

**REPUBLIC OF TURKEY  
YILDIZ TECHNICAL UNIVERSITY  
GRADUATE SCHOOL OF SOCIAL SCIENCES  
DEPARTMENT OF ECONOMICS  
MASTER OF ARTS PROGRAMME IN ECONOMICS**

**MASTER'S THESIS**

**THE IMPACT OF BEHAVIORAL ECONOMICS ON  
INVESTMENT DECISIONS**

**GAMZE ÖZKOÇAK  
15729030**

**THESIS SUPERVISOR  
Assoc. Prof. Dr. ASUMAN OKTAYER**

**ISTANBUL  
2019**

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## **ABSTRACT**

### **THE IMPACT OF BEHAVIORAL ECONOMICS ON INVESTMENT DECISIONS**

**Gamze Özkoçak  
July, 2019**

In recent years, Behavioral Finance Theory has been developed in order to show that people have different characteristics than it is assumed and that the behaviors of investors can differ from each other because each individual does not have the same rational behaviors. According to the Theory of Behavioral Finance, people do not act rationally and cannot always make optimum decisions. People can make different decisions and make mistakes under various factors such as their moods, psychologies and living conditions, and with this situation, they can cause falls or increases from time to time to different movements in the markets. One of the most important differences in human characteristics is the personality, so it is concluded that the personality traits can have an effect on the decisions taken in the behavioral finance. In this study, it is aimed to reveal the behavioral finance dimension of investment decisions in insurance sector employees.

The sample of the study consisted of 384 participants working in various insurance companies in Istanbul. In order to collect the research data, personal information form and investment information, along with the Temperament and Character Characteristics Scale and Investment Decisions Scale were used. The data were analyzed with descriptive statistics, correlation, regression, t-test and ANOVA analysis at SPSS 23.00. The findings were evaluated at 95% confidence interval and 5% significance level. The findings of the study reveal that the investment decisions of the participants differ according to their demographic characteristics and investment preferences.

**Keywords:** Behavioral finance, investor psychology, investment, decision making.

## ÖZ

### DAVRANIŞSAL İKTİSADIN YATIRIM KARARLARINA ETKİSİ

Gamze Özkoçak

Temmuz, 2019

Son yıllarda insanların varsayılandan daha farklı özellikler taşıması ve her bireyin birbirinin aynısı olan rasyonel davranışlara sahip olmaması sebebiyle yatırımcı davranışlarının birbirinden farklılık gösterebileceği ortaya koyularak Davranışsal Finans Teorisi geliştirilmiştir. Davranışsal Finans Teorisi'ne göre insanlar rasyonel davranmamakta ve her zaman optimum kararlar verememektedir. İnsanlar kendi ruh halleri, psikolojileri, yaşam koşulları gibi birçok etkenin altında birbirlerinden farklı kararlar verebilmekte, hatalar yapabilmekte ve bu durumla birlikte de piyasalarda farklı hareketlenmelere zaman zaman düşüş veya yükselişlere sebep olabilmektedirler. İnsan üzerinde en önemli farklılık gösteren özelliklerden birisi de kişilik olması sebebiyle, her birey bir diğerinden farklı bir kişilik özelliği taşıdığı düşünülürse, kişilik özelliklerinin de davranışsal finansta alınan kararlar üzerinde etkili olabildiği sonucuna varılmaktadır. Bu noktadan hareketle hazırlanan araştırmada sigorta sektörü çalışanlarında yatırım kararlarının davranışsal finans boyutunun ortaya çıkarılması amaçlanmıştır.

Araştırmanın örneklemini İstanbul'da çeşitli sigorta işletmelerinde çalışan 384 katılımcı oluşturmaktadır. Araştırma verilerinin toplanmasında kişisel bilgi formu ve yatırım bilgileri ile birlikte Yatırım Kararları Ölçeği kullanılmıştır. Verilerin analizi SPSS 23.00'da betimleyici istatistikler, t-test ve ANOVA analizleri ile gerçekleştirilmiştir. Elde edilen bulgular %95 güven aralığında ve %5 anlamlılık düzeyinde değerlendirilmiştir. Araştırmadan elde edilen bulgular, katılımcıların yatırım kararlarının, demografik özellikleri ile yatırım tercihlerine göre farklılaştığını ortaya koymaktadır.

**Anahtar Kelimeler:** Davranışsal finans, yatırımcı psikolojisi, yatırım, karar verme.

## **PREFACE**

We tried to examine the impact of Behavioral Economics on Investment Decision. I would like to thank my advisor Assoc. Prof. Dr. Asuman Oktayer for supporting me with her knowledge, experience and helpfulness at any time I need. Finally, I would also like to thank my family, my husband and my close friends for their support.

Istanbul, July, 2019

Gamze Özkoçak

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## 1. INTRODUCTION

Expected Prospect Theory, which is the cornerstone of traditional finance theories and which describes how people will decide under uncertainty, treats individuals as beings that are free of their emotions, making highly rational financial decisions. According to this theory, assuming that individuals behave rationally, the choices are based on the correct mathematical phenomena, that people create their expectations in accordance with the Bayesian Statistics Rule and that similar errors do not systematically repeat in the face of new knowledge. Moreover, it is the basic predictions of this theory that investors can have the information that may affect the asset prices immediately without having any cost, they can make transactions in the capital market in the direction required by the information and choose the investment that gives them the highest benefit considering the risk ratios of return. Since Expected Prospect Theory which evolved from the 1950s to the present and the Effective Markets Hypothesis which is based on this theory cannot explain the fluctuations and anomalies seen in the markets, the rational human element, which forms the basis of the theory, has been strongly criticized.

The insufficiency of traditional theories has led to the support of other disciplines such as sociology and psychology to explain these fluctuations and anomalies. Studies that began in 1979 under the leadership of Daniel Kahneman and Amos Tversky began to take into account the impact of psychological factors in the decision-making process and this process led to the emergence of a behavioral finance approach.

Recently, media outlets have attempted to educate the public about the impact of behavioral biases found in the finance literature (Parker, 2014). Overconfidence, when an individual believes that their knowledge is more accurate than it truly is, has been reported to have potentially played a part in the lead up to the 2008 global financial crisis (Abbes, 2013). Other articles have examined how mental accounting, defined as the “process of coding, categorizing, and evaluating events” (Thaler, 1999) when making decisions, impacts individuals’ behavior (Kaul, 2011). Others have explored how exponential growth bias, the inclination of consumers to linearize functions that

have an exponential term, causes individuals to not properly project future savings growth (Forbes, 2013; Parker, 2014).

Research in behavioral finance, the study of how psychology affects individuals', markets', and organizations' financial decisions, has explored a multitude of biases, many which originated in the psychology literature (Coval & Shumway, 2005; De Bondt, Muradoglu, Shefrin, & Staikouras, 2008). Behavioral biases in finance include: base-rate neglect, overconfidence, mental accounting, and exponential growth bias. Base-rate neglect occurs when individuals neglect or significantly underweight the base rates in favor of descriptive information, rather than incorporating both sets of information (Allen, Preiss, & Gayle, 2006; Hoppe & Kusterer, 2011). Overconfidence is when an individual believes that their knowledge is more accurate than it is (Gervais et al., 2011). Thaler (1999) defined mental accounting as the "process of coding, categorizing, and evaluating events" when making decisions. Finally, exponential growth bias is the inclination of consumers to linearize functions that have an exponential term when evaluating them naturally (Stango & Zinman, 2009). These behavioral biases have been found to impact the field of finance in various ways including impacting asset prices, increasing individuals' trading activity, reducing trading performance, pursuing shareholder wealth destroying acquisitions, altering spending decisions and behaviors based on prior spending decisions, and underestimating the cost of waiting to save for retirement (Chuang & Lee, 2006; McKenzie & Liersch, 2011).

In this study, it was aimed to investigate the behavioral finance dimensions of investment decisions and the related factors. The study consists of three main parts. In the first part of the study, the theories of traditional finance are examined and the information about the anomalies that contradict the theory are presented. In the following section, the literature related to the Prospect Theory is given.

In the second section, behavioral finance is discussed. The theoretical framework for behavioral finance was first presented in the chapter and then, biases about behavioral finance were discussed. Biases are presented in base-rate neglect bias, overconfidence bias, mental accounting bias and exponential growth bias.

In the third part of the research, the outputs related to the field research are presented. In the chapter firstly, information was given about the method of the research, and then the findings were presented.

## **2. TRADITIONAL FINANCE THEORY**

### **2.1. Traditional Finance Theories and Concept of Market Activity**

Traditional finance theory forms the basis of models such as Expected Utility Theory, Efficient Markets Hypothesis and Modern Portfolio Theory, which assert that individuals exhibit highly rational behavioral patterns. At the core of traditional finance theory lies the rational human model, which argues that the individuals who form the trading units of financial markets will move in such a way that they will move away from the cognitive worlds that affect the decision-making processes and the behavior of other people to increase their own benefits.

The Expected Utility Theory (EUT), the basis of traditional finance theory, was proposed by Von-Neumann and Morganstern in 1944 and developed by Savage in 1953 (Savage, 1953, p. 110). According to this theory, people behave rationally. Rationality is accepted as reaching the maximum level of profit. People avoid risk by using Bayes Statistics Rule in uncertainty, calculate the maximum income that they will obtain and act rationally as a result (Yaşar, 2008, p. 5). The predictions of this theory are that the investors can have the information that may affect the asset prices without having to pay any cost, they can make transactions in the capital market as required by the information without delay.

In the first half of the last century, economics, which formed the basis of finance science, was considered as a social science. Economists like Irving Fisher and John Maynard Keynes emphasized psychological factors while explaining economic behavior. In the 1940s, economists such as John Hicks and Paul Samuelson began to use mathematics predominantly in their analysis. The human, being squeezed into economic models, was made into an ultra-rational entity that successfully solved complex optimization problems (Bostancı, 2003, p. 1). The widespread use of mathematics in the field of economics has led to the definition of human being as a limited entity acting under certain constraints. Individuals typed in these financial models are defined as being as rational as possible, trying to maximize their benefits,

as being free from emotions and as highly beneficial assets. In fact, these simplistic assumptions simplify the creation of models, making economics (and finance) an engineering field that teaches human beings how to behave, confining human complex nature into mathematical formulas, rather than a social science trying to understand human behavior (Bostancı, 2003, p. 3).

In traditional finance models, investors are considered to be the rational, but this assumption is not supported by any experimental study. At this point, it can be said that traditional finance is not about how people act, but how they should act. In conclusion, it can be said that the Expected Utility Theory finds different findings from the assumptions of human behavior (Tversky and Kahneman, 1971, p. 107).

"Effective Markets Hypothesis", which was created by Von Neumann and Morgenstern, "Expected Utility Theory" which was aimed to maximize the benefit developed by Savage and followed by "Modern Portfolio Theory", "Capital Asset Pricing Model" and "Arbitrage Pricing Theory" are traditional financial theories which are shaped by the assumptions of rational behaviors.

### **2.1.1. Efficient Market Hypothesis**

Efficient Market Hypothesis, which is one of the most controversial topics in finance science, developed by Fama in a study in 1970 (Eugene, 1970, p. 383). In this study, Fama compiled the empirical studies based on the "Random Walk" hypothesis and established a theoretical structure (Doğukanlı and Ergün, 2011, p. 322).

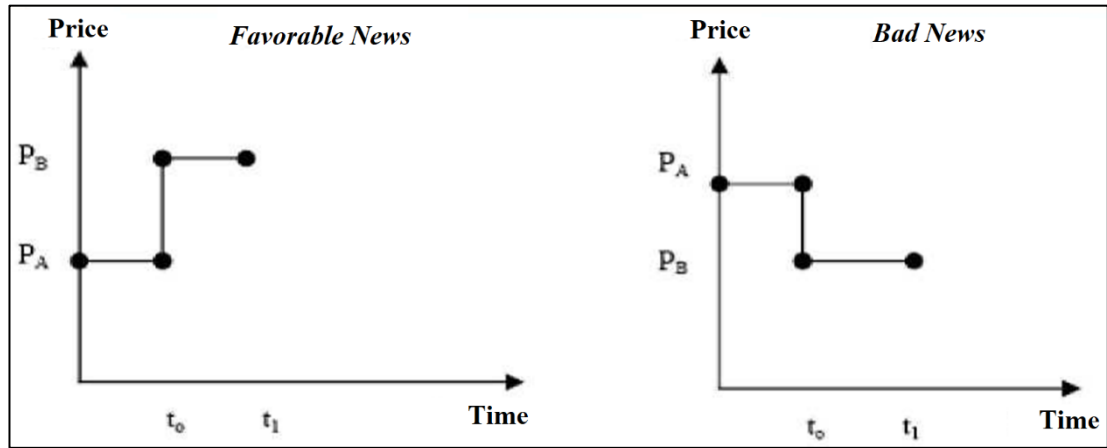
The efficient market hypothesis examines the impact of all securities-related information on price changes of securities. If any information is available to all investors on the stock exchange at the same time and information about all firms is available to all actors in the market, that market is effective. As a result, if a market is active, no investor can continuously gain more than normal earnings from the stock exchange since the information is received at the same time and the prices are reflected at the same time (Dumanatan et al., 2009, p. 34).

Because if a new information on the market affects the prices in a fast and correct way, it will cause the investor not to get a return above the market return. The price of a good or service in an effective market where full competitive conditions are applicable, is the result of equalization of the supply and demand of that good or service and this



price is called the price reconciliation price. If the investors reach the information which comes to such a market in an instant and cost-free manner and trades according to the new information, the balance price will come to its place in a very short period of time. This makes it impossible for investors to consistently find information that allows them to buy low-valued securities or sell high-value securities.

In a market where the assumptions of EMH are valid, the price formation process will happen as shown in Figure 1.1.



**Figure 1. 1: Efficient Market Hypothesis**

Aybar, Şakir, ve Enver Sümer. 2016. Etkin Piyasalar Hipotezinin, Finansal Piyasaları Açıklamadaki Yetersizliği ve Davranışsal Finans. *Erzincan Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, c. 9, s.2: 75-84.

As can be seen in Figure 1.1, a favorable news in an effective market is reflected immediately in the price of securities and moves the price to the point where it should be. A bad news will be priced instantly, reducing the price of securities.

As can be seen from the previous information, according to the Efficient Market Hypothesis, investors in the securities markets can get as much return as the average return on the market. There is no more profit. Therefore, it is futile to demand the help of the portfolio optimization, basic and technical analysis studies and professional traders in the securities markets.

One point to note is that the effective markets hypothesis is closely related to the rational expectations hypothesis. The Theory of Rational Expectations suggests that individuals will have “rational” expectations and therefore take an active attitude

towards economic policies and change the expected results of these policies. According to this theory, individuals have a complete knowledge of economic policy practices and the effects of these practices, and therefore cannot make a systematic mistake. In short, as a result of individuals act rationally, economic policy can not create the expected effects (Muth, 1961). However in a market where expectations are rational, prices will reflect all available information.

In the study conducted by Fama in 1970, the markets were divided into classes according to their level of knowledge. In this context, the markets are divided into 3 sub-groups as weak, semi-strong and strong effective markets (Fama, 1970, p. 389).

#### **2.1.1.1. Weak Form Market Activity**

In the weak form market activity, it is assumed that the investor cannot achieve higher than normal returns using past price movements. According to this, technical analysis, time series etc. has no benefit. That is, in a market with weak form activity, it is not possible to obtain extra returns by using trading strategies based on past price movements or other historical information and to estimate the future value of the stock (Barak, 2006, p. 63). Weak market performance can be tested with various methods such as serial correlation test, time series tests, running test and filter test (Karan, 2001, p. 271).

#### **2.1.1.2. Semi-Strong Form Market Activity**

In the semi-strong market activity, it is assumed that the investor cannot provide higher than normal returns by using publicly disclosed information in addition to past prices. In such a market, fundamental analysis, financial statement analysis or other relevant information of the enterprise should not be taken into account when making the investment decision. In other words, in such a market, all information disclosed to the public about securities is assumed to be fully reflected in the current price of the securities. As the new information coming to the market is reflected in the prices rapidly, the prices will be close to the real value.

In an effective market in a semi-strong form, however, it is possible to gain a gain above the market return as a result of learning and making use of information that is not disclosed to the public. In an effective market in a semi-strong form, a gain above

the market yield can only be achieved if the information that is not disclosed to the public is used within the business.

In order to test market activity in semi-strong form, the information presented to the public and stock returns are monitored. For this purpose, stock returns are tested by making use of the tests of the stock division test, the annual earnings announcement test and the brokerage suggestions. If investors are continuously generating excessive returns, this market is not effective according to the information announced to the public. For example, if shares in a market generate excessive returns after the announcement of dividend distribution, that market is not effective in semi-strong form according to the dividend distribution announcement (Barak, 2006, p. 64). The realization of this hypothesis depends on the fact that the information is spread very quickly. Otherwise, there will be a change in stock prices which will take place for a few days instead of a sudden change (Yaşar, 2008, p. 17).

#### **2.1.1.3. Strong Form Market Activity**

It is assumed that stock prices reflect non-public information about the business. However, having this information does not give investors an additional advantage. If the market is active in a strong form, in such a market, no one (insider trading, managers of large funds, analysts) cannot obtain abnormal earnings. Because if the market is working effectively, the new information will be reflected to the prices at such a great speed that it does not provide additional benefits to any buyer and seller.

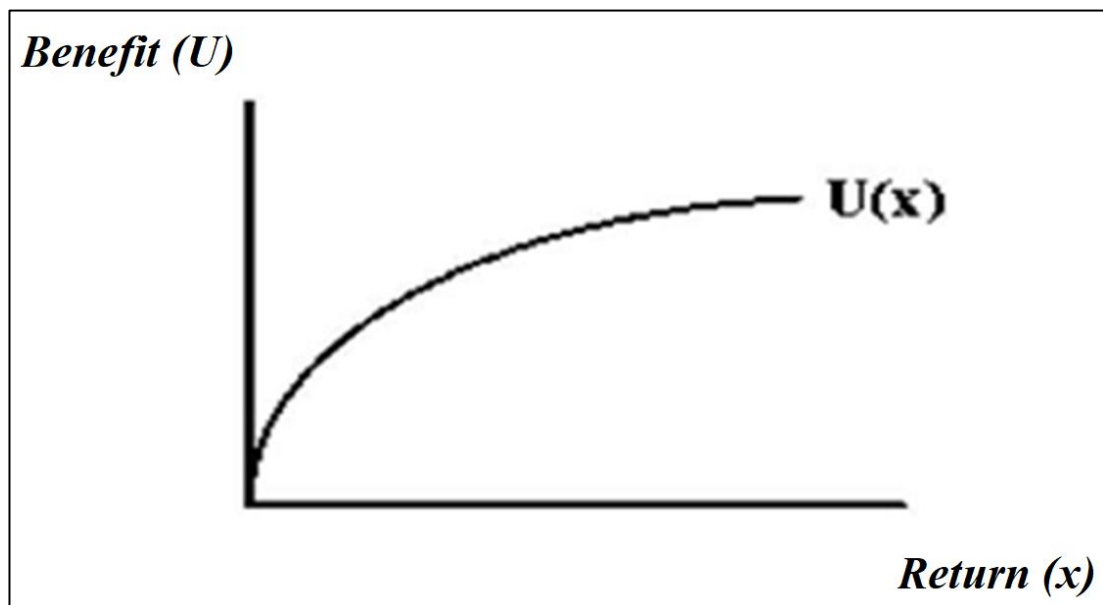
#### **2.1.2. Decision Making in Uncertainty: Expected Utility Theory**

The theory of Expected Utility which was first formulated by Bernoulli and later formulated by John Von Neumann and Oscar Morgenstern in “Theory of Games and Economic Behavior” is the basis of traditional finance (Bernoulli, 1954, p. 31). According to this theory, man is a rational being. The rational human or economic person (Homo Economicus) refers to a hypothetical person who acts in the direction of his own interest and who is free from his emotions, with the aim of maximizing his or her benefits in taking decisions (Ede, 2007, p. 5).

Expected Utility Theory is a normative model of how people behave when making risk-based decisions, and suggests that individuals are trying to maximize the expected benefit in their choice of risky choices. Individuals weight the benefits of individual

results in the context of this theory and select the alternative with the highest weighted collection (Bayar, 2012, p. 15). For example, in an event where the probability of winning is determined before, if the person has 20% probability of winning 1,000 TL and 5% probability of 5,000 TL, the person who acts rationally will choose the option to earn 5,000 TL if the second probability is 5%. Because the expected benefit of the first option is 200 TL, the expected benefit of the second option will be 250 TL.

Therefore, the expected benefit mentioned in the theory is found by multiplying each possible benefit that is the result of a decision or strategy by the probability of occurrence of the event, and the individual who acts rationally prefers the higher level of benefit to the lesser benefit. However, since the reduced marginal utility principle is valid, the benefit function of the individual concerned will be as in Figure 1.2.



**Figure 1. 2: Utility Function according to Expected Utility Theory**

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Cappello, Carlo, Branko Glišić, and Daniele Zonta. 2016. Expected utility theory for monitoring-based decision-making. *Proceedings of the IEEE*, c. 104, s.8: 1647-1661.

According to Figure 1.2, the benefit increases as the yield increases, but the benefit increases with a decreasing acceleration due to the principle of reduced marginal utility.

Expected Utility Theory, which was developed on the basis of certain basic assumptions, starts from a quantifiable benefit concept. This is one of the most

fundamental criticisms of the theory. However, here, benefit is considered as an index, not as a marginal utility unit in the neoclassical sense. Within this index, the benefits of each event are listed.

Expected utility theory is an approach to how a person should act rather than how he or she acts. The theory of human behavior, which is the basis of the objections against this theory, lies in the fact that it is different from the one assumed in theory. Experimental evidence shows that the behavior of individuals in artificial conditions involving risk in the laboratory is different from that predicted in theory. In alternative approaches instead of expected benefit theory, limited rationality is defined instead of people's unlimited rationality approach (Bostancı, 2003, p. 5). Behavioral Finance approach is the most important approach among the others.

### **2.1.3. Modern Portfolio Theory**

Modern portfolio theory provides a framework for measuring risk and return exchange, assuming that investors avoid risk and that preferences are defined as the average and variance of returns. Markowitz, who formulates the portfolio problem as the choice of the variance of an average asset portfolio, is considered the father of modern portfolio theory (Elton and Gruber, 1997, p. 1744).

As Harry M. Markowitz introduced the concept of risk mathematically (the standard deviation of an asset's return rate), a new era in portfolio management was started and it was possible to reduce the risk at a certain level of return through diversification. Markowitz found that the risk of a portfolio is different from the average of the securities that make up the portfolio. Thus, the portfolio model has been developed considering the expected rate of return of the asset portfolio and the expected risk measure. The variance of the rate of return is a measure of the portfolio risk. The rate of return of assets in the portfolio gives different responses and the covariance changes. The covariances of the return rates of assets constitute the sheet foot of the modern portfolio theory (Altay, 2004, p. 13).

Markowitz's portfolio theory can be explained as increasing the expected return at a certain level of risk (variance) or reducing the risk at a certain level of return. Depending on the individual risk return preferences of the investor, which portfolio to choose is determined by the effective boundary formation. The effective boundary is the curve that combines effective portfolios at different levels of risk and return. The

investor must know how the financial assets act together with other financial assets other than their specific characteristics. Thus, investors can have the same expected return with less risk. According to the modern portfolio theory, an investor who can keep the risk at the lowest level by diversifying the financial assets in the best way in an effective market can raise the expected return (Şenkesen, 2009, p. 15).

In Modern Portfolio Theory, it is stated that the total risk of the portfolio cannot be solved only by increasing the number of securities in the portfolio, and the direction and degree of the relationship between the securities in the portfolio should be examined. According to the theory, if the securities included in the portfolio are positively correlated (returns are moving in the same direction), the portfolio risk will not decrease as changes in economic conditions will affect the securities values in the same direction. For this reason, the stocks included in the portfolio must be selected from the stocks that have negative correlation (returns are moving in different directions).

#### **2.1.4. Capital Asset Pricing Model (CAPM)**

The portfolio theory introduced by Markowitz in the 1960s was developed by scientists such as Sharpe, Lintner and Tobin, and the relationship between the risk and return of an asset is based on a more comprehensive scientific basis. This theory is referred to in the literature as the Capital Assets Pricing Model. This model investigates whether the investment is appropriate to the risk that the investment is expected to be made, or even provides a theoretical framework explaining the return that an asset that has not yet started trading in the market (Karan, 2001, p. 205).

The model shows the relationship between risk-free rate of return, non-systemic risk, market rate of return and expected rate of return. In addition, it focuses on how this rate of return and risk-return balance will be based on risk. The yield of the financial asset is evaluated in relation to the market return and the market sensitivity of the securities.

While CAPM demonstrates the relationship between the risk of an asset and its expected return, this relationship carries out two important tasks. First, it responds to what an actual return of an investment should be at a given risk level. Thus, the actual return of the investment and the theoretical return should be comparable. Second, the

price of an asset that does not have a price in the market can be estimated (Sümer and Hepsağ, 2007, p. 5).

CAPM established a theory for individual securities valuation and contributed to a better understanding of market behavior and financial asset pricing. The model drew attention to the relationship between the risk and return of a financial asset and showed the importance of taking the risk into account. The total risk of a security is composed of systematic risk / beta and securities non-systematic non-risk risk that measures the change in financial asset according to market movements. The non-systematic risk is not rewarded by the market and the non-systematic risk can be eliminated with diversified portfolios. Therefore, only the systematic risk is taken into account when determining the price. Thus, the variance or standard deviation of the returns of an asset is not an appropriate measure of risk. Because these concepts measure total risk including both distributable risk and systematic risk. For this reason, CAPM proposes that the real measure of risk for a financial asset is beta, and it also calls the prize of the beta as a risk premium. Beta takes into account the sensitivity of an asset to the market and thus measures only systematic risk. Bets of financial assets can be collected. The beta of a portfolio is a linear combination of betas of financial assets that make up the portfolio. According to CAPM, the non-systematic risk / distributable risk component of each security is zero in balance. In addition, CAPM provides a reference to the relative attractiveness of securities by evaluating the equilibrium values of securities and price differences (Bayar, 2012, p. 36).

#### **2.1.5. Arbitrage Pricing Theory (APT)**

Arbitrage is a transaction that is sold on the market where the assets are more expensive if they are bought and sold in two or more markets with price differences (Parasız, 1999, p. 26).

A single price is expected for the same securities in a functioning market. Both the Capital Asset Pricing Model and the Arbitrage Pricing Theory argue that short-term arbitrage opportunities in the markets will be used in a short time by the market players and the market will be rebalanced. In the Capital Asset Pricing Model, it is assumed that investors make their investment preferences by looking only at the returns and variances of the securities in order to achieve the balance situation. According to Stephen Alan Ross, these factors are less important to investors. The main factor that

determines the choice decision should be the utility function. Investors can limit the Capital Assets as a Pricing Model in the utility function, and the Arbitrage Pricing Theory can be empirically tested (Ross, 1976, p. 341-360).

In the APT, the existence of a positive relationship between return and risk is accepted, where the return on securities is created by factors in the market. These factors are GNP, inflation, money supply and interest. As the number of securities increases, the non-systematic risk will decrease, but the systematic risk will not change. The yield of the securities is expressed as the sum of the risks carried by the securities according to the risk factors and the risk free interest rate (Atan et al., 2005).

The basis of the APT is the recognition of important systematic factors affecting the long-term average returns of financial assets. APT does not consider the numerous factors that affect the daily price changes of individual equities and bonds, but it places more important factors affecting the sum of assets in large portfolios. By recognizing these factors, intuitive evaluations can be made on portfolio returns. The result that is to be achieved here is to achieve a better understanding of portfolio configuration and evaluation and thus to improve the overall portfolio design and performance (Güçlü, 2006).

Ross's Arbitrage Pricing Model is based on a linear model and assumes that the return on an investment is based on multiple factors. Although the Capital Asset Pricing Model is a linear model, it only associates the return of an asset with the yield of the market portfolio. The Arbitrage Pricing Theory, which is a more general model than the Capital Asset Pricing Model, and which is less hypothetical, does not contain any restrictions on the market balance and the preferences of investors and is based on the Single Price Law. That is, if arbitrage opportunities are born, arbitrageurs will intervene rapidly to take advantage of this situation, resulting in the price of money and risk in the market as a single price. This is called the Single Price Act. The justification for this law is the fact that the same commodity cannot be sold at two separate prices. At this point, Arbitrage Pricing Theory claims that it will be easy to establish market equilibrium, and that when arbitrageists realize that arbitrage opportunities are born, they would prefer to take a large scale transaction, and consequently, the market will soon be balanced (Cihangir and Kandemir, 2010, p. 261).



## **2.2. Adverse Results of Traditional Finance Theories: Anomalies**

The concept of anomaly in literature is defined as observation or reality which does not match with theory. If it is difficult to evaluate a finding based on observation in a theoretical framework, or if it is only possible to explain this finding by accepting unreasonable assumptions, then the finding can be evaluated as anomaly. Therefore, it is stated that unusual behavior is not in compliance with the generally accepted principles and principles of anomaly (Özmen, 1997, p. 11).

Anomalies can be found in all areas of life. Various examples of anomalies are seen in social, cultural, political or financial life. Many financial anomalies observed in financial markets as deviations from the Effective Market Hypothesis have been encountered and studies have been carried out.

We can examine the financial anomalies according to their types by dividing them into two groups as sectional anomalies and periodic anomalies. Periodic anomalies indicate that stock returns show different behavior from other time periods in various time periods such as day, week, month, holiday period. Cross-sectional anomalies indicate that firms with market values or financial ratios above or below the sector average will exhibit behavior contrary to the market average in a certain period of time (Demireli, 2008, p. 225).

### **2.2.1. Cross-sectional Anomalies**

Cross-sectional anomalies are the anomalies that can be determined by examining the financial ratios of companies. Accordingly, the comparative status of some of the financial ratios of the companies according to the market indicates that the shares of the company will provide a return higher than normal (Sönmez, 2010, p. 27).

#### **2.2.1.1. Price / Earning Ratio Anomaly**

The price/gain ratio, calculated by dividing the stock price by per share, shows how much investors have to pay for a unit of expected earnings. In other words, the amount paid for the stock shows the number of earnings per share. When evaluating firms, this ratio, which is frequently used by analysts, is often wanted in a low ratio. According to many investors, the price/earning ratio is one of the most important indicators that give clues about the future performance of a securities investment. Stocks with low price/earning ratio are expected to show high performance (Öztürk, 2007/2, 276).

According to the price / earnings ratio anomaly, stocks with a low price / earnings ratio (P / E) yield a much higher return than those with a high P / E ratio. The first study on this subject was conducted by Basu and 750 stocks in the New York Stock Exchange were examined over a period of 14 years. For this period, 5 different portfolios were created based on year-end P / E ratios (Basu, 1977, pp. 663-682). Stocks ranging from stocks with the lowest P / E ratio to stocks with the highest P / E ratio are listed; portfolios are ranked from the lowest F / K ratio to the one with the highest P / E ratio. When the earnings of these portfolios are analyzed according to the CAPM and according to the criteria of Sharpe, Treynor and Jensen, it is determined that the portfolios with low P / E ratio yields above average. According to this result, it is possible to make a return on the market by investing in stocks with low P / E ratio.

Öztürktalay, tested P-E ratio anomaly in the period 1989-2002 in the BIST (Öztürktalay, 2005, pp. 167-183). In the scope of the research, Öztürktalay, using the Earning / Price ratio instead of the P / E ratio, sorted the positive profit shares from the largest to the smallest according to the Earning / Price ratio and separated them into five portfolios and collected the negative Earning / Price ratio stocks in another portfolio. As a result of the econometric tests, it was determined that the price / earnings ratio anomaly was not valid in BIST.

In another study conducted by Karan on the BIST, stocks were listed according to P / E ratios and analyzed by creating portfolios (Karan, 1996, pp. 73-91). In this study, it was determined that the yields were lower than the CAPM and the portfolios with lower P / E ratio yielded higher returns in the long term. When existing portfolios are analyzed according to Sharpe, Treynor and Jensen criteria, it is determined that portfolios with low P / E ratio yield higher returns.

#### **2.2.1.2. Market Value / Book Value Anomaly**

Market Value / Book Value (MV / BV) is used as an important indicator of the expected returns by analysts, although not based on a theoretical model, and MV / BV anomaly states that firms with low MV / BV ratios have higher returns than high MV / BV rated firms. (Öztürktalay, 2005, p. 49).

According to this anomaly of Rosenberg, Reid and Lanstein in 1985, the firms with low MV / BV yield higher returns (Rosenberg et al., 1985, pp. 9-17). Market Value of the share represents the value of the stock determined by supply and demand under the

market conditions, whereas the book value represents the value of the company's equity value divided by the number of shares. Rosenberg, Reid and Lanstein Standard & Poor's 500, COMPUSTAT and IBES data base in the work covering 12 years, the lower MV / BV rate of companies with a higher rate of return by determining the investor in terms of investing in low MV / BV rate of the investor in the long term have positive results (Sönmez, 2010, p. 30).

As for the MV / BV anomaly, Karan found in the study conducted in the BIST for the years 1988-1995 that the stocks with low MV ratios can yield higher returns and this anomaly is also valid for the ISE (Karan, 1996, p. 73).

### **2.2.1.3. Price / Sales Ratio Anomaly**

The price-to-sale ratio is calculated by dividing the price of the stock by the net sales value per share for the last 12 months and shows the market value of the business, which is the business volume. According to this anomaly, stocks with low Price / Sales Ratio (P / S) yield much better returns compared to stocks with high P / S ratios. This anomaly, which has similarities with the price / earning anomaly, is replaced by sales.

Although the P / E ratio shows similarities, two elements are suggested as the reason why portfolio strategies based on low P / S ratio are preferred to portfolio strategies based on low P / E ratio (Karan, 2011, p. 288). These are;

- Sales are less affected and predicted more easily by accounting than earnings
- Difficulty in interpreting the P / S ratio while maintaining the significance of the P / S ratio in case of loss of the said company, due to the negative value of the P / E ratio

One of the first studies on this subject was made by Senchack and Martin in 1987 (Senchack and Martin, 1987, pp. 46-56). In this study, Senchack and Martin found that P / S shares with low P / S ratios had lower P / S shares than those with low P / E shares. In the study, it was revealed that low P / E shares yielded a lower but more stable return. Following this study, in the study conducted by Jacobs and Levy in 1988, stocks with low P / S ratio were examined. It was stated that the stocks with low P / S ratio between 1978-1986 provided 2% more return on average annually. According to this study, it is enough to provide high returns when the P / S ratio of a stock is low (Sönmez, 2010, p. 29).

#### **2.2.1.4. Low-priced Stock Anomaly**

The low-priced stock anomaly is trying to explain that the companies' bills traded on the stock market will have more returns than other company bills due to their low prices. Empirical studies have shown that investors can invest in low-priced stocks and achieve over-normal return. Although many studies have been carried out on this subject, the history of the first study on low-priced stocks is based on the work done by Louis H. Fritzmeier in 1936 (Karan, 2011, p. 286).

Several studies have been conducted on the subject. For example, when Pinches and Simon compared the returns of their portfolio with alternative returns on the American Stock Exchange at less than \$ 5, they stated that this portfolio yielded extremely high returns in most periods (Pinches and Simon, 1972, pp. 1773-1796). Riding and Husic evaluated the low price effect with the Modern Portfolio Theory in order to consolidate Fritzmeier's work (Blume and Husic, 1973, pp. 283-299). In this study, it is stated that there is an inverse relationship between the price level and the yields, and the beta value increases as the price level decreases. Branch and Galai examined the relationship between risk and return in portfolios created above and below \$ 20 (Bachrach and Galai, 1979, pp. 421-441). The researchers stated that the low-price portfolio provided a relatively higher return due to their high systematic risk (Sevim & Akkoç, 2007, p. 5).

In a study carried out in the ISE on this subject, for a period of 5 years (1995-1999), the stocks listed in the ISE were ranked from the lowest price to the highest price. Based on this ranking, ten separate portfolios were created and it was investigated whether low-priced portfolios yielded higher returns compared to high-priced portfolios. In the studies conducted abroad, it has been observed that low-priced stocks yield a much higher return than the high-priced stocks. In contrast to the expectations, the average yields of the portfolios with low-priced stocks were low, while the average yield of the portfolio with high-priced stocks was observed to be high. According to this study, there was no low price effect in the Istanbul Stock Exchange, but a high price effect was found. Accordingly, it is possible to make a higher than normal return in the ISE by investing in high-priced stocks (Sönmez, 2010, p. 28). In another study of the Istanbul Stock Exchange (ISE) between 1997-1999 and 2002-2004, similar results were achieved and a high price effect was observed in the ISE rather than a low price effect (Sevim and Akkoç, 2007, p. 12). In other words, it has been determined

that the high price portfolio provides investors with a return on the market and on the other hand, it provides a lower return on the market with a low price.

#### **2.2.1.5. Neglected Stock Anomaly**

In various studies, it has been determined that the stocks which are less recommended and less traded by the investors and experts are performed higher than the other securities. This effect is called the neglected stock effect. According to this anomaly, neglected stocks provide higher returns. Thus; It is possible to determine the stocks that have been neglected and that are valued less than they should be and invest in them, and it is possible to generate returns above market averages.

In the first studies on neglected stocks, the results showed that the unpopular stocks showed higher performance than the popular securities. The existence of this anomaly has been started to be explored more frequently since the early 1980s with the development of effective markets hypothesis (Karan, 2001, p. 86).

Firstly, in 1964, the study conducted by Karan in the BIST in 2000, based on the transaction volume in brokerage houses, was divided into three classes as normal, popular and neglected. The systematic risks and excessive returns of these stocks have been examined and it has been found that the unpopular stocks provide higher returns, although they have a lower systematic risk. Since neglected stocks are generally composed of small firms, it has been investigated whether this effect has an interest in the size of the firm and it has been determined that there is no such effect and the excessive returns are due to neglected stock effect. According to this study, it is possible to determine the stocks that have been neglected in the BIST and provide a return above normal.

#### **2.2.1.6. Firm Size Anomaly**

In terms of the value of the firm size anomaly and the market value, it is stated that the shares of the small firms give a higher return to the investors than the stocks of the large firms.

The idea that the firm size is effective in explaining the variability in stock returns is presented for the first time in the 1981 study of Banz. In his study, Banz used the equity value as an explanatory variable to express the size of the firm and examined the relationship between the returns of stocks traded on the New York Stock Exchange

between 1926-1975 and the size of the firm. In the study, it was found that small firms had higher returns on average in comparison to large firms (Banz, 1981, pp. 3-18). This study of Banz is stated by the various researchers that the risks of small-scale companies are high and therefore their high yield will not be considered as a deviation. In the studies on these criticisms, the risk-matched data and yields were compared and the returns of small-scale firms were determined to be high and the study of Banz was confirmed (Karan, 2011, p. 298).

Many studies that have been done later have also supported the findings. In a study conducted by Reinganum in 1981, it has been found that small market-valued firms earn about 6 times more than big market-valued firms. In 1983, Keim identified the same effect in his study of 1963-1979 and found that this effect was mostly realized in January. In 1985, Kato and Schallheim, based on 30 years of data on the Tokyo Stock Exchange, found that small market-valued firms yielded higher returns, while in 1986 Wahlroos and Berglund reached the same results on the Helsinki Stock Exchange (Sönmez, 2010, p. 31).

The firm size effect was investigated by Öztürkatalay in Turkey. Between July 1989 and June 2003, the shares listed on the BIST were separated into five separate portfolios and included in the analysis with monthly closing prices (Öztürkatalay, 2005, p. 78). According to the results of cross-sectional regression analysis and time series regression analysis, it was found that the effect of firm size was valid in BIST in 1989-2003 period and there was an inverse relationship between firm size and yield.

#### **2.2.1.7. Business Cycle Anomaly**

Equity indices are considered to be one of the most important indicators of economic life. Generally speaking, vitality in the business world also stimulates share index. In this way, in the period when the economy is alive, investment can be ensured by making an over-return. However, there may be a decline in the indexes periodically in the recovery period of the economy.

#### **2.2.1.8. Share Division and Bonus Share Anomaly**

It was determined that the stock prices were reduced without any decrease in the total value of the company by giving shares or dividing shares by increasing the prices of shares, which had a positive effect on the stock performance. In general, cheap stocks

are being demanded more and the price of the stock in a short period of time is greatly increased. Thus, those who invest in these stocks can achieve a higher return.

### **2.2.2. Periodic Anomalies**

Better or worse performance of the securities in different periods than normal times is generally called calendar anomaly. Accordingly, stock returns vary in various time periods and it is possible to provide a higher return than normal for an investor by considering these. This situation makes it possible to obtain high returns in case investors invest on the basis of historical data, contrary to the hypothesis of efficient markets.

#### **2.2.2.1. Intraday Anomaly**

Intra-day anomalies are systematic in certain hours of the day or in periods of time, with higher or lower returns compared to other times during the day. The time to be taken can be minutes, hours or sessions.

The first study on this was done by Wood, Mcinish and Ord (Wood et al., 1985, pp. 723-739). At the end of the study, it was seen that the first 30 minutes of the session in NYSE and the return in the last one minute were two-thirds of the total return. Furthermore, it was concluded that the yield distribution was almost the same when the first 30 minutes of the session and the last five minutes were not taken into consideration. This shows that the fluctuations during the day are more than 30 minutes after opening and before closing.

In another study conducted by Harris in the New York Stock Exchange in 1986, the transaction day was divided into 24 15-minute chapters, and it was found that stocks yielded five to ten times higher returns compared to other hours at the beginning and end of the day (Harris, 1989), pp. 29-45). On the first 45 minutes of Monday, the low-yield observed on the day remained outside this detection, while the last minutes of Friday were observed to be the highest in prices. In addition, the researcher noted that the situation described above could be observed more strongly in low-priced stocks.

Many studies have been carried out on this subject and the studies conducted in general showed that the heads and the end of the sessions were the highest yields. It is also noteworthy that the beginning of the session on Mondays is generally negative.

#### **2.2.2.2. Weekday Anomaly**

This anomaly, which suggests that stock returns differed from other days in a positive or negative manner on some days of the week, is also referred to as "Day of the week effect", "Weekend effect" or "Monday effect" anomaly. In markets where this anomaly is valid, stock returns are generally low on Monday, the first trading day of the week, while stock prices are regularly lower on Mondays compared to the previous day, while on Fridays it is significantly higher than on the previous day. According to the day of the week, the average returns are the highest on the last trading day of the week and the lowest on the first trading day of the week (Ergül and Dumanoglu, 2009).

In the literature, it is stated that the existence of the effect of the days of the week in the stock market yields goes back to the 1930s. In order to avoid the uncertainty of financial market commentators' uncertainty in the weekend holiday, Fields analyzed the daily closing values of the DJIA index between 1918 and 1930 to test the judgment that investors tend to close their speculative position during the closing hours of the last trading day. Contrary to the expectations, the stocks reached an increasing trend on the last trading day of the week compared to other days (Fields, 1931, pp. 415-418). Cross, Standard and Poor examined the price changes of the composite index for the period 1953-1970. In the study, it was determined that the average daily returns differed according to the days of the week, the returns were negative on the first day of the week and positively positively on the last day of the week (Cross, 1973, pp. 67-69). The study found that 62% of the Fridays increased the index and that this rate was only 39% for Mondays. On Friday, the average return rate was 0.12%, while the average of the return on Monday was a negative value of - 0.18%.

When daily returns are calculated according to the closing prices, two basic hypotheses are put forward about the effects of the days of the week on the generation of returns. According to the Calendar Time Hypothesis, the returns on Monday should be higher than the other days of the week. Because according to the closing prices on Friday, the return generated by the closing price on Monday corresponds to 3 calendar days, while the other days of the week are based on a calendar day. Therefore, Monday's returns should be three times higher than other days of the week. According to the Transaction Time Hypothesis, returns are generated when the markets are open to transactions. Therefore, there should be no difference between daily returns depending on the days of the week. French analyzed the daily returns of the Standard and Poor's composite



index, composed of large firms with large transaction volumes, by subdividing them between the years 1953-1977. Contrary to the predictions of both hypotheses, on Monday, the yields were negative and the other days of the week were positive (Aktaş and Kozoğlu, 2007, p. 3).

In 1985, Jaffe and Westerfield did a study in the USA, Australia, England, Canada and Japan. In the study, the lowest yield day is Monday and the highest yielding day is determined as Friday. The highest yielding day for Japan was determined on Saturday, but Saturday was the last trading day for Japan, which led to the absence of a different result from other countries (Jaffe and Westerfield, 1985, pp. 433-454).

In 1989, the same researchers again worked in the USA, Australia, the UK, Canada and Japan and were interested in negative Monday returns. As a result of this study, it was observed that the index decreased on average in the previous week. If they were raised, it was observed on Monday that there was a higher rate of increase compared to other Mondays (Jaffe and Westerfield, 1989, pp. 641-650). In every country this situation was observed and the effect of negative Monday had disappeared if the previous week yields increased (Sönmez, 2010, p. 34).

The effect of the days of the week observed as an international phenomenon in the stock markets was also observed in the studies conducted on BIST. Selçuk carried out a study using the data of the index of BIST in the period of 1991-1995; He found that on Monday, Tuesday and Friday the returns differed (Selçuk, 1996, pp. 147-168). Kıvılcım, Muratoğlu and Yazıcı examined the effect of days of the week in the context of market activity in BIST for the years 1988-1990, and concluded that the days of Friday and Monday affect the process of return and therefore the market is not effective in weak form (Kıvılcım et al., 1997, p. 15 -25).

Bildik analyzed the national 100 index by sub-periods with the 1988-1999 data. It was concluded that Monday and Tuesday were the highest and the lowest risk days, and the high and positive returns observed on Fridays showed statistically significant (Bildik, 2000). In the period of 2002-2005, Tuncel examined the effect of the week on the BIST and it was found that the highest yield of the week with 52% on Friday and the days with the lowest return of the week with 0.38% on Mondays (Tuncel, 2007, p. 260).. At the same time, the lowest volatility was Friday and the highest on Monday.

One of the most interesting works in the ISE was made by Demirer and Karan in 2000. In this study, the average returns of the first day of the week in ISE and the average returns of that week were examined. As a result of the investigations carried out in this study, it is revealed that there is a close relationship between the returns of the first day of the week and the average returns of the week in the ISE (Demirer and Karan, 2002, pp. 47-77). Accordingly, if the first day of the week is positive, the average return of the week is positive. Likewise, if the first day of the week is negative, the average return of that week is negative. According to these results, it is possible for an investor to find a positive return on the first day of the ISE and to find a positive return on the first day. According to these results, an investor can find a positive return by looking at the first day returns in the Istanbul Stock Exchange and determining that the first day yield is positive.

#### **2.2.2.3. January Anomaly**

One of the most debated anomalies in stock markets is the January effect. According to the studies, this differentiation is more noticeable in the first week of January. In January, stock returns are higher than average in other months. At the same time, this excess yield is observed in stocks with small capital and market value (Atakan, 2008, p. 99).

Many studies have been done on this anomaly. Rozeff and Kinney, for the first time in their study have determined the effect of January (Rozeff and Kinney, 1976, p. 379-402). In their study covering the period 1904-1974, the authors found that the monthly yields of stocks on the New York Stock Exchange in January amounted to about 8 times the average return on the other months. Keim and Reinganum are the researchers who present this anomaly for the second time. Especially in the first two weeks of January, excessive returns are realized and this depends on the microstructure of the market (Keim, 1983, pp. 13-32; Reinganum, 1983, pp. 89-104).

In a study by Karan and Uygur, the presence of the impact on January in the BIST was investigated (Karan and Uygur, 2001, pp. 103-116). However, it is determined that this January effect is due to the size of the firms. Accordingly, the effect of January on the BIST is only valid for large firms. In another study conducted by Özmen (1997, p. 98) in BIST, January effect was observed. Accordingly, January is the month with the highest return on the Istanbul Stock Exchange. January was followed by June and

September respectively. The only month in this study was found to yield negative returns is August. The lowest means of return were May and July. In the study conducted by the Kıyılar and Karakaş, the National 100 Index was examined between 1988 and 2003. It was found that the average compound yield in January was 61% higher than in December with the second highest average yield. They reached 734% more than the average return of the whole year (Coasts and Karakas, 2005, pp. 17-25).

As the possible causes of the January anomaly, investors can sell by weight in the last month of the year in order to gain an advantage by getting rid of the tax and they can be seen as getting back in the first month of the year after benefiting from this advantage. Another finding on this issue is that mutual fund managers dispose of their unsuccessful funds as of December in order to show their year-end balance sheets more positively, and by re-purchasing their portfolios in January (Karan, 2011, p. 294). In addition, January is generally considered as a month in which financial strategic planning is initiated, annual bonuses are paid, wages are raised in public places, and there is a period in which the markets are vigorous and there is an increase in all kinds of monetary parameters (Özmen, 1997, p. 98). ).

In 1989, Cadsby studied the New York Stock Exchange between 1963-1985 and found that October was the most negative month of the year. This is called the Mark Twain Effect, since Mark Twain wrote in a novel that October is the most dangerous month to speculate on stocks (Sönmez, 2010, p. 37).

#### **2.2.2.4. Intramonth Anomalies**

Intramonth anomaly is the result of dividing the 30-day calendar period for any month of the year by two, and yielding a different return in the first half or second half of the month compared to the other. The first comprehensive study was conducted by Ariel (Ariel, 1987, pp. 161-174). In his study, Ariel calculated the average yields on the first and last 9 days of the month using the data from 1963-1981 on the New York Stock Exchange, and found that his first 9 days yields were greater. Ariel also stated that the intramonth anomaly is not a reflection of the January anomaly, and this effect continues in other months. In a similar study conducted by Jaffe and Westerfeld on the US, Japan, UK, Canada and Australia stock exchanges, the study was divided into two as the first 9 days and the last 9 days. It was concluded that the first half yields in 4 other countries except Japan were higher than the second-half returns. In Japan, the

opposite effect was observed and the second half yields were higher than the first half returns. Wong, who did the same study in Asia, Taiwan, Thailand, Singapore and Malaysia, could not find an intramonth anomaly in Asia and the USA (Wong, 1995, pp. 285-289). In Malaysia, Singapore and Thailand, there was no difference between the two periods, while the first half yields were higher in Taiwan and the second half yields were higher in Thailand.

Several studies have been carried out in our country about the presence of intramonth anomaly. In the study performed by Özmen, the presence of the in - month anomaly in the period of 1988-1996 of BIST was investigated. In the first half of the month, the yields for the 101 period were found to be significantly higher. Based on these findings, Özmen stated that there is an intra-month anomaly in the BIST. In Turkey's stock market, especially in January compared to other months, is composed of an obvious anomaly inside the month. In the first half of January, traders earn a higher return than the other half. In another study conducted by Bildik, it was investigated whether there was an intra-month anomaly in the BIST for a ten-year period between 1988-1998 and significant results were obtained. In this study, it is seen that the trading days in the first half of the month provide an average of 65% higher than the trading days in the second half of the month in terms of daily average returns on the basis of calendar days and trading days. In addition, the distribution of intramonth returns by months was examined and it was observed that the first half of January, April and partly in June provided higher positive returns compared to other months. On the other hand, in the second half of April, May and October, a higher rate of negative return was found. In addition, in the first and last ten days of each month, it was concluded that the first ten-day period was higher than the last ten-day period. In light of all this work, it can be said that in Turkey and in many countries, there is intramonth anomaly (Barak, 2006, p. 141).

Among the possible causes of intra-month anomalies, there are some reasons such as tax or portfolio balancing-adjusting by the investors with the risky and low yielded stocks in the portfolio. In addition, it is considered that the sale of the cash flows within the month and the cash flows that are collected in the same month as the salaries, dividends, premium payments and other funds that increase the liquidity may lead to the return of the shares to the purchase of the stock and this may cause the return of the year if this situation coincides with the year-end (Eken and Üner, 1997, pp. 66-67).

#### **2.2.2.5. Pre-holiday Anomaly**

In many markets, stock returns have been higher than in other trading days before the holidays. This situation is expressed by the concept of pre-holiday anomaly. A lot of research has been done on the world stock exchanges. In the research conducted by Lakonishok and Smidt in 1984, it was observed that stock returns increased remarkably during the last day of December with the last day of December.

One of the most comprehensive studies on this subject was done by Lakonishok and Smidt in 1988 (Lakonishok and Smidt, 1988, pp. 403-425). In the study, the Dow Jones Index classified the days when stocks were traded in the 90-year period between 1897-1986 as normal days, pre-holiday and post-holiday, and made a return comparison. Pre-holiday average returns were approximately 23 times higher than the average returns of normal days, and approximately 50% of the annual return of the index was obtained before the holiday. They found that the average returns after the holiday were negative (-0.017%) as absolute value but statistically not different from zero and regular days returns. When the post-holiday returns were examined, it was found to be very low and even lower than the known Mondays. When the pre-holiday returns were compared with the pre-weekend holiday returns, it was observed that the pre-holiday returns yielded a 5-fold return on the weekend.

In the study conducted by Kim in the US, Australia, UK, Japan, Canada and Korea stock exchanges in 1988, high return was found in all stock exchanges and low return in post-holiday periods. No pre-holiday anomaly was found in the Korean stock exchange and the returns of pre-holiday periods were negative (Kim, 1988, pp. 59-63).

In the study conducted by Pettengill from June 1962 to December 1986, daily data of New York Stock Exchange were used. During the holiday period, stock behaviors were examined and it was stated that the stock returns of the small market valued firms were higher than those of the big market companies and they differed significantly from the normal days. In addition, at the beginning of the week the return of the week after the very low at the end of the week was very high (Pettengill, 1989, pp. 57-69).

In many studies conducted on the BIST, results were parallel to international findings. In the study which Özmen made based on the data of 37 official holidays in January 1988-June 1996, it was determined that the pre-holiday returns were 14 times higher than the average post-holiday returns and 5.5 times higher than the other days' returns.

Bildik (2000) investigated the anomalies related to the holidays between 1988-1998 in the Istanbul Stock Exchange and examined the stock returns before and after the public holidays. As a result of the research, the average of the return and trading volume in the stock market days before the holidays was found to be significantly higher than that of the holiday and all other days. However, it was determined that after the 2-day clearing period application, this situation reversed and the post-holiday returns were higher than the pre-holiday period. In the findings of Bildik (2000), there was a positive correlation between the last trading day before the holiday and the first trading day after holiday, in contrast to the negative correlation in the literature. As a result, it is stated in the ISE Equity Market that the stocks are different from the other days in the first trading days before and after the public holidays. It has been seen that there is a strong holiday effect in BIST. It was found that the holiday effect in the BIST exhibited a unique behavior that is not fully compatible with the examples in the literature (Barak, 2006, p. 150).

### **2.3. Expectation Theory**

By ignoring the psychology of the investors in investment decisions, asset pricing models that accept all investors as rationally, directly or indirectly, the Expected Utility Theory (EUT) are valid. For a long time, the most important criticism of the Expected Utility Theory, which is considered to have a decisive role in the decision-making process of investors, was brought by a new theory of expectation that also takes into account psychological factors. This prospective theory proposed by Kahneman and Tversky (1979) has been a guide for many studies examining the impact of investor psychology in investor behavior. The work, which brought the Nobel Prize of 2002 to Kahneman, became a touchstone in showing the effects of individuals' intuition and decision making processes on finance and constituted one of the most cited works in the history of economics.

Expectation Theory is a descriptive decision analysis model and explores how investors (individuals) make decisions in risk conditions. This theory, which has an important place in psychology literature, completes the deficiencies of Expected Benefit Theory which is widely accepted in the theoretical sense and which is also used in finance field. Expected Utility Theory is based on normative analysis. Normative analysis is concerned with the logic of decision making. It tries to produce

rational solutions regarding decision making. In contrast, Expectation Theory uses descriptive analysis and emphasizes what people's beliefs and preferences are. It also attempts to measure behavior and trends in decision-making (Döm, 2003, p. 1).

It is observed that the decisions made under uncertainty differ considerably according to the decisions that are expected to be taken when the Expected Utility Theory is taken into consideration. Therefore, EUT has been severely criticized in various experimental studies, especially after the 1950s. The two criticisms are the Allais and Ellsberg paradoxes. The Ellsberg paradox will be discussed later in the study.

In the Allais Paradox, some people are selected from players who are capable of calculating Allais probability, are considered to be rational, and whose capital is relatively lower than their relative income. These players are asked to select one of the first A, B, C and D options, respectively, and one of the other two (Aksoy and Şahin, 2009, p. 8);

- (A): A definite 1 million dollar gain will be obtained.
- (B): A 10% chance of gaining 5 million dollars will be earned, a gain of 1 million dollars will be achieved with 89% probability, nothing will be earned with a probability of 1%,
- (C): 1 million dollars will be earned with 11% probability, nothing will be won with 89% probability,
- (D): 5 million dollars will be earned with 10% probability, nothing will be won with 90% probability,

Allais expects the individuals facing A and B situations to choose A. The answers have also been this way. The reason for this is that it is certain to be a millionaire in case A. However, according to the expected value formulation, B should have been preferred. Consistent with this, C should have been preferred to D in the second case, but D was preferred to C. In other words, a 10% chance of gaining 5 million dollars was preferred to 11% probability of 1 million dollars is preferred. Therefore, the hypotheses of the value theory are violated and a paradox emerges.

A numerical example is given in the works of Kahneman and Tversky. In the study, two options were offered to the people and they were asked to indicate their preferences.

- 7.500\$ total loss
- 75% probability loss of 10,000 \$ or 25% probability gain of 0 \$

According to EUT, the expected loss in both options was \$ 7,500, but the majority of investors preferred the second option. The expected utility theory will remain indifferent in this case. Because the expected loss in both options is \$ 7,500. At this point, the superiority of expectation theory over the expected utility theory is revealed. Because people do not like to lose and the second option gives a little chance of winning.

Although there are serious differences between the EUT and the Expectation Theory in terms of individuals acting rationally, they have similar principles in some respects. In both theories, it is acknowledged that individuals are trying to keep their benefits at the highest level and that the benefits they get from their wealth should be measured in terms of satisfaction, not financially. Finally, it is accepted by both theories that investors avoid risk if their earnings are concerned, and that the increase in the wealth of individuals leads to a diminishing marginal benefit.

The differences between EUT and Expectation Theory are listed below (Ding et al., 2004, pp. 425-428).

a) EUT measures the benefit provided by the people in the last situation. The most recent status of the wealth of persons includes the person's previous assets and the additional benefits of the option to be evaluated. But the theory of expectation is concerned with the change that the applied option will lead to wealth.

b) EUT takes into account the probabilities identified in the calculation of the expected benefit. Expected benefit; each option is obtained by weighting and aggregating the expected results of the options. Expectation theory makes use of decision weights in value function. The decision weights of Kahneman and Tversky in the function they have developed are less than the probabilities in the expected theory of benefit.

c) EUT predicts three types of investors. These; risk-avoiding, risk-insensitive and risk-taking investors. An investor cannot carry these three features at the same time.



However, according to the theory of expectation, individuals are risk free when earnings are irrespective of their wealth levels. They will show the personality traits that are not risk averse in case of loss. Tversky and Kahneman, in one of their studies, have argued that people's pain of losing is almost twice that of the same amount of gain. Therefore, avoiding losing determines the preferences of people.

Expectation theory describes how people shape a decision that they will make under uncertainty. Investors determine their results as gain and loss based on a particular reference point. Then they evaluate the gain and loss according to the value function. Therefore, the result of the decision after the decision to be considered as gain or loss depends on the reference point. The key elements of theory;

- Concave for gains, convex for losses, a steeper value function for losses than earnings contributes to avoidance of risk as in the standard benefit theory. Convexity for losses, on the other hand, contributes to the search for risk. This is called the certainty effect. For example, the loss of losing all 50 dollars is more than the loss of half the 100 dollars. Therefore, it contributes to the selection of the bet. One would prefer 50% chance of losing 100 dollars to losing all of 50 dollars.

- • It is a nonlinear probability conversion scale that weighs small, low, medium and high probability (Kahneman & Tversky, 1992, p. 298).

Significant features of the theory of expectation can be explained by several major violations of the expected utility theory. In the Camerer study, three simple elements of the theory of expectation, which are anomalous for the expected utility theory, describe the following 10 events described by loss avoidance, reflection effects and nonlinear weighting of probabilities (Bayar, 2012, p. 127);

**Table 1. 1: Expected Utility Theory Anomalies**

<b>Field</b>	<b>Event</b>	<b>Definition</b>	<b>Content</b>
Share market	Share premium	Stock returns are very high compared to bond returns.	Loss avoidance
Share market	Effect of inclination	Keeping stocks that cause losses too much, selling earning stocks too early.	Reflection effect
Labor economics	Downward sloping labor supply	In New York City, taxi drivers leave their jobs around their daily target revenue.	Loss avoidance
Consumer goods	Asymmetric price elasticities	Purchases are more sensitive to price increases than price cuts.	Loss avoidance
Macro economics	Insensitivity to bad income news	Consumers do not cut consumption after bad news.	Loss avoidance and reflection effect
Consumer choice	Statutory bias, default bias	Consumers do not change the health plan, they prefer the default insurance.	Loss avoidance
Horse-racing	Prejudice to choose the less likely to win	To bet less on the favorite ones. Too many bets on those who are less likely to win.	Excessive measurement of low losses
Horse-racing	End of day effect	At the end of the day there is a chance of slipping.	Reflection effect
Insurance	Insurance purchase	Consumers receive high-priced / expensive insurances.	Excessive measurement of low losses
Lottery	Lottery demand	More tickets are sold when the prize rises.	Excessive measurement of low earnings

Bayar, Yılmaz. 2012. Davranışsal Finans Perspektifinden Küresel Finansal Krizin Yatırımcı Davranışlarına Etkileri, Yayınlanmamış Doktora Tezi, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, p. 127.

#### **2.4. The Process of Theory of Expectation**

The process of Expectation Theory, which constitutes the basis of behavioral finance approach, consists of correction and evaluation processes and value function.

### **2.4.1. Correction Stage**

The main function of the correction phase is to reformulate by organizing options to facilitate the evaluation and selection process in the secondary stage. In this sense, the correction phase includes the following mental activities (Kahneman and Tversky, 1979, p. 274):

The starting point of behavioral imitation is that people move away from rationality when making decisions and show some tendencies. These tendencies, which take people away from rationality, emerge as a result of realization of the elements of the correction phase. For example, with the effect of separation, the first phase of a two-stage game may not be canceled and evaluated during the cancellation phase, and it will not be possible to make healthy decisions (Ertan, 2007, p. 54).

### **2.4.2. Evaluation Stage**

The evaluation phase of Expectation Theory consists of two main components. These are value function and weighted probability function.

- Value Function

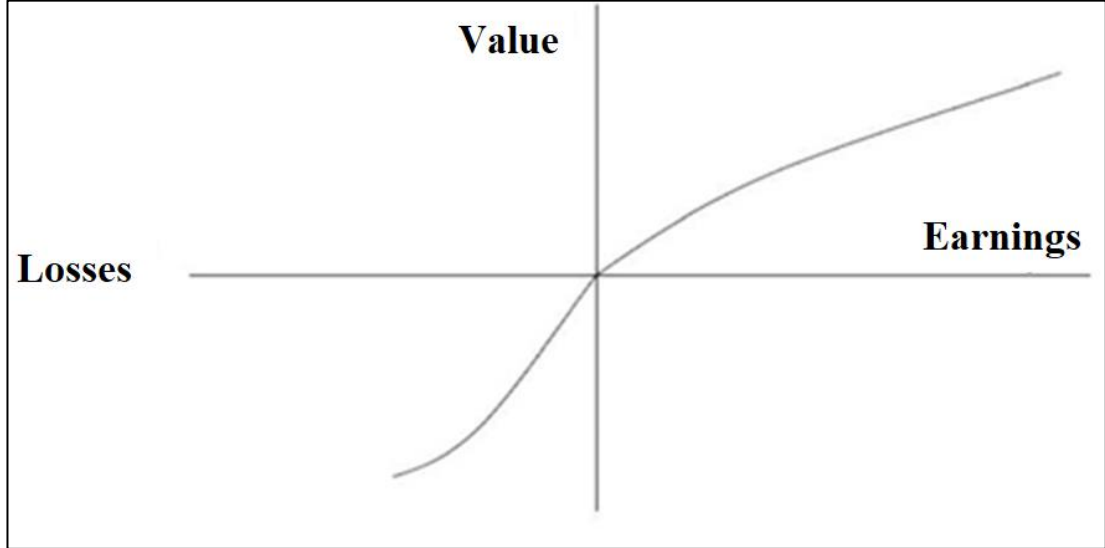
The greatest innovation that the theory of expectation brings to the field of finance is that it puts the concept of value instead of benefit. The benefit mentioned in the expected utility theory is the benefit achieved as a result of a rational calculation. The value of the theory of expectation is not rational, but a psychological concept.

In expectation theory, value refers to the proportional change in wealth. This assumption is consistent with the basic principles of perception and judgment, given the fact that people's perceptual arrangements are more appropriate to evaluate changes or differences rather than absolute magnitudes. For example, when people are exposed to stimuli such as brightness and loud sound, the warning is perceived in relation to a reference point determined by past experiences. Sensing the heat level as hot or cold depends on the temperature we are adapting. The same principle applies to those that are not perceived by sensory organs. For example, depending on the level of assets it has, the same level of wealth can express poverty to a person while expressing wealth for another person. Based on this, Kahneman and Tversky found that individuals set a reference point for assessing the yields or losses they suffered (Heath et al., 1999, p. 82). The reference point is generally the existing wealth level that individuals have.

Most stock traders consider the stock purchase price as a reference point. The investor will be pleased as the stock price exceeds the reference point. However, satisfaction will increase as the stock price decreases as it moves away from the reference point.

However, the satisfaction of gaining a certain amount of wealth and the sadness of losing the same amount of wealth will not be the same. Because in Expectation Theory, the value function is less inclined for gains, while it shows a much more inclined property for losses. Accordingly, the loss of benefits that investors will face in the event of a loss will be greater than the benefits they will obtain in a profit. On the other hand, the value function is concave in the gain zone and convex in the loss zone. In other words, the value function shows that people avoid risk in the area of gain and do not avoid risk in the area of loss (Kandır, 2006, p. 36).

As can be seen in Figure 1.3, the reference point divides the possible results into two separate regions: the loss zone and the gain zone. Yields are compared with reference points, returns below the reference point are lost, and returns above the reference point are considered to be earnings.



**Figure 1. 3: Value Function**

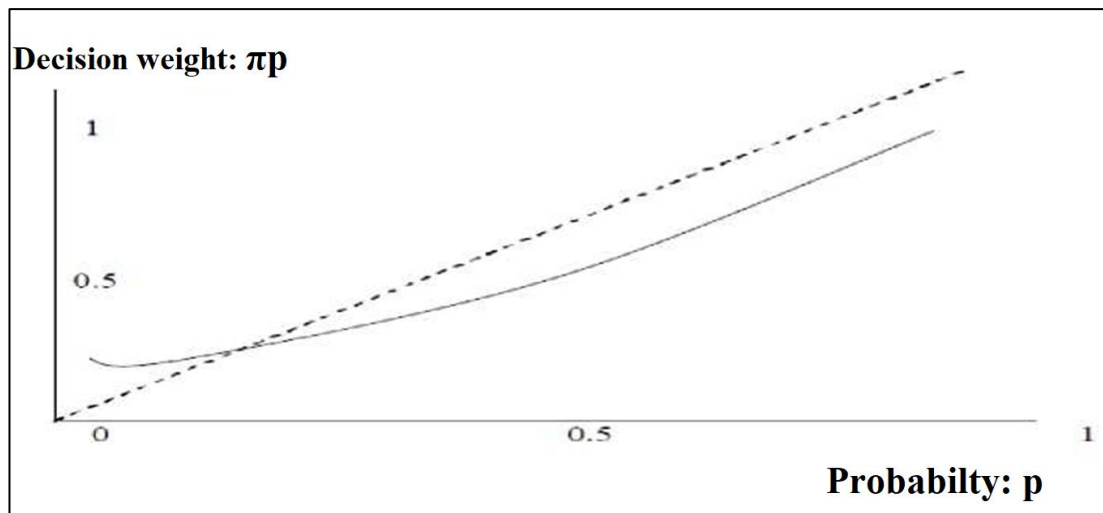
Şener, Uğur. 2015. Beklenen Fayda Yaklaşımı ve Bu Yaklaşımın Sistemantik İhlalleri. **İstanbul Aydın Üniversitesi Dergisi**, c. 7, s.27: 37-68.

The shifting of the value function at the origin shows that individuals evaluate their losses and gains differently. "S" value function; It is stated that the pain caused by small losses is more than the pleasure of the same amount of earnings and the marginal pleasure obtained as the gain amount increases, and the marginal pain will be decreased as the amount of loss increases. Therefore, the value function is steeper in the region where losses are defined than in the region where the gains are defined. Accordingly, people exhibit a behavior that avoids loss when it comes to earnings, and they exhibit risky behavior when it comes to loss (Kahneman and Tversky, 1979, p. 279).

### **Weighted Probability Function**

The second component of the evaluation phase is the weighted probability function. This component of expectation theory involves giving decision weight to each result. In the decision-making phase, the value of each result is multiplied by the decision weight, similar to that in the EUT where people multiply the benefit by probability. However, the decision weights used in the Theory of Expectation are not equal to the traditionally used probabilities and do not comply with the probability rules.

The weighted probability function, except for the very low (near zero) probability range, as shown in Figure 1.4, is the non-linear function with the probability of the determined decision weight being generally lower than the corresponding probability. This is clearly seen in Figure 1.4 (the dashed line represents the probability function, the continuous curve represents the decision weight function). The weighted probability function measures the effect of an event on the attractiveness of the option. Decision weights are affected by uncertainty and risk factors rather than probability (Döm, 2003, p. 31). As a matter of fact, in a non-cheating coin game, there is a 50% chance of winning a shot. The probability of decision in the theory of expectation is less than 50% of  $p$  (0.50) (Kahneman and Tversky, 1979, p. 279).



**Figure 1. 4: Weighted Probability Function**

Kahneman, Daniel, and Amos Tversky. 1979. Prospect theory: An analysis of decision under risk. *Econometrica*, c. 47, s. 2: 263-292.

The weighted probability function gets extremely high values as it approaches 0 to 1, but it never reaches points 0 and 1. This is because people have limited ability to comprehend extreme possibilities. Events with very low probability of occurrence are either rejected or overweighted. Events that are very likely to occur or are certain are either neglected or low weighted. In other words, the decision weight of investors is to increase the small possibilities and to ignore the great possibilities (Barak, 2006, p. 91).

### **3. BEHAVIORAL FINANCE**

The impact of psychological forces on individuals and markets has long been recognized (Camerer & Loewenstein, 2004; Hirshleifer, 2001). Adam Smith, in *The Wealth of Nations*, noted that man overvalued the opportunity for a gain and undervalued the opportunity for a loss (Smith, 1789/1937). Additionally, in *The Theory of Moral Sentiments*, Smith noted that individuals suffered more when they incurred a loss, than they enjoyed a gain (Smith, 1790/1976). Fisher (1930) described individuals' savings behavior as a function of their forethought, self-control, habits, life expectancy, family situation, and social trends. Keynes (1936/1964), in *The General Theory of Employment, Interest, and Money*, noted that instead of evaluating the quantitative benefits and probabilities related to a decision, individuals have the urge, referred to as animal spirits, to take action instead of inaction.

Markowitz (1952b) suggested that individuals may “take large chances of a small loss for a small chance for a large gain.”. The key driver of this decision was based on the individual's wealth and their definition of large gains and small losses. For example, a high wealth individual may choose a 10% chance of \$10,000 over \$1,000 with certainty, whereas a middle-class person would choose the \$1,000 with certainty over the 10% chance of \$10,000. Kahneman and Tversky (1979) identified systematic violations of expected utility theory when individuals were faced with decisions under uncertainty and proposed an alternative to expected utility theory, called prospect theory. Building from the foundation of prospect theory and other behavioral biases such as mental accounting, regret aversion, and self-control, Shefrin and Statman (1985) found that investors displayed an inclination to sell good performing stocks early and hold poor performing stocks too long. De Bondt and Thaler (1985), utilizing the overreaction bias, found that portfolios of poor performing stocks outperformed portfolios of good performing stocks over a three year period and the effect was noticeable as late as five years after the formation of the portfolio. Recently, researchers have explored how different facets of behavioral finance impact the stock market, consumer behavior, and corporate finance (Abbes, 2013; Barber & Odean,

1999,2000; Ben-David, Graham, & Harvey, 2013; Biais et al., 2005; Eisenstein & Hoch, 2007; Ganguly et al., 2000; Huang & Kisgen, 2013; Malmendier & Tate, 2005a, 2005b, 2008; Malmendier, Tate, & Yan, 2011; McKenzie & Liersch, 2011; Stango & Zinman, 2009; Stanovich & West, 1998; Thaler, 1999; Dickason-Koekemoer & Ferreira, 2018; Baker et al. 2018; Velupillai, 2019).

### **3.1. Definition of Behavioral Finance**

Since the formation of behavioral finance, many definitions have been presented; however, the definitions allude to two key components: individuals and financial markets (JureviSiene, Bikas, & Gausiene, 2012). Some researchers have defined behavioral finance as “the application of psychology to financial behavior” (Baker & Nofsinger, 2002, p. 98; Shefrin, 2000, p. 3). Ricciardi and Simon (2000) defined behavioral finance as an “attempt to explain and increase understanding of the reasoning patterns of investors, including the emotional processes involved and the degree to which they influence the decision-making process” Ritter (2003, p. 27) defined behavioral finance as a paradigm where financial markets are studied using less restricted models than standard finance and that the two main components of behavioral finance were related to cognitive psychology, how people think, and limits to arbitrage, predicting the circumstances when arbitrage forces are and are not effective. Pompian (2011) defined behavioral finance as “the application of psychology to finance” . De Bondt et al. (2008, p. 4) defined behavioral finance as the study of how psychology effects individuals’, organizations’, and markets’ financial decisions.

### **3.2. Behavioral Finance Biases**

The field of behavioral finance has identified numerous behavioral biases that cause deviation from rational choice (JureviCiene et al., 2012; Montier, 2007; Pompian, 2011). Additionally, Stango and Zinman (2009) proposed exponential growth bias, the inclination of consumers to linearize functions that have an exponential term. The behavioral finance biases of base-rate neglect, overconfidence, mental accounting, and exponential growth bias are also explored.



### **3.2.1. Base-Rate Neglect Bias**

Base-rate neglect or base-rate fallacy is when individuals ignore the probability of outcomes and instead evaluate probabilities based on representativeness (Allen et al., 2006; Bar-Hillel, 1980; Kahneman & Tversky, 1973; Tversky & Kahneman, 1974). Tversky and Kahneman (1974) noted that individuals rely on the representativeness heuristic when making decisions, in essence they evaluate the probability that item A reflects the characteristics of item B. Researchers have found that when individuals are presented with specific information related to a situation they do not sufficiently incorporate the prior probabilities when determining the likelihood of a given outcome (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974). When no specific information is given, individuals were more likely to rely on the prior probabilities related to the situation (Tversky & Kahneman, 1974). As a result, individuals who neglect the base rates are said to not make statistical inferences using Bayes' rule (Bimbaum, 1983; Gigerenzer & Hoffrage, 1995; Tversky & Kahneman, 1974). The development of Bayes' rule, also referred to as Bayesian inference, was credited to Thomas Bayes and was later rediscovered by Pierre Simon Laplace. (Bayes & Price, 1763; Laplace, 1986; Stigler, 1982,1986; Gigerenzer, 2018).

Hammerton (1973) also noted that overweighting the representativeness of the information given the problem did contribute to neglecting base rates; however, concluded that prior experience with the subject matter was the primary cause of neglecting the base rates. Lyon and Slovic (1976) tested the conclusion that the subject matter was a primary reason for neglecting base rates, their findings did not support Hammerton's hypothesis. Instead they concluded that "the dominance of individuating information over prior probabilities is a robust phenomenon, impervious to incidental features of the basic inference task as well as to major changes in the content of the problem" (Lyon & Slovic, 1976, p. 296). Finally, Bar-Hillel (1980) argued that the base rate fallacy existed due to the way individuals treated the relevance of the information presented. Individuals utilized two pieces of information only if they both appeared equally relevant, otherwise individuals ignored information considered to have low relevance and focused on the information deemed to have high relevance (Bar-Hillel, 1980).

### **3.2.1.1. Criticism of Base-Rate Neglect**

While some researchers have argued that base-rate neglect is a “robust phenomenon” (Lyon & Slovic, 1976, p. 296), other researchers have argued that base-rate neglect is a product of how the information is presented. Bar-Hillel (1980) noted that when base-rate problems were presented that did not provide information dominance, base-rate neglect did not occur. Gigerenzer and Hoffrage (1995) found that study participants were more likely to incorporate prior base rates when the information was presented in a frequency format instead of the probability format. Cosmides and Tooby (1996) found that asking for an answer in a frequency format to a question known to induce base-rate neglect had the greatest impact in reducing base-rate neglect. Additionally, presenting information in the question in a frequency format was found to have the second largest impact on reducing base-rate neglect (Cosmides & Tooby, 1996). Finally, J. J. Koehler (1996) argued that the existing literature showed that base rates are commonly used and their degree of use depends on the task presented and the structure of the information.

Kahneman and Tversky (1996) argued that the evidence on base-rate neglect found that base rates were usually underweighted but not overlooked entirely. Sloman, Over, Slovak, and Stibel (2003) found that presentation of information in frequency or probability format was not the cause for the difference in the susceptibility of the base-rate neglect; however, it was the use of nested sets of information that made the relationships between the pieces of information more transparent. Welsh and Navarro (2012) noted that it was unlikely that base-rate neglect was caused by experiment design or avoided depending on question format. Finally, Welsh and Navarro (2012) argued that base rates in the real world differ from those presented in problems used in experiments, as there may be instances where it is rational to ignore base rates.

### **3.2.1.2. Base-Rate Neglect & Finance**

Ganguly et al. (2000) explored how base-rate neglect impacts asset prices, finding that under certain conditions biased (base-rate neglect) traders can inflate market prices. The authors utilized an experiment with biased (base-rate neglect) and unbiased traders who had expectations regarding an expected dividend for an asset (Ganguly et al., 2000). Two markets were tested, one where unbiased traders had the highest expected dividend and the other where biased traders had the highest expected dividend

(Ganguly et al., 2000). The study found that market prices tended to reflect the traders who had the highest expected dividend payoff regardless of the bias (Ganguly et al., 2000). The study noted that when biased traders expected the highest dividend, the price of the asset was driven to or above the biased traders' prediction (Ganguly et al., 2000). When unbiased traders held the highest expected dividend payoff the market price was near the expected value even when the number of unbiased traders in the market were in the minority (Ganguly et al., 2000).

### **3.2.2. Overconfidence Bias**

Overconfidence is when an individual believes that their knowledge is more accurate than it is (Gervais et al., 2011). Overconfidence is considered one of the most common judgment biases (Glaser, Langer, & Weber, 2013; Glaser & Weber, 2010; Lichtenstein et al., 1982). Overconfidence has been used to explain excess business entry (Camerer & Lovo, 1999), higher trading volume (Glaser & Weber, 2007; Odean, 1998; Statman, Thorley, & Vorkink, 2006), corporate investment decisions (Malmendier & Tate, 2005a), negotiator behavior (Neale & Bazerman, 1985), and capital investment decisions (Gervais et al., 2011) (Moore & Healy, 2008; Skala, 2008). While overconfidence has been heavily studied, it has been studied inconsistently and in three distinct ways (Moore & Healy, 2008). The first way of studying overconfidence is referred to as overestimation, in which individuals overestimate their ability or performance on a task (Moore & Healy, 2008). Overestimation is studied by asking an individual a series of questions and then to estimate how many questions they answered correctly (Moore & Healy, 2008). The second version of overconfidence is based on an individual's belief of their performance compared to others and is referred to as better- than-average or overplacement (Moore & Healy, 2008). The third version of overconfidence is when individuals have too much certainty in their beliefs and is typically measured through the use of confidence intervals (Moore & Healy, 2008). This method asks participants to give a lower and upper range to a question so that they are 90% certain that the answer falls within the range given (Moore & Healy, 2008). This third method is referred to as overprecision or miscalibration (Glaser et al., 2013; Moore & Healy, 2008). Finally, the impact of overconfidence has been studied in financial markets and corporate finance (Skala, 2008).

### **3.2.2.1. Differences in Overconfidence**

Early studies in miscalibration found that individuals were overconfident in their answers; however, recent studies have identified factors that can influence overconfidence (Fischhoff, Slovic, & Lichtenstein, 1977; Koriat, Lichtenstein, & Fischhoff, 1980; Nickerson & McGoldrick, 1965). Question difficulty has been found to have a direct impact on the existence of overconfidence (Glaser & Weber, 2010). Studies have documented a hard-easy effect where more difficult questions tend to elicit higher levels of overconfidence than easy questions (Brenner, 2003; Juslin, Winman, & Olsson, 2000; Lichtenstein & Fischhoff, 1977; Pulford & Colman, 1997; Soli, 1996). Men have been found to be more overconfident than women (Huang & Kisgen, 2013; Pulford & Colman, 1997). Overconfidence has also been found to vary among cultures (Acker & Duck, 2008; Yates et al., 1997; Yates et al., 1998). Respondents in Taiwan have been found to be more overconfident than Americans and Japanese respondents (Yates et al., 1997; Yates et al., 1998). Acker and Duck (2008) found that East Asian participants were more overconfident than British participants. Soil and Klayman (2004) found that the way a question is phrased can impact the degree of overconfidence. The authors noted that overconfidence decreased when individuals were asked to provide an upper, midpoint, and lower bound to a question, instead of an upper and lower bound (Soil & Klayman, 2004). Additionally, overconfidence can be domain dependent when asking individuals to choose between two choices; however, the effect is small when sets of questions are sourced from multiple domains and are representative (Soil & Klayman, 2004).

Budescu and Ning (2007) found that individuals who were asked to give intervals at 90% confidence level exhibited overconfidence, intervals at 50% confidence level exhibited underconfidence, and intervals at 70% confidence level were well-calibrated. Cesarini, Sandewall, and Johannesson (2006) found that overconfidence was decreased by presenting the questions in a frequency format instead of using intervals. Giving individuals additional information has also been found to increase overconfidence (Tsai, Klayman, & Hastie, 2008). With the exception of meteorologists (Murphy & Winkler, 1984) and expert bridge players (Keren, 1987), overconfidence has been found in experts across a multitude of professions such as investment advisors (Menkhoff, Schmeling, & Schmidt, 2013), IT professionals

(McKenzie, Liersch, & Yaniv, 2008), and managers (Russo & Schoemaker, 1992) (Barber & Odean, 2001; D. J. Koehler, Brenner, & Griffin, 2002; Skala, 2008).

### **3.2.2.2. Criticisms of Overconfidence**

Critics of overconfidence have argued that an overconfidence bias does not exist and the findings of overconfidence are due to data analysis methods, biased question selection and random error (Erev, Wallsten, & Budescu, 1994; Glaser & Weber, 2010). Erev et al. (1994) showed that both over and underconfidence can be found in the same dataset depending on the method of data analysis. It was noted that overconfidence may be an artifact of or at least overstated by the data analysis method (Erev et al., 1994). Additionally, the authors argued that the magnitude of error in how judgments are stated can also cause over and under confidence to appear (Erev et al., 1994).

Gigerenzer, Hoffrage, and Kleinbölting (1991) argued that overconfidence is not a deficit in cognition; however, it is a result of the interaction between how the judgment task is designed and the relationship of the questions asked to the subject's natural environment. Using the same set of selected questions, subjects who were asked to give frequency judgments were found to be fairly correct; however, confidence interval judgments were found to exhibit overconfidence (Gigerenzer et al., 1991). Additionally, when asked a set of questions that the subjects would be familiar with the study found no overconfidence among subjects when asked for confidence intervals; however, found underconfidence using frequency judgments (Gigerenzer et al., 1991). Juslin et al. (2000) performed a quantitative review of empirical data that asked participants general knowledge questions where they were to choose between two possible answers. The review found that when representative questions were used, supportive of ecological models, overconfidence bias was not found (Juslin et al., 2000). Finally, Juslin et al. (2000) found the impact of the hard-easy effect was reduced when the authors controlled for response error and linear dependency.

Merkle, Sieck, and van Zandt (2008) explored different psychological processes that error models, similar to Juslin et al. (2000), can imitate. The study found that using error models to reject systematic biases in confidence judgments could be deceptive due to the fact that the models also eliminates systematic biases in the judgment itself (Merkle et al., 2008). The authors argued that it is likely that response error, ecological validity and cognitive biases each influence overconfidence in certain instances and

that future studies should focus on exploring how each of these contribute to overconfidence (Merkle et al., 2008).

### **3.2.2.3. Overconfidence and Financial Markets**

Overconfidence in the financial markets has been explored through theoretical models, market data, questionnaires and experiments (Skala, 2008).

**Market Data:** Utilizing data from a discount brokerage house, Odean (1999) found that overconfident investors trade when their expected gains do not cover the costs of trading and lowered their returns by trading too much. Other studies have also found that traders trade to their disadvantage as a result of overconfidence (Barber & Odean, 1999,2000). Based on the work of Odean (1998) and the finding that men are more overconfident than women (Lundeberg, Fox, & Puncchohar, 1994; Pulford & Colman, 1997), Barber and Odean (2001) found that men trade more than women and as a result earn lower returns than women. Finally, Chuang and Lee (2006) examined the impact of overconfidence finding that overconfident investors overreact to private information and underreact to public information, market gains caused overconfident investors to increase trading activity, overconfident investors trade riskier stocks, and excessive trading by overconfident investors can account for excessive volatility.

**Questionnaires and Experiments:** Kirchler and Maciejovsky (2002) used an experimental asset market to explore the impact overconfidence had on traders. The study found that overconfidence, measured using 98% confidence intervals, increased over time and was harmful to returns (Kirchler & Maciejovsky, 2002). The study noted that traders were not typically overconfident and its presence was moderated by methodology (Kirchler & Maciejovsky, 2002). Using a trading game and measuring overconfidence through a series of general knowledge questions asking for 90% confidence intervals Biais et al. (2005) found that overconfidence reduced trading performance. The study did not find men to be more overconfident than women; however, it did find that overconfidence significantly reduced the performance of men (Biais et al., 2005). Contrary to Barber and Odean (2000), Biais et al. (2005) did not find a relationship between trading activity and overconfidence. Nor did Glaser and Weber (2007) when overconfidence was measured via miscalibration; however, the researchers did find a relationship when overconfidence was measured as better-than-average.

#### **3.2.2.4. Overconfidence and Corporate Finance**

Overconfidence in corporate finance has been studied less often than financial markets (Skala, 2008). The impact of overconfidence on firms has been explored with regards to mergers and acquisitions and corporate financial structure (Skala, 2008).

**Mergers and Acquisitions:** Malmendier and Tate (2008) measured overconfidence in CEOs two ways: one based on the portfolio decisions of CEOs regarding the exercise of stock options and the other on media reports that described the CEO as confident or optimistic. The study found that overconfident CEOs were more likely to make an acquisition than rational CEOs and that these acquisitions destroyed shareholder value (Malmendier & Tate, 2008). Huang and Kisgen (2013) found that acquisitions made by female executives earned around two percent higher announcement returns than those made by men. The study also found evidence that men were more likely to make shareholder value destroying acquisitions (Huang & Kisgen, 2013).

**Capital Structure and Project Selection:** Measuring overconfident CEOs as CEOs who do not exercise their stock options at a specific threshold after the vesting period, hold stock options until expiration, or consistently purchase company stock, Malmendier and Tate (2005a) found that overconfident CEOs had higher investment-cash flow sensitivity. Utilizing a media reported measurement of overconfidence, Malmendier and Tate (2005b) supported the findings of Malmendier and Tate (2005a). Malmendier et al. (2011) found that CEOs misjudged future cash flows and viewed external financing as expensive. CEOs were found to prefer internal financing over debt and equity and to prefer debt over equity financing (Malmendier et al., 2011). The study also noted companies with overconfident CEOs were likely to have more debt than unbiased prior or future CEOs of that firm (Malmendier et al., 2011).

Recently, Ben-David et al. (2013) surveyed CFOs over a ten year period asking them to predict stock returns using an 80% confidence interval. The study found that CFOs were extremely miscalibrated and that long-term CFO miscalibration was positively associated with higher firm investment and higher levels of debt (Ben-David et al., 2013). Finally, consistent with the gender effect of overconfidence, Huang and Kisgen (2013) found that the announcement returns for debt offerings of female executives were higher than male executives, indicating that markets interpret capital decisions

more favorably for women than men. (Lundeberg et al., 1994; Pulford & Colman, 1997).

Gervais et al. (2011) developed a model that explored overconfidence and capital budgeting that took into account optimal compensation contracting. Their model predicted that overconfident executives were likely to be employed at high risk growth firms (Gervais et al., 2011). Gervais et al. (2011) noted that when firms utilize inefficient compensation contracting, overconfidence can lead to overinvestment. Their model predicted that overconfident executives received compensation that is more performance focused than their rational peers when employed at high risk growth firms; however, at more established firms overconfident executives should receive less performance focused compensation than their rational peers (Gervais et al., 2011).

**Firm Value and Dividend Policy:** Goel and Thakor (2008) developed a model exploring how overconfidence impacted CEO selection and firm value. Their study found that overconfident managers were more likely to be selected as CEO, causing overconfidence to be more common in CEOs than the general population (Goel & Thakor, 2008). Goel and Thakor (2008) predicted that moderately overconfident CEOs increased firm value by overcoming the underinvestment problem that is found in rational CEOs; however, extremely overconfident CEOs overinvest (Goel & Thakor, 2008). Overconfident CEOs were also predicted to invest less in gathering project-related information which increased project selection errors (Goel & Thakor, 2008). Finally, the model predicted that overconfidence among CEO should decrease due to Sarbanes-Oxley (Goel & Thakor, 2008).

Deshmukh, Goel, and Howe (2013) studied overconfidence, utilizing the methodology of Malmendier and Tate (2008) and Malmendier et al. (2011), finding that overconfidence had a significant impact on dividend policy. The authors modeled the impact of overconfidence on dividend payouts, predicting that overconfident CEOs, who believed that the firm was undervalued and viewed external financing as expensive, would pay lower dividends to increase financial slack for future investments (Deshmukh et al., 2013). Utilizing panel data, the study tested for this effect, finding that overconfident CEOs' dividend payouts were less than their rational peers and the impact of overconfidence on reduced dividend payout was significant (Deshmukh et al., 2013). Finally, the study noted that dividend increases caused a larger increase in stock price when uncertainty regarding CEO overconfidence was



high, as dividend increases were viewed as a sign of lower CEO overconfidence (Deshmukh et al., 2013).

### **3.2.3. Mental Accounting Bias**

Mental accounting has been described as the “process of coding, categorizing, and evaluating events” (p. 186) when making decisions (Thaler, 1999). Decision makers typically separate different choice problems into separate mental accounts and then evaluate each choice as its own account, instead of at the same time (Grinblatt & Han, 2005; Sheffin & Statman, 1985). Thaler (1990) described individuals as developing a system of mental accounts that spanned three categories: a current income account, an asset account, and a future income account. How individuals assign changes in wealth across the three categories, depended on the size and source of the change (Thaler, 1990). Gains that were considered small in comparison to income, would be treated as income and consumed; however, larger gains were treated as an asset and entered the asset account (Thaler, 1990). Windfalls could be treated as changes to the asset or income account depending on the source of the change (Thaler, 1990).

Thaler (1999) noted that mental accounting utilizes the value function of prospect theory to describe how situations are interpreted and coded when individuals are faced with a decision. Kahneman and Tversky (1984) described three ways that outcomes to a decision could be framed: minimal, topical, or comprehensive account. The topical account relates the outcomes of possible choices to a reference point that is identified by the context of the situation, as opposed to the minimal account which ignores the parts that the outcomes share, instead focusing only on the differences between the outcomes (Kahneman & Tversky, 1984; Thaler, 1999). A comprehensive account includes all factors related to the decision including current wealth, future earnings, and alternative outcomes (Thaler, 1999). Researchers have found that when individuals evaluate a decision they use a topical account and are influenced by the context of the situation, which is opposite of the rational theory of consumer behavior (Kahneman & Tversky, 1984; Thaler, 1999). As a result, researchers have examined the impact of mental accounting in a variety of settings.

### **3.2.3.1. Budget and Investments**

Heath and Soil (1996) examined mental accounting from the perspective of consumer budgeting. The study found that consumers under-consumed a good or service when a typical expense to the same spending account had recently been made (Heath & Soil, 1996). Shefrin and Statman (2000) incorporated mental accounting in their formation of behavioral portfolio theory, noting that investors may consider different portfolios as separate accounts with different purposes. As a result, the investor may take opposing positions on a security found in multiple portfolios, instead of viewing the two accounts as one unified portfolio (Shefrin & Statman, 2000).

### **3.2.3.2. Sunk Costs**

Thaler (1999) noted that mental accounts can be opened and closed by consumers at will. Using an example of basketball tickets previously purchased, Thaler (1999) also stated that consumers will be risk averse to not utilizing the previously purchased tickets and may even attempt to attend the event regardless of safety concerns to avoid realizing the loss of the purchase, referred to as the sunk cost effect. Stanovich and West (1998) examined the sunk cost effect by adapting a problem from Thaler (1980) and Frisch (1993). Thaler (1999) noted that sunk costs influenced later decisions; however, the impact was not indefinite.

### **3.2.3.3. Credit**

Payment decoupling has been found to affect how consumers make decisions and credit cards were noted to be one of the best decoupling devices (Thaler, 1999). Prelec and Simester (2001) showed that customers' willingness to pay increased when using a credit card. Thaler (1999) argued that credit cards decoupled the purchase from the payment by postponing the payment and it was difficult for consumers to connect the credit card balance to any specific purchase (Thaler, 1999).

Ranyard, Hinkley, Williamson, and McHugh (2006) studied how APR and total cost information influenced borrowers decisions for loan products. The study found that APR information influenced individuals to choose debt instruments with the lowest APR; however, when total cost information was given it removed the influence of APR (Ranyard et al., 2006). The study concluded that these results supported the belief that individuals integrated the periodic repayment amounts into a total account, instead of

segregating each repayment amount to its periodic due date (Ranyard et al., 2006). The study noted that the use of a total account for installment payments ignored the complexities of the loan; however, it did simplify the complexity of the loan product and helped individuals better understand the total impact of the loan on their overall financial situation (Ranyard et al., 2006).

#### **3.2.4. Exponential Growth Bias**

Exponential growth bias is a recent term coined by Stango and Zinman (2009) that has been found to effect household finance and was defined as the inclination of consumers to linearize functions that have an exponential term when evaluating them naturally. While the term exponential growth bias is new, the issue of underestimating exponential growth is not (Wagenaar & Sagaria, 1975).

Wagenaar and Sagaria (1975) designed a series of experiments which found that individuals systematically underestimated exponential growth. In the first experiment college students were given a table regarding the growth of a fictitious pollution index over a given time period (Wagenaar & Sagaria, 1975). Depending on which treatment group the students were in they were asked a question about the future value of pollution (Wagenaar & Sagaria, 1975). The questions ranged from specifying a value for a certain year in the future, a series of consecutive years in the future, or the year the index would surpass a specific value (Wagenaar & Sagaria, 1975). Regardless of the question asked, each group of college students underestimated the growth (Wagenaar & Sagaria, 1975). In a second experiment, using three additional groups of students, the researchers replaced the table with a graph displaying the data (Wagenaar & Sagaria, 1975). The graph was presented in three different aspect ratios, one for each group; however, the underestimation of exponential growth was not reduced. The authors noted that the results suggested that displaying the information in a graphical form caused responses to be more conservative than the table (Wagenaar & Sagaria, 1975). Using one of the graphs of the second experiment, the study tested the underestimation of professional decision makers by testing eight members of the Joint Conservation Committee of the Senate and House of Representatives of the Commonwealth of Pennsylvania (Wagenaar & Sagaria, 1975). The study found that underestimation of exponential growth existed even with the professional decision makers; however, the level of underestimation was not lower than the college students

in the second experiment (Wagenaar & Sagaria, 1975). The authors concluded that underestimation appeared to be a general effect that was not negated by life experiences with exponential growth (Wagenaar & Sagaria, 1975).

In a follow up study, Timmers and Wagenaar (1977) examined if the estimates of exponential growth were more accurate if the series was decreasing. In this study both numerical and graphical representation was tested (Timmers & Wagenaar, 1977). The study found that when given a decreasing exponential growth using a numerical representation underestimation of the value was reduced; however, when using the graphical representation the reduced underestimation was less than the gain using the numerical representation (Timmers & Wagenaar, 1977). Later studies confirmed that when fewer data points are shown, study participants were more likely to more closely estimate the exponential function (Wagenaar & Timmers, 1978; Wagenaar & Timmers, 1979).

Using the inflation rate to estimate the future prices of a good, Keren (1983) explored the estimation of exponential growth of college students in Canada and Israel. Both groups of students underestimated the exponential growth; however, it was found that Israeli students did not underestimate the future price of a good as much as the Canadian students (Keren, 1983). Keren (1983) noted that one potential explanation for this difference between the two groups is the high inflation rate in Israel that increased their awareness of financial issues.

In an unpublished working paper, Eisenstein and Hoch (2007) explored exponential growth estimation from the perspective of compound interest. The study found that undergraduate business students inaccurately estimated the future value and this effect increased when the interest rate and time were largest (Eisenstein & Hoch, 2007). The study found that of the students studied, those who used the Rule of 72 were twice as precise as students who did not and that students who did not use the Rule of 72 appeared to utilize a simple interest calculation when estimating the future value (Eisenstein & Hoch, 2007). The increase in precision of those who used the Rule of 72 was not found to be explained by their financial knowledge or the time spent on the question (Eisenstein & Hoch, 2007).

A second experiment compared MBA students and a group of participants from varied backgrounds examining how expertise and the framing of the problem affected the

estimation of exponential growth. Expertise was found to have no impact on respondents accuracy; however, it was noted that on average respondents with math and business backgrounds took less time than individuals with other backgrounds (Eisenstein & Hoch, 2007). The framing of the problem was tested by asking individuals to find either the present value (retrospective frame) or the future value (prospective frame) (Eisenstein & Hoch, 2007). The study found that individuals performed worse on the retrospective frame than the prospective frame, especially for individuals whose relied on the simple interest method for estimating their answer (Eisenstein & Hoch, 2007). Finally, those individuals who utilized the Rule of 72 were more accurate in their estimation of the exponential growth (Eisenstein & Hoch, 2007).

A third experiment by Eisenstein and Hoch (2007) explored the impact of training individuals on the Rule of 72 and the impact the training had on their estimations. The experiment utilized a group of undergraduate college students and a diverse group of respondents from varied backgrounds whom the authors considered ordinary people (Eisenstein & Hoch, 2007). Of those participants who received training, their estimates were twice as accurate as the control group (Eisenstein & Hoch, 2007). Ultimately, the study concluded that individuals tend to utilize simple interest when estimating a compound interest problem which causes their estimation to be erroneous. Situations or problems with large timeframes or interest rates appeared to cause the largest errors and that when individuals are trained to utilize the Rule of 72 their estimated error was cut in half (Eisenstein & Hoch, 2007). Undergraduate business students were found to have learned the Rule of 72 easier than the other group (Eisenstein & Hoch, 2007).

Building off of the work of Eisenstein and Hoch (2007), Stango and Zinman (2009) coined the term exponential growth bias, which attempts to explain both fixture value bias (Eisenstein & Hoch, 2007) and payment/interest bias (Stango & Zinman, 2009). Future value bias causes individuals to underestimate the future value of a sum of money (Stango & Zinman, 2009). Payment/interest bias causes individuals to underestimate the interest rate on a loan (Stango & Zinman, 2009). Exponential growth bias is the inclination of consumers to linearize functions that have an exponential term when evaluating them naturally (Stango & Zinman, 2009). Stango and Zinman (2009) found a weak correlation between financial sophistication and exponential growth bias that they were unable to rule out.

Almenberg and Gerdes (2012) explored the correlation between financial literacy and exponential growth bias using a consumer survey of Swedish households. Financial literacy was measured using two sets of questions that measured basic and advanced financial literacy (Almenberg & Gerdes, 2012). Exponential growth bias was measured by asking participants to guess the future value of a sum of money compounded at a given rate (Almenberg & Gerdes, 2012). Respondents underestimated the future value of the sum by almost 2:1 (Almenberg & Gerdes, 2012). The study found a strong negative correlation between financial literacy and exponential growth bias, even when controlling for education and income (Almenberg & Gerdes, 2012). The authors concluded that without controlling for financial literacy, the effect of exponential growth bias on financial decision-making could be overstated (Almenberg & Gerdes, 2012). Finally, McKenzie and Liersch (2011) noted that due to exponential growth bias, individuals did not understand the cost of waiting to save for retirement and grossly underestimated the additional payments needed to catch up to a fictitious account balance.

## **4. CASE STUDY**

### **4.1. Methodology**

In this study, it is aimed to reveal the behavioral finance dimension of investment decisions in insurance sector employees. For this purpose, it was evaluated that the investment decisions of the participants in terms of gender, age, education level, monthly income, marital status, number of dependents, investment preference, primary source of investment, frequency of reviewing investment decisions and differentiation of investment decisions.

#### **4.1.1. Literature Review**

Some sensory deviations in Turkey have been examined through questionnaire method by Oran et al. (2010). The survey was applied to 1681 people, 858 of whom were online and 823 of them were face to face. As a result of the analysis of the data, it was concluded that the participants did not show a meaningful simple nailing perceptual error, but the reference point effect was encouraging the existing option with the presence of a safe alternative, the perceptual deviation of the biased probability assessment was outweighed in terms of the gambler error and the risk trend was highly effective on individual decisions. According to all these findings, perceptual deviations of individuals affect decisions such as buying and selling of financial products, forming new business, and considered as an important factor that business players should consider.

Moldovan (2010), who mentions that understanding human psychology is the key to understanding the world and thus the nature of the investment, says that investors who resist resentful psychology and expert suggestions in articles will eventually win, and that the market always gives you the chance to play your card differently. In this work, Moldovan also seeks answers to the fact that the real problem in investments is that if we cannot resist our own instincts, whether we have enough power to stand up against the signals from our body and mind. In the study on the effect of investor psychology

and herd behavior tendency in financial markets, the conclusion that social trends and expert opinions can create serious opportunities in the opposite direction is mentioned. Sönmez (2010), in order to examine the Excessive Response Hypothesis and to determine whether this hypothesis exists in the Istanbul Stock Exchange (ISE), examined the data in the ISE between January 2004 and December 2008 period. In addition, their 1-month winning and losing portfolio was developed and their performances were examined. Within this framework, all companies that are regularly traded on the ISE between the dates 02.01.2001 and 31.12.2008 (8 years) are included in the research sample. During the 8-year period, the shares of 219 enterprises, whose activities are carried out regularly on the ISE and there are no problems in the price information, have been determined. As a result of the study, it was seen that there was an overreaction hypothesis in the short term in ISE. It is foreseen that ISE is not effective in the weak form and investors can provide big gains by applying short term contrast strategies.

Malmendier and Nagel (2011) investigated macroeconomic events perceived as major depression and the attitudes of people experiencing a period of life in the face of risk. In this study, data of consumer finance survey was used between 1964-2004. As a result of the study, people who experience low stock market returns have observed a lower level of financial risk. Another finding of the study is that the effect of experiencing the negative experience in the early or late period is different; however, the effects of recent negative experiences have been observed to be strong.

Kahyaoğlu (2011) examined differences between male and female investors in terms of the level of exposure to various psychological and emotional factors affecting risk perception. In the study, real data related to the share purchase and sale transactions of 31 individual investors between January 1, 2007 and December 31, 2009 were used in the Istanbul Stock Exchange. There were statistically significant differences between male and female investors in terms of exposure to various psychological and emotional factors. Moreover, female investors' risk perception is higher than that of male investors. Considering that the perception of risk is influenced by a number of psychological and emotional factors, differences between the psychological and emotional factors mentioned above are expected to occur between male and female investors.



In a study, Ben-David and Hirshleifer (2012) investigated how investor preferences and beliefs were affected by the relationships between past buy-sell transactions and earnings and losses, and described the probability of sales as a V-shaped function. In short holding periods, investors tend to overestimate their major losses compared to their younger counterparts. In the case of zero profit, there is little evidence of a rise in sales. These results have unclear indications that the realizations of preference will be explained by trading. In addition, there is no direct link between the profit-making effect and the gains in sales and the trends in sales. Buy-sell based on belief revisions can be considered as potential explanations of these findings.

Wang et al. (2011) compared women and men in their study on asset investments. The study was conducted in many categories. As a result of the study, it was concluded that women's risk perceptions were higher than men. In addition, no risk perceptions were found for both sexes in the assessment of popular, valued securities with high yield and high yield. Another assessment found that women found that antique, gold and art investments were less risky than men. The reason for this is shown as the weaknesses and passions of women and jewelry.

In a study conducted by Çevik (2012), it was investigated on the sectoral basis whether the weakness in the ISE is valid or not, and the existence of long memory in the volatility of the index returns of 10 sectors traded on the ISE, using parametric and semi-parametric methods. The daily closing prices of the sectors obtained from the official web address of the ISE were created as a result of 3564 observations daily between 03 January 1997 and 27 May 2011. As a result of the study, it was determined that the volatility series of the sectors showed long memory characteristics. This situation indicates that the volatility in the ISE is influenced by the past values and thus shows a predictable structure and the ISE is not effective in the weak form.

In his study, Bhalla (2012) explored learning among financial estimators. Bhalla worked on financial analysts with informational trends or rational behavior trends. Bhalla, using the nonparametric Water and White test, found that analysts did not only learn; at the same time, they saw that they had learned from each other. He also failed to find any evidence that analysts had made independent estimates.

Böyükaslan (2012) conducted a study to determine the factors affecting the investment decisions of individual investors in Afyonkarahisar province. The data of the study

was formed as a result of a questionnaire which was conducted between 12-22 June 2012 in Afyonkarahisar with 460 participants. As a result of the analyzes, investors have shown that they are largely influenced by behavioral finance tendencies.

In a study by Seiler (2012) which was tried to observe the effects of herd behavior, tried to give back and forth information to the study group and to measure the results. The study is an experimental study designed to determine how their behavior and decisions change according to the results of the information given to the same group at different times. The most important result reached in the study is that there are a lot of psychology tendencies and individuals have left their private information sets for information sets belonging to the group. The importance of this discontinuation in favor of the group identified in the study will increase in the market even more rapidly with the information technology social binders.

Sezer (2013) conducted a study to determine the cognitive abilities and financial knowledge levels of the investors and their attitudes towards risk and their behavioral tendencies. In this study, behavioral trends are observed in Turkish investors regardless of their cognitive abilities and financial information levels; the reason for this is that it may be a common orientation. The results show that the investors in the complex tables are paralyzed and therefore their decisions are affected.

In his study, Göksu (2013) tried to examine the effects of behavioral tendencies on individual investors who invested in İstanbul stock exchange and the questionnaire method was applied. This study, in fact, wants to exhibit behaviors that can go into portfolio diversification in order to avoid risk, to make rational decisions and to maximize their preferences; however, they have shown that they are unable to patch in real life. In this study, it is seen that individual investors exhibit irrational behaviors as well as rationality when making investment decision, some of the psychological prejudices affect the behavior of individual investors, many investors make wrong choices that show systematic structure, even if they know the solution that will be described as rational, and that the market balances due to the reactions caused as a result of this situation.

Küden (2014) conducted a study to reveal the investor profile of individual investors and to evaluate the psychological factors that influence the investors' investment preferences in terms of behavioral finance. The questionnaire method was used to

obtain the data and 31 questions were included in the questionnaire. The survey was conducted between 29 March 2014 and 23 April 2014 and applied to 437 individual investors. In this study, simple random sampling method was used. Research results showed that psychological prejudices affect individual investors' preferences and behaviors.

Sevim and Akkoç (2014) conducted a study to test the effect of low price on the ISE. As of data, the monthly prices and returns of the stocks traded on the ISE between January 1997 - December 1999 and January 2002 - December 2004 were used. In this study, the ISE was not an effective market and the result was strengthened and a high price effect was determined. This effect is considered as a trading strategy for stock traders on the ISE.

In another study, Hirshleifer (2014) investigated how behavioral finance, as the main subject, influences psychology over finance, particularly on cognitive trends. Hirshleifer identified judicial and decision-making tendencies, how these trends affect trade and market prices, the role of arbitrage and how welfare flows between less rational investors, how firms use ineffective prices for their own benefit, how they promote false valuation, and judicial tendencies in managerial decisions. In this study, it is also necessary to examine the effects of emotions on more theory and financial decisions; In addition to these, it was commented that behavioral finance would further carry the structure of social relations to working social finance, explain how financial thoughts would be spread and how social processes affected financial outcomes.

Nawrockia and Viole (2014) examined the role of behavioral finance in portfolio theory and markets. In the study, due to the non-homogeneous structure and individual security level in the markets, the non-parametric statistics show that all the best possible investor preferences are suitable for descriptive and inferential analysis. This study is a conceptual study that demonstrates the contribution of behavioral theory to the theory of financial market theory, expected benefit theory, expectation theory and portfolio theory.

Aldemir (2015) conducted a questionnaire study to measure the impact of social and emotional trends on the basis of communication and information, which has an impact on the investment decisions of the workers and civil servants residing in the province of Tokat. The survey conducted with individual investors was applied to 400 people.

As a result of the research, it is concluded that, it is important to know the investment objectives, risk status, income, age and profession in order to determine a suitable investment policy for individuals and the factors such as financial risk tolerance, education level, occupation, personality trait, income have a significant effect on individual investment behavior.

Aytekin (2015) conducted a survey study to examine the non-economic factors that affect the investment decisions of individual investors living in the province of Van in terms of behavioral finance and to test the existence of this effect. A questionnaire consisting of 31 questions was applied to 82 investors using simple random sampling method between June and July 2015 and analyzed with SPSS 17.0 statistical program. As a result of the study, it has been concluded that individual investors residing in Van are influential on investment decisions and non-economic factors are influenced by non-rational behavioral finance trends.

Aslan (2016) conducted a survey on 183 people in Viranşehir district of Şanlıurfa in order to determine the investment decisions of individual investors, reveal their financial portfolios and determine the factors affecting investor behavior. As a result of the study, it has been understood that investors are under the influence of psychological and social factors while taking decisions, and they face too much risk due to the high number of low portfolios.

In the study conducted by Alpdündar (2016), behaviors that are effective in individuals' insurance decisions are examined within the context of behavioral finance trends. As a result of the survey conducted by 106 people in face-to-face and electronic mail in the city of Istanbul, it was concluded that the decisions taken by the individuals about the insurance sector were away from rationality and were affected by their emotions and other cognitive constraints.

#### **4.1.2. Methodology and Sampling Method**

##### **4.1.2.1. Methodology**

In this study, relational screening model was applied because it was aimed to determine the current situation. Screening models are research approaches that aim to describe a situation that exists in the past or the present. The relational screening model, which is

a type of screening model, is a research model aiming to determine the presence and / or degree of coexistence between two and more variables (Karasar 2016).

#### **4.1.2.2. Sampling Method**

The universe of the research consisted of insurance sector employees. According to TSB (2019) the number of employees in insurance sector is 14070, and this number shows the universe of the research. As the study covered a large area and revealed cost and time problems in reaching the whole area, sampling was made in this study. Simple random sampling method was used in this sample selection. This sampling method consists of the people who believe that among the elements that make up the sample, the researcher will find the answer to the problem (Karasar, 2016). In determining the sample size to represent the main population;

$$n = Nt^2 pq / d^2 (N - 1) + t^2 pq$$

**N:** Number of individuals in the target group (14070 employees)

**n:** Number of individuals to be sampled

**p:** Incident frequency (0,9)

**q:** Lack of incident frequency (0,1)

**t:** At a certain level of significance, the theoretical value, (Sampling error is 5% and confidence level is 95%.)

**d:** Indicates the accepted +/- sampling error based on the occurrence of the event (0,05) (Karasar 2016).

Using the formula, the sample size of the study was calculated as 95% confidence interval and  $\pm 5\%$  sampling error as  $n = 374$  employees. The online survey form is answered by a total of 400 employees in order to reach the minimum number that could represent the main population. In the evaluation of the data, it was decided that 16 questionnaires were incomplete or incorrect and therefore not suitable for analysis. The research sample consisted of 384 people.

#### **4.1.3. Data Collection and Data Tools**

In the questionnaire, there are three sections: personal information form, investment information and investment decision scale.

There are six items in the form of personal information in the first part of the questionnaire, the items were prepared by the researcher. With these items, the participants' gender, age, education level, monthly income, marital status and the number of dependents were reached.

In the second part of the questionnaire, there are four items prepared by the researcher to evaluate the investment information. With these items, the information about the investment preference, the primary source of investment, the frequency of reviewing investment decisions and the factors considered during the investment were collected.

In the last part of the form, the investment decisions scale developed by Hamurcu (2015), which consists of 42 items, is included. The scale is 5-point Likert type and the responses to the scale vary between 1-strongly disagree and 5-strongly agree. Hamurcu (2015) stated that the scale has 12 factors which are investment blindness, winning desire, looking optimistic and believing in self, being familiar, avoiding risk, avoiding from regret/uncertainty, fortune telling, effect of brand, expert and environment, conservative perception, believing in the cost of the acquisition, conditional association and conservatism in decision making.

#### **4.1.4. Analysis of Data**

SPSS 23.00 was used to analyze the data. In order to determine the personal characteristics and investment informations of the employees, frequency distributions were examined. Descriptive statistics were used to determine the levels of investment decisions of the participants. In order to determine the other analysis techniques to be used, the distribution of data is examined and the results of normality test are presented in Table 3.1.

**Table 3. 1: Normality Test Results**

	<b>Skewness</b>	<b>Kurtosis</b>
<b>Investment Blindness</b>	,58	,44
<b>Winning Desire</b>	,00	-,08
<b>Looking Optimistic and Believing in Self</b>	-,35	,47
<b>Being Familiar</b>	-,35	,23
<b>Avoiding Risk</b>	,23	-,63
<b>Avoiding from Regret/Uncertainty</b>	-,18	-,02
<b>Fortune Telling</b>	-,24	,17
<b>Effect of Brand, Expert and Environment</b>	-,39	-,20
<b>Conservative Perception</b>	,08	-,53
<b>Believing in the Cost of the Acquisition</b>	,33	,46
<b>Conditional Association</b>	-,14	-,47
<b>Conservatism in Decision Making</b>	,22	-,33

Although there is no lost value in the variables, it is stated that  $\pm 3$  is accepted as the skewness and kurtosis threshold value in the sense of normal distribution criterion (Sposito et al. 1983). The skewness and kurtosis values of the research variables in Table 3.1 were examined and there was no skewness and kurtosis problems requiring normalization intervention. In the comparison of binary groups t-test is used. ANOVA and Post-Hoc Test LSD test were used for comparison of three and more groups. The findings were evaluated at 95% confidence interval and 5% significance level.

## 4.2. Results

**Table 3. 2: Characteristics of the Sample**

	N ( $\bar{X}$ )	% (sd)
<b>Gender</b>		
Female	132	34,4
Male	252	65,6
<b>Age</b>		
	32,33	8,29
<b>Education</b>		
Elementary and high school	42	10,9
Associate and bachelor	234	60,9
Graduate	108	28,1
<b>Monthly average income</b>		
Lower than 2000 TL	48	12,5
2000-2999 TL	69	18,0
3000 -3999 TL	66	17,2
4000-5999 TL	72	18,8
6000 TL and more	129	33,6
<b>Marital status</b>		
Married	189	49,2
Single	195	50,8
<b>Number of dependents</b>		
1	168	43,8
2	111	28,9
3 and more	105	27,3

$\bar{X}$ : Mean, sd: Standard deviation

The distribution of the socio-demographic characteristics of the participants is shown in Table 3.2. 34.4% of the participants are women and 65,6% are men. The mean of the age is  $32,33 \pm 8,29$ . In education, 10,9% of the participants are elementary and high school, 60,9% are Associate and bachelor, 28,1% are Graduate. In addition, 12.5% of the participants has Lower than 2000 TL, 18% has 2000-2999 TL, 17.2% has 3000 -3999 TL, 18.8% has 4000-5999 TL, 33.6%. has 6000 TL and more monthly average income. 49.2% of the participants were married and 50.8% were single. Lastly, 43.8% of the participants were 1, 28.9% 2, 27.3% 3 and more.



**Table 3. 3: Investment Information of the Sample**

	<b>N</b>	<b>%</b>
	<b>(<math>\bar{X}</math>)</b>	<b>(sd)</b>
<b>Investment preference</b>		
Currency	102	26,6
Gold	69	18,0
Stock	129	33,6
Real estate	27	7,0
Bank deposits	42	10,9
Treasury bills and bonds	15	3,9
<b>Years of investment</b>	<b>5,76</b>	<b>6,38</b>
<b>First source of information when investing</b>		
TV	18	4,7
Internet	192	50,0
Social media	27	7,0
Friend recommendation	24	6,3
Analysis and reports of intermediary firms	30	7,8
Recommendations of investment advisors	27	7,0
Annual reports of the firm	66	17,2
<b>Frequency of reviewing investment decisions</b>		
Everyday	63	16,4
Several times a week	63	16,4
Every week	24	6,3
Several times a month	57	14,8
Monthly	33	8,6
Every few months	48	12,5
Not at a certain frequency	96	25,0
<b>Factors taken when investing</b>		
Analysis methods	117	30,5
Exchange	75	19,5
Interest rates	39	10,2
Intermediary Incentives	18	4,7
Cheats taken	18	4,7
Political stability	21	5,5
Economic stability	96	25,0

$\bar{X}$ : Mean, sd: Standard deviation

While 33.6% of the respondents preferred stock investments, this figure was followed by currency investments at 26.6%. However, the least preferred investment tools are treasury bills and bonds. The mean of year of investment is calculated as 5,76±6,38. 50% of the participants use internet for the first source of information when investing while 17,2% of them use annual reports of the firm. Most of the participants (25%) do not have a certain frequency for reviewing investment decision. Moreover, 30,5% of the participants use analysis methods and 25% use economic stability factors when investing.

**Table 3. 4: Descriptive Statistics of Investment Decisions**

	<b>Range</b>	<b><math>\bar{X}</math></b>	<b>sd</b>
<b>Investment Blindness</b>	1,00-4,75	2,10	,72
<b>Winning Desire</b>	1,67-5,00	3,48	,70
<b>Looking Optimistic and Believing in Self</b>	1,00-5,00	3,14	,75
<b>Being Familiar</b>	1,33-4,67	3,27	,67
<b>Avoiding Risk</b>	1,00-4,50	2,38	,97
<b>Avoiding from Regret/Uncertainty</b>	1,00-5,00	3,27	,79
<b>Fortune Telling</b>	1,00-4,33	2,79	,65
<b>Effect of Brand, Expert and Environment</b>	1,00-4,33	2,86	,67
<b>Conservative Perception</b>	1,00-5,00	3,07	,90
<b>Believing in the Cost of the Acquisition</b>	1,00-5,00	2,49	,73
<b>Conditional Association</b>	1,00-4,50	2,67	,80
<b>Conservatism in Decision Making</b>	1,00-4,50	2,51	,77

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness average is  $2,10 \pm 0,72$ , Winning Desire average is  $3,48 \pm 0,70$ , Looking Optimistic and Believing in Self average is  $3,14 \pm 0,75$ , Being Familiar average is  $3,27 \pm 0,67$ , Avoiding Risk average is  $2,38 \pm 0,97$ , Avoiding from Regret/Uncertainty average is  $3,27 \pm 0,79$ , Fortune Telling average is  $2,79 \pm 0,65$  Effect of Brand, Expert and Environment average is  $2,86 \pm 0,67$ , Conservative Perception average is  $3,07 \pm 0,90$ , Believing in the Cost of the Acquisition average is  $2,49 \pm 0,73$ , Conditional Association average is,  $2,67 \pm 0,80$ , Conservatism in Decision Making average is  $2,51 \pm 0,77$ .

**Table 3. 5: Differentiation of Investment Decisions by Gender**

		<b>n</b>	<b><math>\bar{X}</math></b>	<b>sd</b>	<b>t</b>	<b>p</b>
<b>Investment Blindness</b>	Female	132	2,24	0,71	2,79	<b>0,006</b>
	Male	252	2,03	0,72		
Winning Desire	Female	132	3,41	0,67	1,54	0,125
	Male	252	3,52	0,71		
<b>Looking Optimistic and Believing in Self</b>	Female	132	2,96	0,67	-3,47	<b>0,001</b>
	Male	252	3,24	0,78		
Being Familiar	Female	132	3,18	0,63	-1,84	0,067
	Male	252	3,31	0,68		
Avoiding Risk	Female	132	2,42	0,89	0,69	0,492
	Male	252	2,35	1,01		
<b>Avoiding from Regret/Uncertainty</b>	Female	132	3,40	0,85	2,31	<b>0,021</b>
	Male	252	3,20	0,75		
Fortune Telling	Female	132	2,77	0,68	-0,30	0,765
	Male	252	2,79	0,63		
Effect of Brand, Expert and Environment	Female	132	2,89	0,71	0,78	0,435
	Male	252	2,84	0,66		
<b>Conservative Perception</b>	Female	132	2,82	0,86	-4,12	<b>0,000</b>
	Male	252	3,21	0,90		
<b>Believing in the Cost of the Acquisition</b>	Female	132	2,33	0,73	-3,19	<b>0,002</b>
	Male	252	2,57	0,71		
<b>Conditional Association</b>	Female	132	2,80	0,86	2,26	<b>0,024</b>
	Male	252	2,60	0,76		
<b>Conservatism in Decision Making</b>	Female	132	2,63	0,67	2,30	<b>0,022</b>
	Male	252	2,45	0,81		

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Looking Optimistic and Believing in Self, Avoiding from Regret/Uncertainty, Conservative Perception, Believing in the Cost of the Acquisition, Conditional Association and Conservatism in Decision Making becomes different according to gender ( $p < 0,05$ ). In Investment Blindness, Avoiding from Regret/Uncertainty, Conditional Association and Conservatism in Decision Making variables, the average of female participants is significantly higher than the the average of the male participant. In the looking Optimistic and Believing in Self, Conservative Perception and Believing in the Cost of the Acquisition variables, the average of the male participants is significantly higher than the average of the female participants,

**Table 3. 6: Differentiation of Investment Decisions by Age**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
27 and younger <sup>1</sup>	141	2,23	0,76			
28-33 <sup>2</sup>	117	2,03	0,69	3,69	<b>0,026</b>	<b>1&gt;2</b>
34 and older <sup>3</sup>	126	2,02	0,69			<b>1&gt;3</b>
<b>Winning Desire</b>						
27 and younger <sup>1</sup>	141	3,45	0,66			
28-33 <sup>2</sup>	117	3,38	0,69	3,83	<b>0,023</b>	<b>3&gt;1</b>
34 and older <sup>3</sup>	126	3,62	0,72			<b>3&gt;2</b>
<b>Looking Optimistic and Believing in Self</b>						
27 and younger <sup>1</sup>	141	3,23	0,74			
28-33 <sup>2</sup>	117	3,00	0,77	3,30	<b>0,038</b>	<b>1&gt;2</b>
34 and older <sup>3</sup>	126	3,17	0,74			
<b>Being Familiar</b>						
27 and younger <sup>1</sup>	141	3,40	0,56			
28-33 <sup>2</sup>	117	3,21	0,68	4,85	<b>0,008</b>	<b>1&gt;2</b>
34 and older <sup>3</sup>	126	3,17	0,74			<b>1&gt;3</b>
<b>Avoiding Risk</b>						
27 and younger <sup>1</sup>	141	2,39	1,03			
28-33 <sup>2</sup>	117	2,54	0,92	3,72	<b>0,025</b>	<b>2&gt;3</b>
34 and older <sup>3</sup>	126	2,20	0,93			
<b>Avoiding from Regret/Uncertainty</b>						
27 and younger <sup>1</sup>	141	3,24	0,76			<b>3&gt;1</b>
28-33 <sup>2</sup>	117	3,10	0,68	6,20	<b>0,002</b>	<b>3&gt;2</b>
34 and older <sup>3</sup>	126	3,45	0,88			
<b>Fortune Telling</b>						
27 and younger <sup>1</sup>	141	2,90	0,61			
28-33 <sup>2</sup>	117	2,72	0,51	3,49	<b>0,032</b>	<b>1&gt;2</b>
34 and older <sup>3</sup>	126	2,72	0,78			<b>1&gt;3</b>
<b>Effect of Brand, Expert and Environment</b>						
27 and younger <sup>1</sup>	141	2,90	0,69			
28-33 <sup>2</sup>	117	2,89	0,71	1,30	0,275	
34 and older <sup>3</sup>	126	2,78	0,62			
<b>Conservative Perception</b>						
27 and younger <sup>1</sup>	141	3,23	0,83			
28-33 <sup>2</sup>	117	2,82	0,90	7,35	<b>0,001</b>	<b>1&gt;2</b>
34 and older <sup>3</sup>	126	3,13	0,93			<b>3&gt;2</b>
<b>Believing in the Cost of the Acquisition</b>						
27 and younger <sup>1</sup>	141	2,48	0,76			
28-33 <sup>2</sup>	117	2,42	0,64	1,08	0,340	
34 and older <sup>3</sup>	126	2,56	0,76			
<b>Conditional Association</b>						
27 and younger <sup>1</sup>	141	2,74	0,84			
28-33 <sup>2</sup>	117	2,71	0,76	2,19	0,113	
34 and older <sup>3</sup>	126	2,55	0,80			
<b>Conservatism in Decision Making</b>						
27 and younger <sup>1</sup>	141	2,63	0,66			
28-33 <sup>2</sup>	117	2,36	0,79	3,94	<b>0,020</b>	<b>1&gt;2</b>
34 and older <sup>3</sup>	126	2,51	0,85			

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Winning Desire, Looking Optimistic and Believing in Self, Being Familiar, Avoiding Risk, Avoiding from Regret/Uncertainty, Fortune Telling Conservative Perception and Conservatism in Decision Making becomes different according to age ( $p < 0,05$ ). In Investment Blindness, Being Familiar and Fortune Telling variables, the average of 27 and younger age group participants is significantly higher than the average of participants who are 28-33 age group and 34 and older age group. In Winning Desire and Avoiding from Regret/Uncertainty variables, the average of 34 and older age group participants is significantly higher than the average of 27 and younger age group and 28-33 age group participants. In Looking Optimistic and Believing in Self and Conservatism in Decision Making variables, the average of the 27 age group and younger participants is significantly higher than the average of 28-33 participants. In Conservative Perception variables, the average of the 27 and younger and 34 age group and older participants is significantly higher than the average of 28-33 age group participants.

**Table 3. 7: Differentiation of Investment Decisions by Education**

	n	$\bar{X}$	sd	F	P	Difference
<b>Investment Blindness</b>						
Elementary and high school <sup>1</sup>	42	2,48	0,83			
Associate and bachelor <sup>2</sup>	234	2,09	0,66	7,32	<b>0,001</b>	<b>1&gt;2</b>
Graduate <sup>3</sup>	108	1,99	0,77			<b>1&gt;3</b>
<b>Winning Desire</b>						
Elementary and high school <sup>1</sup>	42	3,62	0,82			
Associate and bachelor <sup>2</sup>	234	3,51	0,70	2,45	0,087	
Graduate <sup>3</sup>	108	3,37	0,62			
<b>Looking Optimistic and Believing in Self</b>						
Elementary and high school <sup>1</sup>	42	3,21	0,79			
Associate and bachelor <sup>2</sup>	234	3,18	0,80	1,81	0,165	
Graduate <sup>3</sup>	108	3,03	0,61			
<b>Being Familiar</b>						
Elementary and high school <sup>1</sup>	42	3,36	0,60			
Associate and bachelor <sup>2</sup>	234	3,31	0,68	2,92	0,055	
Graduate <sup>3</sup>	108	3,14	0,65			
<b>Avoiding Risk</b>						
Elementary and high school <sup>1</sup>	42	2,79	0,97			<b>1&gt;2</b>
Associate and bachelor <sup>2</sup>	234	2,28	0,97	5,27	<b>0,006</b>	<b>1&gt;3</b>
Graduate <sup>3</sup>	108	2,43	0,93			
<b>Avoiding from Regret/Uncertainty</b>						
Elementary and high school <sup>1</sup>	42	3,39	0,51			
Associate and bachelor <sup>2</sup>	234	3,25	0,81	0,58	0,559	
Graduate <sup>3</sup>	108	3,26	0,85			
<b>Fortune Telling</b>						
Elementary and high school <sup>1</sup>	42	2,98	0,58			
Associate and bachelor <sup>2</sup>	234	2,84	0,63	7,70	<b>0,001</b>	<b>1&gt;3</b>
Graduate <sup>3</sup>	108	2,59	0,68			<b>2&gt;3</b>
<b>Effect of Brand, Expert and Environment</b>						
Elementary and high school <sup>1</sup>	42	2,71	0,57			
Associate and bachelor <sup>2</sup>	234	2,91	0,67	2,39	0,093	
Graduate <sup>3</sup>	108	2,79	0,71			
<b>Conservative Perception</b>						
Elementary and high school <sup>1</sup>	42	3,36	0,93			
Associate and bachelor <sup>2</sup>	234	3,17	0,91	10,18	<b>0,000</b>	<b>1&gt;3</b>
Graduate <sup>3</sup>	108	2,76	0,78			<b>2&gt;3</b>
<b>Believing in the Cost of the Acquisition</b>						
Elementary and high school <sup>1</sup>	42	2,60	0,77			
Associate and bachelor <sup>2</sup>	234	2,45	0,74	0,82	0,439	
Graduate <sup>3</sup>	108	2,52	0,68			
<b>Conditional Association</b>						
Elementary and high school <sup>1</sup>	42	2,82	0,99			
Associate and bachelor <sup>2</sup>	234	2,63	0,81	1,11	0,331	
Graduate <sup>3</sup>	108	2,69	0,71			
<b>Conservatism in Decision Making</b>						
Elementary and high school <sup>1</sup>	42	2,96	0,62			
Associate and bachelor <sup>2</sup>	234	2,47	0,72	8,93	<b>0,000</b>	<b>1&gt;2</b>
Graduate <sup>3</sup>	108	2,40	0,88			<b>1&gt;3</b>

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Avoiding Risk, Fortune Telling, Conservative Perception and Conservatism in Decision Making differ according to education level ( $p < 0,05$ ). In investment Blindness, Avoiding Risk and Conservatism in Decision Making factors, means of elementary and high school level is higher than associate and bachelor and graduate degree. On the other hand, in fortune telling and conservative perception factors, elementary, high school, associate and bachelor degrees have higher means than graduate degrees.

**Table 3. 8: Differentiation of Investment Decisions by Income**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
Lower than 2000 TL <sup>1</sup>	48	2,11	0,70			
2000-2999 TL <sup>2</sup>	69	2,47	0,80			2>1, 2>3
3000 -3999 TL <sup>3</sup>	66	1,89	0,56	8,53	<b>0,000</b>	2>4,2>5
4000-5999 TL <sup>4</sup>	72	2,23	0,86			4>3,4>5
6000 TL and more <sup>5</sup>	129	1,95	0,59			
<b>Winning Desire</b>						
Lower than 2000 TL <sup>1</sup>	48	3,27	0,74			2>1
2000-2999 TL <sup>2</sup>	69	3,58	0,56			4>1
3000 -3999 TL <sup>3</sup>	66	3,39	0,68	4,54	<b>0,001</b>	4>3
4000-5999 TL <sup>4</sup>	72	3,74	0,87			4>5
6000 TL and more <sup>5</sup>	129	3,42	0,60			
<b>Looking Optimistic and Believing in Self</b>						
Lower than 2000 TL <sup>1</sup>	48	3,19	0,76			
2000-2999 TL <sup>2</sup>	69	3,01	0,61			
3000 -3999 TL <sup>3</sup>	66	3,26	0,69	1,17	0,324	
4000-5999 TL <sup>4</sup>	72	3,21	0,70			
6000 TL and more <sup>5</sup>	129	3,10	0,86			
<b>Being Familiar</b>						
Lower than 2000 TL <sup>1</sup>	48	3,17	0,49			2>1
2000-2999 TL <sup>2</sup>	69	3,54	0,58			2>3
3000 -3999 TL <sup>3</sup>	66	3,26	0,62	4,13	<b>0,003</b>	2>4
4000-5999 TL <sup>4</sup>	72	3,29	0,76			2>5
6000 TL and more <sup>5</sup>	129	3,16	0,71			
<b>Avoiding Risk</b>						
Lower than 2000 TL <sup>1</sup>	48	2,47	1,02			
2000-2999 TL <sup>2</sup>	69	2,72	0,88			1>3
3000 -3999 TL <sup>3</sup>	66	2,09	0,92	3,92	<b>0,004</b>	2>3
4000-5999 TL <sup>4</sup>	72	2,35	1,12			2>4
6000 TL and more <sup>5</sup>	129	2,31	0,89			2>5

**Table 3. 8 - continue**

	n	$\bar{X}$	sd	F	p	Difference
<b>Avoiding from Regret/Uncertainty</b>						
Lower than 2000 TL <sup>1</sup>	48	3,56	0,53			1>3
2000-2999 TL <sup>2</sup>	69	3,33	0,67			1>5
3000 -3999 TL <sup>3</sup>	66	2,91	0,74	6,43	<b>0,000</b>	2>3
4000-5999 TL <sup>4</sup>	72	3,44	0,86			4>3
6000 TL and more <sup>5</sup>	129	3,22	0,85			5>3
<b>Fortune Telling</b>						
Lower than 2000 TL <sup>1</sup>	48	2,92	0,62			1>5
2000-2999 TL <sup>2</sup>	69	3,01	0,51			2>3
3000 -3999 TL <sup>3</sup>	66	2,68	0,55	3,85	<b>0,004</b>	2>4
4000-5999 TL <sup>4</sup>	72	2,74	0,74			2>5
6000 TL and more <sup>5</sup>	129	2,70	0,69			
<b>Effect of Brand, Expert and Environment</b>						
Lower than 2000 TL <sup>1</sup>	48	2,75	0,78			
2000-2999 TL <sup>2</sup>	69	3,03	0,59			
3000 -3999 TL <sup>3</sup>	66	2,82	0,67	1,71	0,147	
4000-5999 TL <sup>4</sup>	72	2,89	0,69			
6000 TL and more <sup>5</sup>	129	2,81	0,66			
<b>Conservative Perception</b>						
Lower than 2000 TL <sup>1</sup>	48	3,25	0,71			
2000-2999 TL <sup>2</sup>	69	3,04	0,80			
3000 -3999 TL <sup>3</sup>	66	2,84	0,94	1,77	0,134	
4000-5999 TL <sup>4</sup>	72	3,08	1,16			
6000 TL and more <sup>5</sup>	129	3,14	0,81			
<b>Believing in the Cost of the Acquisition</b>						
Lower than 2000 TL <sup>1</sup>	48	2,63	0,94			
2000-2999 TL <sup>2</sup>	69	2,67	0,67			1>4
3000 -3999 TL <sup>3</sup>	66	2,42	0,53	2,65	<b>0,033</b>	2>4
4000-5999 TL <sup>4</sup>	72	2,32	0,82			
6000 TL and more <sup>5</sup>	129	2,47	0,67			
<b>Conditional Association</b>						
Lower than 2000 TL <sup>1</sup>	48	2,53	0,87			2>1
2000-2999 TL <sup>2</sup>	69	3,09	0,84			2>3
3000 -3999 TL <sup>3</sup>	66	2,64	0,73	6,73	<b>0,000</b>	2>4
4000-5999 TL <sup>4</sup>	72	2,46	0,85			2>5
6000 TL and more <sup>5</sup>	129	2,63	0,70			
<b>Conservatism in Decision Making</b>						
Lower than 2000 TL <sup>1</sup>	48	2,66	0,56			1>3 1>5
2000-2999 TL <sup>2</sup>	69	2,65	0,67			2>3 2>5
3000 -3999 TL <sup>3</sup>	66	2,23	0,60	6,70	<b>0,000</b>	4>3 4>5
4000-5999 TL <sup>4</sup>	72	2,77	0,97			
6000 TL and more <sup>5</sup>	129	2,37	0,77			

$\bar{X}$ : Mean, sd: Standard deviation



Investment Blindness, Winning Desire, Being Familiar, Avoiding Risk, Avoiding from Regret/Uncertainty, Fortune Telling, Believing in the Cost of the Acquisition, Conservative Perception and Conservatism in Decision Making Monthly becomes different according to average income ( $p < 0,05$ ). In Investment Blindness, Being Familiar and Conditional Association variables, the average of the participants having 2000-2999 TL income is significantly higher than the average of participants with income Lower than 2000 TL, 4000-5999 TL and 6000 TL and more participants. In Winning Desire variables, the average of the 4000-5999 TL participants is significantly higher than the participants Lower than 2000 TL, 3000-3999 TL and 6000 TL and more participants. In Avoiding Risk and Fortune Telling variables, the average of the 2000-2999 TL participants is significantly higher than the average of the participants with 3000-3999 TL, 4000-5999 TL and 6000 TL and more incomes. In Avoiding from Regret/Uncertainty variables, the average of the participants with Lower than 2000 TL, 2000-2999 TL, 4000-5999 TL and 6000 TL and more income is significantly higher than the average of the participants with 3000 -3999 TL income. In Believing in the Cost of the Acquisition variable, the average of the participants with lower than 2000 TL income is significantly higher than the average of the participants with 2000-2009TL, 4000-5999 TL income. In Conservatism in Decision Making variable, the average of the participants with Lower than 2000 TL, 2000-2009 TL and 4000-5999 TL income is significantly higher than the average of the people with 3000-3999 TL and 6000 TL and more income.

**Table 3. 9: Differentiation of Investment Decisions by Marital Status**

	<b>n</b>	<b><math>\bar{X}</math></b>	<b>sd</b>	<b>t</b>	<b>p</b>
<b>Investment Blindness</b>					
Married	189	2,04	0,75	-1,60	0,110
Single	195	2,16	0,70		
<b>Winning Desire</b>					
Married	189	3,51	0,62	0,80	0,423
Single	195	3,46	0,76		
<b>Looking Optimistic and Believing in Self</b>					
Married	189	3,11	0,72	-0,95	0,338
Single	195	3,18	0,78		
<b>Being Familiar</b>					
Married	189	3,21	0,74	-1,63	0,104
Single	195	3,32	0,59		
<b>Avoiding Risk</b>					
Married	189	2,52	1,02	2,82	<b>0,005</b>
Single	195	2,24	0,91		
<b>Avoiding from Regret/Uncertainty</b>					
Married	189	3,33	0,76	1,56	0,120
Single	195	3,21	0,81		
<b>Fortune Telling</b>					
Married	189	2,80	0,66	0,53	0,598
Single	195	2,77	0,64		
<b>Effect of Brand, Expert and Environment</b>					
Married	189	2,93	0,63	1,98	<b>0,048</b>
Single	195	2,79	0,71		
<b>Conservative Perception</b>					
Married	189	3,13	0,91	1,13	0,259
Single	195	3,02	0,89		
<b>Believing in the Cost of the Acquisition</b>					
Married	189	2,60	0,76	3,12	<b>0,002</b>
Single	195	2,37	0,67		
<b>Conditional Association</b>					
Married	189	2,60	0,86	-1,55	0,121
Single	195	2,73	0,75		
<b>Conservatism in Decision Making</b>					
Married	189	2,50	0,84	-0,20	0,846
Single	195	2,52	0,70		

$\bar{X}$ : Mean, sd: Standard deviation

Avoiding Risk, Effect of Brand, Expert and Environment and Believing in the Cost of the Acquisition becomes different according to marital status ( $p < 0,05$ ). In Avoiding Risk, Effect of Brand, Expert and Environment and Believing in the Cost of the

Acquisition variables, the average of the married participants is significantly higher than the average of the single participants.

**Table 3. 10: Differentiation of Investment Decisions by Number of Dependents**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
1 <sup>1</sup>	168	2,13	0,73			
2 <sup>2</sup>	111	1,99	0,56	2,18	0,114	
3 and more <sup>3</sup>	105	2,18	0,84			
<b>Winning Desire</b>						
1 <sup>1</sup>	168	3,56	0,72			
2 <sup>2</sup>	111	3,37	0,72	2,52	0,082	
3 and more <sup>3</sup>	105	3,49	0,62			
<b>Looking Optimistic and Believing in Self</b>						
1 <sup>1</sup>	168	3,21	0,82			
2 <sup>2</sup>	111	3,05	0,58	1,57	0,209	
3 and more <sup>3</sup>	105	3,12	0,80			
<b>Being Familiar</b>						
1 <sup>1</sup>	168	3,38	0,59			
2 <sup>2</sup>	111	3,17	0,55	4,34	<b>0,014</b>	<b>1&gt;2</b>
3 and more <sup>3</sup>	105	3,19	0,86			<b>1&gt;3</b>
<b>Avoiding Risk</b>						
1 <sup>1</sup>	168	2,27	1,01			
2 <sup>2</sup>	111	2,58	0,85	3,69	<b>0,026</b>	<b>2&gt;1</b>
3 and more <sup>3</sup>	105	2,33	1,01			
<b>Avoiding from Regret/Uncertainty</b>						
1 <sup>1</sup>	168	3,29	0,80			
2 <sup>2</sup>	111	3,38	0,66	2,78	0,064	
3 and more <sup>3</sup>	105	3,13	0,89			
<b>Fortune Telling</b>						
1 <sup>1</sup>	168	2,78	0,68			
2 <sup>2</sup>	111	2,84	0,53	0,59	0,554	
3 and more <sup>3</sup>	105	2,74	0,73			
<b>Effect of Brand, Expert and Environment</b>						
1 <sup>1</sup>	168	2,82	0,67			
2 <sup>2</sup>	111	3,07	0,58	9,67	<b>0,000</b>	<b>2&gt;1</b>
3 and more <sup>3</sup>	105	2,69	0,72			<b>2&gt;3</b>
<b>Conservative Perception</b>						
1 <sup>1</sup>	168	3,13	0,91			
2 <sup>2</sup>	111	3,07	0,87	0,63	0,536	
3 and more <sup>3</sup>	105	3,00	0,92			
<b>Believing in the Cost of the Acquisition</b>						
1 <sup>1</sup>	168	2,43	0,71			
2 <sup>2</sup>	111	2,42	0,56	3,17	<b>0,043</b>	<b>3&gt;1</b>
3 and more <sup>3</sup>	105	2,64	0,87			<b>3&gt;2</b>
<b>Conditional Association</b>						
1 <sup>1</sup>	168	2,68	0,79			
2 <sup>2</sup>	111	2,76	0,81	1,69	0,185	
3 and more <sup>3</sup>	105	2,56	0,82			
<b>Conservatism in Decision Making</b>						
1 <sup>1</sup>	168	2,53	0,74			
2 <sup>2</sup>	111	2,49	0,80	0,10	0,907	
3 and more <sup>3</sup>	105	2,50	0,80			

$\bar{X}$ : Mean, sd: Standard deviation

Being Familiar, Avoiding Risk, Effect of Brand, Expert and Environment and Believing in the Cost of the Acquisition becomes different according to number of dependents ( $p < 0,05$ ). In Being Familiar variable, the average of the 1 participants is significantly higher than the average of the 2 and 3 and more participants. In Avoiding Risk variable, the average of 2 participants is significantly higher than the the average of 1 participants. In Effect of Brand, Expert and Environment variable, the average of the 2 participants is significantly higher than the average of the 1 and 3 and more participants. In Believing in the Cost of the Acquisition variable, the average of the 3 and more participants is significantly higher than the average of 1 and 2 participants.

**Table 3. 11: Differentiation of Investment Decisions by Investment Preference**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
Currency <sup>1</sup>	102	2,10	0,70	6,09	<b>0,000</b>	1>3 2>1 2>3 2>4 5>3
Gold <sup>2</sup>	69	2,41	0,65			
Stock <sup>3</sup>	129	1,88	0,79			
Real estate <sup>4</sup>	27	2,06	0,71			
Bank deposits <sup>5</sup>	42	2,32	0,53			
Treasury bills and bonds <sup>6</sup>	15	2,10	0,42			
<b>Winning Desire</b>						
Currency <sup>1</sup>	102	3,37	0,65	3,84	<b>0,002</b>	2>5 3>1 3>5 4>5 6>1 6>5
Gold <sup>2</sup>	69	3,54	0,60			
Stock <sup>3</sup>	129	3,60	0,72			
Real estate <sup>4</sup>	27	3,56	0,97			
Bank deposits <sup>5</sup>	42	3,17	0,58			
Treasury bills and bonds <sup>6</sup>	15	3,80	0,56			
<b>Looking Optimistic and Believing in Self</b>						
Currency <sup>1</sup>	102	2,97	0,74	7,33	0,459	
Gold <sup>2</sup>	69	3,00	0,71			
Stock <sup>3</sup>	129	3,41	0,75			
Real estate <sup>4</sup>	27	3,37	0,59			
Bank deposits <sup>5</sup>	42	2,83	0,79			
Treasury bills and bonds <sup>6</sup>	15	3,13	0,28			
<b>Being Familiar</b>						
Currency <sup>1</sup>	102	3,21	0,67	1,73	0,127	
Gold <sup>2</sup>	69	3,29	0,66			
Stock <sup>3</sup>	129	3,37	0,62			
Real estate <sup>4</sup>	27	3,00	0,82			
Bank deposits <sup>5</sup>	42	3,26	0,78			
Treasury bills and bonds <sup>6</sup>	15	3,20	0,28			
<b>Avoiding Risk</b>						
Currency <sup>1</sup>	102	2,41	0,92	7,44	<b>0,000</b>	1>3 6>1 2>1 6>3 2>3 6>4 2>4 6>5 5>3
Gold <sup>2</sup>	69	2,74	0,99			
Stock <sup>3</sup>	129	2,06	1,04			
Real estate <sup>4</sup>	27	2,17	0,72			
Bank deposits <sup>5</sup>	42	2,54	0,75			
Treasury bills and bonds <sup>6</sup>	15	3,10	0,39			

**Table 3. 11 - continue**

<b>Avoiding from Regret/Uncertainty</b>						
Currency <sup>1</sup>	102	3,40	0,79			1>3 4>3
Gold <sup>2</sup>	69	3,61	0,81			1>5 4>5
Stock <sup>3</sup>	129	3,08	0,79	7,26	<b>0,000</b>	2>3 4>6
Real estate <sup>4</sup>	27	3,44	0,45			2>5
Bank deposits <sup>5</sup>	42	2,89	0,77			
Treasury bills and bonds <sup>6</sup>	15	3,20	0,25			
<b>Fortune Telling</b>						
Currency <sup>1</sup>	102	2,74	0,64			
Gold <sup>2</sup>	69	2,90	0,81			
Stock <sup>3</sup>	129	2,78	0,67	1,05	0,386	
Real estate <sup>4</sup>	27	2,78	0,51			
Bank deposits <sup>5</sup>	42	2,69	0,47			
Treasury bills and bonds <sup>6</sup>	15	3,00	0,22			
<b>Effect of Brand, Expert and Environment</b>						
Currency <sup>1</sup>	102	2,97	0,80			1>3 4>5
Gold <sup>2</sup>	69	2,86	0,50			2>3 5>3
Stock <sup>3</sup>	129	2,56	0,60	11,85	<b>0,000</b>	4>1 6>2
Real estate <sup>4</sup>	27	3,37	0,25			4>2 6>3
Bank deposits <sup>5</sup>	42	3,02	0,69			4>3
Treasury bills and bonds <sup>6</sup>	15	3,27	0,40			
<b>Conservative Perception</b>						
Currency <sup>1</sup>	102	2,90	0,75			1>6 4>1
Gold <sup>2</sup>	69	2,89	0,93			2>6 4>2
Stock <sup>3</sup>	129	3,31	0,98	6,17	<b>0,000</b>	3>1 4>6
Real estate <sup>4</sup>	27	3,44	0,88			3>2 5>6
Bank deposits <sup>5</sup>	42	3,07	0,76			3>6
Treasury bills and bonds <sup>6</sup>	15	2,40	0,60			
<b>Believing in the Cost of the Acquisition</b>						
Currency <sup>1</sup>	102	2,53	0,70			
Gold <sup>2</sup>	69	2,54	0,68			
Stock <sup>3</sup>	129	2,51	0,82	0,74	0,597	
Real estate <sup>4</sup>	27	2,41	0,69			
Bank deposits <sup>5</sup>	42	2,33	0,62			
Treasury bills and bonds <sup>6</sup>	15	2,33	0,53			
<b>Conditional Association</b>						
Currency <sup>1</sup>	102	2,87	0,86			
Gold <sup>2</sup>	69	2,76	0,71			1>3
Stock <sup>3</sup>	129	2,36	0,81	6,63	<b>0,000</b>	2>3
Real estate <sup>4</sup>	27	2,94	0,85			4>3
Bank deposits <sup>5</sup>	42	2,82	0,59			5>3
Treasury bills and bonds <sup>6</sup>	15	2,60	0,51			
<b>Conservatism in Decision Making</b>						
Currency <sup>1</sup>	102	2,66	0,79			1>3 4>3
Gold <sup>2</sup>	69	2,65	0,67			1>6 5>3
Stock <sup>3</sup>	129	2,26	0,78	5,53	<b>0,000</b>	2>3 5>6
Real estate <sup>4</sup>	27	2,61	0,89			2>6
Bank deposits <sup>5</sup>	42	2,71	0,63			
Treasury bills and bonds <sup>6</sup>	15	2,20	0,53			

X̄: Mean, sd: Standard deviation

Investment Blindness, Winning Desire, Avoiding Risk, Avoiding from Regret/Uncertainty, Effect of Brand, Expert and Environment, Conservative Perception, Conditional Association and Conservatism in Decision Making become different according to Investment preference ( $p < 0,05$ ). In Investment Blindness variable, the average of the gold participants is significantly higher than the average of the currency, stock and real estate participants. The average of the Currency and bank deposits participants is significantly higher than the average of the stock participants. In Winning Desire variable, the average of the stock and treasury bills and bonds participants is significantly higher than the average of the currency participants. The average of the Gold, stock, real estate and treasury bills and bonds participants is significantly higher than the average of the bank deposits participants. In Avoiding Risk variables, the average of the gold participants is significantly higher than the average of the currency, stock and real estate participants. The average of the Treasury bills and bonds participants is significantly higher than the average of the currency, stock, real estate and bank deposits participants. In Avoiding from Regret/Uncertainty variable, the average of the currency, gold and real estate participants is significantly higher than the average of the stock and bank deposits participants. In Effect of Brand, Expert and Environment variable, the average of the currency, gold, real estate bank deposits and treasury bills and bonds participants is significantly higher than the average of the stock participants. The average of the Real estate participants is significantly higher than the average of the currency, gold, stock and bank deposits participants. In Conservative Perception variable, the average of the currency, gold, stock, real estate and bank deposits participants is significantly higher than the average of the treasury bills and bonds participants. The average of the Stock and real estate participants is significantly higher than the average of the currency and gold participants. In Conditional Association variable, the average of the currency, gold, real estate and bank deposits participants is significantly higher than the average of the stock participants. In Conservatism in Decision Making variable, the average of the currency, gold and bank deposits participants is significantly higher than the stock and treasury bills and bonds participants.

**Table 3. 12: Differentiation of Investment Decisions by Years of investment**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
2 years and fewer <sup>1</sup>	147	2,33	0,77			
3-5 <sup>2</sup>	120	2,09	0,64	16,41	<b>0,000</b>	<b>1&gt;3</b>
6 years and more <sup>3</sup>	117	1,83	0,65			<b>2&gt;3</b>
<b>Winning Desire</b>						
2 years and fewer <sup>1</sup>	147	3,44	0,74			
3-5 <sup>2</sup>	120	3,46	0,46	1,12	0,326	
6 years and more <sup>3</sup>	117	3,56	0,82			
<b>Looking Optimistic and Believing in Self</b>						
2 years and fewer <sup>1</sup>	147	2,97	0,77			
3-5 <sup>2</sup>	120	3,22	0,60	6,53	<b>0,002</b>	<b>2&gt;1</b>
6 years and more <sup>3</sup>	117	3,28	0,83			<b>3&gt;1</b>
<b>Being Familiar</b>						
2 years and fewer <sup>1</sup>	147	3,34	0,68			
3-5 <sup>2</sup>	120	3,28	0,62	2,36	0,096	
6 years and more <sup>3</sup>	117	3,16	0,69			
<b>Avoiding Risk</b>						
2 years and fewer <sup>1</sup>	147	2,47	0,95			
3-5 <sup>2</sup>	120	2,58	0,90	10,20	<b>0,000</b>	<b>1&gt;3</b>
6 years and more <sup>3</sup>	117	2,05	1,00			<b>2&gt;3</b>
<b>Avoiding from Regret/Uncertainty</b>						
2 years and fewer <sup>1</sup>	147	3,11	0,73			<b>3&gt;1</b>
3-5 <sup>2</sup>	120	3,25	0,72	7,62	<b>0,001</b>	<b>3&gt;2</b>
6 years and more <sup>3</sup>	117	3,49	0,88			
<b>Fortune Telling</b>						
2 years and fewer <sup>1</sup>	147	2,84	0,64			
3-5 <sup>2</sup>	120	2,83	0,57	2,51	0,083	
6 years and more <sup>3</sup>	117	2,68	0,72			
<b>Effect of Brand, Expert and Environment</b>						
2 years and fewer <sup>1</sup>	147	2,86	0,74			
3-5 <sup>2</sup>	120	2,98	0,62	4,37	<b>0,013</b>	<b>2&gt;3</b>
6 years and more <sup>3</sup>	117	2,73	0,62			
<b>Conservative Perception</b>						
2 years and fewer <sup>1</sup>	147	2,95	0,88			
3-5 <sup>2</sup>	120	3,13	0,85	2,43	0,089	
6 years and more <sup>3</sup>	117	3,18	0,96			
<b>Believing in the Cost of the Acquisition</b>						
2 years and fewer <sup>1</sup>	147	2,48	0,74			
3-5 <sup>2</sup>	120	2,55	0,66	0,85	0,429	
6 years and more <sup>3</sup>	117	2,43	0,78			
<b>Conditional Association</b>						
2 years and fewer <sup>1</sup>	147	2,67	0,79			
3-5 <sup>2</sup>	120	2,83	0,73	4,94	<b>0,008</b>	<b>2&gt;3</b>
6 years and more <sup>3</sup>	117	2,50	0,87			
<b>Conservatism in Decision Making</b>						
2 years and fewer <sup>1</sup>	147	2,51	0,73			
3-5 <sup>2</sup>	120	2,55	0,68	0,39	0,678	
6 years and more <sup>3</sup>	117	2,46	0,91			

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Looking Optimistic and Believing in Self, Avoiding Risk, Avoiding from Regret/Uncertainty, Effect of Brand, Expert and Environment and Conditional Association Years of become different according to investment ( $p < 0,05$ ). In Investment Blindness variable, the average of the 2 years and fewer participants is significantly higher than the average of the 3-5 and 6 years and more participants. The average of the 3-5 participants is significantly higher than the average of the 6 years and more participants. In Looking Optimistic and Believing in Self variable, the average of the 3-5 and 6 years and more participants are significantly higher than the average of the 2 years and fewer participants. In Avoiding Risk variable, the average of the 6 years and more participants is significantly higher than the average of the 2 years and fewer and 3-5 participants. In Effect of Brand, Expert and Environment and Conditional Association variables, the average of the 3-5 participants is significantly higher than the average of the 6 years and more participants.

**Table 3. 13: Differentiation of Investment Decisions by First Source of Information When Investing**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
TV <sup>1</sup>	18	2,92	0,35			
Internet <sup>2</sup>	192	2,12	0,70			1>2 2>7
Social media <sup>3</sup>	27	2,36	0,98			1>3 3>7
Friend recommendation <sup>4</sup>	24	2,09	0,57	7,41	<b>0,000</b>	1>4 5>7
Analysis and reports of intermediary firms <sup>5</sup>	30	2,10	0,64			1>5 1>7
Recommendations of investment advisors <sup>6</sup>	27	2,03	0,59			1>6
Annual reports of the firm <sup>7</sup>	66	1,77	0,68			
<b>Winning Desire</b>						
TV <sup>1</sup>	18	3,67	0,20			
Internet <sup>2</sup>	192	3,47	0,69			
Social media <sup>3</sup>	27	3,44	0,75			
Friend recommendation <sup>4</sup>	24	3,67	0,61	0,63	0,703	
Analysis and reports of intermediary firms <sup>5</sup>	30	3,53	0,51			
Recommendations of investment advisors <sup>6</sup>	27	3,41	1,06			
Annual reports of the firm <sup>7</sup>	66	3,44	0,71			
<b>Looking Optimistic and Believing in Self</b>						
TV <sup>1</sup>	18	3,00	0,28			
Internet <sup>2</sup>	192	3,13	0,74			4>6
Social media <sup>3</sup>	27	2,93	0,81			7>1
Friend recommendation <sup>4</sup>	24	3,00	0,68	3,09	<b>0,006</b>	7>2
Analysis and reports of intermediary firms <sup>5</sup>	30	3,27	0,47			7>3
Recommendations of investment advisors <sup>6</sup>	27	2,85	1,01			7>4
Annual reports of the firm <sup>7</sup>	66	3,42	0,77			



**Table 3. 13 - continue**

<b>Being Familiar</b>						
TV <sup>1</sup>	18	3,61	0,42			1>2 3>6
Internet <sup>2</sup>	192	3,18	0,70			1>5 3>7
Social media <sup>3</sup>	27	3,70	0,59			1>6 4>2
Friend recommendation <sup>4</sup>	24	3,71	0,46	5,80	<b>0,000</b>	1>7 4>5
Analysis and reports of intermediary firms <sup>5</sup>	30	3,17	0,31			3>2 4>6
Recommendations of investment advisors <sup>6</sup>	27	3,19	0,98			3>5 4>7
Annual reports of the firm <sup>7</sup>	66	3,17	0,52			
<b>Avoiding Risk</b>						
TV <sup>1</sup>	18	3,58	0,81			1>2 2>7
Internet <sup>2</sup>	192	2,40	0,93			1>3 4>3
Social media <sup>3</sup>	27	2,11	1,09			1>4 4>6
Friend recommendation <sup>4</sup>	24	2,69	0,92	8,41	<b>0,000</b>	1>5 4>7
Analysis and reports of intermediary firms <sup>5</sup>	30	2,55	0,77			1>6 5>7
Recommendations of investment advisors <sup>6</sup>	27	2,11	0,75			1>7
Annual reports of the firm <sup>7</sup>	66	2,00	0,95			
<b>Avoiding from Regret/Uncertainty</b>						
TV <sup>1</sup>	18	4,00	0,42			1>2
Internet <sup>2</sup>	192	3,32	0,78			1>3
Social media <sup>3</sup>	27	3,28	0,80			1>4
Friend recommendation <sup>4</sup>	24	2,88	0,49	4,41	<b>0,000</b>	1>5
Analysis and reports of intermediary firms <sup>5</sup>	30	3,20	0,79			1>6
Recommendations of investment advisors <sup>6</sup>	27	3,06	0,88			1>7
Annual reports of the firm <sup>7</sup>	66	3,18	0,83			2>4
<b>Fortune Telling</b>						
TV <sup>1</sup>	18	3,28	0,24			1>2 2>7
Internet <sup>2</sup>	192	2,79	0,72			1>4 3>6
Social media <sup>3</sup>	27	3,04	0,63			1>5 3>7
Friend recommendation <sup>4</sup>	24	2,75	0,41	4,08	<b>0,001</b>	1>6 5>7
Analysis and reports of intermediary firms <sup>5</sup>	30	2,87	0,27			1>7
Recommendations of investment advisors <sup>6</sup>	27	2,63	0,59			
Annual reports of the firm <sup>7</sup>	66	2,58	0,63			
<b>Effect of Brand, Expert and Environment</b>						
TV <sup>1</sup>	18	2,89	0,65			
Internet <sup>2</sup>	192	2,90	0,72			
Social media <sup>3</sup>	27	2,74	0,38			
Friend recommendation <sup>4</sup>	24	3,17	0,66	1,87	0,084	
Analysis and reports of intermediary firms <sup>5</sup>	30	2,87	0,66			
Recommendations of investment advisors <sup>6</sup>	27	2,81	0,74			
Annual reports of the firm <sup>7</sup>	66	2,68	0,59			
<b>Conservative Perception</b>						
TV <sup>1</sup>	18	2,33	0,38			2>1 6>1
Internet <sup>2</sup>	192	3,09	0,87			2>4 6>4
Social media <sup>3</sup>	27	3,28	0,84			3>1 7>1
Friend recommendation <sup>4</sup>	24	2,56	0,65	4,37	<b>0,000</b>	3>4 7>4
Analysis and reports of intermediary firms <sup>5</sup>	30	3,10	0,71			5>1 5>4
Recommendations of investment advisors <sup>6</sup>	27	3,17	1,10			
Annual reports of the firm <sup>7</sup>	66	3,27	1,03			

**Table 3. 13 - continue**

<b>Believing in the Cost of the Acquisition</b>						
TV <sup>1</sup>	18	2,83	0,71			
Internet <sup>2</sup>	192	2,58	0,76			1>5 3>7
Social media <sup>3</sup>	27	2,63	0,56			1>6 4>6
Friend recommendation <sup>4</sup>	24	2,63	0,60	5,59	<b>0,000</b>	1>7 4>7
Analysis and reports of intermediary firms <sup>5</sup>	30	2,37	0,73			2>6 5>6
Recommendations of investment advisors <sup>6</sup>	27	1,93	0,62			2>7 7>6
Annual reports of the firm <sup>7</sup>	66	2,29	0,63			3>6
<b>Conditional Association</b>						
TV <sup>1</sup>	18	3,42	0,69			1>2 2>7
Internet <sup>2</sup>	192	2,72	0,77			1>3 4>3
Social media <sup>3</sup>	27	2,39	0,82			1>5 4>6
Friend recommendation <sup>4</sup>	24	3,00	0,26	7,19	<b>0,000</b>	1>6 4>7
Analysis and reports of intermediary firms <sup>5</sup>	30	2,85	0,46			1>7 5>3
Recommendations of investment advisors <sup>6</sup>	27	2,33	0,83			2>3 5>6
Annual reports of the firm <sup>7</sup>	66	2,36	0,94			2>6 5>7
<b>Conservatism in Decision Making</b>						
TV <sup>1</sup>	18	2,50	0,42			
Internet <sup>2</sup>	192	2,60	0,80			2>4
Social media <sup>3</sup>	27	2,50	0,93			2>7
Friend recommendation <sup>4</sup>	24	2,25	0,51	2,81	<b>0,011</b>	6>4
Analysis and reports of intermediary firms <sup>5</sup>	30	2,55	0,77			6>7
Recommendations of investment advisors <sup>6</sup>	27	2,72	0,93			
Annual reports of the firm <sup>7</sup>	66	2,23	0,60			

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Looking Optimistic and Believing in Self, Being Familiar, Avoiding Risk, Avoiding from Regret/Uncertainty, Fortune Telling, Conservative Perception, Believing in the Cost of the Acquisition, Conditional Association and Conservatism in Decision Making become different according to First source of information when investing ( $p < 0,05$ ). In Investment Blindness variable, the average of the TV participants is significantly higher than the average of the, Internet, Social media, Friend recommendation, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants. The average of the Internet, Social media and Analysis and reports of intermediary firms participants is significantly higher than the average of the Annual reports of the firm participants. In Looking Optimistic and Believing in Self variable, the average of the Annual reports of the firm participants is significantly higher than the average of the TV, Internet, Social media and Friend recommendation participants. In Being Familiar variable, the average of the TV, Social media and Friend recommendation participants is significantly higher than the average of the Internet, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants. In Avoiding Risk variable, the average of the TV

participants is significantly higher than the average of the Internet, Social media, Friend recommendation, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants. The average of the Friend recommendation participants is significantly higher than the average of the Social media and Recommendations of investment advisors participants. In Avoiding from Regret/Uncertainty variable, the average of the TV participants is significantly higher than the Internet, Social media, Friend recommendation, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants. In Fortune Telling variable, the average of the TV participants is significantly higher than the average of the Internet, Friend recommendation, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants. The average of the Internet, Social media and Analysis and reports of intermediary firms participants is significantly higher than the average of the Annual reports of the firm participants. In Conservative Perception variable, the average of the Internet, Social media, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants is significantly higher than the average of the TV and Friend recommendation averages. In Believing in the Cost of the Acquisition variable, the average of the TV, Internet, Social media, Friend recommendation, Analysis and reports of intermediary firms and Annual reports of the firm participants is significantly higher than the average of the Recommendations of investment advisors average. The average of the TV, Internet, Social media and Friend recommendation participants is significantly higher than the average of the Annual reports of the firm averages. In Conditional Association variable, the average of the TV participant is significantly higher than the average of the Internet, Social media, Analysis and reports of intermediary firms, Recommendations of investment advisors and Annual reports of the firm participants. The average of the Internet, Friend recommendation and Analysis and reports of intermediary firms participants is significantly higher than the average of the Social media, Recommendations of investment advisors and Annual reports of the firm participants. In Conservatism in Decision Making variable, the average of the Internet and Recommendations of investment advisors participants is significantly higher than the average of the Analysis and reports of intermediary firms and Annual reports of the firm participants.

**Table 3. 14: Differentiation of Investment Decisions by Frequency of Reviewing Investment Decisions**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
Everyday <sup>1</sup>	63	2,10	0,64			
Several times a week <sup>2</sup>	63	1,89	0,58			
Every week <sup>3</sup>	24	2,22	1,25			4>2
Several times a month <sup>4</sup>	57	2,20	0,73	2,21	<b>0,041</b>	7>2
Monthly <sup>5</sup>	33	2,07	0,39			7>6
Every few months <sup>6</sup>	48	1,95	0,63			
Not at a certain frequency <sup>7</sup>	96	2,25	0,77			
<b>Winning Desire</b>						
Everyday <sup>1</sup>	63	3,81	0,71			
Several times a week <sup>2</sup>	63	3,38	0,57			1>2 3>2
Every week <sup>3</sup>	24	3,71	0,65			1>4 3>4
Several times a month <sup>4</sup>	57	3,23	0,66	5,11	<b>0,000</b>	1>5 3>5
Monthly <sup>5</sup>	33	3,33	0,68			1>6 3>6
Every few months <sup>6</sup>	48	3,38	0,50			1>7 7>4
Not at a certain frequency <sup>7</sup>	96	3,54	0,79			
<b>Looking Optimistic and Believing in Self</b>						
Everyday <sup>1</sup>	63	3,43	0,80			1>2 3>4
Several times a week <sup>2</sup>	63	3,14	0,51			1>4 3>5
Every week <sup>3</sup>	24	3,79	0,66			1>5 3>6
Several times a month <sup>4</sup>	57	3,00	0,72	8,47	<b>0,000</b>	1>7 3>7
Monthly <sup>5</sup>	33	2,85	0,89			2>7 6>4
Every few months <sup>6</sup>	48	3,29	0,69			3>1 6>5
Not at a certain frequency <sup>7</sup>	96	2,91	0,71			3>2 6>7
<b>Being Familiar</b>						
Everyday <sup>1</sup>	63	3,44	0,78			
Several times a week <sup>2</sup>	63	2,97	0,61			1>2 6>2
Every week <sup>3</sup>	24	3,21	0,45			1>4 6>4
Several times a month <sup>4</sup>	57	3,02	0,63	7,17	<b>0,000</b>	5>2 7>2
Monthly <sup>5</sup>	33	3,64	0,77			5>3 7>4
Every few months <sup>6</sup>	48	3,46	0,57			5>4
Not at a certain frequency <sup>7</sup>	96	3,29	0,58			5>7
<b>Avoiding Risk</b>						
Everyday <sup>1</sup>	63	2,38	1,17			1>6
Several times a week <sup>2</sup>	63	2,29	0,80			2>6
Every week <sup>3</sup>	24	2,56	1,34			3>6
Several times a month <sup>4</sup>	57	2,45	0,83	3,22	<b>0,004</b>	4>6
Monthly <sup>5</sup>	33	2,41	0,78			5>6
Every few months <sup>6</sup>	48	1,88	0,77			7>6
Not at a certain frequency <sup>7</sup>	96	2,58	0,98			
<b>Avoiding from Regret/Uncertainty</b>						
Everyday <sup>1</sup>	63	3,14	0,84			7>1
Several times a week <sup>2</sup>	63	3,19	0,75			7>2
Every week <sup>3</sup>	24	3,13	0,71			7>3
Several times a month <sup>4</sup>	57	3,13	0,83	2,86	<b>0,010</b>	7>4
Monthly <sup>5</sup>	33	3,23	0,73			7>5
Every few months <sup>6</sup>	48	3,25	0,84			7>6
Not at a certain frequency <sup>7</sup>	96	3,55	0,73			

**Table 3. 14 - continue**

<b>Fortune Telling</b>						
Everyday <sup>1</sup>	63	3,00	0,67			
Several times a week <sup>2</sup>	63	2,75	0,64			1>2
Every week <sup>3</sup>	24	2,88	0,51			1>4
Several times a month <sup>4</sup>	57	2,68	0,57	2,31	<b>0,033</b>	1>6
Monthly <sup>5</sup>	33	2,94	0,50			5>7
Every few months <sup>6</sup>	48	2,75	0,68			
Not at a certain frequency <sup>7</sup>	96	2,68	0,72			
<b>Effect of Brand, Expert and Environment</b>						
Everyday <sup>1</sup>	63	2,54	0,68			3>2 7>4
Several times a week <sup>2</sup>	63	2,73	0,72			4>1 7>5
Every week <sup>3</sup>	24	3,04	0,86			6>1 7>6
Several times a month <sup>4</sup>	57	2,89	0,67	5,89	<b>0,000</b>	7>1
Monthly <sup>5</sup>	33	2,76	0,46			7>2
Every few months <sup>6</sup>	48	2,85	0,57			
Not at a certain frequency <sup>7</sup>	96	3,11	0,60			
<b>Conservative Perception</b>						
Everyday <sup>1</sup>	63	3,24	1,04			1>2
Several times a week <sup>2</sup>	63	2,90	0,80			1>7
Every week <sup>3</sup>	24	3,31	0,99			3>7
Several times a month <sup>4</sup>	57	3,21	0,77	3,70	<b>0,001</b>	5>7
Monthly <sup>5</sup>	33	3,18	0,76			6>2
Every few months <sup>6</sup>	48	3,31	0,76			6>7
Not at a certain frequency <sup>7</sup>	96	2,78	0,95			
<b>Believing in the Cost of the Acquisition</b>						
Everyday <sup>1</sup>	63	2,63	0,89			
Several times a week <sup>2</sup>	63	2,30	0,65			1>2
Every week <sup>3</sup>	24	2,25	0,72			1>3
Several times a month <sup>4</sup>	57	2,53	0,71	2,28	<b>0,035</b>	7>2
Monthly <sup>5</sup>	33	2,33	0,66			7>3
Every few months <sup>6</sup>	48	2,48	0,68			
Not at a certain frequency <sup>7</sup>	96	2,60	0,68			
<b>Conditional Association</b>						
Everyday <sup>1</sup>	63	2,62	0,64			1>6
Several times a week <sup>2</sup>	63	2,67	0,87			2>6
Every week <sup>3</sup>	24	2,38	1,01			4>6
Several times a month <sup>4</sup>	57	2,68	0,84	5,46	<b>0,000</b>	7>3
Monthly <sup>5</sup>	33	2,50	0,72			7>4
Every few months <sup>6</sup>	48	2,31	0,78			7>5
Not at a certain frequency <sup>7</sup>	96	3,00	0,71			7>6
<b>Conservatism in Decision Making</b>						
Everyday <sup>1</sup>	63	2,40	0,89			
Several times a week <sup>2</sup>	63	2,52	0,63			
Every week <sup>3</sup>	24	2,69	0,84			
Several times a month <sup>4</sup>	57	2,45	0,82	1,18	0,314	
Monthly <sup>5</sup>	33	2,64	0,58			
Every few months <sup>6</sup>	48	2,34	0,53			
Not at a certain frequency <sup>7</sup>	96	2,59	0,87			

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Winning Desire, Looking Optimistic and Believing in Self, Being Familiar, Avoiding Risk, Avoiding from Regret/Uncertainty, Fortune Telling, Effect of Brand, Expert and Environment, Conservative Perception, Believing in the Cost of the Acquisition and Conditional Association Frequency of reviewing become different according to investment decisions( $p < 0,05$ ). In Investment Blindness variable, the average of the Several times a month is significantly higher than the average of the Several times a week participants. The average of the Not at a certain frequency participants is significantly higher than the average of the Several times a week and Every few months participants. In Winning Desire variable, the average of the Everyday participants is significantly higher than the average of the Several times a week, Several times a month, Monthly, Every few months and Not at a certain frequency participants. The average of the Every week participants is significantly higher than the average of the, Several times a week, Several times a month, Monthly and Every few months participants. In Looking Optimistic and Believing in Self variable, the average of the Everyday participants is significantly higher than the average of the Several times a week, Several times a month, Monthly and Not at a certain frequency participants. The average of the Every few months participants is significantly higher than the average of Several times a month, Monthly and Not at a certain frequency participants. The average of the Every week participants is significantly higher than the average of the Everyday, Several times a week, Several times a month, Monthly, Every few months and Not at a certain frequency participants. In Being Familiar variable, the average of the Monthly participants is significantly higher than the average of the Several times a week, Every week, Several times a month and Not at a certain frequency participants. The average of the Everyday, Every few months and Not at a certain frequency participants is significantly higher than the average of the Several times a week and Several times a month participants. In Avoiding Risk variable, the average of the Everyday, Several times a week, Every week, Several times a month, Monthly and Not at a certain frequency participants is significantly higher than the average of the Every few months participants. In Avoiding from Regret/Uncertainty variable, the average of the Not at a certain frequency participants is significantly higher than the Everyday, Several times a week, Every week, Several times a month, Monthly and Every few months participants. In Fortune Telling variable, the average of the Everyday participants is significantly

higher than the average of the Several times a week, Several times a month and Every few months participants. In Effect of Brand, Expert and Environment variable, the average of the Not at a certain frequency participants is significantly higher than the average of the Everyday, Several times a week, Several times a month, Monthly and Every few months participants. The average of the Several times a month and Every few months participants is significantly higher than the average of the Everyday participants. In conservative perception factor everyday and every few months group have higher means than several times a week group. The average of the Everyday, Every week, Monthly and Every few months participants is significantly higher than the average of the Not at a certain frequency participants. In Believing in the Cost of the Acquisition variable, the average of the Everyday and Not at a certain frequency participants is significantly higher than the average of the Several times a week and Every week participants. In Conditional Association variable, the average of the Everyday, Several times a week, Several times a month and Not at a certain frequency participants is significantly higher than the average of the Every few months participants. The average of the Not at a certain frequency participants is significantly higher than the average of the Every week, Several times a month and Monthly participants.

**Table 3. 15: Differentiation of Investment Decisions by Factors Taken When Investing**

	n	$\bar{X}$	sd	F	p	Difference
<b>Investment Blindness</b>						
Analysis methods <sup>1</sup>	117	2,01	0,78			
Exchange <sup>2</sup>	75	1,95	0,60			3>1 6>3
Interest rates <sup>3</sup>	39	2,40	0,73			3>2 6>4
Intermediary Incentives <sup>4</sup>	18	1,79	0,50	6,61	<b>0,000</b>	3>4 6>5
Cheats taken <sup>5</sup>	18	2,17	0,49			3>7 6>7
Political stability <sup>6</sup>	21	2,82	0,26			6>1 6>2
Economic stability <sup>7</sup>	96	2,11	0,75			
<b>Winning Desire</b>						
Analysis methods <sup>1</sup>	117	3,52	0,71			
Exchange <sup>2</sup>	75	3,24	0,70			1>2 6>3
Interest rates <sup>3</sup>	39	3,31	0,47			1>4 6>4
Intermediary Incentives <sup>4</sup>	18	3,11	0,47	5,15	<b>0,000</b>	5>2 7>2
Cheats taken <sup>5</sup>	18	3,67	0,59			5>4 7>3
Political stability <sup>6</sup>	21	3,71	0,53			6>2 7>4
Economic stability <sup>7</sup>	96	3,69	0,75			
<b>Looking Optimistic and Believing in Self</b>						
Analysis methods <sup>1</sup>	117	3,47	0,69			1>2 2>4
Exchange <sup>2</sup>	75	3,01	0,98			1>3 3>4
Interest rates <sup>3</sup>	39	3,21	0,57			1>4 5>4
Intermediary Incentives <sup>4</sup>	18	2,33	0,97	9,30	<b>0,000</b>	1>5 6>4
Cheats taken <sup>5</sup>	18	3,11	0,55			1>6 7>4
Political stability <sup>6</sup>	21	3,05	0,22			1>7
Economic stability <sup>7</sup>	96	3,00	0,54			
<b>Being Familiar</b>						
Analysis methods <sup>1</sup>	117	3,27	0,58			
Exchange <sup>2</sup>	75	3,12	0,75			4>1 6>1
Interest rates <sup>3</sup>	39	3,15	0,76			4>2 6>2
Intermediary Incentives <sup>4</sup>	18	3,89	0,51	5,42	<b>0,000</b>	4>3 6>3
Cheats taken <sup>5</sup>	18	3,28	0,54			4>5 6>5
Political stability <sup>6</sup>	21	3,71	0,46			4>7 6>7
Economic stability <sup>7</sup>	96	3,21	0,67			
<b>Avoiding Risk</b>						
Analysis methods <sup>1</sup>	117	2,04	0,91			
Exchange <sup>2</sup>	75	2,40	1,12			2>1
Interest rates <sup>3</sup>	39	2,46	0,73			3>1
Intermediary Incentives <sup>4</sup>	18	2,50	1,19	3,97	<b>0,001</b>	5>1
Cheats taken <sup>5</sup>	18	2,67	0,82			6>1
Political stability <sup>6</sup>	21	2,64	0,71			7>1
Economic stability <sup>7</sup>	96	2,59	0,95			
<b>Avoiding from Regret/Uncertainty</b>						
Analysis methods <sup>1</sup>	117	3,03	0,84			
Exchange <sup>2</sup>	75	3,42	0,87			2>1
Interest rates <sup>3</sup>	39	3,31	0,70			2>4
Intermediary Incentives <sup>4</sup>	18	3,00	0,51	3,83	<b>0,001</b>	3>1
Cheats taken <sup>5</sup>	18	3,25	0,58			6>1
Political stability <sup>6</sup>	21	3,43	0,69			7>1
Economic stability <sup>7</sup>	96	3,45	0,73			7>4



**Table 3. 15 - continue**

<b>Fortune Telling</b>							
Analysis methods <sup>1</sup>	117	2,74	0,61				
Exchange <sup>2</sup>	75	2,67	0,81				3>1
Interest rates <sup>3</sup>	39	3,00	0,48				3>2
Intermediary Incentives <sup>4</sup>	18	2,89	0,16	2,15	<b>0,047</b>		3>7
Cheats taken <sup>5</sup>	18	2,94	0,83				6>1
Political stability <sup>6</sup>	21	3,05	0,50				6>2
Economic stability <sup>7</sup>	96	2,74	0,65				6>7
<b>Effect of Brand, Expert and Environment</b>							
Analysis methods <sup>1</sup>	117	2,62	0,65				
Exchange <sup>2</sup>	75	2,81	0,91				2>1
Interest rates <sup>3</sup>	39	3,03	0,61				3>1
Intermediary Incentives <sup>4</sup>	18	3,06	0,46	5,22	<b>0,000</b>		4>1
Cheats taken <sup>5</sup>	18	2,78	0,62				6>1
Political stability <sup>6</sup>	21	3,10	0,47				7>1
Economic stability <sup>7</sup>	96	3,04	0,49				7>2
<b>Conservative Perception</b>							
Analysis methods <sup>1</sup>	117	3,15	0,88				
Exchange <sup>2</sup>	75	3,04	0,98				
Interest rates <sup>3</sup>	39	3,19	0,73				
Intermediary Incentives <sup>4</sup>	18	3,25	0,83	0,78	0,584		
Cheats taken <sup>5</sup>	18	3,00	0,79				
Political stability <sup>6</sup>	21	3,07	0,51				
Economic stability <sup>7</sup>	96	2,94	1,02				
<b>Believing in the Cost of the Acquisition</b>							
Analysis methods <sup>1</sup>	117	2,58	0,80				
Exchange <sup>2</sup>	75	2,25	0,74				1>2 5>4
Interest rates <sup>3</sup>	39	2,38	0,44				1>4 6>2
Intermediary Incentives <sup>4</sup>	18	1,94	0,67	4,93	<b>0,000</b>		3>4 6>4
Cheats taken <sup>5</sup>	18	2,83	0,59				5>2 7>2
Political stability <sup>6</sup>	21	2,62	0,50				5>3 7>4
Economic stability <sup>7</sup>	96	2,60	0,69				
<b>Conditional Association</b>							
Analysis methods <sup>1</sup>	117	2,53	0,86				3>1 6>4
Exchange <sup>2</sup>	75	2,44	0,67				3>2 6>5
Interest rates <sup>3</sup>	39	3,00	0,74				3>4 7>1
Intermediary Incentives <sup>4</sup>	18	2,25	0,39	9,14	<b>0,000</b>		3>5 7>2
Cheats taken <sup>5</sup>	18	2,17	0,92				6>1 7>4
Political stability <sup>6</sup>	21	3,21	0,72				6>2 7>5
Economic stability <sup>7</sup>	96	2,94	0,72				
<b>Conservatism in Decision Making</b>							
Analysis methods <sup>1</sup>	117	2,36	0,69				2>5 6>2
Exchange <sup>2</sup>	75	2,56	0,85				3>1 6>4
Interest rates <sup>3</sup>	39	2,81	0,58				3>2 6>5
Intermediary Incentives <sup>4</sup>	18	2,25	0,71	5,41	<b>0,000</b>		3>4 6>1
Cheats taken <sup>5</sup>	18	2,17	0,57				3>7
Political stability <sup>6</sup>	21	3,14	0,59				
Economic stability <sup>7</sup>	96	2,50	0,84				

$\bar{X}$ : Mean, sd: Standard deviation

Investment Blindness, Winning Desire, Looking Optimistic and Believing in Self, Being Familiar, Avoiding Risk, Avoiding from Regret/Uncertainty, Fortune Telling, Effect of Brand, Expert and Environment, Believing in the Cost of the Acquisition, Conditional Association and Conservatism in Decision Making Factors become different according to taken when investing ( $p < 0,05$ ). In Investment Blindness variable, the average of the Interest rates participants is significantly higher than the average of the Analysis methods, Exchange, Intermediary Incentives and Economic stability participants. The average of the Political stability participants is significantly higher than the average of the Analysis methods, Exchange, Interest rates, Intermediary Incentives, Cheats taken and Economic stability participants. In Winning Desire variable the average of the Analysis methods and Cheats taken participants is significantly higher than the average of the Exchange and Intermediary Incentives participants. Political stability and economic stability groups have higher means than, exchange, interest rates and intermediary incentives groups. In Looking Optimistic and Believing in Self variable, the average of the Analysis methods participants is significantly higher than the average of the Exchange, Interest rates, Intermediary Incentives, Cheats taken, Political stability and Economic stability participants. The average of the Exchange, Interest rates, Cheats taken, Political stability and Economic stability participants is significantly higher than the average of the Intermediary Incentives participants. In Being Familiar variable, the average of the Intermediary Incentives participants is significantly higher than the average of the Analysis methods, Exchange, Interest rates, Cheats taken and Economic stability participants. The average of the Political stability participants is significantly higher than the average of the Analysis methods, Exchange, Interest rates, Cheats taken and Economic stability participants. In Avoiding Risk variable, the average of the Exchange, Interest rates, Cheats taken, Political stability and Economic stability participants is significantly higher than the average of the Analysis methods participants. In Avoiding from Regret/Uncertainty variable, the average of the Exchange, Interest rates, Political stability and Economic stability participants is significantly higher than the average of the Analysis methods participants. The average of the Exchange and Economic stability participants is significantly higher than the average of the Intermediary Incentives participants. In Fortune Telling variable, the average of the Interest rates and Political stability participants is significantly higher than the average of the

Analysis methods, Exchange and Economic stability participants. The average of the Effect of Brand, Expert and Environment, Exchange, Interest rates, Intermediary Incentives, Political stability and Economic stability participants is significantly higher than the average of the Analysis methods participants. In Believing in the Cost of the Acquisition variable, the average of the Analysis methods, Cheats taken, Political stability and Economic stability participants is significantly higher than, Exchange participants. The average of the Analysis methods, Interest rates, Cheats taken, Political stability and Economic stability participants is significantly higher than the average of the Intermediary Incentives participants. In Conditional Association variable, the average of the Interest rates, Political stability and Economic stability participants is significantly higher than the average of the Analysis methods, Exchange, Intermediary Incentives and Cheats taken participants. In Conservatism in Decision Making variable, the average of the Interest rates and Political stability participants is significantly higher than the average of the Analysis methods, Exchange and Intermediary Incentives participants. The average of the Exchange and Political stability participants is significantly higher than the average of the Cheats taken participants.

## 5. CONCLUSION

From the past to the present, there have been many theories about market movements and the factors that influence the choices of individuals in their investment decisions. Traditional financial theories, which are based on rationality and regard the individual as egocentric entities, accept the assumption that the market is effective. The inadequacy of these theories in explaining investor behavior in case of uncertainty and risk has led to the emergence of behavioral finance that approaches a decision with a more psychological perspective. Behavioral finance is based on the assumption that individuals are not fully rational in their investment decisions and are influenced by various psychological factors in making decisions. Therefore, it is located at the intersection of psychology and economy. While traditional finance models are based on rational individuals and rational decisions, behavioral finance seeks to find and understand deviations from these decisions.

In this study, a total of 384 participants in the insurance sector were surveyed. In the research, it was determined that the majority preferred the stock exchange with a share of 33,6% and invested in foreign exchange with a rate of 26,6%. The fact that the profit margin in the stock market is high and that the stock market players gain high earnings by certain segments of the society, often directs investors to this area. Nevertheless, the recent movements in the foreign exchange market in our country have driven people from every socio-economic level to buy and sell foreign currency. In general, considering that the group included in the study is not an investment professional, it can be said that the participants have investing behaviors acting with herd psychology. The average number of years experienced in the investment field was  $5,76 \pm 6,38$ , and 25% stated that the majority did not control the investment decisions over a certain period, confirming that the participants were generally inexperienced in this area.

According the descriptive statistics of investment decisions, the averages of winning desire and avoiding risk is higher than other factors. Participants' activity in the insurance sector suggests that they are familiar with financial products and use their

professional experience when investing. In particular, it can be said that the risk calculation methods in the insurance sector turn the participants into investors who avoid risk.

In the evaluations made in terms of demographic features, it is noteworthy that women showed more behavior of investment blindness and avoiding from regret / uncertainty. This picture shows that women are more cautious in evaluating the investment opportunities that will be captured in real time than men and they are making less moves in their investment decisions. Similar table was observed in the group with low level of education. However, the participants in the older age group have higher behaviors such as winning desire and avoiding from regret / uncertainty. With the advancing age, individuals fear of losing is expected to decrease and their desire to win is expected to increase. Because the fear of the financial losses to be experienced with old age cannot be replaced again. In addition, with the increasing age, marriage and parenting will bring various responsibilities, therefore avoiding from regret/uncertainty behaviours are expected to increase. In line with this view, it was determined that married participants had high attitudes towards avoiding risk, effect of brand, expert and environment, and cost of the acquisition.

Depending on the increasing level of education, it was determined that the factors of investment blindness, avoiding risk, fortune telling, conservative perception and conservatism in decision making decrease. Because, parallel to the level of education, it is expected that the level of knowledge of the investment market will be increased, and instead investors will take into account the basic and technical analysis data in investment decisions rather than exhibiting attitudes such as fortune telling. However, in the low-income group, it was determined that the orientation towards the factors of being familiar, avoiding risk, fortune telling and conditional association was high. Considering that the level of education of low-income individuals is low, a connection can be made between the two findings.

On the other hand, especially the participants who took information from the TV and listened to the advice of friends, it was noteworthy that the attitudes of investment blindness, avoiding risk, regret / uncertainty, fortune telling, believing of the acquisition and conditional association were high. However, investors who use annual reports of the company, are higher than other investors. All these findings show that

participants with lack of experience and knowledge in the investment sector generally have fortune telling behavior and that they fit the manipulative investor profile.

According to another result of the study, the desire to win in the stock market is high. In general, for the individuals who invest in gold, real estate, bank deposits, treasury bills and bonds, the factors of investment blindness, avoiding risk, conservatism in decision making behaviors come to the fore. Gold, real estate, bank deposits, treasury bills and bonds products are considered as the least risky instruments in the investment market. Especially in our society, gold and real estate is considered to be the most reliable investment areas, so it is expected that investment psychology which does not want to take risks is channeled to these instruments. Although these products are guaranteed investments, earning ratios are very low compared to a professional stock market player. In this case, it is expected that the participants in the stock market will have a higher desire to win.

The fact that the relative experience in the investment market is higher for the participants, is another noteworthy point of the research. It is expected that the investment blindness attitude will decrease and the individual will be an appetite for new investment opportunities. However, the result of the survey is that people with investment experience avoid the risk of having more investment blindness attitudes. The result may be said to be that investors get sufficient income from the investment instruments they use and therefore they are not interested in other markets or investment instruments.

When the results are evaluated in general, it is seen that the individual's sociodemographic characteristics and psychology have an important place in investment decisions. At this point, the magnitude of the impact of behavioral finance trends increases the importance of research on these trends. The behavioral finance trends, the functioning and the effects of these trends are considered to be less effective in the investment decisions. The greater the number of research studies on behavioral finance trends, the greater the inconvenience of trends, impacts and results. For this reason, increasing the number of studies in the field of behavioral finance and increasing the number of participants in the studies; It is recommended that studies should be conducted to determine the linkages of these trends with other fields of study.

Within the scope of the study, only 384 participants from the insurance sector is an important limitation. It is recommended to work on larger samples from different sectors in subsequent studies. In order to evaluate the role of behavioral finance in different markets, research can be repeated with comparisons between the groups to be formed from different investment markets.

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## APPENDICES

### Appendix 1: Survey Form

#### KİŞİSEL BİLGİLER

Lütfen aşağıdaki her madde için size en uygun seçeneği (X) şeklinde işaretleyiniz.			
1	Cinsiyetiniz	<input type="radio"/> Kadın	<input type="radio"/> Erkek
2	Yaşınız	.....	
3	Eğitim Durumunuz	<input type="radio"/> İlköğretim	<input type="radio"/> Lise
		<input type="radio"/> Ön lisans	<input type="radio"/> Lisans
		<input type="radio"/> Lisansüstü	
4	Aylık Ortalama Net Geliriniz	<input type="radio"/> 2000 TL den az	<input type="radio"/> 2000-2999 TL
		<input type="radio"/> 3000-3999 TL	<input type="radio"/> 4000-4999 TL
		<input type="radio"/> 5000-5999 TL	<input type="radio"/> 6000 TL ve üzeri
5	Medeni Durumunuz	<input type="radio"/> Evli	<input type="radio"/> Bekâr
6	Bakmakla yükümlü olduğunuz kişi sayısı (kendiniz dahil)	<input type="radio"/> 1	<input type="radio"/> 2
		<input type="radio"/> 3	<input type="radio"/> 4
		<input type="radio"/> 5	<input type="radio"/> 5'ten fazla

#### MİZAC VE KARAKTER ÖZELLİKLERİ

Lütfen aşağıdaki önermeleri dikkatle okuyunuz ve size en uygun gelen seçeneği (X) şeklinde işaretleyiniz.	Evet	Hayır
Keşfetmekten heyecan duyarım.		
Hızlı karar veririm.		
Savurganım.		
Düzensiz olduğumu düşünürüm.		
Endişeli ve karamsar olduğumu düşünürüm.		
Belirsizlikten korkarım.		
Yabancılardan çekinirim.		
Çabuk yorulurum.		
Duygusal olduğumu düşünürüm.		
Kolay bağlanırım.		
Başka insanlara bağımlı bir yapım vardır.		
Mükemmeliyetçiyim.		
Amacıma ulaşmak için sınırları zorlarım.		
Kolay vazgeçmem.		
Sebat ederim.		
Sorumluluk alırım.		
Amaçlarımı kendim belirlerim.		
Becerikli olduğumu düşünürüm.		
Kendimi olduğum gibi kabullenirim.		
Değişikliklere kolay adapte olurum.		
Başkalarını olduğu gibi kabullenirim.		
Empati kurarım.		
Yardım severim.		
Acıma duygum vardır.		
Temiz kalpli ve vicdanlıyım.		
Yaptığım işe kendimi kaptırırım.		
Çevremdeki insanları bir parçam olarak görürüm.		
Hayatta manevi bir gücün yarattığı mükemmel bir düzen olduğuna inanırım.		

## YATIRIM BİLGİLERİ

Lütfen aşağıdaki maddelerdeki önermeleri okuyunuz ve size uygun gelen seçenekleri (X) şeklinde işaretleyiniz.

<b>1</b>	<b>Yatırım tercihiniz?</b>	<input type="checkbox"/> Döviz	<input type="checkbox"/> Altın	<input type="checkbox"/> Hisse senedi
		<input type="checkbox"/> Gayrimenkul	<input type="checkbox"/> Banka Mevduatı	<input type="checkbox"/> Hazine bonosu
		<input type="checkbox"/> Tahvil	<input type="checkbox"/> Repo	<input type="checkbox"/> A Tipi Yatırım fonu
		<input type="checkbox"/> B Tipi Yatırım Fonu	<input type="checkbox"/> Forex	
<b>2</b>	<b>Kaç yıldır yatırım yapıyorsunuz?</b>	.....		
<b>3</b>	<b>Yatırım yaparken öncelikle yararlandığımız bilgi kaynağı?</b>	<input type="checkbox"/> Televizyon	<input type="checkbox"/> İnternet	<input type="checkbox"/> Gazete
		<input type="checkbox"/> Sosyal Medya	<input type="checkbox"/> Arkadaş tavsiyesi	<input type="checkbox"/> Aracı Kurumların Analiz ve Raporları
		<input type="checkbox"/> Yatırım Danışmanlarının Tavsiyeleri	<input type="checkbox"/> Firmanın Yıllık Faaliyet Raporları	<input type="checkbox"/> Firmanın Basın Açıklamaları
		<input type="checkbox"/> Kamuoyu Aydınlatma Platformu		
<b>4</b>	<b>Yatırım kararlarını gözden geçirme sıklığımız?</b>	<input type="checkbox"/> Her gün	<input type="checkbox"/> Haftada bir kaç defa	<input type="checkbox"/> Her hafta
		<input type="checkbox"/> Ayda bir kaç defa	<input type="checkbox"/> Her ay	<input type="checkbox"/> Bir kaç ayda bir
		<input type="checkbox"/> Belirli bir sıklıkta değil		
		<input type="checkbox"/> Analiz yöntemleri	<input type="checkbox"/> Döviz kurları	<input type="checkbox"/> Faiz oranları
<b>5</b>	<b>Yatırım yaparken esas aldığımız faktörler?</b>	<input type="checkbox"/> Aracı kurum yönlendirmeleri	<input type="checkbox"/> Alınan tüyolar	<input type="checkbox"/> Siyasi istikrar
		<input type="checkbox"/> Ekonomik istikrar		

## YATIRIM KARARLARI

Lütfen aşağıdaki önermeleri dikkatle okuyunuz ve karşılarında yer alan ölçekte size en uygun gelen seçeneği işaretleyiniz.		Hiç Katılmıyorum	Çok Az Katılmıyorum	Biraz Katılmıyorum	Büyük Ölçüde Katılmıyorum	Tamamen Katılmıyorum
<b>1</b>	Kişisel özelliklerimden kaynaklanan yatırım yeteneğim oldukça gelişmiş düzeydedir.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>2</b>	İyi bir markanın piyasaya sunduğu ürünlere yatırım yapmakta tereddüt etmem.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>3</b>	Yatırım yaptığım bir varlık değer kaybettiğinde, alış fiyatına ulaşmadan elden çıkarmam.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>4</b>	Yatırım kararını bir defa verdikten sonra, yeni gelen yatırım bilgilerine itibar etmem.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>5</b>	Zarar ettiğim bir yatırımı, bir daha asla dikkate almam.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>6</b>	Yatırım kararlarındaki başarının kişisel yeteneklerimden kaynaklandığına inanırım.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

7	Yatırımlarımı kendim yönetebildiğim ölçüde kazanma ihtimalim artar.	1	2	3	4	5
8	Kazandıracığına inandığım yatırım kaybettirmeye başlasa bile başlangıç stratejilerime uyarım.	1	2	3	4	5
9	Daha önce herhangi bir şekilde işlem yapmadığım yeni bir varlığa yatırım yapmakta tereddüt ederim.	1	2	3	4	5
10	Kolayca sahip olduğum varlığı kolayca elden çıkarabilirim.	1	2	3	4	5
11	Bir yatırım ile ilgili sahip olduğum düşünceleri destekleyen göstergeler, yatırım yapma motivasyonumu artırır.	1	2	3	4	5
12	Zarar ettiysem, bu sonucu daha önceden biliyordum düşüncesine kapılıyorum.	1	2	3	4	5
13	Bir varlığa dönük yatırım kararı vermek için son bir aylık performansını izlemenin yeterli olduğunu düşünürüm.	1	2	3	4	5
14	Yüksek olasılıkla finansal hedeflerime ulaşacak bir portföyü, düşük olasılıkla ulaştıramayacak olan portföye tercih ederim.	1	2	3	4	5
15	Daha önce sahip olmak isteyip de sahip olamadığım bir varlığı, tekrar bir fırsat yakaladığımda yüksek bir bedelle de olsa alırım.	1	2	3	4	5
16	Yatırım yapmayı, tasarruf yapmaya tercih ederim.	1	2	3	4	5
17	Yatırım yaparken, içimde iyimser bir ruh hali oluşur.	1	2	3	4	5
18	Zarar ettiğim bir varlığı, kolay kolay elden çıkaramam.	1	2	3	4	5
19	Düşüş eğilimine girmiş bir varlığa yatırım yapmakta tereddüt ederim.	1	2	3	4	5
20	Yatırım kararı verirken dini inançlarımdan etkilenirim.	1	2	3	4	5
21	Yatırımda başarılı olmuş kişilerin taktiklerini izlerim.	1	2	3	4	5
22	Yatırım kararlarında sezgilerime çok güvenirim.	1	2	3	4	5
23	Daha önce kazandığım bir yatırıma düşünmeden yeniden yatırım yaparım.	1	2	3	4	5
24	Yatırım yaptığımda, mutlaka satış fiyatını belirlerim ve yatırımın değeri bu fiyata ulaşmadan satmam.	1	2	3	4	5
25	Yatırım stratejime ters düşen haberlerden uzak dururum.	1	2	3	4	5
26	Yatırım ile ilgili ses getiren olumlu haberler, yatırım yapmamda etkilidir.	1	2	3	4	5
27	Yatırım kararlarındaki başarısızlığın çoğunlukla dış kaynaklı veya şans eseri olduğuna inanırım.	1	2	3	4	5
28	Kararlarını kendim vermediğim yatırım süreçlerinin zarar etme ihtimalinin yüksek olduğuna inanırım.	1	2	3	4	5
29	Bir varlığın kazanç getireceğine inandığım zaman ondan asla vazgeçmem.	1	2	3	4	5
30	Daha önce işlem yaptığım ve bilgi sahibi olduğum bir varlığa daha sonra da rahatça yatırım yapabilirim.	1	2	3	4	5
31	Bedelini fazlasıyla ödediğim bir varlığı kolay kolay elden çıkaramam.	1	2	3	4	5
32	Bir yatırım ile ilgili sahip olduğum düşüncelere ters düşen göstergelere pek itibar etmem.	1	2	3	4	5
33	Kazanç elde ettiğimde, aslında bunu en başından beri bildiğimi düşünürüm.	1	2	3	4	5
34	Son dönemlerde olumlu haberler aldığım yatırıma, kazanç için fırsat görürüm.	1	2	3	4	5
35	Düşük oranda kaybetme olasılığı bulunan bir yatırım yerine, yüksek oranda kazanma olasılığı bulunan bir yatırıma tercih ederim.	1	2	3	4	5
36	Daha önce bana yüksek kazanç getiren bir varlığı kolayca elden çıkaramam.	1	2	3	4	5
37	Konforlu yaşamak için her zaman para harcarım.	1	2	3	4	5
38	Yatırım kararlarımda asla zarar etmem.	1	2	3	4	5
39	Yatırım yaptığım varlıkta kara geçtiğimde hızlıca elden çıkarırım.	1	2	3	4	5
40	Sahip olduğum yatırım, yükselme eğiliminde olsa bile elden çıkarırım.	1	2	3	4	5
41	İçinde bulunduğum çevrenin tercihlerinden etkilenirim.	1	2	3	4	5
42	Uzman yorumlarına uymanın, yatırım kararlarındaki riski azalttığımı düşünürüm.	1	2	3	4	5



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