provision of the social security system. Historically, social security and pension systems were constructed differently in each country and were affected by the countries' socio-cultural, economic and political structures (Uğur, 2004:2).

In time, social security system has collapsed in Turkey. The most important reasons for that are the change in population structure, and the problems related to financing. Despite this unfavorable situation, code No 4632, the law of individual pension investment and saving system was legislated. Individual pension system, complementing the public social security system, was introduced on October 27, 2003, with the objective of increasing the level of welfare by providing additional income for the retired and contributing to economic development as well as creating employment opportunities via creation of long term resources (BYEGM, 2007). There were many reasons why the IPS application took a long time to implement in Turkey, namely; high interest and inflation rates, budget deficit, private pension funds are perceived as unreliable and the existing low confidence level for the current social security system (Ceylan and Korkmaz; 2006:163). After October 2003, Turkish pension funds have shown dramatic progress. Because of this, people choose individual retirement (Korkmaz and Uygurtürk; 2017:7).

There are many reasons why individual pension system was implemented in Turkey in 2003. Bağ-Kur (Social Security Organization for Artisans and the Self-Employed), SSK (Social Security Institution) and Emekli Sandığı (Pension Fund) social security institutions were not able to satisfy its members and they frequently requested extra funds from the treasury department to finance their expenditures. Although birth rate growth relatively decreased through time, life span increased. Today's young population will be retired in the future resulting in an increase in old-age dependency ratios (Korkmaz and Uygurtürk; 2014:8). Currently there is already a disequilibrium on the active passive ratio, in the future aging population will destroy the active passive ratio deeply. All these problems created a

pressure to initiate IPS in Turkey (Uğur; 2004:16). The main objective of IPS is to play an important complementary role to the current social security system. Furthermore IPS motivates individuals to save more money and invest in long term capital market instruments to generate income to have a better life standards during their post-retirement (Korkmaz and Uygurtürk; 2007:9). Particularly private pension funds are considered as a well-established long term capital sources for the economy as a whole and private pension funds help economic growth and lower unemployment rate (Erçoklu; 2003:138).

One of the most important advantages of the individual retirement is its transparent system framework. This transparency helps account holders to follow and control their monthly payments, deductions, preferred fund distribution, etc., these fundamentals are required by default and standard information about pension funds could be reached via the Internet or regular mail (Dağalp, 2002). Account holders are able to transfer their savings and accumulated benefits to other pension companies. To do this, an account holder has to stay at least one year in her or his current pension program (Korkmaz and Uygurtürk; 2007:11). When the account holder gets the right to be retired in the system, there are some options to utilize his/her retirement account balance the account holder can get the lump-sum balance or some portion of the accumulated money, the other options are to receive monthly, quarterly, semi-annually or annually regular pay-checks, which are is called “annual insured income”. In order to get the benefits of the system, account holders have to make monthly payment at least for 10 years and cannot be retired till they reach the age of 56.

There are several control and surveillance mechanisms that increase the confidence for the system. Mainly Treasury Under-secretariat, Pension Monitoring Center, Capital Markets Board and Custody Bank and many other organizations control the system. Takasbank (Custody Bank) is authorized as the Central Securities Depository and is appointed as the National Numbering Agency of Turkey by the Capital Markets Board (Korkmaz and Uygurtürk; 2007:13). Prime Ministry Undersecretariat of Treasury authorized the Pension Monitoring Center (EGM) in order to ensure that the Individual Pension System operates in a safe and efficient manner and protects rights and interests of participants. As a self-regulated e-governance application, EGM is established to produce accurate information on behalf of Turkish Treasury for daily electronic monitoring of the corporations operating in the system (EGM, 2008). Treasury Undersecretariat and Capital Markets Board of Turkey are authorized to arrange the rules and regulations and enforce other institutions to obey the regulations and supervise the system. Another important part of the system is Individual Pension Advisory Board that determines policies and provides advice on how to apply the rules effectively (IPS 2012 Progress Report, 22).

Within the above described framework, this study aims to analyze and to determine the factors affecting people’s decisions concerning IPS in Bursa, Turkey.

## 2. LITERATURE

Multiple studies have examined the individual pension systems and individuals' investment choices. Researchers have attempted to determine whether extending the range of choices increase or decrease the participation and contribution levels. In all, the findings indicated that too many investment options could cause an information overload resulting in greater use of the default option and even caused drops in participation rates (Tapia and Yermo, 2007: 6).

For example, a study by Iyengar, Jiang and Huberman (2003) showed that the participation in 401- (k) pension plans declined as the number of fund options increased in the United States. They found that participation rates peaked at 75% when only two options were offered and they declined steadily to 60% as the number of options approached 60<sup>1</sup>. This study also found that on average, participation in United States 401(k) plans fell 2% for every 10 investment options added (Vanguard, 2003:17).

Another study carried out by Agnew (2003) examined the interaction between individuals' financial knowledge and their behavior relative to the number of investment options. The study found that when there were a large number of choices and an increasing number of similar funds, both high-knowledge and low-knowledge participants opted increasingly for the default investment option (Tapia and Yermo, 2007:7).

Tapia and Yermo (2008) examined the fees in mandatory individual account pension systems. This study demonstrated that the structure of fees adopted in the countries under study were fairly complex.

Şahin, Rittersberger-Tılıç and Elveren (2010) also examined the Turkish individual pension system. This study using the actual data for 102,724 participants (sampled from a total of 1,457,704) provided by the Pension Monitoring Center, examined the effects of social variables. These variables were; occupation, province, marital status, income, social security and education scrutinized using the generalized linear model. As a result they observed that, s education level, income or age increased the contribution amount increased as well, and the study pointed out the problems related to the data collected by the insurance companies which might be used as a guide for obtaining better information.

Şener and Akın (2010) also studied on the individual pension system. In their study, individual's perspectives of individual pension system and determining factors affecting the entry decisions for an individual pension system were investigated by using the survey method. They found that the individuals' income level has a positive effect on their decisions to join an individual pension system.

Kahraman (2013) examined the Turkish Pension Amendments in his report. This report observed that in order to reach the economies of scale, investors should consider that

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<sup>1</sup> The average number of plan options in 401(k) plans in United States was 19 in 2005, up from 13 in 2000. The average participant used 3.6 options in 2005 (Vanguard, 2006).

participants currently did not have tendencies for long run pursuits and financial plans and did not have sufficient disposable income.

### **3. INDIVIDUAL PENSION SYSTEM IN TURKEY**

Since the early 1980s the Turkish welfare state has been restructured in an age of neo-liberalism (Elveren; 2007:40). Thus, for a period of almost thirty years Turkish capitalism has taken the form of neo-liberalism. Turkey's subordination to the world economic order was pursued consistently after the 1980 military coup (Coşar and Yeğenoğlu; 2009). Since 1990s, a number of financial problems have been experienced in Turkish social security system due to various reasons such as early retirement implementations, high rates of unregistered employment and income replacement and low rates of premium collection and earning subject to contribution. This system does not include the entire population and does not have adequate safeguards against poverty. The provision of services by different social security institutions in a nonsystematic way hinders the unity of norms regarding rights and obligations of the employees. It became compulsory to make reforms in social security system as a result of all these problems and ageing tendency of the population which is one of the major factors affecting the financial sustainability of the system (Social Security Institution; 2011).

For the purpose of restructuring the social security system, a reform was billed in 2008, when the Law No. 5510 was legislated seeking solutions to the prominent problems such as the existence of increasing deficit in the system and different implementations the institutions implemented in the provision of health and insurance services (Social Security Institution; 2011).

The social security reform particularly included the regulations regarding the enhancement of the retirement system and expenses. From this point of view, a set of changes have been made on pension replacement rate, updating coefficient, number of paid premium days and age parameters and a transition period has been envisaged. As the previous rules continued to be followed until the completion of transition period, the effect of these parametric changes on social security deficit were not be able to be seen exactly in the short-term, quantitatively until the 2040s. The reforms were designed to aim at increasing the services for insurance holders as well as removing the defects in the social security system. In this context, various regulations have been implemented in the field of both health and retirement aspects (Social Security Institution; 2011).

Finally, Turkey has reformed her social security system and introduced a privately managed individual pension scheme, namely the Individual Pension System (IPS) in 2001. Turkey started to change the legal structure of the system based on recommendations of the International Monetary Fund (IMF) and the World Bank (WB), particularly in the late 1990s. The European Union accession process was another key factor in shaping the reforms (Elveren 2008a: 215).

In line with the neo-liberal paradigm, many countries have restructured their social security systems towards a more-oriented structure, ranging from introducing private pension schemes to replacing the whole public system with private pension funds. For many years the defined benefit plan was the main type of pension plan offered by employers. The benefits were designated according to a formula the computation of which was based on the employee's salary; the defined benefit plan guaranteed a fixed retirement benefit per year for life (Şahin, Rittersberger and Elveren; 2012:115). This plan specified a minimum length of employment to be served before the employee had a right for retirement benefits. This traditional plan was common in public sector. Shortly, social security was mainly based on pay-as-you-go (PAYG) system. PAYG refers to an unfunded system in which current contributors to the system pay the expenses for the current recipients. In a pure PAYG system, no reserves are accumulated and all contributions are paid out in the same period. On the other hand, defined contribution plan is based on the contributions and investment returns. Besides the employer, might make a contribution to the fund in this plan. Shortly, defined contribution plan is the opposite of PAYG system.

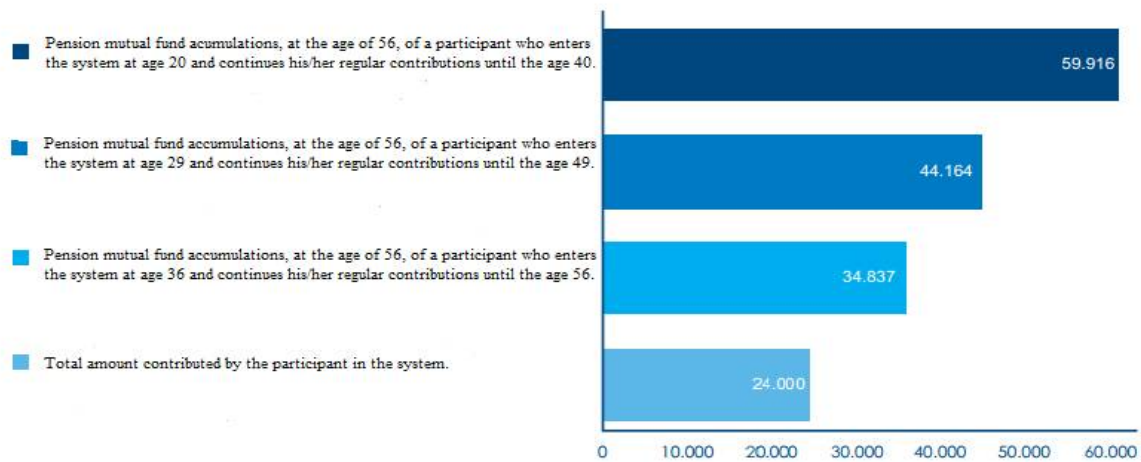
The Individual Pension Savings and Individual System Law was adopted in the Turkish National Assembly on March 28, 2001. It was introduced as a complementary tool to the state social security system on the basis of voluntary participation and with the defined contribution principle to provide a supplementary income during retirement. These individual savings turning into investment also aimed to contribute to economic development by creating long-term resources for the economy and thereby increase employment. After the law and some other legislation to strengthens the base of the system, Turkish Individual Pension System was introduced on October 27, 2003 with the contribution of six pension companies. As it was a requirement of the law no 4632, Prime Ministry Undersecretariat of Treasury authorized the 'Pension Monitoring Center' in order to ensure that the Individual Pension System operates in a safe and efficient manner and rights and interests of participants are protected (Individual Pension System 2013 Progress Report, 2013). Pension Monitoring Center (EGM), which is a control mechanism, mainly assigned to perform the following tasks;

- Daily electronic monitoring and surveillance of pension company activities and e-reporting to the authorities,
- Storing standardized data for all individual accounts,
- Consolidation of data, based on the daily transactions of the pension companies,
- Providing information to public and participants,
- Generating statistical information,
- Providing analysis and reports,
- Implementing the licensing exam for the intermediaries and keeping track of the electronic registries,

- Meeting the demand for joint presentation, training activities, software and related issues,
- Organizing data for timely intervention to possible problems,
- Managing complaints from the participants,
- Coordinating projects with international associations to enhance the system, giving support to pension companies,
  - Analytically querying the system,
  - Calculation of the state subsidies utilizing the data sent by the pension companies, to allocate the subsidies paid by the Undersecretariat between the pension companies to be transferred to the individual pension accounts,
- Performing other tasks determined by the Prime Ministry Undersecretariat of Treasury that are related to the life insurance and the other branches of insurance.

As of February 22, 2004, Pension Monitoring Center (EGM) has been registered as a governing member of the International Organization of Pension Supervisors (IOPS), the standard-setting body on pension supervisory and regulating issues related to pension supervision through the development and promotion of the implementation of international principles, standards and good practices in pension supervision, with regard to a variety of different private pension systems.

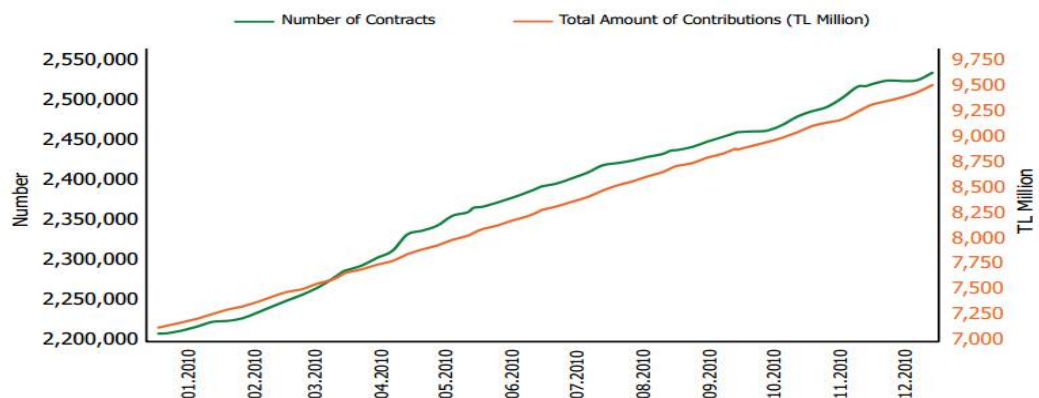
Individual pension system was also established to enable individuals to direct their savings collected during their active working life to investments and thus attain the total accumulations required for obtaining the supplementary income to help them maintain their life standards when they retire (Individual Pension System Progress Report; 2006). The most crucial aspect of the system is that each participant obtains a pension benefit that is proportional to his or her accumulations totaling to his or her contributions, which increase in value in line with their own investment preferences. As the system builds on the long term and voluntary savings, individuals will be able to attain a satisfactory accumulation level at retirement, provided that they have started at young ages with relatively lower contributions and continue their savings in proportion to their income as they get older. However, the same cannot be true for a participant who joins the system at an older age. This can be seen in Figure 1:



**Figure 1:** Comparison of Accumulations According to Age of Entrance to the System

As the end of 2013, 4,687,675 contracts were in force. The number of participants has grown around 33% when compared to the end of 2012 and exceeded 4.1 million. In the same period the total net asset value of funds has been increased 24%, exceeding TL 25 billion.

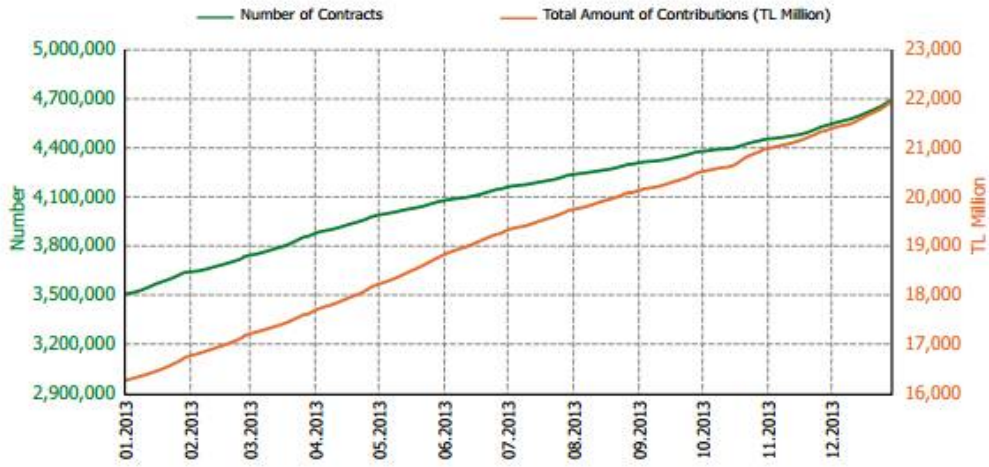
The participation in the Individual Retirement System has increased by the years. As of 2010 year-end, distribution of contributions for the contracts in force is analyzed according to the reason of establishment of the contracts. At the end of 2010; 2,281,478 contracts were in force. At the end of 2013, 4,687,675 contracts were in force. The number of participants has grown around 51% and exceeded 4.1 million when compared to the end of the previous year (IPS Progress Report, 2013: 10) In the same period, the total net asset value of the funds has been increased 24%, exceeding TL 25 billion. These developments could be observed in figures 2 and 3:



**Figure 2:** Development of “Number of Contracts” and “Amount of Contributions” in 2010<sup>2</sup>

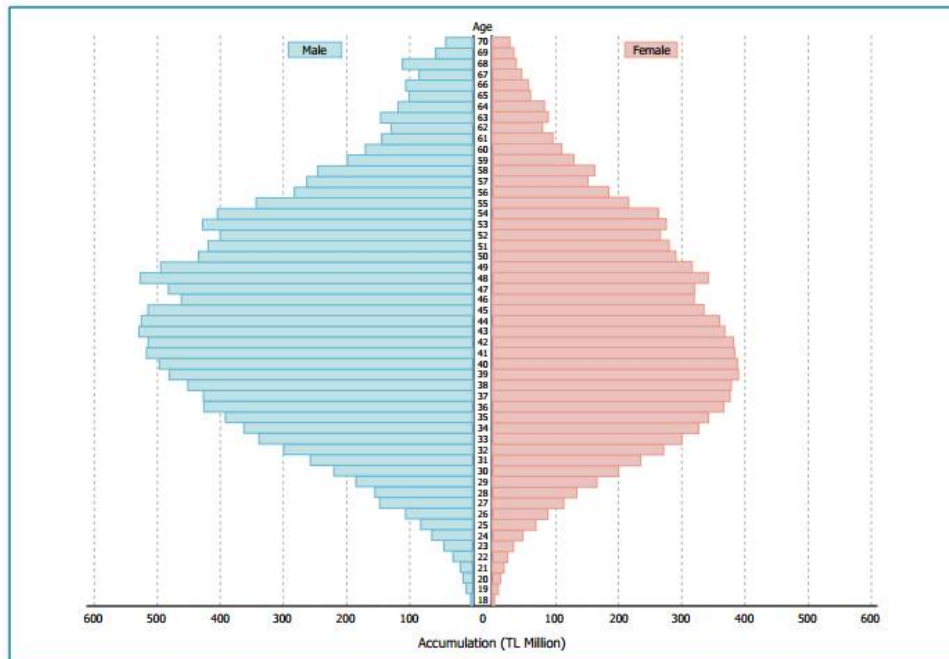
<sup>2</sup> Source: IPS 2013 Progress Report





**Figure 3:** Development of “Number of Contracts” and “Amount of Contributions” in 2013

Not only the number of participants in force is important, but also the age of the participants are important too. Because, the system was mainly based on participant’s age. In Turkey, by the end of 2013, the age distribution of contributions can be seen in Figure 4:



**Figure 4:** Accumulations of Participants According to Gender and Ages

Distribution of contracts in force by 2013 year-end and distribution of the total amount of initial (new entry to system), regular and additional contributions paid to these contracts in 2013 are shown in Table 1 based on regions (IPS Report, 2013:8). It can be observed that, the

vast majority of participants were in Marmara region. East Anatolia region had the minimum number of individual pension system participants.

**Table 1:** Average Monthly Regular Contribution Amount (TL), Number of Contracts, Number of Participants and Total Amount of Contributions Paid in 2013 (By Region)

Regions	Number of Contracts	Number of Participants	Total Amount of Contributions Paid in 2013 (TL)	Monthly Average Regular Contribution Paid in 2013 (TL)
Marmara	2,052,438	1,793,106	3,467,365,974	219
Central Anatolia	713,532	634,572	1,089,533,607	193
Aegean	729,658	650,659	1,147,318,107	206
The Mediterranean	572,006	510,868	735,145,888	192
The Black Sea	326,399	297,514	403,090,711	176
Southeast Anatolia	164,643	149,386	193,070,460	182
East Anatolia	110,840	101,374	128,648,203	169
Living Abroad	18,159	15,576	67,456,836	331
<b>Total</b>	<b>4,687,675</b>	<b>4,153,055</b>	<b>7,231,629,787</b>	

Funds of total accumulations by 2013 year-end are shown in Table 2. On average, 2.31 fund types were bought per contract. By December 31, 2013 flexible fund group has 21% stocks, 52% government bonds and bills and 3% reverse repurchase agreements in its portfolio. On the other hand, by 2013 year-end accumulations of noncontributory group contracts is TL 926 million, group individual group contracts was TL 5,580 million and individual pension contracts was TL 18,640 million. On average, in noncontributory group contracts 2.32, in individual pension contracts 2.33, in group individual group contracts 2.25 fund groups were bought per contract.

**Table 2:** Number of Contracts, Total Amount of Contributions Paid in 2013 (TL) and Number of Intermediaries with Sales according to Age Groups of Intermediaries

Fund Group	Individual Pension Contracts	Group Individual Contracts	Noncontributory Group Contracts	Total
Gov't Bonds and Bills (YL)	40,48	38,85	41,43	40,15
Flexible	33,43	31,74	35,49	33,13
Liquid	8,75	9,64	6,50	8,86
Stocks	6,99	8,25	8,32	7,32
Standart	5,42	6,53	2,12	5,55
Gov't Bonds and Bills (FX)	3,80	3,34	4,71	3,73
International	0,79	1,28	1,25	0,91
Precious Metals	0,33	0,38	0,18	0,33
<b>Total</b>	<b>100,00</b>	<b>100,00</b>	<b>100,00</b>	<b>100,00</b>

#### 4. APPLICATION

As described above, this study aimed to analyze and determine the factors effecting people's decision on joining IPS in Bursa, Turkey. In this study a questionnaire of 50 items was administered to 350 participants, who were chosen using simple random sampling technique. This survey was applied to people both still in workforce and retired. There were questions on the participants' demographic profiles, to measure their perceptions on social security and individual pension system, and designed to measure the risk structure. Consequently, logistic regression was estimated using the data obtained by this survey. In this regression, the dependent variable was whether he/she is in individual pension system and the independent variables were age of participant and other components of the demographic profile, profession, whether or not the participant was a risk-taker, whether or not there were dependents, business history, financial knowledge level, confidence in social security system and the participant's investment/spending ratio.

##### 4.1. Hypothesis

As per the aim of the study following, hypotheses were defined:

**Table 3:** The Hypotheses of Analysis

<b>H<sub>0</sub>:</b> Marital status has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Marital status has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Individuals' age has not a significant effect on individuals' IPS entry decision.
<b>H<sub>1</sub>:</b> Individuals' age has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Individuals' profession has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Individuals' profession has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Risk-taking character has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Risk-taking character has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Whether there is one obliged to take care has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Whether there is one obliged to take care has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Individuals' business history has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Individuals' business history has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Individuals' financial knowledge has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Individuals' financial knowledge has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Individuals' investment/spending ratio has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Individuals' investment/spending ratio has a significant effect on individuals' decisions to join IPS.
<b>H<sub>0</sub>:</b> Individuals' confidence in social security system has not a significant effect on individuals' decisions to join IPS.
<b>H<sub>1</sub>:</b> Individuals' confidence in social security system has a significant effect on individuals' decisions to join IPS.

These hypotheses were the main objective of the study. Because, an individual's decision to join IPS was effected by many factors. Which factors were more effective on peoples' decision in Bursa? This question could be answered with statistical and regression analysis.

**4.2. Statistical Results**

Before the statistical analysis, the reliability of the survey must be established using Cronbach’s alpha coefficient. Cronbach’s alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. Technically speaking, Cronbach’s alpha is not a statistical test; it is a coefficient of reliability. The result is as follows:

**Table 4: The Reliability Statistics**

<b>N of items</b>	<b>Cronbach’ Alpha Coefficient</b>
48	0,987

The Cronbach’s alpha coefficient for the 48 items was 0,987, suggesting that the items have relatively high internal consistency. This high reliability coefficient is considered acceptable in this study, therefore statistical analyses could be implemented.

There were 350 people questioned for the survey. Demographic/general profile for these people can be observed in Table 5:

**Table 5: General Profile of Participants in the Survey**

<b>Gender</b>	54% Women 46% Men
<b>Education</b>	12% Primary School 23% Secondary education 45% Undergraduate 20% Graduate
<b>Age</b>	5% Under 25 years old 10% 26-30 25% 31-40 40% 41-50 20% 51 and over
<b>Marital Status</b>	15% Single 20% Widow 5% Divorced 60% Married
<b>Profession</b>	28% Private/ Self-employed 40% Civil Servant 22% Retired 10% Unemployed
<b>Number of people in household</b>	62% 1-3 people 38% 4 and over
<b>Number of employees/pensioners in household</b>	60% 1-3 people 40% 4 and over
<b>The number of dependents in household</b>	78% None 22% 1 and over
<b>General health status</b>	64% No health problems 22% Occasionally ill 14% Have permanent disturbance

Because IPS is related to social security system, there were questions about social security system of Turkey in the questionnaire. The answers to the questions in the survey related to the social security system can be observed in Table 6:

**Table 6:** Questions/Answers about the Social Security System

<b>Which security institution he/she is connected</b>	54% Pension Fund 38% SSK (Social Insurance Institution) 8% Bağ-Kur
<b>The amount of paid premiums</b>	5% Have no idea 20% Between 100-200 TL 25% Between 200-300 TL 20% Between 300-450 TL 20% Between 500-750 TL 6% Between 750-1000 TL 4% 1000 TL and over
<b>Social security system provides benefits for his/her children</b>	35% Yes 62% No 3% No idea
<b>Whether or not he/she wants to leave the social security system after taking out the accumulated premiums</b>	73% Yes 15% No 12% No idea
<b>Whether or not her/his parents have retirement plans</b>	12% Yes 88% No

As shown in Table 6, most of the participants were connected to a pension fund. It could be observed that participants did not trust social security system because they did not think that system had benefits for them and their children, besides; if they have opportunity to receive their accumulated premiums, they say that they would leave the system.

Some questions in the survey were asked to employees and others to retirees. The answers for questions directed to employees are as follows:

**Table 7:** General Questions/Answers Asked to Employees

<b>Investment preferences</b>	15% Foreign exchange 47% Gold 17% Interest income 4% Invest in his/her own business 7% Other 10% No investment
<b>Whether or not acting cautious for retirement</b>	87% Yes 13% No
<b>Retirement plan</b>	10% Travelling 8% Work in temporary jobs 5% Take part on civil society organizations 45% Spend more time with family 4% Go abroad 27% Get a hobby 1% Other
<b>Average monthly income</b>	10% Under 1000 TL 23% Inter 1000-2000 TL

	35% Inter 2000-3000 TL 27% Inter 3000-4000 TL 5% 4000 TL and over
<b>Maturity of debt</b>	7% Short term 30% Medium term 50% Long-term 13% Have no debt

As could be seen in Table 7, the vast majority of employees in the survey preferred gold as an investment tool. They implied that this was because gold is a reliable long-term investment tool even it loses value in short term. Despite this fact, they generally did not think they were cautious for retirement. The majority of the employees in the survey had long-term debt.

The answers for questions directed to all respondents in the survey are as follows:

**Table 8:** General Questions/Answers Asked to Employees/Retirees

<b>Whether or not they control their spending</b>	19% Yes 81% No
<b>5 years later, your household financial situation will</b>	78% Be better off 12% Remain the same 10% Be worse off
<b>Economic situation in our country</b>	25% Good 25% Not bad 50% Bad
<b>Trust social security system</b>	11% Yes 89% No

The rest of the questions in the survey were related to IPS. General questions/answers directed to participants with an IPS contract are as follows:

**Table 9:** Questions/Answers for Participants with an IPS Contract

<b>The reason to join individual pension system</b>	68% To obtain additional income during retirement
<b>Satisfaction with individual retirement institution</b>	31% Satisfied 69% Not satisfied
<b>Whether or not to trust the authority</b>	21% Yes 79% No

**Table 10:** Questions/Answers for Participants without an Individual Pension Contract

<b>Whether or not want to be included in the IPS</b>	13% Yes 87% No
<b>Satisfaction with the individual retirement institution</b>	5% Yes 95% No
<b>Ability to get information from institutions about IPS</b>	8% Yes 92% No
<b>Whether it was a wise investment</b>	9% Yes 91% No

If the results are interpreted generally, most of the participants in Bursa did not trust both the Social Security System and the IPS. The main reason for that was the past experiences with the private pension in Turkey. But this was not the only reason. Insufficient disclosure and mistrust for the private pension system were the other reasons. Participants generally thought that, they could invest in more profitable assets with the same amount of money. But on the other hand, majority of people in the survey said that they could not control their spending. This was a contradiction. The statistical results obtained from individuals in the survey displayed that many factors affected their decision and the decision to join an IPS. So as described above, logistic regression analysis could determine these factors' individual effects on the decision to join IPS.

### 4.3. Logistic Regression Results

In this study, logistic regression analysis was conducted. For the logistic regression model, a value of 1 is assigned to the individuals with a pension contract, and others were denominated with a 0.

The dummy variables have two or more values; assigned as the dependent variable in the regression model. In these types of models, the dependent variable can take two values, such as yes or no. Hence binary choice models are used to explain the reason for decision (Judge; 1988: 783). However, such models could not be determined as a linear form. Thus, logistic regression is a method used to determine the cause and effect relationship when the dependent variable is observed in double, triple or multiple categories (Akın, 2002a:15). In other words, in logistic regression analysis, the effects of the independent variables' on the dependent variable is attempted to be determined with the aid of the possibility of one of the two levels of the dependent variable against the possibility of the other (Arabacı, 2002:18).

$$P_i = F(Z_i) = F(\beta_1 + \beta_2 X_i) \quad (1)$$

$$P_i = E(Y = 1|X_i) = \frac{1}{1+e^{-Z_i}} \quad (2)$$

$$Z_i = \beta_1 + \beta_2 X_i \quad (3)$$

In this case when  $Z_i$  changes between  $-\infty$  and  $+\infty$ ,  $P_i$  changes between 0 and 1 and there will be a non-linear relationship between them (Gujarati, 1999:554).  $P_i$  refers to the probability of the realization of an event and  $1-P_i$  refers to not realization of an event and  $P_i/1 - P_i$  gives the odds ratio, this ratio can be measured as follows (Agresti, 2002:44):

$$\Omega = \frac{P_i}{1-P_i} = \frac{1+e^{Z_i}}{1+e^{-Z_i}} = e^{Z_i} \quad (4)$$

This ratio must be a non-negative. Odds ratio is closely related to relative risk (Powers and Xie, 2000: 51). If the situation of interest's probability is low, odds ratio gives close results to the relative risk. As a result, when a necessary regulation in the model is executed, logistic equation can be given as follows:

$$L_i = \ln\left(\frac{p_i}{1-p_i}\right) = Z_i = \beta_1 + \beta_2 X_i \quad (5)$$

In Equation 5,  $L_i$  represents the logits. The model's details can be found in Akın, 2002b and Arabacı 2002. In addition, the assumptions of logistic regression model can be given as follows:

$$Y_i \in (0,1)$$

$$P_i = \frac{1}{1+e^{-Z_i}}$$

$Y_1, Y_2, Y_3, \dots, Y_n$  values are statistically independent.

The explanatory variables are independent of each other.

Once the logistic regression model is estimated, Hosmer-Lemeshow (2000) goodness of fit test is used to determine how the model displayed compliance.

Hosmer and Lemeshow developed seven statistic tests involving a grouping based on estimated probabilities obtained from the fitted logistic model, and a grouping with respect to fixed pre-determined cutoff points (Hosmer and Lemeshow, 1980:12). The test proposed by Hosmer lemeshow (1980; 1989; 1982; Hosmer et al, 1997) were based on binary logistic regression and therefore did not require fewer covariate patterns than observations (Hallet, 1999:16).

The calculation of the Hosmer and Lemeshow goodness-of-fit statistic was based on the grouping of estimated probabilities obtained from the fitted logistic model (Hallet, 1999:17). For the reliability of the test, there should not be values greater than five in the observed and expected table, in addition, the number of groups should not be less than six (Arabacı, 2002:33).

Increasing volumes of literature written about logistic regression also contribute to the growing use of logistic regression in social sciences research (Peng and So; 2002:32). Logistic regression textbooks were published by Hosmer and Lemeshow (2000), Kleinbaum (1994), McCullagh and Nelder (1989) and Menard (1995).

In logistic regression, in the simplest form contains one predictor X (say, IQ score) and one dichotomous outcome variable Y from X. The logit is the natural logarithm (ln) of the odds of Y. The simple logistic model has the form:

$$\ln\left(\frac{\pi}{1-\pi}\right) = \log(\text{odds}) = \text{logit} = \alpha + \beta X$$

$$\text{Hence, } \pi = \text{Probability} (Y = \text{outcome of interest} | X = x) = \frac{e^{\alpha + \beta X}}{1 + e^{\alpha + \beta X}}$$

According to the equation above,, the relationship between logit (Y) and X is linear. Yet, according to the equation, the relationship between the probability of Y and X is nonlinear. For this reason, the natural log transformation of the odds in this equation is



necessary to make the relationship between a categorical outcome variable and its predictor(s) linear (Peng, Lee and Ingersoll, 2002: 4).

In the light of the information given above, the variables used in the model can be observed as follows:

**Table 11:** Designation of Variables

Variables	Question	Codes	Variable Designation
Y	Satisfaction of IPS	1=Yes 2=No	Satisfaction
X <sub>1</sub>	Age	Numeric	Age
X <sub>2</sub>	Learning shape	1=Elementary school 2=Secondary education 3=Undergraduate 4=Graduate	Learning
X <sub>3</sub>	Marital Status	1=Single 2=Widow 3=Divorced 4=Married	Marital Status
X <sub>4</sub>	Profession	Open ended	Profession
X <sub>5</sub>	Whether or not risk-taking	1=Yes 2=No	Risk-taking
X <sub>6</sub>	Whether or not there is one obliged to take care	1=Yes 2=No	Take-care
X <sub>7</sub>	Financial knowledge	1=Yes 2=A little 3= No	Financial knowledge
X <sub>8</sub>	Confidence in social security system	1=Yes 2=No	Confidence
X <sub>9</sub>	Investment/spending ratio	Hand calculated	Investment/spending ratio

**4.3.1. Evaluation of the suitability of the Model**

The appropriate model was determined at the end of the sixth step. Model coefficients were meaningful in all steps. The results could be displayed as follows:

**Table 12:** Hosmer and Lemeshow Test

H <sub>0</sub> : There is no lack of fit in the model H <sub>1</sub> : There is a lack of fit in the model			
Step	Chi-Square	Degrees of Freedom	Sig
6	5,184	6	0,322

When the Hosmer and Lemeshow test results were scrutinized, it could be stated that H<sub>0</sub> hypothesis could not be rejected. It meant that the model was appropriate for the data.

Table 13: Classification Table

Observed	Estimated		
	Preference		Correct Percentage
	No	Yes	
<b>Step 1</b> No	215	105	43,5
Yes	95	320	70,5
General Percentage			65,8
<b>Step 2</b> No	257	125	36,5
Yes	102	348	86,8
General Percentage			66,2
<b>Step 3</b> No	298	99	34,5
Yes	122	100	88,9
General Percentage			65,9
<b>Step 4</b> No	125	136	45,7
Yes	57	349	79,8
General Percentage			66,5
<b>Step 5</b> No	278	110	50,1
Yes	110	325	79,5
General Percentage			68,7
<b>Step 6</b> No	225	96	47,9
Yes	98	98	66,8
General Percentage			<b>65,4</b>

According to classification table, approximately 65% of observations were classified correctly.

### 4.3.2 Logistic Regression Model Results

At the end of sixth step, the variables included in the model were examined and the most important or statistically significant variables were determined as the marital status, risk-taking character, financial knowledge and the investment/spending ratio.

Table 14: Logistic Regression Results<sup>3</sup>

	Parameters	Wald	Sig	Exp(B)	95% C.I. for EXP(B)	
					Lower Bound	Upper Bound
<b>Marital Status</b>		135,99	0,000			
Marital Status (1)	1,589*	110,88	0,000	5,645	2,589	5,214
Marital Status (2)	1,026*	18,65	0,000	3,005	1,147	2,547
<b>Risk-taking</b>		124,78	0,000			
Risk-taking (1)	0,459*	102,36	0,000	4,089	1,289	1,980
Risk-taking (2)	0,021*	18,78	0,000	2,059	0,985	1,589
<b>Financial Knowledge</b>		7,89	0,001			
Financial Knowledge (1)	0,258*	4,12	0,002	1,368	1,097	1,768
Financial Knowledge (2)	0,012	0,07	0,425	0,978	0,789	1,263
<b>Investment/Spending Ratio</b>		9,91	0,002			
Investment/Spending Ratio	0,420*	0,08	0,784	1,489	1,279	1,975

<sup>3</sup> \* means that parameter is significant at 1% significance level.

Investment/Spending Ratio	-0,038	4,01	0,043	0,998	0,719	1,255
<b>Constant</b>	-1.587	147.89	0,000	0,159		

**Table 15:** The Hypotheses Evaluated After LOGIT Results

<p><b>H<sub>0</sub>:</b> Marital status has not a significant effect on individuals’ decisions to join IPS.  <b>H<sub>1</sub>:</b> Marital status has a significant effect on individuals’ decisions to join IPS.</p>	<p><b>The estimated parameters in logistic regression were significant at 1% significance level. So H<sub>0</sub> hypotheses were rejected and H<sub>1</sub> hypotheses were accepted. Thus, marital status, risk-taking character, financial knowledge level and investment/spending ratio had significant influence on decision to join IPS.</b></p>
<p><b>H<sub>0</sub>:</b> Risk-taking character has not a significant effect on individuals’ decisions to join IPS.  <b>H<sub>1</sub>:</b> Risk-taking character has a significant effect on individuals’ decisions to join IPS.</p>	
<p><b>H<sub>0</sub>:</b> Individuals’ financial knowledge has not a significant effect on individuals’ decisions to join IPS.  <b>H<sub>1</sub>:</b> Individuals’ financial knowledge has a significant effect on individuals’ decisions to join IPS.</p>	
<p><b>H<sub>0</sub>:</b> Individuals’ investment/spending ratio has not a significant effect on individuals’ decisions to join IPS.  <b>H<sub>1</sub>:</b> Individuals’ investment/spending ratio has a significant effect on individuals’ decisions to join IPS.</p>	

As a result if an individual was;

- Married,
- Can take risks in his/her investment decisions,
- Financially knowledgeable,
- Could allocate a certain portion of his/her spending to investments

That individual will more likely to join the IPS.

As shown in Table 14, Exp (β) reveals the proportional difference between the categories. For example, the possibility of joining IPS is 5.6 times more for married individuals when compared to the unmarried. Similarly, the possibility of joining the IPS is 4.1 times more for people who take risks in their investment decisions compared to the others. The possibility of joining IPS is 1.4 times more for people who have high financial knowledge compared to others. Finally, the possibility of joining IPS is 1.5 times more for people whose investment/spending ratio is high when compared to others.

An individual’s’s possibility of joining IPS, who is married, can take risks in his/her investment decisions, financially knowledgeable and allocate a portion of his/her spending to investments could be displayed as follows:

$$Z_i = -1,587 + 1,589 + 0,459 + 0,258 + 0,420 = 1,139$$

$$P_i = \frac{1}{1 + e^{-Z_i}} = \frac{1}{1 + e^{-1,139}} = \frac{1}{1 + 0,320} = 0,758$$

According computed value of probability; an individual’s possibility of joining IPS, who has the features above, is approximately 76%. An individual’s possibility of joining IPS, who has the opposite features listed above, meaning the individual was not married, could not take risks in his/her investment, financially uninformed, and with low investment/spending ratio could be demonstrated as follows:

$$Z_i = -1,587 + 1,026 + 0,021 + 0,012 - 0,038 = -0,566$$

$$P_i = \frac{1}{1 + e^{-Z_i}} = \frac{1}{1 + e^{0,566}} = \frac{1}{1 + 1,761} = 0,362$$

Within the light of the two values calculated above, it could be argued that, if an individual is not married, cannot take risks in his/her investment decisions, financially uninformed and has low investment/spending ratio, this individual’s decision to join IPS is reduced approximately by 50%. Thus, an individual must be married, could take risks in his/her investment decision, financially informed, with high investment/spending ratio to decide to join IPS.

**5. RESULTS**

This study aimed to analyze and to determine the main factors affecting the decisions of individuals on joining IPS. Before determining these factors, in the scope of the study, a statistical analysis was conducted. The Cronbach’s alpha coefficient for the 48 items was found as 0,987, suggesting that the items had relatively high internal consistency. As a result, 350 participants were given a questionnaire and 54 percent of these individuals were women, 45 percent of these had an undergraduate degree, 60 percent of these were married, 40 percent of these were civil-servants.

On the other hand, 54 percent of these people were dependent on a pension fund, 25 percent of these paid premium between 200-300 TL and 62 percent of these said, social security system had benefits for his/her children.

In the scope of this study, logistic regression results needed to be focused on. Because, logit results would depict the main factors affecting the individual’s decisions on joining IPS. In the beginning of the study, nine hypotheses were defined. Thus, nine factors were included in the logit regression. Some of these factors were not statistically significant so the factors which were statistically significant were interpreted only. These factors were designed as “independent variables” in the logit regression. The variables with, significant effects on individual’s decision on IPS membership, were marital status, risk-taking character, financial knowledge level, and investment/spending ratio. According to the value of the computed probability, an individual’s possibility of joining IPS who has the features above, was approximately 76%. If a person was not married, could not take risks in his/her investment decisions, financially uninformed and had low investment/spending ratio, this individual’s decision to join IPS was reduced approximately 50%.

In short, statistical analysis and logistic regression results demonstrated that, marital status, an individual's risk-taking character, an individual's financial knowledge level and investment/spending ratio had a significant influence on that individual's decision to join IPS in Bursa, Turkey. If an individual had these characteristics, the possibility of that individual's decision to become a member of IPS was 76%. If an individual did not possess these characteristics, this possibility fell by a half. According to this conclusion, the probability of joining IPS could be increased the financial knowledge in individuals. Also this result could be presented as a recommendation to the private pension companies.

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