IMPACT OF PERSONALITY TRAITS AND RISK ATTITUDE ON INDIVIDUAL RESPONSE TO RISK: AN EXPERIMENTAL EVIDENCE

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ABSTRACT

IMPACT OF PERSONALITY TRAITS AND RISK ATTITUDE ON INDIVIDUAL RESPONSE TO RISK: AN EXPERIMENTAL EVIDENCE

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The present study aims to contribute to insurance sector by investigating the risk reduction mechanisms: self-insurance, self-protection, and market insurance. First, individual valuations/demands for these mechanisms in fire and earthquake events are analyzed through conducting an experiment to 78 students from Middle East Technical University In addition, the effects of risk attitude, personality traits, and demographic variables (that are measured through using a questionnaire) on valuations to these precautionary actions' are examined. The findings show that, consistent with the theory, self-insurance and market insurance are substitutes to each other; contrary to the theory, self-protection and market insurance are not complements, they are also substitutes to each other. Further, individuals prefer self-protection and self-insurance to market insurance for both fire and earthquake events. Lastly, individual investment attitude is found to affect the valuations of these three risk reduction mechanisms positively concluding that people perceive these mechanisms as an investment tool.

Keywords: Self-insurance, Self-protection, Market Insurance, Personality Traits, Risk Attitudes.

ÖZ

KİŞİLİK ÖZELLİKLERİNİN VE RİSK TUTUMUNUN BİREYSEL RİSK ALMA TERCİHİNE ETKİSİ: DENEYSEL BİR KANIT

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Bu çalışma, risk azaltma mekanizmaları olan kendi kendini sigortalama, kendi kendini koruma ve piyasada mevcut sigortayı alma tercihlerini inceleyerek sigorta sektörüne katkıda bulunmayı amaçlamaktadır. Öncelikle, 78 Orta Doğu Teknik Üniversitesi öğrencisine bir deneysel çalışma uygulanarak, deprem ve yangın olayları için bu mekanizmalara olan bireysel değerlendirmeler/talepler analiz edilmektedir. Bunun yanı sıra, risk tutumunun, kişilik özelliklerinin ve demografik değişkenlerin (anket kullanılarak ölçülmektedir), bu koruyucu tedbirlere biçilen değere olan etkisi incelenmektedir. Bulgular, teoriyle tutarlı olarak kendi kendini koruma ve piyasada mevcut sigortanın birbirinin yerine geçtiğini; teorinin aksine kendi kendini koruma ve piyasada mevcut sigortanın birbirinin bütünleyicisi olmadığını, bu mekanizmaların da birbirinin yerine geçtiğini göstermektedir. Dahası, bireylerin hem deprem hem de yangın olayları için kendi kendini sigortalama ve kendi kendini koruma mekanizmalarını piyasada mevcut sigortaya tercih ettikleri anlaşılmaktadır. Son olarak, bireysel yatırım tutumunun bu üç risk azaltma

mekanizmasına biçilen değeri pozitif yönde etkilediği ve insanların bu mekanizmaları bir yatırım aracı olarak gördüğü anlaşılmaktadır.

Anahtar Kelimeler: Kendi Kendini Sigortalama, Kendi Kendini Koruma, Piyasada Mevcut Sigorta, Kişilik Özellikleri, Risk Tutumu.

To My Family and To My Little Nephew.

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CHAPTER 1

INTRODUCTION

Some people may think that natural disasters are our destiny. However, human being has found solutions to overcome them.

Even if it has been made some predictions based on statistics related to natural disasters, occurrence of them cannot be prevented by people. However, effective precautions can be taken to reduce or prevent the damage.

In the present study, people's standpoint to natural disasters is examined with respect to earthquake and fire. The main reason of choosing these disasters is that they appear frequently in Turkey. Especially, as Turkey is located in a vulnerable location for earthquakes, they often occur.

As shown in Figure 1, especially the west, north and east sides of Turkey are first-degree earthquake hazard zones and the most part of the rest also carries an earthquake risk (Republic of Turkey Prime Ministry Disaster and Emergency Management Presidency (AFAD), Earthquake Department).

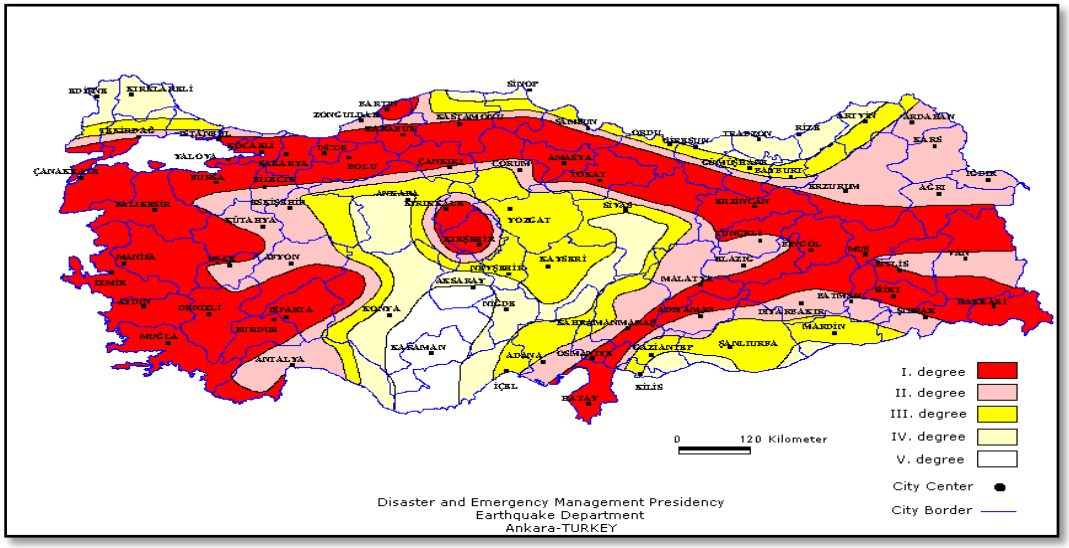

Figure 1. Earthquake Hazard Map of Turkey (Source: AFAD, 2012)

Earthquakes have been frequently observed in the past in various parts of the country, and it continues to happen. For example, Malazgirt Earthquake with the death toll of 2,626 in 1903, Hakkari Earthquake with the death toll of 2,514 in 1930, Erzincan Earthquake with the death toll of 32,962 in 1939, Bolu Earthquake with the death toll of 3,959 in 1944 (TÜBİTAK) and the most recent ones are Gölcük Earthquake with the death toll of 17,480 in 1999 (TÜBİTAK) and Van Earthquake with the death toll of 644 in 2011 (Earthquake Report of Middle East Technical University Disaster Management Implementation and Research Center) are among the most catastrophic disasters. Besides loosing lives, a huge financial loss occurred, and people lost their jobs and houses. Because Turkey is in earthquake zone, risk of occurrence of event always exists. In this direction, compulsory earthquake insurance in Turkey constitutes a system of insurance that

is in general meaning, intended for dwellings that remain inside the boundaries of the municipality (Turkish Catastrophe Insurance Pool/TCIP).

Fire events are also seen frequently both in forests and buildings, and the main reason of that is mostly negligence of people as well as natural reasons like air temperature, speed and direction of wind and lightning (Turkish State Meteorological Service). In this direction, fire insurance in Turkey compensates the whole physical losses of all types of buildings that are used with personal and commercial purposes against self-induced fire, lightning and explosions. In addition, physical damages are included to the content of the insurance in the consequence of intervention to extinguish the fire (Association of the Insurance and Reinsurance Companies of Turkey). However, unfortunately the necessary precautions are generally not taken to prevent these events that affect people's lives both financially and emotionally.

However, it is possible to reduce the amount of loss by taking necessary precautions for each disaster, and it is possible to prevent the occurrence of fire if the reason arises from people. For this purpose, people's approaches to these events are investigated, and the notion of self-insurance that decreases the loss amount, self-protection that decreases the probability of the occurrence of event and market insurance that is a promise of compensation for any potential future losses are examined and people's attitudes towards these risk reduction mechanisms are analyzed.

In the present study, I examine the three risk reduction mechanisms -self-insurance, self-protection and market insurance- in a comprehensive manner. More specifically, First, I empirically test the theoretical results of Ehrlich and Becker (1972) that claims while self-insurance and market insurance mechanisms are substitutes, self-protection and market insurance mechanisms are complements. Second, I investigate whether individuals demands for these three risk reduction mechanisms differently. Third, I examine the effects of risk attitudes, personality traits and some demographic variables on individual valuations on these risk reduction mechanisms. Last, I examine the effects of personality traits and demographic factors on individual risk attitude.

The present study has several contributions to literature in many aspects. Individual valuation to these mechanisms for earthquake and fire are examined in this study. The current study contributes to the existing literature by testing the theory of Ehrlich and Becker (1972) empirically. The study concluded that self-insurance-market insurance mechanisms and self-protection-market insurance mechanisms are substitutes to each other.

Another crucial contribution to literature is to add market insurance to the comparison of self-insurance and self-protection. Market insurance has not been tested before, however, all three risk reduction mechanisms are compared in this study and the findings show that a significant difference exists between market insurance and self-insurance mechanisms for earthquake event and a significant difference exists between market insurance and self-protection mechanisms for fire event.

One more notable contribution is asking to subjects conceptual scenarios instead of general ones that are different from literature. More specifically two loss events: Earthquake and fire are taken into account when scenarios are designed. Lastly, the effects of risk attitudes and personality traits on individual preferences for these risk reduction mechanisms are investigated through asking a questionnaire to the participants of the experiment.

For the purpose of collecting data about individual valuations/preferences on self-insurance, self-protection and market insurance, I conduct an experiment. The experiment includes 57 hypothetical questions for each risk reduction mechanism at different prices and probability levels, and it is carried out on 78 participants from Faculty of Economic and Administrative Sciences at Middle East Technical University. These mechanisms are explained with hypothetical scenarios for earthquake and fire events: Self-insurance mechanisms are exemplified for earthquake as consolidation of house and for fire as decorating the house from nonflammable materials, and thus, they reduce the size of loss to zero. Self-protection mechanism is exemplified for fire as a fire alarm system which reduces the probability of occurrence of the loss event to zero and thus, the event does not occur. Market insurance is available insurance in the market that decreases the amount of loss to zero by compensating the amount of loss. Scenarios are asked to subjects for three different price and probability levels to examine risk reduction preferences since it is important to understand when people tend to purchase a risk reduction mechanism, at what price they accept to buy and at what probability of the risky event they are ready to purchase. Besides, when price of

mechanism and probability level of occurrence of the loss event are same for all mechanisms, the factors that affect these risk reduction preferences are investigated.

In addition to measure the factors that affect these risk reduction mechanisms: namely, risk attitude, personality trait, and some demographic variables (income, gender, and age) are examined through using questionnaire (that consists of 85 questions) taken from the literature.

The first part of the study investigates whether self-insurance, self-protection and market insurance mechanisms are substitutes of each other or complements. According to subjects' preferences, demands to the mechanisms are collected, and thus, own price elasticity of demands is calculated. In addition, by asking cross-questions, cross-price elasticity of demands is calculated. As a consequence, the findings of study reveal that consistent with the theory self-insurance and market insurance mechanisms are substitutes, however; contradictory to the theory self-protection and market insurance are not complements, they are substitute, too. The results actually are not surprising because the theory is presenting that self-insurance and market insurance mechanisms decrease the loss size to zero and self-protection mechanisms decrease the probability of event to zero. In other words, people will face some amount of loss, but all loss will be compensated or people do not face any event that they will suffer. However, since it is not possible to prevent an earthquake disaster, self-protection mechanism cannot be examined for earthquake, and self-insurance and market insurance mechanisms

are handled to examine substitute and complementary relationship. On the other hand, all the three risk reduction mechanisms are analyzed for fire event.

The second part of the study argues that whether any significant difference exists among these risk reduction mechanisms according to the expected utility theory. In this way, subjects are asked hypothetical questions at different price and probability levels to measure demand. Since there are more than two mechanisms and demand to these risk reduction mechanisms is a discrete variable, non-parametric Cochran Q-test is used for binary choices (if one purchases the mechanism, demand will be 1 and if one does not purchase, demand will be 0) at each price and probability level and non-parametric Friedman test is used to compare aggregate demand which is calculated by collecting demand of risk reduction mechanisms at each price and probability level and thus, risk reduction mechanisms could be compared irrespective of price and probability levels. The findings show that a significant difference exists between market insurance and self-insurance mechanisms for earthquake disaster with respect to individual demand. In addition, market insurance and self-insurance mechanisms are found to be different from each other for fire event with respect to individual demand.

In the third part of the study, subjects are asked their maximum willingness to pay; in other words, at what price they are ready to purchase these risk reduction mechanisms. According to their valuation, maximum willingness to pay is regressed with personality traits, risk attitude and demographic factors for each price and probability level. The reason of conducting regression analysis is to explore availability of significant factors that affect maximum willingness to pay

decisions when price and probability levels are held constant. Normality and linearity assumptions are tested, and when these assumptions are violated for some dependent variables, necessary transformations are conducted to data. As a consequence, the results show that while personality traits do not have a significant effect on maximum willingness to pay decisions, risk attitudes and some demographic variables like age and gender affect significantly these decisions.

In the last part of the study, risk attitude, personality traits and demographic factors are measured by asking a questionnaire to the subjects participated in. While examining personality traits the questionnaire about personality characteristics is designed for Turkish sample (Gençöz and Öncül, 2012) based on five factor model of personality (McCrae and John, 1972). Validity of the model has been tested before and reliability analysis and varimax rotation results have been found significant, thus, the five factor model in Turkish sample has been chosen. In the same way, according to the factor analysis results, domain-specific risk attitude scale is used to measure risk attitude of participants (Weber, 2002) and by means of this scale people's perception towards risk at six different domains can be understood (social, recreational, health/safety, gambling, ethical and investment). Regression analyses are conducted after normality and linearity assumptions are tested and the factors that affect risk attitude significantly are revealed. The results show that openness to experience trait affects social risk attitude significantly and positively. In addition, income has a negative effect on recreational decisions. Besides, conscientiousness and gender have important

roles on health risk attitude, and it can be concluded that women are more risk averse than men concerning health issues. Agreeableness and gender affect the ethical risk attitude significantly and negatively. Thus, it can be said that women are more risk averse in ethic domain. Lastly, as the degree of openness to experience trait increases, people invest more.

In conclusion, individuals prefer self-protection and self-insurance to market insurance for both fire and earthquake events. Lastly, individual investment attitude is found to affect the valuations of these three risk reduction mechanisms positively concluding that people perceive these mechanisms as an investment tool.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Self-Insurance, Self-Protection and Market Insurance

Risk -meaning, in general, possibility of suffering harm or loss- is nearly used by all people in daily lives. People would like to take some precautions under circumstances that may result in loss. Owing to these precautions, they may prevent the adverse effect of possible losses, they are provided to be compensated. These precautionary mechanisms can be defined as Market Insurance, Self-Insurance and Self-Protection (Ehrlich and Becker, 1972). Market insurance which means a promise of compensation for any potential future losses, self-insurance that means a reduction in size of a loss and self-protection that means a reduction in the probability of a loss are risk reduction mechanisms that people choose them. For example, sprinkler systems reduce the loss from fires; burglar alarms reduce the probability of illegal entry; cash balances reduce the fluctuations in consumption; medicines, certain foods and medical checkups reduce vulnerability to illness; and good lawyers reduce both the probability of conviction and the punishment for crime. In a sense, while installing a burglar alarm is an example of self-protection which reduces the probability of getting burgled; putting valuable items in a safety place is an example of self-insurance which reduces the size of loss.

The explanation of theory of Ehrlich and Becker (1972) is seen below;

2.1.1 Theoretical Framework

2.1.1.1 Market Insurance and Self-Insurance

If market and self-insurance were both available, values of c and s would be chosen simultaneously to maximize the expected utility function (Ehrlich and Becker, 1972);

$$U^* = (1-p)\, U(I_1^e - c - s\pi) \; + pU(I_1^e - L(L^e, c) - \; c + s)\,, \qquad (1)$$

If the price of market insurance were independent of the amount of self-insurance, the first-order optimality conditions would be,

$$-(1-p)U_1'\pi + pU_0' = 0, \qquad (2)$$

$$-(1-p)U_1' - pU_0'[L'(c) + 1] = 0, \qquad (3)$$

By combining these equations we get,

$$\pi = -\frac{1}{L'(c) + 1} \quad . \qquad (4)$$

In equilibrium, therefore, the "shadow price" of self-insurance would equal the price of market insurance and clearly, market insurance and self-insurance are "substitutes" in the sense that an increase in π, the probability of loss being the same, would decrease the demand for market insurance and increase the demand for self-insurance.

2.1.1.2 Market Insurance and Self-Protection

If market insurance and self-protection were jointly available, the function,

$$U^* = [1 - p(p^e, r)]U\big(I_1^e - r - s\pi(r)\big) + p(p^e, r)U(I_0^e - r + s), \tag{5}$$

would be maximized with respect to r and s; the first-order optimality conditions are;

$$-(1-p)U_1^{'}\pi + pU_0^{'} = 0\ , \tag{6}$$

$$-p^{'}(r^*)(U_1 - U_0) - (1-p)U_1^{'}[1 + s^*\pi^{'}(r^*)] - pU_0^{'} = 0. \tag{7}$$

If market insurance were always available at an actuarially fair price regardless of the amount spent on self-protection, then $\pi = p/\,(1 - p)$, and the optimal amount of market insurance (s^*) equalizes income in both states of the world. There is still an incentive to spend on self-protection, however, because, π is negatively related to these expenditures (r);

$$\pi^{'}(r) = \frac{p^{'}(r)}{(1-p)^2}, \tag{8}$$

Substituting $U_1 = U_0$ and $U_1^{'} = U_0$ into, and using above equation and the fact that $s^* = (1-p)(I_1^e - I_0^e)$ we get; (9)

$$p^{'}(r^*) = -\frac{1-p}{s^*} = \frac{1}{I_1^e - I_0^e} \tag{10}$$

$$\frac{U(I_1^e - r^0) - (I_0^e - r^0)}{I_1^e - I_0^e} \tag{11}$$

$$=\bar{U}' < (1-p)U'(I_1^e - r^0) + pU'(I_0^e - r^0). \quad (12)$$

which is likely provided p is not very small and U is concave. Indeed, if utility were a quadratic function of income, r^* would be larger than r^* if p were larger than one-half. Market insurance and self-protection are complements in the sense that the availability of the former could increase the demand for the latter, but also in the sense that an increase in the productivity of self-protection or a decrease in the real cost of market insurance would increase the demand for both.

As mentioned earlier, market insurance, self-insurance and self-protection are risk reduction mechanisms that have been analyzed among their interaction and the effects of changes in prices, income and other variables on the demand for these alternative forms of insurance by using the 'state preference' approach under uncertainty and combining expected utility and indifference curve analysis (Ehrlich and Becker, 1972). The findings of the study revealed that market insurance and self-insurance were shown to be substitutes, but market insurance and self-protection could be complements of each other. Accordingly, the hypothesis is formulated;

H_1=Self-insurance and market insurance mechanisms are substitutes.

H_2=Self-protection and market insurance mechanisms are complements.

Besides, more risk-averse individuals do not necessarily invest in self-protection activities, but more risk-averse individuals were found to invest more in self-

insurance (Dionne and Eeckhoudt, 1985; Briys and Schlesinger, 1990; Briys, Schlesinger and Schulenburg, 1990).

According to Prospect Theory (Kahneman and Tversky, 1992), people are risk averse for gains and risk seekers for losses in high probability events, and risk averse for losses and risk seekers for gains in low probability events.

Lee (2010) examined the effects of the increase in risk aversion on self-insurance. The findings of the study showed that more risk-averse individuals invest more in self-insurance in the case of two states. However, in more than two states, it cannot be reached to the same conclusion because self-insurance is not effective in reducing larger losses compared to smaller losses; therefore, self-insurance cannot be assumed as insurance for more than two states. Besides the effects of probability to protection preferences, by investigating the effect of feedback, he made a notable contribution to the literature (Shafran, 2011). Scade, Kunreuther and Kaas (2002) analyzed that whether individual's willingness to pay (WTP) for insurance for high-stakes decision is related to either probability or person's concern perception. The findings of the study revealed that for low probability high consequence events, concern plays a significant role in determining WTP for insurance and concern has a significant role when probabilities are given precisely.

2.1.2 Empirical Findings

Shogren (1990) aimed to examine the effect of self-protection and self-insurance on individual response to risk as private or collective, and he found notable

evidence that the two mechanisms were significant in reducing risk. The results of the study showed that while reducing risk by altering the probability or severity of an event, private self-protection was preferred to self-insurance, and besides private mechanisms were valued significantly more greatly than the collective mechanisms for both self-protection and self-insurance. Another important finding of the study was that individuals were oversensitive to changes in the probabilities of low-probability events. Mauro and Maffioletti (1996) investigated how individuals value the two risk reduction mechanisms, namely, self-protection and self-insurance when the probability of loss is ambiguous. Then, they compared the mechanisms when the probability of loss is known. The findings of study revealed that there is no significant difference between the two risk management tools consistent with Expected Utility Theory. In an experimental study conducted by Özdemir (2007), individual valuations of the two risk reduction mechanisms, which are self-insurance and self-protection, in risky versus ambiguous outcome situation were examined. In other words, the situations in which the probability of occurrence of an event and the size of loss are known were compared with situations in which the probability of occurrence of an event is known but the size of the loss is not known. In addition, the distinction in self-insurance and self-protection context between risk and ambiguity was explored. The findings of the study revealed that there was not a significant difference between ambiguous and risky situations in terms of individuals' valuations of two risk reduction mechanism. Besides, perceptions of decision makers were not different from each other under risky situations. Since

market insurance compensates only the loss amount and does not consider health issues, it is expected that market insurance is significantly different in terms of individual demand. Thus, the hypothesis is formulated;

H_3=Individual valuations do not differ significantly between self-insurance and self-protection.

H_4=Individual valuations do not differ significantly between self-insurance and market insurance.

H_5 = Individual valuations do not differ significantly between self-protection and market insurance.

There has been conducted various studies and researches in order to examine the effect of both ambiguity aversion (unknown probability of loss) and risk aversion (known probability of loss) on self-insurance, self-protection and market insurance mechanisms. Alary, Gollier and Treich (2012) showed that while ambiguity aversion increases the demand of self-insurance and insurance coverage, it decreases the demand of self-protection. They investigated ambiguous context with loss and no loss states which provide them much simpler results to comprehend the impact of ambiguity on demand. The results of the study indicated that ambiguity aversion increases the perceived probability of loss and thus, this increase in the perceived probability of loss increases the willingness-to-pay for self-insurance and insurance coverage, but it decreases the willingness-to-pay for self-protection.

In another study (Hogarth and Kunreuther, 1989) examined risk, ambiguity and insurance decision; it was found that as probabilities of losses increased, aversion to ambiguity decreased. In addition, consumers exhibit their ambiguity preference for high probability of loss events and for low probability of loss events and prices for both consumers and firms indicated that they are aversion to ambiguity. Besides, sensitivity to ambiguity varies as a function of the probability of potential loss. Shafran (2011) investigated the effect of experience on preferences for self-protection against low and high probability losses and changes in demand for self-protection while the probability of a loss is getting smaller. Subjects were gained experience by repeatedly making choices with regard investing in a protective activity. The findings of the study revealed that subjects preferred more invest in a high probability low outcome risk than a low probability high outcome risk with the same expected loss and it could be comprehend that subjects were not very sensitive to changes in the price of self-protection.

2.2 Risk Attitude

2.2.1 Theoretical Framework

Expected Utility Model (Neumann and Morgenstern, 1947) named as a major theory, affirmed that while individuals decide under risk, their choices base on rational criteria and with that choice, a rational decision maker would prefer the prospect that offers the highest expected utility. They claim that individuals behave rationally because they desire to obtain maximum utility or satisfaction.

Rational individual according to the Expected Utility Theory's Axioms;

Where p and q denote lotteries and u refers to outcome;

$$p \geq q \; iff \; (only \; if) \; E[u(p)] \geq E[u(q)] \tag{13}$$

2.2.1.1 Axiom of Completeness

Assumed two different lotteries; p and q,

• For every p and q of $p \geq q$ or $q \geq p$

• There is no difference between the choices and individuals prefer either p or q.

2.2.1.2 Axiom of Transitivity

Assumed three different lotteries; p, q and r

• For every p, q and r, if $p \geq q$ and $q \geq r$, then $p \geq r$

• Individuals decide consistently.

2.2.1.3 Axiom of Independence

Assumed three different lotteries; p, q and r, and $0 < \alpha < 1$

• If $p \geq q$, and then $\alpha p + (1 - \alpha) r \geq \alpha q + (1 - \alpha)$ r for any r

• As both equation yield r with probability$1 - \alpha$, the choice depends on the preference between p and q.

2.2.1.4 Axiom of Continuity

• If $p \geq q$ and $q \geq r$, then $\alpha p + (1 - \alpha)q \geq \beta q + (1 - \beta)r$, for any α and β in (0,1)

• The rationale of this axiom is based on the observation that if α is chosen near to 1, then the difference between p and $\alpha p + (1 - \alpha)q$ is negligible, therefore one

can argue that $\alpha p + (1 - \alpha)q$ will be preferred to q for some $0 < \alpha < 1$ whenever p is preferred to q.

When all these axioms are performed, the individual is said to be rational and the preferences can be represented by a utility function.

However, Tversky and Kahneman (1981) developed a theory that shows individuals' patterns and expected utility theory is incompatible. The theory restricts the choices by indicating numerical probabilities and quantitative outcomes of prospective events. In addition, the value of an uncertain outcome is multiplied by a weighted decision that is different from expected utility that claims the value of an uncertain outcome is weighted by its probability. With the extension of the theory cumulative prospect theory was developed that considered cumulative decision weights rather than separate. The enhanced theory included uncertain as well as risky choices with any number of outcomes with different weighting functions for gains and losses (Tversky and Kahneman, 1992).

2.2.2 Empirical Studies

One of the most common definitions of risk, supported by various researchers is the probability distribution of an event to be known, which is different from uncertainty defined as an event of unknown probability distribution (Knight, 1921). Decision making under risk has been investigated in a number of studies. While examined this phenomena, the perceived risk magnitude notion that means how large a person's perception against a risk associated situation became

important. This perception determines risk attitude and risk propensity for which people can be classified as risk taker, neutral or risk averse. Risk behavior is defined as actual behavior of people in risky situations (Rohrmann, 2004).

While measuring risk attitudes, variety of instruments were developed. Risk Orientation Questionnaire (ROQ) aims at general direction towards risk-propensity by presenting statements for expression risk propensity and risk aversion by using 5-point scale. Risk Propensity-Holistic Questions (RPQ) was developed for direct and holistic self-assessment of risk propensity of individuals. Risk Situation Questionnaire (RSQ) presents stories that people confront a risky situation that include good reasons for both risk-taking and risk-avoiding. Risk Motivation Questionnaire (RMQ) elaborates a set of motivations which may induce people to engage in risky activities (Rohrmann, 2004).

Beetsma and Schotman (2001) measured individual's risk attitudes by using natural data from a television game show related to guessing a word. In each round, players decide whether they stop or continue to the game, and according to their decision they have possibility of doubling their money or losing everything. By this means, they could measure both constant absolute risk aversion and constant relative risk aversion by adopting an expected-utility maximizing framework as seen from the table.

Table 1. Risk Classification Scale

Range of Relative Risk Aversion	Risk Preference Classification
r < -0.95	highly risk loving
-0.95 < r < -0.49	very risk loving
-0.49 < r < -0.15	risk loving
-0.15 < r < 0.15	risk neutral
0.15 < r < 0.41	slightly risk averse
0.41 < r < 0.68	risk averse
0.68 < r < 0.97	very risk averse
0.97 < r < 1.37	highly risk averse
1.37 < r	stay in bed

Holt and Laury (2002) developed a model in order to measure the degree of risk aversion. There are ten binary rows that include probabilities of both two payoffs for two options (Option A and Option B). For example, in first row whereas Option A represents 2.00$ payoff with 1/10 probability and 1.60$ payoff with 9/10 probability, Option B represents 3.85$ payoff with 1/10 probability and 0.10$ payoff with 9/10 probability. At the end of the decision preferences, risk propensity can be classified according to the range of relative risk aversion. Classifications, probabilities and payoffs for two options can be seen as below;

Table 2. The Ten Paired Lottery-Choice Decisions with Low Payoffs

Option A	Option B	Expected Payoff Difference
1/10 of $2.00, 9/10 of $1.60	1/10 of $3.85, 9/10 of $0.10	$1.17
2/10 of $2.00, 8/10 of $1.60	2/10 of $3.85, 8/10 of $0.10	$0.83
3/10 of $2.00, 7/10 of $1.60	3/10 of $3.85, 7/10 of $0.10	$0.50
4/10 of $2.00, 6/10 of $1.60	4/10 of $3.85, 6/10 of $0.10	$0.16
5/10 of $2.00, 5/10 of $1.60	5/10 of $3.85, 5/10 of $0.10	-$0.18
6/10 of $2.00, 4/10 of $1.60	6/10 of $3.85, 4/10 of $0.10	-$0.51
7/10 of $2.00, 3/10 of $1.60	7/10 of $3.85, 3/10 of $0.10	-$0.85
8/10 of $2.00, 2/10 of $1.60	8/10 of $3.85, 2/10 of $0.10	-$1.18
9/10 of $2.00, 1/10 of $1.60	9/10 of $3.85, 1/10 of $0.10	-$1.52
10/10 of $2.00, 0/10 of $1.60	10/10 of $3.85, 0/10 of $0.10	-$1.85

Domain Specific Risk-Attitude Scale which was developed by Weber (2002) measures individuals' differences in attitude toward risk in different content domains; namely, social, recreational, health/safety, gambling, ethical and investment. The model distinguishes two psychological variables, risk perception and attitudes towards perceived risk, from each other and examines the risk-taking determinants. The study proved that people are not consistently risk averse or consistently risk taker. In other words, people can differ in decision making in different risk contents. By conducting factor analysis to these domains, reliability of the domains is checked, and found that risk taking is domain-specific. Therefore, this risk attitude scale is used in the present study.

Table 3. Domain Specific Risk Attitude Scale

	Domain Specific Risk Attitude Scale	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Admitting that your tastes are different from those of your friends.	1	2	3	4	5
2.	Going camping in the wilderness, beyond the civilization of a campground.	1	2	3	4	5
3.	Betting a day's income at the horse races.	1	2	3	4	5
4.	Buying an illegal drug for your own use.	1	2	3	4	5
5.	Cheating on an exam.	1	2	3	4	5
6.	Chasing a tornado or hurricane by car to take dramatic photos.	1	2	3	4	5
7.	Investing 10% of your annual income in a moderate growth mutual fund.	1	2	3	4	5
8.	Consuming five or more servings of alcohol in a single evening.	1	2	3	4	5
9.	Cheating by a significant amount on your income tax return.	1	2	3	4	5
10.	Disagreeing with your father on a major issue.	1	2	3	4	5
11.	Betting a day's income at a high stake poker game.	1	2	3	4	5
12.	Having an affair with a married man or woman.	1	2	3	4	5
13.	Forging somebody's signature.	1	2	3	4	5
14.	Passing off somebody else's work as your own	1	2	3	4	5
15.	Going on a vacation in a third-world country without prearranged travel and hotel accommodations.	1	2	3	4	5
16.	Arguing with a friend about an issue on which he or she has a very different opinion	1	2	3	4	5
17.	Going down a ski run that is beyond your ability or closed	1	2	3	4	5
18.	Investing 5% of your annual income in a very speculative stock.	1	2	3	4	5

Table 3 (cont'd)

19.	Approaching your boss to ask for a raise	1	2	3	4	5
20.	Illegally copying a piece of software	1	2	3	4	5
21.	Going whitewater rafting during rapid water flows in the spring	1	2	3	4	5
22.	Betting a day's income on the outcome of a sporting event (e.g. baseball, soccer, or football).	1	2	3	4	5
23.	Telling a friend if his or her significant other has made a pass at you.	1	2	3	4	5
24.	Investing 5% of your annual income in a conservative stock.	1	2	3	4	5
25.	Shoplifting a small item (e.g. a lipstick or a pen).	1	2	3	4	5
26.	Wearing provocative or unconventional clothes on occasion.	1	2	3	4	5
27.	Engaging in unprotected sex.	1	2	3	4	5
28.	Stealing an additional TV cable connection off the one you pay for.	1	2	3	4	5
29.	Not wearing a seatbelt when being a passenger in the front seat	1	2	3	4	5
30.	Investing 10% of your annual income in government bonds (treasury bills).	1	2	3	4	5
31.	Periodically engaging in a dangerous sport (e.g. mountain climbing or sky diving).	1	2	3	4	5
32.	Not wearing a helmet when riding a motorcycle	1	2	3	4	5
33.	Gambling a week's income at a casino	1	2	3	4	5
34.	Taking a job that you enjoy over one that is prestigious but less enjoyable.	1	2	3	4	5
35.	Defending an unpopular issue that you believe in at a social occasion.	1	2	3	4	5
36.	Exposing yourself to the sun without using sunscreen.	1	2	3	4	5
37.	Trying out bungee jumping at least once.	1	2	3	4	5
38.	Piloting your own small plane, if you could.	1	2	3	4	5

Table 3 (cont'd)

39.	Walking home alone at night in a somewhat unsafe area of town.	1	2	3	4	5
40.	Regularly eating high cholesterol foods.	1	2	3	4	5

In risky decision making process, risk perception which was defined as an individual assessment of a risky situation in terms of probabilistic estimates of uncertainty (Baird&Thomas, 1985) and risk propensity which was defined as an individual's current tendency to take or avoid risk have a central role as determinant parameters. In addition to this, problem framing which is a determinant of risk perception defined as whether a situation is presented to a decision maker as an opportunity or a threat (Jackson&Dutton, 1988) or in terms of gains or losses (Kahneman&Tversky, 1979) and outcome history which is a determinant of risk propensity defined as belief of a decision maker that the previous risk related decisions have resulted in successful or un successful (Sitkin, 1992). The study examined whether these variables affect significantly the person's decision making behavior through correlation and regression analyses. The findings of the study showed that risk propensity was negatively related to risk perception; that is, when subjects had higher levels of risk propensity, it has been analyzed that they perceived less risk in the situation. Finally, bivariate correlation between risk propensity and risky decision making was significant (Sitkin and Weingart, 1995).

A study related to perceived risk attitudes and risk perception to risky choice considered two problems while measuring risk preference. First, different methods of measuring risk preference have been shown to result in different classification (Slovic 1964, MacCrimmon and Wehrung, 1990). Second, even with the same assessment method, individuals have not shown themselves as consistently risk seeking or risk avoiding across different situations (MacCrimmon and Wehrung 1986, 1990, Payne, Laughhunn and Crum 1980, Schoemaker 1990). That risk preference as a stable individual-difference or as a variable does not change in different situations has been a controversial issue because a number of factors affect people's choices. The study argued that a situational variable that may affect people's choices under risk does not necessarily mean that stable individual differences in risk preference cannot be measured.

In the light of the relevant literature, the hypotheses are developed according to the intuitive expectations and formulated;

H_6= *Risk attitudes affect individual valuation to risk preferences significantly.*

H_7= *Personality traits affect individual valuation to risk preferences significantly.*

H_8=*Demographic factors affect individual valuation to risk preferences significantly.*

2.2.2.1 Risk Attitude and Demographic Characteristics

A research conducted by Borgans, Golsteyn, Heckman and Meijers (2009) aimed to reveal whether gender differs in risk aversion (known probability of an event) and ambiguity aversion (unknown probability of an event). The results of the study showed that women are more risk-averse than men. However, for ambiguity situation men display more ambiguity aversion than women for an initial range and at greater levels of ambiguity, women and men show same behavior as a risk averse. According to the relevant literature, a hypothesis is developed and formulated;

H_9= Demographic variables affect risk attitude significantly.

2.3 Personality Traits

One of the most crucial goals of psychology has been establishing a model that describes and classifies human personality which provides researchers maintaining a broad understanding of the relationship between personality and other variables.

Personality is the combination of an individual's behavioral and emotional characteristics. It embraces person's moods, attitudes, opinions, motivations, and style of thinking, perceiving, speaking, and acting. It is part of what makes each individual distinct. Theories of personality have existed in most cultures and throughout most of the recorded history (Universalium Academic).

Ancient Greeks used type theory which classifies people into distinct categories; namely, the sanguine, the phlegmatic, the choleric and the melancholic. According to this theory, people can be included only in one of these categories, which conflict the view that most people have the characteristics of the combinations of more than one of these aspects. However, modern psychologists prefer trait theory to type theory. Trait approach is focused on differences between individuals which can be defined as habitual patterns of behavior, thought and emotion. The combination and interaction of various traits form personality that is unique to each individual. Allport (1936) found that one English-language dictionary contained more than 4,000 words describing different personality traits. He categorized these traits into three levels; cardinal traits, central traits and secondary traits. Modern psychologists have created traits according to the similarity of the behaviors and thus, they have constructed a questionnaire in order to measure individual characteristics. This questionnaire consists of various questions related to the personal behavior, preferences, reactions, attitudes and opinions. These questions are scientifically constructed and have validated inventories that are different from journalistic questionnaire not based on a well-established theory. Eysenck and Wilson (1975) have constructed a theoretical model to measure the personality traits which include sociability, impulsiveness, risk-taking, emotional expressiveness, reflectiveness and responsibility by writing a number of questions related to each of these traits. After embraced trait approach, several theories have been developed to measure personality traits.

One of the most prominent models in contemporary psychology is the five-factor model of personality (Digman, 1990). This theory incorporates five different variables into a conceptual model for describing personality. Throughout the 1960's and 1970's, the importance of Five Factor Model was not acknowledged. However, in the 1980's these factors were viewed as significant and accepted as fundamental dimension of personality by researchers from many different traditions. Five Factor Model is constructed by self-reports and ratings, natural languages and theoretically based questionnaires applied to children, college students, and older adults, men and women in English, Dutch, German, and Japanese samples (John, 1990). Five Factor Theory is among the newest models developed for the description of personality, and this model shows promise to be among the most practical and applicable models available in the field of personality psychology (Digman, 1990). McCrae and John (1992) demonstrated that the model was convenient for individual assessment by using natural language adjectives and theoretically based personality questionnaires.

The Revised NEO Personality Inventory which is a psychological personality inventory was developed by Costa and McCrae (1992) to form Five-Factor Model. It was found that the only consistently reliable factors are extraversion, agreeableness, conscientiousness, neuroticism and openness to experience that are defined and seen as below (Costa and McCrae, 1992);

Table 4. Personality Traits

Traits	Description
Neuroticism	Identifies individuals who are prone to psychological distress
Anxiety	Level of free floating anxiety
Angry Hostility	Tendency to experience anger and related states such as frustration and bitterness
Depression	Tendency to experience feelings of guilt, sadness, despondency and loneliness
Self Consciousness	Shyness or social anxiety
Impulsiveness	Tendency to act on cravings and urges rather than reining them in and delaying gratification
Vulnerability	General susceptibility to stress
Extraversion	Quantity and intensity of energy directed outwards into the social world
Warmth	Interest in and friendliness towards others
Gregariousness	Preference for the company of others
Assertiveness	Social ascendancy and forcefulness of expression
Activity	Pace of living
Excitement seeking	Need for environmental stimulation
Positive Emotion	Tendency to experience positive emotions
Openness to Experiences	The active seeking and appreciation of experiences for their own sake
Fantasy	Receptivity to the inner world of imagination
Aesthetics	Appreciation of art and beauty
Feelings	Openness to inner feelings and emotions
Actions	Openness to new experiences on a practical level
Ideas	Intellectual curiosity
Values	Readiness to re-examine own values and those of authority figures
Agreeableness	The kinds of interactions an individual prefers from compassion to tough mindedness
Trust	Belief in the sincerity and good intentions of others
Straightforwardness	Frankness in expression

Table 4 (cont'd)

Altruism	Active concern for the welfare of others
Compliance	Response to interpersonal conflict
Modesty	Tendency to play down own achievements and be humble
Tender mindedness	Attitude of sympathy for others
Conscientiousness	Degree of organization, persistence, control and motivation in goal-directed behavior
Competence	Belief in own self efficacy
Order	Personal organization
Dutifulness	Emphasis placed on importance of fulfilling moral obligations
Achievement striving	Need for personal achievement and sense of direction
Self Discipline	Capacity to begin tasks and follow through to completion despite boredom or distractions
Deliberation	Tendency to think things through before acting or speaking.

2.3.1 Personality Traits and Risk Attitudes

A number of studies have been conducted to explain risk related behaviors. One of the most important factors is personality while clarifying the risk perception. A study conducted by Soane and Chimel (2004) examined whether the risk preferences; namely, work, health, personal finance are consistent and have an effect on personality in risk-related decision making by using the Five Factor Model. The results showed that participants should be divided into two groups that are consistent or inconsistent in their risk preferences and that these groups are different from each other with respect to personality traits.

A study (Shaninger, 1976) by using correlational analyses investigated the relationship between perceived risk and personality measures and it was found that perceived risk measures were positively related to a number of anxiety

measures and negatively related to self-esteem and risk taking. In addition to this, no significant patterns of relationship were found between perceived risk and rigidity.

Gallagher (2005) showed in his study that individuals who gave high scores to impulsiveness, sensation seeking and openness to experience were more risk-takers than low-scores individuals. A research which investigated relationship between personality traits and risk propensity showed that personality traits can be used to measure risk-taking behaviors in six risk domains; namely, recreational risks, health risks, career risks, financial risks, safety risks and social risks. In addition, some important demographic variables that are age and sex have significant effect on risk propensity (Nicholson, Creevy, Soane and Willman, 2005).

A study by Mishra and Lalumire (2010) examined whether personality questionnaire measured traits, associated with risk such as impulsivity, sensation seeking and low self-control, and was correlated with various behavioral measures of risk like future discounting, probabilistic risky choice.

Another study revealed whether indicators of risk-propensity, including self-reported personality traits, laboratory-based behavioral measures of risk, and self-reported attitudes toward risk in various domains were associated with general gambling involvement and gambling behavior (Mishra, Lalumire and Williams, 2010).

The relationship between risk propensity and two different personality traits which are achievement orientation and sensation seeking were analyzed. The

findings of the study concluded that risk propensity is highly correlated with personality traits (Gelbal, 2010). In the light of the relevant literature, a hypothesis is developed and formulated according to intuitive expectations;

H_{10}= Personality traits affect risk attitudes significantly.

2.3.2 Personality Traits and Demographic Variables

Several researches have been conducted which investigated the relationship between personality traits and demographic variables. One of the most recent studies examined the effect of personality traits and demographic factors to help-seeking attitudes. The findings revealed that the females who had knowledge about the psychological services provided on campus and who were extraverted, agreeable and open had more positive help-seeking behavior (Atik and Yalçın, 2011).

Personality traits, which can be developed by innate nurturing, socialization and education, play an important role in social entrepreneurial decision making. The results showed that agreeableness positively influenced all dimensions of social entrepreneurship; namely, social vision, sustainability, social networks, innovation and financial returns, whereas openness had a positive influence on social vision, innovation and financial returns (Nga and Shamuganathan, 2010).

CHAPTER 3

METHODOLOGY

The present study offers an insight by examining substitution and complementary relationships among risk reduction mechanisms which provides substantial information to the insurance sector. Besides, the study investigates significant factors that influence people's risky decisions and risk attitudes.

3.1 Measurement of Variables

3.1.1 Substitutability and Complementarity in General

The current study analyzes whether the three risk reduction mechanisms -self-insurance, self-protection and market insurance- are substitutes to each other or complements, so price elasticity and cross-price elasticity of demand that are mostly used methods in economics are examined to determine whether goods and services are substitutes and complements.

While analyzed the demand of a product, there are many determinants need to be considered. Change in price of the good, change in consumer tastes, change in the number of buyers, change in consumer incomes, change in the prices of complementary and substitute goods and change in consumer expectation may affect the demand of a good significantly. The present study analyzes the role of

price and the effect of price changes to complementary and substitute goods in terms of demand by keeping other factors constant.

Demand Curve is defined as the relationship between the price of the good and the amount or quantity that the consumer is willing and able to purchase in a specified time period given constant levels of the other determinants (Kim Sosin, http://ecedweb.unomaha.edu/dem_sup/analysis.htm). The relationships between the price of a good, which is a risk reduction mechanism for this study, and quantity demanded, which is the number of people that purchased the mechanisms, can be seen.

3.1.1.1 Price Elasticity of Demand

In the present study I examined the demand by changing only the price of the mechanisms, and it was assumed that other factors were held constant. Consequently, own and cross price elasticities were calculated to reveal demand curves besides complementary and substitution relationships among these mechanisms.

Price elasticity of demand measures the responsiveness of the quantity demanded to changes in the price of the product, holding constant the values of all other variables in the demand function. Price elasticity of demand is found as below Hirschey, 2000);

$$\in_p = Price\ Elasticity = \frac{Percentage\ Change\ in\ Quantity\ (Q)}{Percentage\ Change\ in\ Price\ (P)}$$

Where $\Delta Q/\Delta P$ is the marginal change in quantity following a one-unit change in price, and P and Q denote price and quantity, respectively, at a given point on the demand curve.

3.1.1.2 Cross Price Elasticity of Demand

Price change in most products affects the demand of other products. This influence on demand depends on being substitute or complement of goods. In a substitution relationship, if the price of a good increases, the demand of substitute good increases, too. For example, as the price of chicken increases, the demand for beef increases. On the other hand, if the price of a good increases, the demand of complement good decreases. It can be given tea-sugar, DVD player-DVD or computer hardware-computer software as examples for complementary relationship.

The cross-price elasticity is used to examine the responsiveness of demand for one product to changes in the price of another. Cross-price elasticity is found as below (Hirschey, 2000);

$$\in_{px} = Cross\ Price\ Elasticity = \frac{Percentage\ Change\ in\ Quantity\ of\ Y}{Percentage\ Change\ in\ Price\ of\ X}$$

where X and Y are two different products. It is revealed from the calculations of cross-price elasticities, while the value of cross-price elasticity for substitutes is always positive, cross-price elasticity for complements is always negative as known from microeconomic theory.

At the last part of the experiment, participants were asked cross-questions. They were offered dual comparisons of mechanisms for both earthquake and fire at three different probability levels. Thus, it could be analyzed when they have two options to purchase, how they would decide.

Rouse, Beach and Corrigan (2009) have asserted that availability of complements and substitutes affect the willingness to pay (WTP) of a consumer. First, they have used demand-revealing experimental design for auctions of three different products and then, by using experimental auction they have estimated inverse elasticity's that have been conducted for the first time in this study. The auction has been done in two different ways. In the first treatment, it has been applied second-price auction (Vickers, 1961) that means all participants give their bids for the related product and then, bids are ordered from highest to lowest and the highest bidder wins and pays the second highest bid price for that product. In the other treatment, respondents give bids for that product and a number is randomly selected between 2 and number of participants (N). Thus, bid price becomes the nth number selected. The n-1 bidder who gave a bid more than nth price can buy the product by paying the nth price. Finally, they have determined the marginal valuations (WTP) of participants for each three products to examine their preferences. In order to estimate the model they have used log-log specification while WTP is dependent variable, quantity of all these three products are independent variables. Thus, the coefficients of the equation represented the elasticity's of demand that can be understood whether the products are substitutes or complements. In another equation, bids of the products were regressed as

binary. Substitutability and complementarity can be seen when looked at the both right-hand side and left-hand side of the equation. While products are substitutes, right-hand side of equation will be less than the left-hand side and while products are complements, right-hand side of equation will be greater than the left-hand side.

In another study (Bernard and Bernard, 2009) which is done related to organic milk, it has been conducted that whether or not any substitute or complement relationship between organic, rest-free, no antibiotics used and conventional milk exists. Participants responded a questionnaire before the experiment to gain information about their awareness and attitudes toward these products. Then, the second-price auction mechanisms started and bids were collected in single trials and simultaneously for each product. After the experiment was applied, participants responded post experiment questionnaire related to demographic information. Finally, auction was ended and the purchase price of the products was announced and people who had a right to purchase were determined. In order to analyze demand relationships between these products, own and cross-price elasticities were calculated via regression analysis as seen below (Bernard and Bernard, 2009);

$$U_{Milk} = \alpha_0 + \alpha_1 Price + \alpha_2 Rbst - free + \alpha_3 NoAntibiotics + \alpha_4 Organic + X\beta$$

And thus, these coefficients showed the elasticities of demand.

Bonet and Petry (2006) conducted a study on drug users to measure Cocaine and Heroin addicts along with Marijuana, Valium, Cigarette and Alcohol. They

investigated if any substitutability or complementarity among them existed or not. In addition, they analyzed the relationships between addiction of Cocaine-Heroin and gender, racial and marital status, income, housing situation, years of education and lifetime dependence. Drug users were conducted two experiments. In the former one, the price of Heroin was changed and other drugs' prices remained at their street prices. With the same logic, a second experiment was conducted by changing price of Cocaine and thus, the price and quantity preferences for all drugs were obtained. To examine substitutability and complementarity, they used Almost Ideal Demand System (Deaton and Muellbauer, 1980) and calculated the coefficients of all drugs and thus, they obtained own and cross-price elasticities of demand for all drugs. The results of the study revealed that while Heroin addicts' demand for Heroin was inelastic and Cocaine, Marijuana, and Alcohol are complements, Cocaine addicts' demand for Cocaine was elastic and Heroin and Alcohol were complements and Marijuana and Valium are complements of each other. Heroin addicts' demand for Cocaine was inelastic and Marijuana and Valium are substitutes, and Alcohol was complement. Cocaine addicts' demand for Heroin was inelastic and Alcohol was complement while Cocaine, Marijuana and Valium were substitutes.

Andersson, Foros and Steen (2009) carried on a study that investigated whether text message and voice were complements, substitutes or both. Since text message has recently become widespread, it has been very important source of revenue that concerns mobile operators. To find the relationship between text messages and voice, they estimated cross-price elasticity of voice by using the demand

model. A linear model was constructed using the number of SMS per subscriber as dependent variable and weighted average price per SMS message, weighted average price per minute called, the number of subscribers in the market, a dummy, CPA (Content Provider Agreement that allowed information providers) as independent variables (Andersson, Foros and Steen, 2009).

$$SMS_t = \alpha + \beta_S . P_t^S + \beta_{SN} . N_t . P_t^S + \beta_V . P_t^V + \beta_{VN} . N_t . P_t^V + \beta_N . N_t + \beta_{CPA} . CPA_t + \epsilon_t$$

Coefficients were estimated by using Ordinary Least Squares and Two-Stage Ordinary Least Squares and found own, cross-price and network elasticities. The results of the study showed when considered the price effect, voice was complement of text messaging; when network was small, voice was substitute of text messaging, as the network size increased the cross-price effect changed sign and a complementary relationship between voice and text exist.

3.2 The Design of Experiment-Self-Insurance, Self-Protection and Market Insurance

The main part of the study consists of an experimental application (see Appendix A for Turkish version of the instructions) that aims to measure the respondents' economic behaviors and risk preferences against two natural disasters, namely, earthquake and fire. By the help of this experiment that consists of 57 scenarios, it is able to be investigated maximum willingness to pay (WTP) of participants, whether any significant difference among self-insurance, self-protection and market insurance mechanisms exists for earthquake and fire disasters, and whether they are substitutes of each other or complements. As there are three

different mechanisms for earthquake and fire at three different price and three different probability levels, 57 scenarios are prepared for maximum willingness to pay decisions, for comparison of the mechanisms and for cross price elasticity of demand calculations.

In the first part of the experiment 15 scenarios are asked for three risk reduction mechanisms at three different probabilities (0.01, 0.50 and 0.80) for earthquake and fire events to reveal individual maximum willingness to pay. One example for this part is given below;

When you decide to purchase a market insurance mechanism against earthquake whose probability of occurrence is 0.01, this mechanism will compensate the loss amount in the event of an earthquake. However, if you do not purchase this precaution against earthquake, you will lose your house whose value is 300,000 TL. Please state your maximum willingness to pay for this mechanism.

In the second part of the experiment, subjects are asked 15 scenarios to learn their buying decisions for three risk reduction mechanisms at three different prices (3,000 TL, 150,000 TL and 240,000 TL) and at three different probabilities (0.01, 0.50 and 0.80) for earthquake and fire events. One example for this part is given below;

The probability of occurrence of a fire disaster is 0.01. If fire happens, you will face a loss whose value is 300,000 TL. If you decorate your house from nonflammable materials, you will not face any loss. You are given different prices

to protect your house. Please indicate whether or not you purchase the mechanism for each price.

The third part of the experiment consists of 27 scenarios at three different prices (3,000 TL, 150,000 TL and 240,000 TL) and three different probabilities (0.01, 0.50 and 0.80) for earthquake and fire events. Paired comparisons are made by asking cross questions. One example for this part is given below;

In the event of a fire whose probability of occurrence is 0.01, and while price of fire alarm is 3,000 TL and price of market insurance is 3,000 TL, which precaution would you buy?

Only Fire Alarm ☐

Only Market Insurance ☐

Both ☐

Neither/None ☐

These hypothetical scenarios are prepared (Shogren, 1990 and Mauro and Maffioletti, 1996) concerning occurrence of natural disasters specifically for earthquake and fire, and a picture of a house is put whose value is 300,000TL, and they were said that the house belongs to them. They had opportunity to take some precautions to protect their house against these disasters at different probability levels while they might not take any precaution as well. I gave some information

about these mechanisms, and I informed them regarding what would be when they got these mechanisms or not and when the loss event occurred or not. I gave all the participants 25 TL as participation fee when they completed the experiment. In addition to this, they were also informed that they could gain additional money according to their decisions. At first part of the experiment subjects were asked fifteen scenarios for each risk reduction mechanisms and each disaster at three different probability levels, and I asked them what their maximum amount of money they were ready to pay was. At the end of experiment if one of the fifteen scenarios came up at the end of the experiment, payment condition would be as below;

A number between 0 and 300,000 TL is generated by the computer. If this number is higher than you paid, taking this precaution is expensive for you and this means you cannot buy this precaution. At this situation;

- If event occurs, you will win 0 TL.
- If event does not occur, you will win 300,000 TL.

If this number is higher than you paid, taking this precaution is expensive for you and this means you cannot buy this precaution. At this situation;

- If event occurs, you will win 300,000 TL-Randomly generated number.
- If event does not occur, you will win 300,000 TL-Randomly generated number.

At the second part of the experiment participants were asked fifteen scenarios with three different probability of loss at three different price levels. They respond

each scenario independently, in other words; as if they assumed they had a house whose value is 300,000 TL at the beginning of each scenario and responded separately. They indicated whether they were willing to purchase at related price or not. Thus, I could determine the demand for each risk reduction mechanism. If one of these fifteen scenarios came up at the end of the experiment, payment condition would be as below;

If event occurs;

- If you purchase the precaution, you will win 300.000 TL-price that you paid to buy the precaution.
- If you do not purchase the precaution, you will win 0 TL.

If event does not occur;

- If you purchase the precaution, you will win 300,000 TL-price that you paid to buy the precaution.
- If you do not purchase the precaution, you will win 300,000 TL.

At third and last part of the experiment, participants are asked twenty-seven scenarios to examine their preferences at the situation of being given two mechanisms together. In each scenario they have opportunity to choose one of the two scenarios, both scenarios and neither scenario. Their relative preferences were measured by changing the prices of mechanisms and probability of events at that part. If one of these twenty-seven scenarios came up at the end of the experiment, payment condition would be as below;

If event occurs;

- If you purchase the precaution, you will win 300,000 TL-price that you paid to buy the precaution.
- If you do not purchase the precaution, you will win 0 TL.

If event does not occur;

- If you purchase the precaution, you will win 300,000 TL-price that you paid to buy the precaution.
- If you do not purchase the precaution, you will win 300,000 TL.

Thus, after all scenarios finished, a person was selected among the participants and a scenario was randomly selected for the selected participant. Then, selected scenario was played for real. According to decision and occurrence of the loss event, participant would get money or nothing. This method is called the Becker, DeGroot, Marschak mechanism (BDM, 1964) that has been used in many studies to elicit individual valuations (Starmer and Sugden, 1991, Hey and Lee, 2005, Laury, 2006 and Drehmann et al., 2007).

One of the most crucial points in the experiment is while asking the scenarios, probabilities are shown as ratios; in other words, both the numerator and denominator of probability are multiplied by a constant; for example, instead of 1 in 100, it is used 10 in 1000 to attract people's attention to the event (Slovic, Monahan and MacGregor, 2000).

3.3 The Design of the Questionnaire-Personality Traits, Risk Attitude and Demographic Variables

The questionnaire part of the study consists of 85 questions and three main topics (see Appendix A). First topic is related to personality traits that affect risk attitude and risky decisions. These traits are adapted from the five factor personality trait of McCrea and Costa (1990) into Turkish culture and language (Gençöz and Öncül, 2012). They conducted a study to 100 undergraduate students from Middle East Technical University and then 510 participants, and these subjects listed many adjectives to describe six basic emotions (happiness, sadness, anger, surprise, disgust and fear). They have established a personality trait inventory and these characteristics were subjected to varimax rotated principle components factor analysis. After analyzed Cronbach's alpha coefficients, Basic Personality Traits Inventory that consists of 45 items was occurred, and thus, the factors were classified as Extraversion, Conscientiousness, Agreeableness, Neuroticism, Openness and Negative Valence (the last one is not included in this study). Second topic is related to risk attitude that has a significant impact on decision making under risk. I have used domain-specific risk attitude scale to measure risk attitude and risk behavior. The main purpose of using this scale is that risk taking is domain-specific; in other words, people cannot be classified as risk taker, neutral or risk averse in consistent. Their attitudes towards risk may change for each domain. In a study conducted at The Ohio State University, subjects were asked total of 101 items in five domains of risk which are financial (investment

and gambling), healthy/safety, recreational, ethics and social risks. They indicate their decisions for each item by using five-point Likert Scale ranging from 1 (extremely unlikely) to 5 (extremely likely). Factor analyses were conducted to measure reliability of these items. At the end of the analyses when the Cronbach's alpha values were examined, it was observed that ethics subscale was most reliable while social subscale was least reliable (Weber, Blais and Betz, 2002).

Third subject of the questionnaire includes some important demographic variables that can be seen from many researches related to decision making under risk that they have significant impacts on decision making process. Therefore, I incorporated age, gender and income as indicators of maximum willingness to pay and risk attitude.

To understand and reveal the factors that affect these preferences, I have conducted a study that consists of four parts. In first part, it was conducted a questionnaire to measure personality traits of respondents. From previous investigation, it is demonstrated that personality traits have a significant effect on risk behavior that I have mentioned before in literature review. Thus, personality traits were measured by using Five-Factor model developed by McCrae and John (1992). Second part of the study consists of Domain Specific Risk Attitude Scale developed by Weber (2002). The scale comprises of forty questions that measures respondents' risk attitudes by using five-point Likert Scale and each question represents risk types classified as social, recreational, health/safety, gambling, ethical and investment. I also investigated demographic factors that are gender,

age and income at third part of the questionnaire. As observed from previous expressions, gender has an important role in risky decisions.

The former part of questionnaire consists of 39 personality characteristics that include extraversion, agreeableness, conscientiousness, neuroticism and openness to experiences traits. Thus, participants could indicate their tendency by using five-point Likert Scale of 1 being “strongly agree”, 2 being “agree”, 3 being “neutral”, 4 being “disagree” and 5 being “strongly disagree”.

The second part of questionnaire involves 40 expressions to be able to measure domain specific risk attitudes in social, recreational, health/safety, gambling, ethical and investment domains .Thus, participants could tend their attitudes by using five-point Likert Scale of 1 being “strongly disagree”, 2 being “disagree”, 3 being “neutral”, 4 being “agree” and 5 being “strongly agree”.

Demographic variables also (gender, age, income, department they study and period of study) appeared as open-ended questions in the last part of questionnaire that mostly affect risk attitude and risky behavior of people.

3.4 Sampling Method

Before the sampling procedure, official permission was taken from Middle East Technical University Ethical Committee. In order to examine risk preferences and the factors that affect these preferences, poster announcements are hanged at Faculty of Economic and Administrative Sciences, and thus, 78 students, who sent e-mail, participated in this study. A questionnaire that investigates

personality traits, risk attitudes and demographic variables were conducted along with the experiment.

3.5 Data Collection

In the direction of above-mentioned procedures, the data was collected in one day and in two separate sessions which one of them consisted of 38 subjects and the other consisted of 40 subjects by receiving official permission. In order to prevent biased decisions, while experiment was conducted first in the first session, questionnaire was conducted first in the second session. Statistical analyses are performed with Predictive Analytics Software (PASW).

For the confidentiality purposes, subjects were not asked to write their names on questionnaire and experiment papers. In addition, they were informed concerning their personal information and decisions would not be shared under any circumstances with anyone.

CHAPTER 4

ANALYSES

4.1 Results of the Experiment

Ehrlich and Becker (1972) presented a theory to analyze insurance decision by combining expected utility and indifference curve analysis. According to this theory, while market insurance and self-insurance are substitutes of each other, market insurance and self-protection are complements.

Based on this theory, I have carried out an experimental study to test this theory. In accordance with this purpose, I concluded that market insurance and self-insurance mechanisms are substitutes for three different price and probability levels; however, market insurance and self-protection are not complements, they are substitutes, too.

As mentioned before, considerable numbers of studies were conducted to determine substitutability and complementarity of goods and services. In the present study, demand denotes the consumer preferences to risk reduction mechanisms; in other words, demand does not correspond to amount of purchased good or service, it corresponds to the number of subjects that purchased the mechanism. Demand analyses are examined and own and cross-price elasticities of demand are calculated, and conclusions are displayed.

4.1.1 Demand Analysis

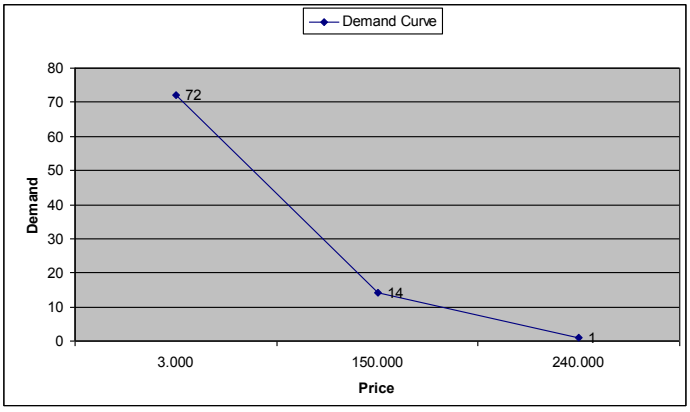

Figure 2. Demand of Self-Insurance Mechanism when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

It is observed from Figure 2, that demand to self-insurance mechanism is 72 when price of mechanism is 3,000 TL, however, while demand shows a high decrease when price increases from 3,000 TL to 150,000 TL, the amount of decrease in demand is far less when price level increases from 150,000 TL to 240,000 TL, which is an expected result due to the low probability of event. In other words, since probability of occurrence of event is very low, subjects do not accept to purchase the mechanism at higher price levels.

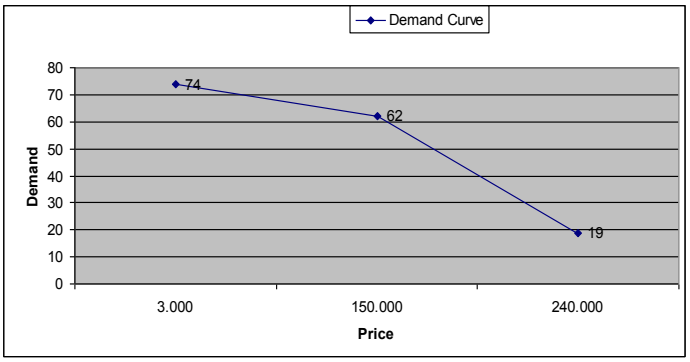

Figure 3. Demand of Self-Insurance Mechanism when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

It is observed from Figure 3, that demand to self-insurance mechanism is 74 when price of mechanism is 3,000 TL. When the price of the mechanism increases to 150,000 TL, demand decreases only 16.22%, which is a relatively low percentage when compared to 0.01 probability level. It is understood that most subjects are ready to pay 150,000 to purchase the mechanism. Since the probability of occurrence of event increases, this is already an expected result.

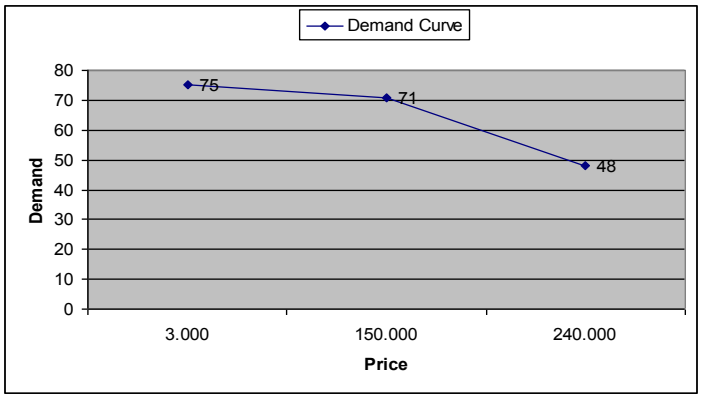

Figure 4. Demand of Self-Insurance Mechanism when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

It is observed from Figure 4, that while demand does not show an important change when price level increases from 3,000 TL to 150,000 TL, demand decreases 32.39% when price increases to 240,000 TL. This result shows that subjects are ready to buy the mechanism when price levels are 3,000 TL and 150,000 TL, and more than half of subjects continue to purchase the mechanism at 240,000 TL.

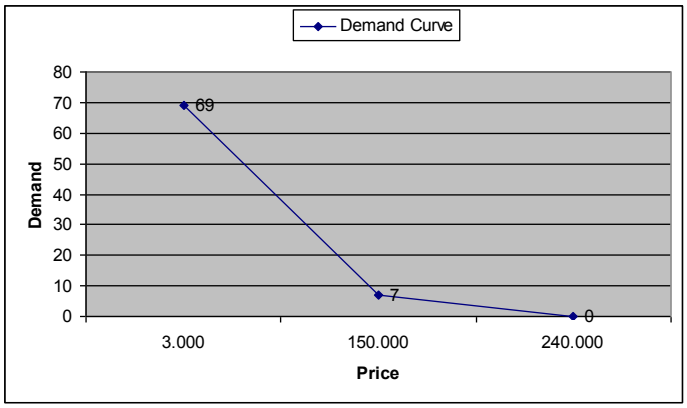

Figure 5. Demand of Market Insurance Mechanism when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

It is observed from Figure 5, that demand to market insurance mechanism is 69 when price of mechanism is 3,000 TL, and while demand shows a high decrease when price increases from 3,000 TL to 150,000 TL, the amount of decrease in demand is far less when price level increases from 150,000 TL to 240,000 TL which is an expected result due to the low probability of event. In other words, since probability of occurrence of event is very low, subjects do not accept to purchase the mechanism at higher price levels and lastly, no subjects buy the mechanism when price is 240,000 TL.

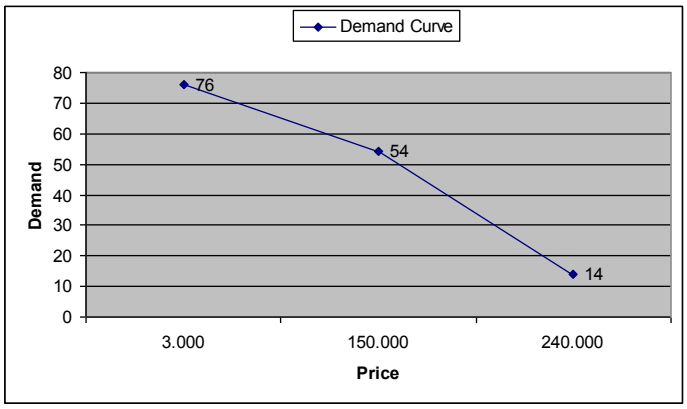

Figure 6. Demand of Market Insurance Mechanism when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

It is observed from Figure 6, that demand to self-insurance mechanism is 76 when price of mechanism is 3,000 TL. When the price of the mechanism increases to 150,000 TL, demand decreases 28.95%, which is a relatively low percentage when compared to 0.01 probability level. It is understood that most subjects are ready to pay 150,000 TL to purchase the mechanism. Since the probability of occurrence of event increases, this is already an expected result.

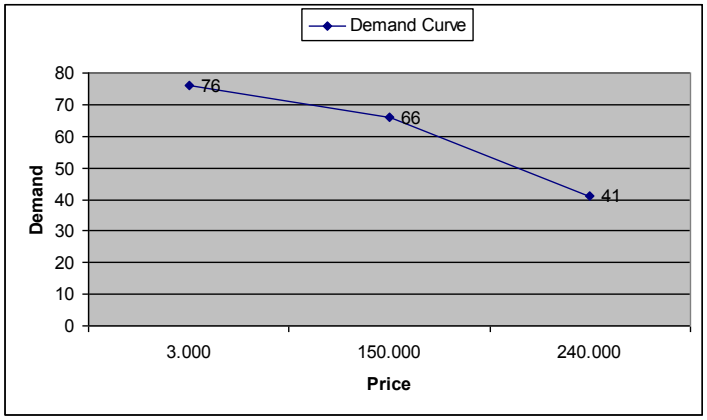

Figure 7. Demand of Market Insurance Mechanism when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

It is observed from Figure 7, that while demand does not show an excessive change when price level increases from 3,000 TL to 150,000 TL, demand decreases to 41 when price is increased to 240,000 TL. This result shows that subjects are ready to buy the mechanism when price levels are 3,000 TL and 150,000 TL, and more than half of subjects continue to purchase the mechanism at 240,000 TL.

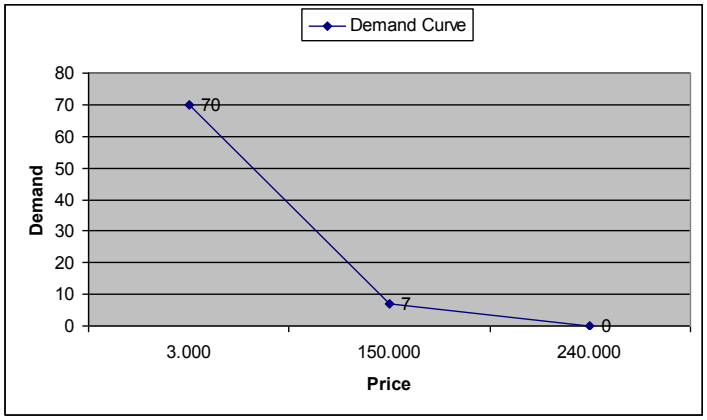

Figure 8. Demand of Market Insurance Mechanism when the Probability of Occurrence of a Fire is 0.01 in the Scenario

It is observed from Figure 8, that demand to market insurance mechanism is 70 when price of mechanism is 3,000 TL, and while demand shows a high decrease when price increases from 3,000 TL to 150,000 TL, the amount of decrease in demand is far less when price level increases from 150,000 TL to 240,000 TL which is an expected result due to the low probability of event. In other words, since probability of occurrence of event is very low, subjects do not accept to purchase the mechanism at higher price levels and lastly, no subjects buy the mechanism when price is 240,000 TL.

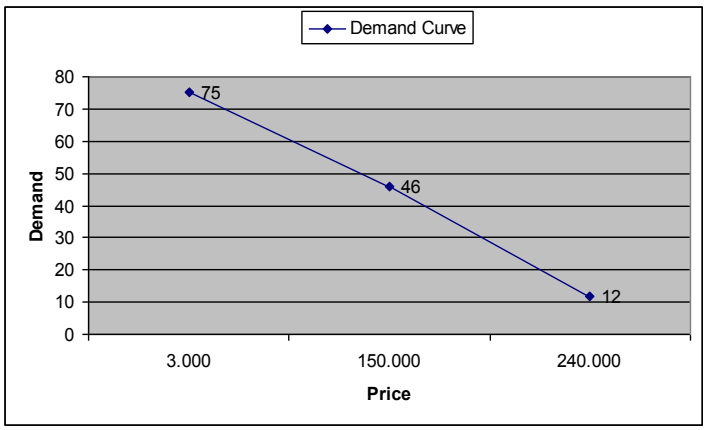

Figure 9. Demand of Market Insurance Mechanism when the Probability of Occurrence of a Fire is 0.50 in the Scenario

It is observed from Figure 9, that demand to self-insurance mechanism is 75 when price of mechanism is 3,000 TL. When the price of the mechanism increases to 150,000 TL, demand decreases to 46. It is understood that more than half of the

subjects are still ready to pay 150,000 TL to purchase the mechanism. Since the probability of occurrence of event increases, this is an expected result.

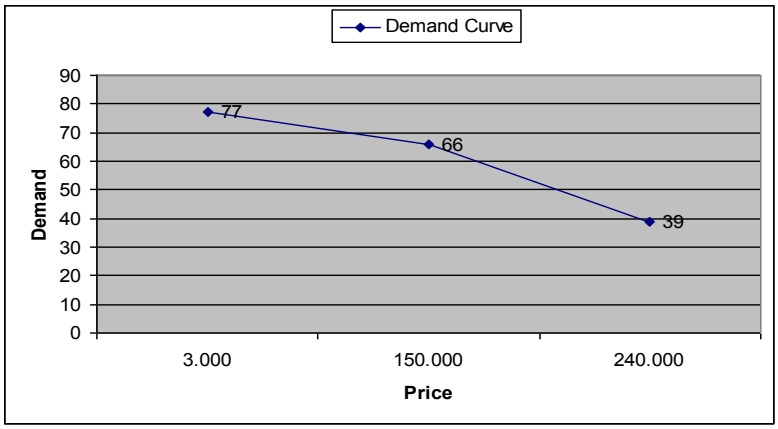

Figure 10. Demand of Market Insurance Mechanism when the Probability of Occurrence of a Fire is 0.80 in the Scenario

It is observed from Figure10, that while demand does not show an excessive change when price level increases from 3,000 TL to 150,000 TL, demand decreases to 39 when price increases to 240,000 TL. This result shows that subjects are ready to buy the mechanism when price levels are 3,000 TL and 150,000 TL, and half of the subjects continue to purchase the mechanism at 240,000 TL.

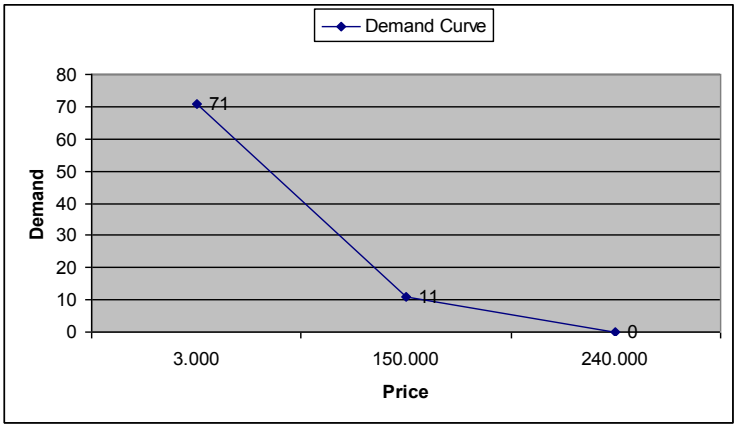

Figure 11. Demand of Self-Protection Mechanism when the Probability of Occurrence of a Fire is 0.01 in the Scenario

It is observed from Figure 11, that demand to market insurance mechanism is 71 when price of mechanism is 3,000 TL, and while demand shows a high decrease when price increases from 3,000 TL to 150,000 TL, the amount of decrease in demand is far less when price level increases from 150,000 TL to 240,000 TL which is an expected result due to the low probability of event. In other words, since probability of occurrence of event is very low, subjects do not accept to purchase the mechanism at higher price levels and lastly, no subjects buy the mechanism when price is 240,000 TL.

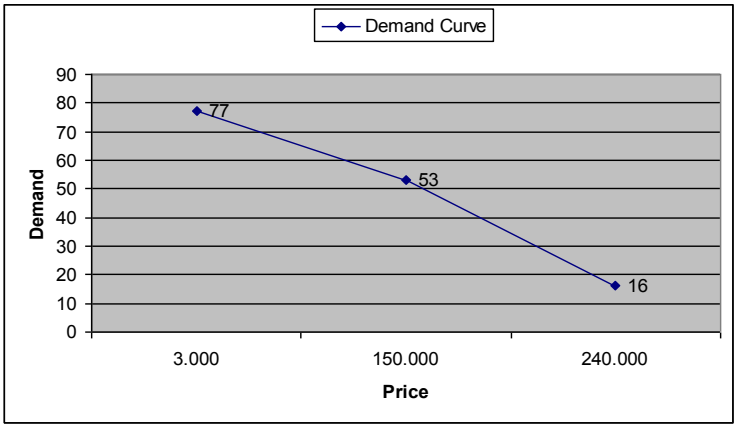

Figure 12. Demand of Self-Protection Mechanism when the Probability of Occurrence of a Fire is 0.50 in the Scenario

It is observed from Figure 12, that demand to self-insurance mechanism is 77 when price of mechanism is 3,000 TL. When the price of the mechanism increases to 150,000 TL, demand decreases to 53. It is understood that more than half of the subjects are still ready to pay 150,000 TL to purchase the mechanism, and 16 subjects continue to buy the mechanism at 240,000TL. As the probability of occurrence of event increases, this is already an expected result.

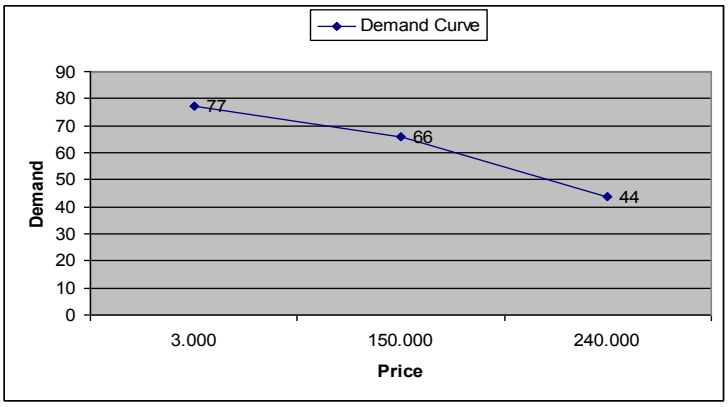

Figure 13. Demand of Self-Protection Mechanism when the Probability of Occurrence of a Fire is 0.80 in the Scenario

It is observed from Figure 13, that while demand does not show an excessive change when price level increases from 3,000 TL to 150,000 TL, demand decreases to 44 when price is increases to 240,000 TL. This result shows that subjects are ready to buy the mechanism when price levels are 3,000 TL and 150,000 TL, and more than half of the subjects continue to purchase the mechanism at 240,000 TL.

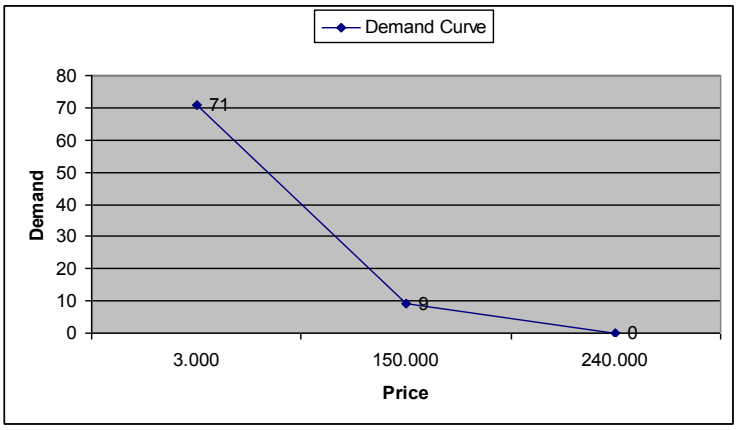

Figure 14. Demand of Self-Insurance Mechanism when the Probability of Occurrence of a Fire is 0.01 in the Scenario

It is observed from Figure 14, that demand to market insurance mechanism is 71 when price of mechanism is 3,000 TL, and while demand shows a substantial decrease when price increases from 3,000 TL to 150,000 TL, the amount of decrease in demand is far less and demand is equal to zero when price level increases from 150,000 TL to 240,000 TL which is an expected result due to the

low probability of event. In other words, since probability of occurrence of event is very low, subjects do not accept to purchase the mechanism at higher price levels.

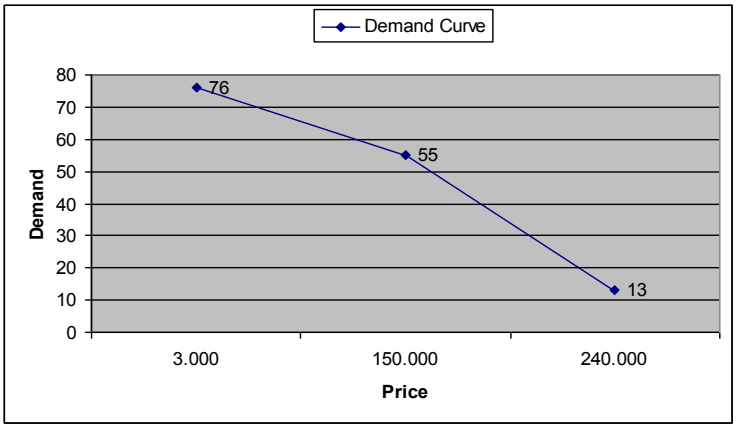

Figure 15. Demand of Self-Insurance Mechanism when the Probability of Occurrence of Fire is given as 0.50 in the Scenario

It is observed from Figure 15, that demand to self-insurance mechanism is 76 when price of mechanism is 3,000 TL. When the price of the mechanism increases to 150,000 TL, demand decreases to 55. It is understood that more than half of the subjects are still ready to pay 150,000 TL to purchase the mechanism, and 13 subjects continue to buy the mechanism at 240,000TL. Since the probability of occurrence of event increases, this is already an expected result.

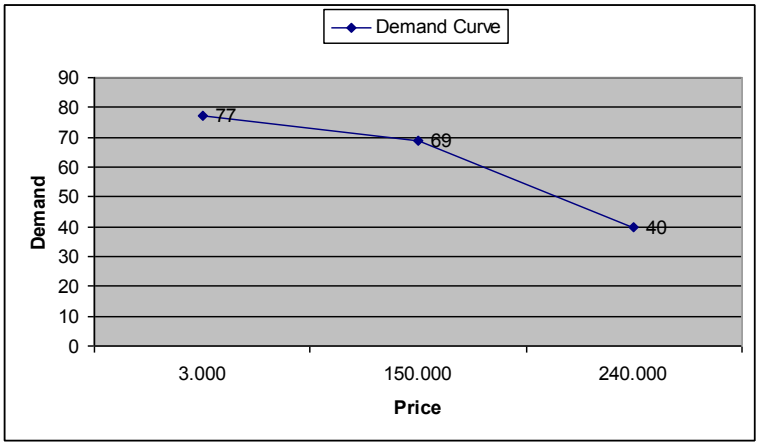

Figure 16. Demand of Self-Insurance Mechanism when the Probability of Occurrence of Fire is given as 0.80 in the Scenario

It is observed from Figure 16, that while demand does not show an excessive change when price level increases from 3,000 TL to 150,000 TL, demand decreases to 40 when price is increased to 240,000 TL. This result shows that subjects are ready to buy the mechanism when price levels are 3,000 TL and 150,000 TL, and more than half of the subjects continue to purchase the mechanism at 240,000 TL.

When looked at the demand curves, it can be easily realized that each of five risk reduction mechanism with the probability of 0.01 is notably sensitive to price changes. When the price of all the risk reduction mechanisms increases from 3,000 TL to 150,000 TL, demand decreases considerably. While seen a moderate sensitivity at the 0.50 probability level, it can be stated that there is a relatively low sensitivity when the probability level is 0.80. The reason is that people are more risk averse at high probability levels of loss events, and even if the cost of avoiding from these events are high, they accept the high prices.

4.1.1.1 Own Price Elasticity of Self-Insurance Mechanism for Earthquake

Own price elasticity of demand is calculated to measure the responsiveness of the quantity demanded to changes in the price of the self-insurance mechanism.

Table 5. Demand of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

Probability of Event	Price of Self-Insurance	Demand of Self-Insurance
0.01	3,000	72
0.01	150,000	14
0.01	240,000	1

Table 6. Own Price Elasticity of Self Insurance when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.01	150,000-3,000	-4.28
0.01	240,000-3,000	-71.90
0.01	240,000-150,000	-34.67

It can be understood from calculations that when price of self-insurance mechanism increases at the probability of 0.01, demand to the mechanism decreases. However, to understand how the demand changes with response to price change, the size of elasticity should be examined. When the price decreases from 150,000 TL to 3,000 TL, demand rises from 14 to 72, and price elasticity of

demand becomes -4.28. Thus, the conclusion that demand is elastic can be reached and it means demand is sensitive to price changes. With the same logic, when examined the price changes from 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, it can be observed that price elasticities of demand are -71.90 and -34.67, respectively. As a consequence, it can be concluded that demand of self-insurance for earthquake is elastic; in other words, it is sensitive to price changes at 0.01 probability level (Table 5 and Table 6).

Table 7. Demand of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

Probability of Event	Price of Self-Insurance	Demand of Self-Insurance
0.50	3,000	74
0.50	150,000	62
0.50	240,000	19

Table 8. Own Price Elasticity of Self Insurance when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.50	150,000-3,000	-0.1646
0.50	240,000-3,000	-3.3080
0.50	240,000-150,000	-3.7720

For the 0.50 probability level, the case is slightly different. Since the probability of occurrence of event increases, price sensitivity of subjects decreases; that is an

expected situation. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are 0.1646, 3.3080 and 3.7720, respectively. As seen from results, while demand is inelastic that is not sensitive to price change for change of 150,000 to 3,000 TL, it is elastic at other levels of price changes (Table 7 and Table 8).

Table 9. Demand of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price of Self-Insurance	Demand of Self-Insurance
0.80	3,000	75
0.80	150,000	71
0.80	240,000	48

Table 10. Own Price Elasticity of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.80	150,000-3,000	-0.0570
0.80	240,000-3,000	-0.5696
0.80	240,000-150,000	-1.2779

For the 0.80 probability level, the case is also different. Since the probability of occurrence of event is highest, price sensitivity of subjects is lowest, not surprisingly. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to

3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are 0.0570, 0.5696 and 1.2779, respectively. As seen from calculations, while demands are inelastic that is not sensitive to price change for first two cases, it is elastic just at last price change (Table 9 and Table 10).

4.1.1.2 Own Price Elasticity of Market Insurance for Earthquake

Own price elasticity of demand is calculated to measure the responsiveness of the quantity demanded to changes in the price of the market insurance mechanism.

Table 11. Demand of Market Insurance when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

Probability of Event	Price of Market Insurance	Demand of Market Insurance
0.01	3,000	69
0.01	150,000	7
0.01	240,000	0

Table 12. Own Price Elasticity of Market Insurance when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.01	150,000-3,000	-9.0379
0.01	240,000-3,000	$-\infty$
0.01	240,000-150,000	$-\infty$

It can be seen from conclusions when price of market insurance mechanism for earthquake increases at the probability of 0.01, demand to the mechanism

decreases. However, to understand how the demand changes with response to price change, the size of elasticity should be examined. When decreased the price from 150,000 TL to 3,000 TL, demand rises from 7 to 69, and price elasticity of demand becomes -9.0379. Thus, it can be reached the conclusion that demand is elastic at 0.01 probability level, i.e., it means that demand is sensitive to price changes. With the same logic, when the price changes from 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL are examined, it can be observed that price elasticities of demand are infinity because demand is zero for 240,000 TL. As a consequence, it can be said that demand of market insurance is elastic; in other words, it is sensitive to price changes at 0.01 probability level (Table 11 and Table 12).

Table 13. Demand of Market Insurance when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

Probability of Event	Price of Market Insurance	Demand of Market Insurance
0.50	3,000	76
0.50	150,000	54
0.50	240,000	14

Table 14. Own Price Elasticity of Market Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.50	150,000-3,000	-0.4157
0.50	240,000-3,000	-4.4846
0.50	240,000-150,000	-7.6190

For the 0.50 probability level, the case is slightly different. Since the probability of occurrence of event increases, price sensitivity of subjects decreases, which is an expected situation. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are 0.4157, 4.4846 and 7.6190, respectively. As seen from calculations, while demand is inelastic that is not sensitive to price change from 150,000 TL to 3,000 TL, it is elastic at other two levels of price changes (Table 13 and Table 14).

Table 15. Demand of Market Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price of Market Insurance	Demand of Market Insurance
0.80	3,000	76
0.80	150,000	66
0.80	240,000	41

Table 16. Own Price Elasticity of Market Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.80	150,000-3,000	-0.1546
0.80	240,000-3,000	-0.8645
0.80	240,000-150,000	-1.6260

For the 0.80 probability level, the case is also different. Since the probability of occurrence of event is highest, price sensitivity of subjects is lowest in this case again, not surprisingly. For price changes from 150,000 TL to 3,000 TL, 240,000

TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are 0.1546, 0.8645 and 1.6260, respectively. As seen from calculations, while demands are inelastic that is not sensitive to price change for first two cases, it is elastic just at last price change (Table 15 and Table 16).

4.1.1.3 Own Price Elasticity of Market Insurance for Fire

Own price elasticity of demand is calculated to measure the responsiveness of the quantity demanded to changes in the price of the market insurance mechanism.

Table 17. Demand of Market Insurance when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price of Market Insurance	Demand of Market Insurance
0.01	3,000	70
0.01	150,000	7
0.01	240,000	0

Table 18. Own Price Elasticity of Market Insurance when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.01	150,000-3,000	-9.1837
0.01	240,000-3,000	-∞
0.01	240,000-150,000	-∞

It can be seen from conclusions when price of market insurance mechanism for fire increases at the probability of 0.01, demand to the mechanism decreases.

However, to understand how the demand changes with response to price change, the size of elasticity should be examined. When the price decreases from 150,000 TL to 3,000 TL, demand rises from 7 to 70, and price elasticity of demand becomes -9.1837. Thus, it can be reached the conclusion that demand is elastic at 0.01 probability level that means it is sensitive to price change. With the same logic, when examined the price changes from 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, it can be observed that price elasticities of demand are infinite because demand is zero for 240,000 TL. As a consequence, it can be concluded that demand of market insurance is elastic; in other words, it is sensitive to price changes at 0.01 probability level (Table 17 and Table 18).

Table 19. Demand of Market Insurance when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price of Market Insurance	Demand of Market Insurance
0.50	3,000	75
0.50	150,000	46
0.50	240,000	12

Table 20. Own Price Elasticity of Market Insurance when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.50	150,000-3,000	-0.6433
0.50	240,000-3,000	-5.3165
0.50	240,000-150,000	-7.5556

For the 0.50 probability level, the case is more different. Since the probability of occurrence of event increases, price sensitivity of subjects decreases, which is an expected situation. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are -0.6433, -5.3165 and -7.5556, respectively. As seen from calculations, while demand is inelastic that is not sensitive to price change from 150,000 to 3,000 TL, it is elastic at other levels of price changes (Table 19 and Table 20).

Table 21. Demand of Market Insurance when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price of Market Insurance	Demand of Market Insurance
0.80	3,000	77
0.80	150,000	66
0.80	240,000	39

Table 22. Own Price Elasticity of Market Insurance when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.80	150,000-3,000	-0.1701
0.80	240,000-3,000	-0.9867
0.80	240,000-150,000	-1.8462

For the 0.80 probability level, the case is also different. Since the probability of occurrence of event is highest, price sensitivity of subjects is lowest in this case

again, not surprisingly. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are -0.1701, -0.9867 and -1.8462, respectively. As seen from calculations, even though price elasticity of demand is approximate to unit elasticity, it is lower than 1, and it can stated while demands are inelastic for first two cases, it is elastic just at last price change (Table 21 and Table 22).

4.1.1.4 Own Price Elasticity of Self-Protection for Fire

Own price elasticity of demand is calculated to measure the responsiveness of the quantity demanded to changes in the price of the self-protection mechanism.

Table 23. Demand of Self-Protection when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price of Self-Protection	Demand of Self-Protection
0.01	3,000	71
0.01	150,000	11
0.01	240,000	0

Table 24. Own Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.01	150,000-3,000	-5.5659
0.01	240,000-3,000	-∞
0.01	240,000-150,000	-∞

It can be seen from conclusions that when price of self-protection mechanism for fire increases at the probability of 0.01, demand to the mechanism decreases. However, to understand how the demand changes with response to price change, the size of elasticity should be examined. When the price decreases from 150,000 TL to 3,000 TL, demand rises from 11 to 71, and price elasticity of demand becomes -5.5659. Thus, it can be reached that demand is elastic at 0.01 probability level, which means it is sensitive to price change. With the same logic, when examined the price changes from 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, it can be observed that price elasticities of demand are infinite because demand for 240,000 TL is zero. As a consequence, it can be concluded that demand of self-protection is elastic; in other words, it is sensitive to price changes at 0.01 probability level (Table 23 and Table 24).

Table 25. Demand of Self-Protection when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price of Self-Protection	Demand of Self-Protection
0.50	3,000	77
0.50	150,000	53
0.50	240,000	16

Table 26. Own Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.50	150,000-3,000	-0.4621
0.50	240,000-3,000	-3.8608
0.50	240,000-150,000	-6.1667

For the 0.50 probability level, the case is more different. Since the probability of occurrence of event increases, price sensitivity of subjects decreases, which is an expected situation. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are -0.4621, -3.8608 and -6.1677, respectively. As seen from calculations, while demand is inelastic that is not sensitive to price change from150,000 TL to 3,000 TL, it is elastic at other levels of price changes (Table 25 and Table 26).

Table 27. Demand of Self-Protection when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price of Self-Protection	Demand of Self-Protection
0.80	3,000	77
0.80	150,000	66
0.80	240,000	44

Table 28. Own Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.80	150,000-3,000	-0.1701
0.80	240,000-3,000	-0.7595
0.80	240,000-150,000	-1.3333

For the 0.80 probability level, the case is also different. Since the probability of occurrence of event is the highest, price sensitivity of subjects is lowest in this case again, not surprisingly. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are -0.1701, -0.7595 and -1.3333, respectively. As seen from calculations, while demands are inelastic for first two cases, it is elastic at last price change (Table 27 and Table 28).

4.1.1.5 Own Price Elasticity of Self-Insurance Mechanism for Fire

Own price elasticity of demand is calculated to measure the responsiveness of the quantity demanded to changes in the price of the self-insurance mechanism.

Table 29. Demand of Self-Insurance when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price of Self-Insurance	Demand of Self-Insurance
0.01	3,000	71
0.01	150,000	9
0.01	240,000	0

Table 30. Own Price Elasticity of Self-Insurance when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.01	150,000-3,000	-8.6111
0.01	240,000-3,000	-∞
0.01	240,000-150,000	-∞

It can be seen from conclusions that when price of self-insurance mechanism for fire increases at the probability of 0.01, demand to the mechanism decreases. However, to understand how the demand changes with response to price change, the size of elasticity should be examined. When the price decreases from 150,000 TL to 3,000 TL, demand rises from 9 to 71, and price elasticity of demand becomes -8.6111. Thus, it can be reached the conclusion that demand is elastic at 0.01 probability level, which means it is sensitive to price change. With the same logic, when examined the price changes from 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, it can be seen that price elasticities of demand are infinity because demand for 240,000 TL is zero. As a consequence, it can be stated that demand of self-insurance is elastic; in other words, it is sensitive to price changes at 0.01 probability level (Table 29 and Table 30).

Table 31. Demand of Self-Insurance when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price of Self-Insurance	Demand of Self-Insurance
0.50	3,000	76
0.50	150,000	55
0.50	240,000	13

Table 32. Own Price Elasticity of Self-Insurance when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.50	150,000-3,000	-0.3896
0.50	240,000-3,000	-4.9075
0.50	240,000-150,000	-8.6154

For the 0.50 probability level, the case is more different. Since the probability of occurrence of event increases, price sensitivity of subjects decreases that is an expected situation. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are -0.3896, -4.9075 and -8.6154, respectively. As seen from calculations, while demand is inelastic that is not sensitive to price change from150,000 TL to 3,000 TL, it is elastic at other levels of price changes (Table 31 and Table 32).

Table 33. Demand of Self-Insurance when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price of Self-Insurance	Demand of Self-Insurance
0.80	3,000	77
0.80	150,000	69
0.80	240,000	40

Table 34. Own Price Elasticity of Self-Insurance when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price Change	Own Price Elasticity
0.80	150,000-3,000	-0.1183
0.80	240,000-3,000	-0.9367
0.80	240,000-150,000	-1.9333

For the 0.80 probability level, the case is also different. Since the probability of occurrence of event is highest, price sensitivity of subjects is lowest in this case again, not surprisingly. For price changes from 150,000 TL to 3,000 TL, 240,000 TL to 3,000 TL and 240,000 TL to 150,000 TL, price elasticities of demand are -0.1183, -0.9367 and -1.9333, respectively. As seen from calculations, while demands are inelastic for first two cases, it is elastic at last price change (Table 33 and Table 34).

In conclusion, demand is elastic; in other words, it is sensitive to price changes for low probability events. While the probability of occurrence of event increases, demand becomes inelastic; i.e. even if price of mechanism rises, demand does not

decrease as much as in low probability events and people continue to purchase the mechanisms.

In order to examine the complementary and substitutability relationships among the mechanisms, cross-price elasticity of demand was calculated as below;

4.1.1.6 Self-Insurance and Market Insurance for Earthquake

Cross price elasticity of demand is calculated by changing the price of market insurance mechanism while the price of self-insurance is held constant.

Table 35. Demand of Self-Insurance and Market Insurance when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

Probability of Event	Price of Self-Insurance	Price of Market Insurance	Demand of Self-Insurance	Demand of Market Insurance
0.01	3,000	3,000	63	22
0.01	3,000	150,000	73	1
0.01	3,000	240,000	73	1

Table 36. Cross Price Elasticity of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.01 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.01	3,000-150,000	0,3240%
0.01	3,000-240,000	0,1808%

Table 37. Demand of Self-Insurance and Market Insurance when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

Probability of Event	Price of Self-Insurance	Price of Market Insurance	Demand of Self-Insurance	Demand of Market Insurance
0.50	150,000	3,000	36	62
0.50	150,000	150,000	54	21
0.50	150,000	240,000	63	8

Table 38. Cross Price Elasticity of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.50 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.50	150,000-3,000	34%
0.50	150,000-240,000	27,8%

Table 39. Demand of Self-Insurance and Market Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price of Self-Insurance	Price of Market Insurance	Demand of Self-Insurance	Demand of Market Insurance
0.80	240,000	3,000	36	63
0.80	240,000	150,000	36	41
0.80	240,000	240,000	52	18

Table 40. Cross Price Elasticity of Self-Insurance when the Probability of Occurrence of an Earthquake is 0.80 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.80	240,000-3,000	0.39%
0.80	240,000-150,000	51.28%

In order to examine the relationship between the two mechanisms, price of self-insurance was held constant while price of market insurance mechanism was increased. Thus, it can be realized what the demand changes for the two mechanisms are and how much the amount of these changes is. As observed on the table, since cross-price elasticities are higher than zero, it can be concluded that mechanisms of self-insurance and market insurance for earthquake are substitutes for two price changes at 0.01, 0.50 and 0.80 probability levels (Table 35, Table 36, Table 37, Table 38, Table 39 and Table 40).

4.1.1.7 Self-Protection and Market Insurance Mechanisms for Fire

Cross price elasticity of demand is calculated by changing the price of market insurance mechanism while the price of self-protection is held constant.

Table 41. Demand of Self-Protection and Market Insurance when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price of Self-Protection	Price of Market Insurance	Demand of Self-Protection	Demand of Market Insurance
0.01	3,000	3,000	65	25
0.01	3,000	150,000	68	1
0.01	3,000	240,000	68	1

Table 42. Cross Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.01	3,000-150,000	0.9420%
0.01	3,000-240,000	0.5840%

Table 43. Demand of Self-Protection and Market Insurance when the Probability of Occurrence ofa Fire is 0.50 in the Scenario

Probability of Event	Price of Self-Protection	Price of Market Insurance	Demand of Self-Protection	Demand of Market Insurance
0.50	150,000	3,000	34	63
0.50	150,000	150,000	60	12
0.50	150,000	240,000	68	2

Table 44. Cross Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.50	150,000-3,000	44.18%
0.50	150,000-240,000	22.17%

Table 45. Demand of Self-Protection and Market Insurance when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price of Self-Protection	Price of Market Insurance	Demand of Self-Protection	Demand of Market Insurance
0.80	240,000	3,000	38	62
0.80	240,000	150,000	31	46
0.80	240,000	240,000	55	16

Table 46. Cross Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.80	240,000-3,000	31.30%
0.80	240,000-150,000	116.37%

In order to examine the relationship between the two mechanisms, price of self-protection mechanism was held constant while price of market insurance mechanism was increased. Thus, it can be realized what the demand changes for the two mechanisms are and how much the amount of these changes is. As seen

on the tables, since cross-price elasticities are higher than zero, it can be concluded that mechanisms of self-protection and market insurance for fire are substitutes for two price changes at 0.01, 0.50 and 0.80 probability levels (Table 41, Table 42, Table 43, Table 44, Table 45 and Table 46).

4.1.1.8 Self-Protection and Self-Insurance Mechanisms for Fire

Cross price elasticity of demand is calculated by changing the price of self-insurance mechanism while the price of self-protection is held constant.

Table 47. Demand of Self-Protection and Self-Insurance when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price of Self-Protection	Price of Self-Insurance	Demand of Self-Protection	Demand of Self-Insurance
0.01	3,000	3,000	60	34
0.01	3,000	150,000	68	2
0.01	3,000	240,000	70	1

Table 48. Cross Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.01 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.01	3,000-150,000	2.04%
0.01	3,000-240,000	1.34%

Table 49. Demand of Self-Protection and Self-Insurance when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price of Self-Protection	Price of Self-Insurance	Demand of Self-Protection	Demand of Self-Insurance
0.50	150,000	3,000	22	71
0.50	150,000	150,000	53	20
0.50	150,000	240,000	64	6

Table 50. Cross Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.50 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.50	150,000-3,000	59.68%
0.50	150,000-240,000	34.58%

Table 51. Demand of Self-Protection and Self-Insurance when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price of Self-Protection	Price of Self-Insurance	Demand of Self-Protection	Demand of Self-Insurance
0.80	240,000	3,000	26	70
0.80	240,000	150,000	21	57
0.80	240,000	240,000	15	53

Table 52. Cross Price Elasticity of Self-Protection when the Probability of Occurrence of a Fire is 0.80 in the Scenario

Probability of Event	Price Change	Cross Price Elasticities
0.80	240,000-3,000	51.58%
0.80	240,000-150,000	161.01%

In order to examine the relationship between the two mechanisms, price of self-protection mechanism for fire was held constant while price of self-insurance mechanism was increased. Thus, it can be realized what the demand changes for the two mechanisms are and how much the amount of these changes is. As seen on the table, since cross-price elasticities are higher than zero, it can be concluded that self-protection and self-insurance mechanisms are substitutes for two price changes at 0.01, 0.50 and 0.80 probability levels (Table 47, Table 48, Table 49, Table 50, Table 51 and Table 52).

In consequence of these findings, it can be concluded that self-insurance and market insurance mechanisms are substitutes for earthquake and fire events at all three probability levels, and the same relationship is found between self-protection and market insurance for fire at three probability levels.

Thus, I have reached same conclusions with Ehrlich and Becker (1972) for both earthquake and fire disasters which they stated self-insurance and market insurance mechanisms are substitutes. However, the findings of present study revealed that self-protection and market insurance mechanisms are not complements; they are substitutes of each other, too.

4.1.2 Test of Differences among the Mechanisms

At this part of the study it is investigated whether a significant difference exists among risk reduction mechanisms at each price and each probability level. 78 subjects were asked their buying decisions for each price and each probability level, thus, consumer demand of mechanisms was collected. As the number of mechanism is more than two, multiple comparison tests are needed to be conducted. However, since buying decisions does not distribute normally, I could not perform one way analysis of variance (ANOVA). Therefore, I carried out Friedman Tests for multiple comparisons, Wilcoxon Rank Sum Test for paired comparisons and Cochran's Q-Test for binary decisions which are nonparametric tests that compares medians of groups, not means.

Table 53. Price of Mechanisms is 3,000 TL and Probability of the Loss Event is 0.01

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.736	Retain the null hypothesis

As can be seen from the test result (Table 53), significant difference does not exist among the mechanisms.

Table 54. Price of Mechanisms is 150,000 TL and Probability of the Loss Event is 0.01

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.027	Reject the null hypothesis

As can be seen from the result of Cochran's Q test (Table 54), a significant difference exists among these risk reduction mechanisms ($p<0.05$). However, this test does not give us which mechanism is significantly different from the others. In order to find the mechanisms that are different, Related-Samples Cochran's Q Test is conducted for paired comparisons.

Table 55. Paired Comparison of Market Insurance and Self-Insurance

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.008	Reject the null hypothesis

At the end of the paired comparisons (Table 55), a significant difference is found only between market insurance and self-insurance mechanisms for earthquake at 0.01 probability level ($p<0.05$).

Table 56. Price of Mechanisms is 240,000 TL and Probability of the Loss Event is 0.01

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.406	Retain the null hypothesis

As can be seen from the test result (Table 56), a significant difference does not exist among the mechanisms.

Table 57. Price of Mechanisms is 3,000 TL and Probability of the Loss Event is 0.50

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.406	Retain the null hypothesis

As can be seen from the test result (Table 57), a significant difference does not exist among the mechanisms.

Table 58. Price of Mechanisms is 150,000 TL and Probability of the Loss Event is 0.50

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.006	Reject the null hypothesis

As can be seen from the result of Cochran's Q test (Table 58), a significant difference exists among these risk reduction mechanisms ($p<0.05$). However, this test does not give us which mechanism is significantly different from the others. In order to find the mechanisms that are different, Related-Samples Cochran's Q Test is conducted for paired comparisons.

Table 59. Paired Comparison of Market Insurance and Self-Insurance

Null Hypothesis	Test	Sig.	Decision
Mechanisms are equally effective	Related-Samples Cochran's Q Test	0.046	Reject the null hypothesis

At the end of the paired comparisons (Table 59), a significant difference is found only between market insurance and self-insurance mechanisms for earthquake at 0.50 probability level ($p<0.05$).

Table 60. Price of Mechanisms is 240,000 TL and Probability of the Loss Event is 0.50

Null Hypothesis	Test	Sig.	Decision
Mechanisms are equally effective	Related-Samples Cochran's Q Test	0.161	Retain the null hypothesis

As can be seen from the test result (Table 60), a significant difference does not exist among the mechanisms.

Table 61. Price of Mechanisms is 3,000 TL and Probability of the Loss Event is 0.80

Null Hypothesis	Test	Sig.	Decision
Mechanisms are equally effective	Related-Samples Cochran's Q Test	0.255	Retain the null hypothesis

As can be seen from the test result (Table 61), a significant difference does not exist among the mechanisms.

Table 62. Price of Mechanisms is 150,000 TL and Probability of the Loss Event is 0.80

Null Hypothesis	Test	Sig.	Decision
Mechanisms are equally effective	Related-Samples Cochran's Q Test	0.258	Retain the null hypothesis

As can be seen from the test result (Table 62), a significant difference does not exist among the mechanisms.

Table 63. Price of Mechanisms is 240,000 TL and Probability of the Loss Event is 0.80

Null Hypothesis	Test	Sig.	Decision
Mechanism are equally Effective	Related Samples Cochran's Q Test	0.031	Reject the null hypothesis

As can be seen from the test result (Table 63), a significant difference exists among the mechanisms ($p<0.05$). After conducted Wilcoxon rank sum test to reveal the difference between mechanisms, it is found that self-insurance for earthquake and market insurance for fire are significantly different from each other.

It can be concluded from Cochran's Q Test statistics that while a significant difference is found between market insurance and self-insurance mechanisms for 150,000 TL price level and at 0.01 and 0.50 probability levels, no significant difference can be found among risk reduction mechanisms for other price and probability levels. All subjects prefer to purchase the mechanisms at low price levels. However, as the probability of occurrence of event increases, they purchase the mechanisms even if prices are high.

In addition to this, since the price of mechanisms and probability levels of occurrence of events are the same for each mechanism, I calculated the overall demand irrespective of price and probability. Since demand does not normally

distribute, I conducted Related-Samples Friedman Test which is a non-parametric test.

Table 64. Overall Comparison of Risk Reduction Mechanisms

Null Hypothesis	Test	Sig.	Decision
Mechanisms are equally effective	Related-Samples Friedman Test	0.000	Reject the null hypothesis

As can be seen from the result of Friedman Test (Table 64), null hypothesis is rejected and it can be said that a significant difference exists among these risk reduction mechanisms ($p<0.05$). For this purpose, Wilcoxon Rank Sum Tests are conducted by comparing the pairs in order to reveal from which mechanisms the difference arises.

Table 65. Comparison of Market Insurance and Self Insurance for Earthquake

Null Hypothesis	Test	Sig.	Decision
The Median of Differences between Market Insurance and Self-Insurance equals zero.	Related-Samples Wilcoxon Signed Rank Test	0.002	Reject the null hypothesis

As seen from the test result (Table 65), market insurance and self-insurance mechanisms differ significantly from each other for earthquake consistent with the hypothesis ($p<0.05$).

Table 66. Comparison of Market Insurance, Self-Insurance and Self-Protection for Fire

Null Hypothesis	Test	Sig.	Decision
The Median of Differences among Market Insurance, Self-Insurance, and Self-Protection equals zero.	Related-Samples Friedman Test	0.035	Reject the null hypothesis

As seen from the result of Friedman Test (Table 66), a significant difference exists among market insurance, self-insurance and self-protection mechanisms for fire ($p<0.05$). Therefore, I conducted Wilcoxon Signed Rank Test to compare pairs and find the distinctness.

Table 67. Comparison of Market Insurance and Self-Insurance for Fire**.**

Null Hypothesis	Test	Sig.	Decision
The Median of Differences between Market Insurance and Self-Insurance equals zero.	Related-Samples Wilcoxon Signed Rank Test	0.109	Retain the null hypothesis

As seen from the test result (Table 67), market insurance and self-insurance mechanisms differ significantly from each other for fire.

Table 68. Comparison of Self-Insurance and Self-Protection for Fire

Null Hypothesis	Test	Sig.	Decision
The Median of Differences between Self-Insurance and Self-Protection equals zero.	Related-Samples Wilcoxon Signed Rank Test	0.508	Retain the null hypothesis

As seen from the test result (Table 68), self-insurance and self-protection mechanisms differ significantly from each other for fire.

Table 69. Comparison of Market Insurance and Self-Protection for Fire

Null Hypothesis	Test	Sig.	Decision
The Median of Differences between Market Insurance and Self-Protection equals zero.	Related-Samples Wilcoxon Signed Rank Test	0.013	Reject the null hypothesis

However, it can be stated that a significant difference exists (Table 69) between market insurance and self-protection mechanisms for fire event ($p<0.05$).

Table 70. Rank of the Mechanisms

Mechanisms	Mean Rank
Self-Protection	2.10
Self-Insurance	2.06
Market Insurance	1.84

Mean ranks of the mechanisms can be seen from the result of Friedman Test (Table 70) and it can be inferred that demand of self-protection is more than market insurance mechanism. However, self-insurance and self-protection mechanisms are not significantly different from each other consistent with the study of Shogren (1990), Mauro and Maffioletti (1996), Özdemir (2007) and expected utility theory.

4.1.3 The Effects of Risk Attitudes, Personality Traits and Demographic Variables on Individual Valuations to Risk Reduction Mechanisms

At the first part of the experiment, participants are asked the prices that they are ready to pay for each mechanism. Before they see the price choices, they are told to value for each risk reduction mechanism at three different probability levels. The purpose of asking these questions is finding significant factors and determinants that affects people's decisions when price of mechanisms and probability of occurrence of events are held constant. It is possible to establish a relationship among personality traits, risk attitude, demographic factors as independent variables and valuation of these mechanisms as dependent variable with only regression analysis. This relationship shows us which independent variables have significant effects on consumer maximum willingness to pay (WTP) and how magnitude and direction of the relationship are. By this means, it could be found significant variables that explain the model.

First, normality assumption is tested market insurance for earthquake, market insurance for fire, self-insurance for earthquake, self-insurance for fire and self-

protection for fire at three different probability levels. The findings of Kolmogorov-Smirnov Tests revealed that self-insurance for earthquake at 0.50 probability level, self-insurance for earthquake at 0.80 probability level, market insurance for earthquake at 0.50 probability level, market insurance for earthquake at 0.80 probability level, self-protection at 0.50 probability level, self-protection at 0.80 probability level, market insurance for fire at 0.50 probability level and market insurance for fire at 0.80 probability level distribute normally. After tested normality, linearity assumption is tested by using Pearson Correlation Coefficient and it is seen that linear relationships exist between dependent and independent variables. Lastly, residual analyses are conducted, and it is seen that residuals distribute normally after conducted Kolmogorov-Smirnov Tests. Thus, regression analyses could be conducted and found significant relationships that affect maximum willingness to pay of consumer (Appendix B).

However, while linearity is suited, normality assumption is not suited for each risk reduction mechanism at the probability of 0.01 and market insurance for fire at 0.50 and 0.80 probability levels. Therefore, natural logarithm and square root transformations are conducted to dependent variables to check normality assumption. As a result of these analyses, normality and linearity assumptions are checked for market insurance against fire at the probability for 0.50 and 0.80. Thus, regression analysis could be conducted and significant variables are ensued. On the other hand, normality assumption is not suited for each mechanism at 0.01 probability level except self-insurance mechanism at that probability level. After

proved a linear relationship between dependent and independent variables, regression analysis is carried out and a significant model is found.

In accordance with these explanations, results of regression analyses are displayed and only significant models are located;

Table 71. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Insurance Mechanism for Earthquake at 0.50

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.075	2072.657			.016
Constant			55037.773		.041
Investment			5116.765	.274	.016

After conducted regression analysis to maximum willingness to pay of consumer, it is observed that (Table 71) R^2 (determination coefficient) shows that investment variable explains the portion of 7.5% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When examined the significance of coefficient along with model significance, it can be easily seen that investment variable is significant ($\beta = .274$, $p<0.05$).

In conclusion, as understood from regression analysis that investment attitude has a positive effect on maximum willingness to pay for self-insurance mechanism when the probability of occurrence of the event is 0.50.

Table 72. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Insurance Mechanism for Earthquake at 0.80

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.055	2373.536			.041
Constant			103026.002		.001
Investment			4943.008	.234	.041

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 72) R^2 (determination coefficient) shows that investment variable explains the portion of 5.5% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When examined the significance of coefficient along with model significance, it can be easily seen that investment variable is again significant ($\beta=.234$, $p<0.05$).

In conclusion, as understood from regression analysis that investment attitude has a positive effect on maximum willingness to pay for self-insurance mechanism when the probability of occurrence of the event is 0.80.

Table 73. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Market Insurance Mechanism for Earthquake at 0.50

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.127	2124.266			.001
Constant			10629.315		.697
Investment			7010.691	.356	.001

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 73) R^2 (determination coefficient) shows that investment variable explains the portion of 12.7% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance is examined, it can be easily seen that investment variable is again significant ($\beta=.356$, $p<0.05$).

In conclusion, as understood from regression analysis, investment attitude has a positive effect on maximum willingness to pay for market insurance for earthquake when the probability of occurrence of event is 0.50.

Table 74. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Market Insurance Mechanism for Earthquake at 0.80

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.127	2615.753			.001
Constant			33439.569		.275
Investment			2615.753	.356	.001

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 74) R^2 (determination coefficient) shows that investment variable explains the portion of 12.7% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance is examined, it can be easily seen that investment variable is again significant ($\beta=.356$, $p<0.05$).

In conclusion, as understood from regression analysis, investment attitude has a positive effect on maximum willingness to pay for market insurance for earthquake when the probability of occurrence of event is 0.80.

Table 75. Effect of Recreational Attitude on Individual Maximum Willingness to Pay of Self-Protection Mechanism for Fire at 0.50

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.053	2.526			.044
Constant			136.267		.021
Recreational			5.186	.231	.044

Before conducted regression analysis, normality assumption was tested, and the result of Kolmogorov-Smirnov test statistics showed that fire alarm mechanism does not normally distribute. Therefore, the data was transformed into square root, and regression assumptions were tested again. According to Kolmogorov-Smirnov test statistics and Pearson Correlation Coefficient, linear regression assumptions were checked and regression analysis was conducted to maximum willingness to pay of consumer (Appendix B).

Finally, it is concluded that (Table 75) R^2 is found as 0.053, which means that recreational variable explains the portion of 5.3% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When examined the significance of coefficient along with model significance, it can be easily seen that recreational risk is significant by explaining maximum willingness to pay ($\beta=.231$, $p<0.05$).

In conclusion, as understood from regression analysis that recreational attitude has a positive effect on maximum willingness to pay for self-protection mechanism when the probability of occurrence of event is 0.50.

Table 76. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Protection Mechanism for Fire at 0.80

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.064	2724.928			.026
Constant			136.267		.128
Investment			5.186	.253	.026

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 76) R^2 (determination coefficient) shows that investment variable explains the portion of 5.2% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When examined the significance of coefficient along with model significance, it can be easily seen that investment variable is again significant ($\beta=.253$, $p<0.05$).

In conclusion, as understood from regression analysis that investment attitude has a positive effect on maximum willingness to pay for self-protection mechanism when the probability of occurrence of event is 0.80.

Table 77. Effect of Age on Individual Maximum Willingness to Pay of Self-Insurance Mechanism for Fire at 0.01

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.132	5.153			.001
Constant			534.312		.000
Age			-17.390	-.363	.001

Before conducted regression analysis, normality assumption was tested, and the result of Kolmogorov-Smirnov test statistics showed that fire alarm mechanism does not normally distribute at 0.01 probability level. Therefore, the data was transformed into square root, and regression assumptions were tested again. According to Kolmogorov-Smirnov test statistics and Pearson Correlation Coefficient, linear regression assumptions were checked and regression analysis was conducted to maximum willingness to pay of consumer (Appendix B).

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table77) R^2 is found 13.2%, which means that investment attitude and age explain together the portion of 13.2% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance ($\beta=-.363$, $p<0.05$) is examined, it can be easily seen that

an inverse relationship between age and self-insurance exists at 0.01probability level.

In conclusion, as understood from regression analysis, age has a negative effect on maximum willingness to pay for self-insurance mechanism when the probability of occurrence of fire is 0.01.

Table 78. Regression Analysis of Self-Insurance Mechanism for Fire with Probability of 0.50

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.091	1931.507			.008
Constant			22783.834		.359
Investment			5295.855	.302	.008

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 78) R^2 (determination coefficient) shows that investment variable explains the portion of 9.1% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance is examined, it can be easily seen that investment variable is again significant ($\beta=.302$, $p<0.05$).

In conclusion, as understood from regression analysis that investment attitude has a positive effect on maximum willingness to pay for self-insurance mechanism when the probability of occurrence of fire is 0.50.

Table 79. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Insurance Mechanism for Fire at 0.80

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.101	2452.479			.005
Constant			43581.754		.169
Investment			7119.038	.318	.005

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 79) R^2 (determination coefficient) shows that investment variable explains the portion of 10.1% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance is examined, it can be easily seen that investment variable is again significant ($\beta=.318$, $p<0.05$).

In conclusion, as understood from regression analysis that investment attitude has a positive effect on maximum willingness to pay for self-insurance mechanism when the probability of occurrence of fire is 0.80.

Table 80. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Market Insurance Mechanism for Fire at 0.50

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.086	3.723			.010
Constant			112.899		.020
Investment			9.866	.293	.010

Before conducted regression analysis, normality assumption was tested, and the result of Kolmogorov-Smirnov test statistics showed that market insurance mechanism does not normally distribute at 0.50 probability level. Therefore, the data was transformed into square root, and regression assumptions were tested again. According to Kolmogorov-Smirnov test statistics and Pearson Correlation Coefficient, linear regression assumptions were checked and regression analysis was conducted to maximum willingness to pay of consumer (Appendix B).

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 80) R^2 (determination coefficient) shows that investment variable explains the portion of 8.6% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance is examined, it can be easily seen that investment variable is again significant ($\beta=.293$, $p<0.05$).

In conclusion, as understood from regression analysis that investment attitude has a positive effect on maximum willingness to pay for self-protection mechanism when probability of occurrence of fire is 0.50.

Table 81. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Market Insurance Mechanism for Fire at 0.80

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.125	4.208			.002
Constant			133.639		.015
Investment			13.793	.354	.002

Before conducted regression analysis, normality assumption was tested, and the result of Kolmogorov-Smirnov test statistics showed that market insurance mechanism does not normally distribute at 0.80 probability level. Therefore, the data was transformed into square root, and regression assumptions were tested again. According to Kolmogorov-Smirnov test statistics and Pearson Correlation Coefficient, linear regression assumptions were checked and regression analysis was conducted to maximum willingness to pay of consumer (Appendix B).

After applied regression analysis to maximum willingness to pay of consumer, it is seen that (Table 81) R^2 is found 12.5%, which means that investment variable explains the portion of 12.5% of change in the maximum willingness to pay.

After applied regression analysis to maximum willingness to pay of consumer, it is seen that R^2 (determination coefficient) shows that investment variable explains the portion of 14.1% of change in the maximum willingness to pay. After that, when looked at the model significance, it can be said that model is significant ($p<0.05$). When the significance of coefficient along with model significance is examined, it can be easily seen that investment variable is again significant ($\beta=.354$, $p<0.05$).

In conclusion, as observed from regression analysis investment attitude has a positive effect on maximum willingness to pay for self-protection mechanism when the probability of occurrence of event is 0.80.

In consequence of the regression analyses, a positive linear relationship exists between investment attitude and maximum willingness to pay of subjects for each five mechanism. They perceive insurance as an investment decision and thus, as their attitudes towards investment increase, the amount of maximum willingness to pay for the mechanisms rises. In addition, while no significant independent variable exists that explains maximum willingness to pay except self-insurance mechanism for fire at 0.01 probability level. Another important finding of the study is that age has a significant effect on self-insurance mechanism for fire at 0.01 probability level.

Table 82. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Insurance Mechanism for Earthquake

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.075	5088.648			.016
Constant			165148.754		.013
Investment			12531.501	.274	.016

Table 83. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Market Insurance Mechanism for Earthquake

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.132	5298.005			.001
Constant			45569.274		.503
Investment			17915.017	.364	.001

Table 84. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Protection Mechanism for Fire

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.069	5464.707			.021
Constant			82397.852		.242
Investment			12920.339	.263	.021

Table 85. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Self-Insurance Mechanism for Fire

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.108	4950.764			.004
Constant			67012.895		.293
Investment			14910.760	.328	.004

Table 86. Effect of Investment Attitude on Individual Maximum Willingness to Pay of Market Insurance Mechanism for Fire

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.117	5056.359			.002
Constant			21588.638		.739
Investment			15943.306	.342	.002

I have explored the risk reduction mechanisms at different probability levels and presented the results above. In addition, it was collected their aggregate maximum willingness to pay for each probability level, and regression analysis was conducted for self-insurance for earthquake, market insurance for earthquake, self-protection for fire, self-insurance for fire and market insurance for fire (Table 82, Table 83, Table 84, Table 85 and Table 86).

Before conducted regression analysis, normality assumption for dependent variables, residual analyses and linearity between dependent and independent variables were tested, and understood from the result of Kolmogorov-Smirnov test statistics and Pearson Correlation coefficients that regression analyses could be conducted.

4.2 The Effects of Personality Traits and Demographic Variables on Risk Attitudes

Last part of present study examines the factors that affect risk attitude. According to the domain-specific risk attitude scale (Weber, 2002), there are six different domains that I measured with five-point Likert Scale, and in accordance with the regression analyses, results and the hypothesis are shown as below;

4.2.1 Social Risk

Before conducted regression analysis to social risk attitude, regression assumptions were tested, and normality of dependent variables and residuals and linearity assumptions were confirmed (Appendix C).

Table 87. The Effect of Openness to Experiences Trait on Social Risk

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.075	.124			.015
Constant			19.659		.000
Openness to Experiences			.310	.275	.015

As seen on regression result (Table 87), openness to experiences trait is significant by explaining social risk attitude and it is stated a positive relationship exists between openness to experiences and social risk (β=0.275, $p<0.05$).

4.2.2 Recreational Risk

Table 88. The Effect of Income on Recreational Risk

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.087	.732			.009
Constant			25.941		.000
Income			-1.953	-.294	.009

As seen on regression result (Table 88), income is a significant factor by explaining recreational risk attitude and a negative relationship exists between income and recreational risk (β= -0.291, $p<0.05$).

4.2.3 Health Risk

Table 89. The Effects of Conscientiousness Trait and Gender on Health Risk

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.280				.000
Constant			31.995		.000
Conscientiousness		.100	-.297	-.382	.004
Gender		1.137	-4.324	-.298	.000

As seen on regression result (Table 89), gender and conscientiousness trait are significant by explaining health risk attitude. It is seen from results negative relationships between gender-health risk and conscientiousness-health risk exist (β= -4.324 and β= -0.298, $p<0.05$).

4.2.4 Ethical Risk

Table 90. The Effects of Agreeableness Trait and Gender on Ethical Risk

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.215				.000
Constant			38.573		.000
Agreeableness		.175	-.594	-.350	.001
Gender		1.152	-3.107	-.278	.009

As seen on regression result (Table 90), agreeableness and gender are significant by explaining ethical risk attitude. Negative relationships between agreeableness and ethical risk; gender and ethical risk exist (β = -0.350 and β = -0.278 respectively, $p<0.05$).

4.2.5 Investment Risk

Table 91. The Effect of Openness to Experiences Trait on Investment Risk

	R^2	Std. Error of the Estimate	β	Std. β	Sig.
Model	.144	.138			.001
Constant			.505		.878
Openness to Experiences			.489	.380	.001

As seen on regression result (Table 91), only openness to experience trait is significant by explaining investment risk attitude. It is said that a positive relationship between openness to experience trait and investment risk exists (β=0.380, $p<0.05$).

4.3 Summary

First, the hypothesis cannot be rejected that asserts self-insurance and self-protection mechanisms are substitutes. On the other hand, the hypothesis is rejected that asserts self-protection and market insurance are complements, and they are found to be substitutes of each other, too.

Second, the hypotheses are proved that self-insurance-market insurance and self-protection-market insurance mechanisms differ significantly from each other. However, self-insurance and self-protection mechanisms are not found to be significant from each other.

Third, risk attitudes (investment and recreational) have significant effect on individual valuations to the risk reduction mechanisms as consistent with the hypothesis. In addition, demographic variable (age) affects individual valuation significantly. However, the hypothesis is rejected that asserts personality traits have significant impact on individual valuations.

Lastly, personality traits (conscientiousness, openness to experiences, agreeableness) affect risk attitudes significantly as asserted in the hypothesis. Further, demographic variables (gender and income) have significant effect on risk attitudes as well.

CHAPTER 5

CONCLUSION

The current study contributes to the existing literature by testing the theory of Ehrlich and Becker (1972) empirically. When analyzed the results of cross-price elasticities of demand, consistent with theory self-insurance and market insurance mechanisms for earthquake are found to be substitutes of each other for all price changes at three different probability levels. Further, self-protection and market insurance mechanisms are found as substitutes at all price changes and three probability levels unlike the theory of Ehrlich and Becker (1972). Finally, in addition to the theoretical investigation self-protection and self-insurance mechanisms are also compared and found that these two mechanisms are also substitutes of each other at three different probability levels for each price change. At the end of an experimental investigation, it is concluded that self-insurance-market insurance mechanisms and self-protection-market insurance mechanisms are substitutes to each other.

The results of own price elasticity of demand show that people are more sensitive to price changes against the low probability events; therefore, as price increased, they do not accept to purchase the mechanisms. However, they accept to pay more money for the high probability events. Further, they do not purchase the mechanisms that above the expected utility and demand closes to zero. In

addition, when analyzed the demand to risk reduction mechanisms, it can be seen that self-insurance and self-protection are much more preferable than market insurance for both earthquake and fire.

Another crucial contribution to literature is adding market insurance to the comparison of self-insurance and self-protection to investigate whether significant differences exist among the risk reduction mechanisms. Shogren (1990) and Mauro and Maffioletti (1996) examine the difference between self-insurance and self-protection mechanisms on individual response to risk. However, market insurance has not been tested before. In this study, all the three risk reduction mechanisms are compared. Results show that significant difference exists between market insurance and self-insurance mechanisms for earthquake event and between market insurance and self-protection mechanisms for fire event. In the second part of the study, whether a significant difference exists among the three risk reduction mechanisms is analyzed. In conclusion, it can be stated that the difference among risk reduction mechanisms are statistically significant. A significant difference between market insurance and self-insurance mechanisms for earthquake at 150,000 TL price and at 0.01 and 0.50 probability levels is found. The difference among risk reduction mechanisms is also analyzed by adding the amount of demand for each price and probability level. Thus, instead of examining separately for each price and probability level, aggregate demand for all risk reduction mechanisms are calculated and compared and the findings show that a significant difference exists between market insurance and self-insurance mechanisms for earthquake disaster with respect to individual demand.

In addition, market insurance and self-insurance mechanisms are found to be different from each other for fire event with respect to individual demand.

One more notable contribution is that most experimental studies (Shogren, 1990, Mauro and Maffioletti, 1996 and Özdemir, 2007) examining self-insurance and self-protection use general hypothetical scenarios that consist of certain probability of occurrence and loss amount without specifying what the event actually is. However, different from literature conceptual scenarios are asked to the individuals instead of general scenarios. Through specifying the loss events: Earthquake and fire are taken into account when scenarios are designed. The preferences of subjects to self-insurance, self-protection and market insurance mechanisms are measured by asking them 57 hypothetical scenarios related to precautions for earthquake and fire. That way, the results make some concrete suggestions for the insurance sector in Turkey for earthquake and fire events by measuring individual's preferences. With this respect, according to the current study individuals perceive insurance mechanisms as an investment tool and their valuations of these mechanisms increase with their investment attitudes. Further, when analyzed individuals' demand to these mechanism, self-insurance and self-protection mechanisms are found to be much more preferable than market insurance for both earthquake and fire events.

Lastly, the effects of risk attitude and personality trait on individual preferences for these risk reduction mechanisms are investigated through asking a questionnaire to the participants of the experiment. At the third part, consumer maximum willingness to pay for precautions is investigated. Risk attitudes,

personality traits and demographic factors are possible variables affecting individual valuations. The findings of the analyses show that investment attitude affects the maximum willingness to pay amounts positively and significantly for self-insurance mechanism for earthquake, for market insurance mechanism for earthquake, for self-protection mechanism for fire, self-insurance mechanism for fire and market insurance mechanism. Subjects are asked to make some decisions related to investment on speculative stocks, conservative stocks, government bonds and moderate growth mutual fund, and thus, it can be concluded from these results that subjects perceive insurance mechanisms as an investment tool. In other words, the more the valuation of people to insurance mechanisms, the more their investment attitudes are financially. In addition, recreational attitude affects maximum willingness to pay decisions positively and significantly for self-protection mechanism. Another finding shows that age is a significant factor by explaining maximum willingness to pay for self-insurance mechanism for fire at 0.01 probability level. When maximum willingness to pay is analyzed independently from price and probability, it is seen that investment attitude has a significant effect on all risk reduction mechanisms.

The last part of the study investigates the effect of personality traits and demographic variables on risk attitude. According to the answers of the subjects, scores are added and regressed with personality traits and demographic variables after tested regression assumptions. Among the six different domains, only gambling attitude is not distributed normally even after the transformation of the gambling variable. For the other five attitudes, regression analyses are conducted

and the results reveal that openness to experience has a positive and significant effect on social risk attitude. Income affects recreational risk attitude significantly and negatively. In addition, both conscientiousness trait and gender affect significantly and negatively health risk attitude. In other words, women are more risk averse when making a decision related to risk. Agreeableness trait and again gender have negative and important impact on ethical risk attitude, and women are more risk averse than men on ethical issues. Lastly, openness to experience trait affects investment decision significantly and as the degree of openness to experience increases, people's tendency to investment risk attitude increases.

Finally, the present study concluded that expected utility theory is valid for preference of subjects to the risk reduction mechanisms. They consider expected utility, not the expected value when they decide. When analyzed their demands to these mechanisms, self-insurance and self-protection mechanisms are much more preferable to market insurance mechanism for earthquake and fire events. In other words, people consider not only financial compensation, but also their personal property as well as their health concerns. Besides, it is understood that subjects perceive insurance decision as an investment instrument.

The study also has some limitations. First of all, substitutability and complementarity of risk reduction mechanisms could not be analyzed in a wide range of price and probability levels. These relationships could be investigated only at three price and probability levels. A regression equation can be constructed by increasing the number of price and probability levels. Thus, coefficients of the model will be able to show the substitution and complementary

relationships among these risk reduction mechanisms. Second, since demand to the mechanisms is a discrete variable, linear regression could not be conducted. Poisson regression can be applied for future analysis. Another problematic issue is the sample size and sampling frame. Due to the convenience of sample and financial considerations, 78 Middle East Technical University students were chosen for conducting this study. However, the study can be extended by increasing the sample size and by diversifying the sampling frame. Lastly, domain specific risk attitudes scale developed by Weber (2002) is used in the present study. Although confidence of the scale was tested, questions were designed according to another culture's characteristics. Therefore, it would have been better to be prepared according to the Turkish culture with respect to reflect culture's characteristics.

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APPENDICES

APPENDIX A

QUESTIONNAIRE FORM AND EXPERIMENT

Sayın ODTÜ Öğrencileri,

Ekteki anket, bireylerin kişilik özelliklerini, risk eğilimlerini ve demografik özelliklerini incelemeye yönelik ***bilimsel bir projenin önemli bir parçasıdır***. Bunun yanı sıra, yapılacak deneysel bir uygulama ile bireylerin çeşitli risk durumlarında nasıl önlem aldıkları araştırılacaktır. Anket ve deneye katılarak bu projeye katkıda bulunmanızı rica ediyoruz. Vereceğiniz cevapların doğruluğu çalışmamız için büyük önem taşımaktadır. ***İsim vermeniz gerekmediği gibi tüm cevaplarınız gizli tutulacaktır.*** Çalışmanın sonuçları hakkında bilgi taleplerinizi telefon ya da e-posta yoluyla yapabilirsiniz.

İlginiz ve vaktinizi ayırdığınız için teşekkür ederiz.

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AÇIKLAMALAR

Adım 1: Birtakım ekonomik kararlar hakkında bilgi almak üzere ilk aşamada bir anket dolduracaksınız.

LÜTFEN ANKETİ EKSİKSİZ DOLDURUNUZ. MODERATÖR TOPLAYACAKTIR!

Aşağıda size uyan ya da uymayan pek çok kişilik özelliği bulunmaktadır. **Bu özelliklerden her birinin kendiniz için ne kadar uygun olduğunu ilgili rakamı daire içine alarak belirtiniz.**

		Hiç Uygun Değil	**Uygun Değil**	**Kararsızım**	**Uygun**	**Çok Uygun**
1.	Aceleci	1	2	3	4	5
2.	Duyarlı	1	2	3	4	5
3.	Konuşkan	1	2	3	4	5
4.	Kendine güvenen	1	2	3	4	5
5.	Soğuk	1	2	3	4	5
6.	Utangaç	1	2	3	4	5
7.	Paylaşımcı	1	2	3	4	5
8.	Geniş / rahat	1	2	3	4	5
9.	Cesur	1	2	3	4	5
10.	Agresif(Saldırgan)	1	2	3	4	5
11.	Çalışkan	1	2	3	4	5
12.	Girişken	1	2	3	4	5
13.	İyi niyetli	1	2	3	4	5
14.	İçten	1	2	3	4	5

15.	Kendinden emin	1	2	3	4	5
16.	Huysuz	1	2	3	4	5
17.	Yardımsever	1	2	3	4	5
18.	Kabiliyetli	1	2	3	4	5
19.	Üşengeç	1	2	3	4	5
20.	Sorumsuz	1	2	3	4	5
21.	Sevecen	1	2	3	4	5
22.	Pasif	1	2	3	4	5
23.	Disiplinli	1	2	3	4	5
24.	Sinirli	1	2	3	4	5
25.	Cana yakın	1	2	3	4	5
26.	Kızgın	1	2	3	4	5
27.	Durgun	1	2	3	4	5
28.	Kaygılı	1	2	3	4	5
29.	Sabırsız	1	2	3	4	5
30.	Yaratıcı (Üretken)	1	2	3	4	5
31.	Kaprisli	1	2	3	4	5
32.	İçine kapanık	1	2	3	4	5
33.	Çekingen	1	2	3	4	5
34.	Alıngan	1	2	3	4	5
35.	Hoşgörülü	1	2	3	4	5
36.	Düzenli	1	2	3	4	5
37.	Titiz	1	2	3	4	5
38.	Tedbirli	1	2	3	4	5
39.	Azimli	1	2	3	4	5

Aşağıdaki Cümlelerin her birinin size ne kadar uyduğunu **ilgili rakamı daire içine alarak belirtiniz.**

		Hiç Uygun Değil	**Uygun Değil**	**Kararsızım**	**Uygun**	**Çok Uygun**
40.	Zevklerimin arkadaşlarımınkilerden farklı olduğunu itiraf ediyorum.	1	2	3	4	5
41.	Kamp alanının dışında yabani bir yerde kamp yapmaya giderim.	1	2	3	4	5
42.	Bir günlük gelirimi (harçlığımı) at yarışlarına yatırırım.	1	2	3	4	5
43.	Kendi kullanımım için yasak madde satın alırım.	1	2	3	4	5
44.	Sınavda kopya çekerim.	1	2	3	4	5
45.	Etkileyici fotoğraflar çekmek için arabayla bir kasırga ya da hortumun peşinden giderim.	1	2	3	4	5
46.	Yıllık gelirimin %10'unu ortalama büyüme gösteren bir yatırım fonuna yatırırım.	1	2	3	4	5
47.	Alkol aldığım bir gecede beş bardak ya da daha fazla alkol tüketirim.	1	2	3	4	5
48.	Gelir vergisi beyannamesinin önemli bir bölümünde sahtekârlık yaparım.	1	2	3	4	5
49.	Temel konularda babamla aynı fikirde olmam.	1	2	3	4	5
50.	Bir günlük gelirimi bir poker oyununa yatırırım.	1	2	3	4	5
51.	Evli bir adamla ya da kadınla ilişkim olur.	1	2	3	4	5
52.	Bir başkasının imzasını taklit ederim.	1	2	3	4	5
53.	Bir başkasının çalışmasını kendiminmiş gibi gösteririm.	1	2	3	4	5
54.	Bir üçüncü dünya ülkesine önceden seyahat ve kalacak yer ayarlaması yapmadan giderim.	1	2	3	4	5
55.	Bir konuda çok farklı görüşü olan bir arkadaşımla tartışırım.	1	2	3	4	5

56.	Kayabileceğimin ötesinde zor ya da kapalı bir kayak pistinden aşağı inerim.	1	2	3	4	5
57.	Yıllık gelirinin %5'ini oldukça spekülatif bir hisse senedine yatırırım.	1	2	3	4	5
58.	Patronuma zam istemek için başvururum.	1	2	3	4	5
59.	Bir yazılımı yasa dışı olarak kopyalarım.	1	2	3	4	5
60.	Baharda hızlı su akıntısı olduğunda rafting yaparım.	1	2	3	4	5
61.	Bir günlük gelirimi bir spor (basketbol, futbol, vs.) sonucu bahsine yatırırım.	1	2	3	4	5
62.	Arkadaşımın sevgilisi bana asıldığında arkadaşıma söylerim.	1	2	3	4	5
63.	Yıllık gelirimin %5'ini ihtiyatlı bir hisse senedine yatırırım.	1	2	3	4	5
64.	Dükkândan küçük bir şey çalarım (dudak parlatıcısı, kalem, vs.)	1	2	3	4	5
65.	Bir ortamda kışkırtıcı ya da alışılmamış bir kıyafet giyerim.	1	2	3	4	5
66.	Korunmasız seks yaparım.	1	2	3	4	5
67.	Ödediğim dışında ek bir TV kablo bağlantısı çalarım.	1	2	3	4	5
68.	Arabanın ön koltuğunda giderken emniyet kemerini takmam.	1	2	3	4	5
69.	Yıllık gelirimin %10'unu hazine bonosuna yatırırım.	1	2	3	4	5
70.	Düzenli olarak tehlikeli bir sporla uğraşırım (dağ tırmanışı, hava dalışı, vs.).	1	2	3	4	5
71.	Motosiklet kullanırken kask kullanmam.	1	2	3	4	5
72.	Bir haftalık gelirimle gazinoda kumar oynarım.	1	2	3	4	5
73.	Daha az eğlenceli ama prestijli bir meslek yerine daha eğlenceli bir işi kabul ederim.	1	2	3	4	5
74.	Sosyal bir ortamda genel kabul görmeyen bir konuyu savunurum.	1	2	3	4	5
75.	Güneş kremi sürmeden	1	2	3	4	5

	güneşe çıkarım.					
76.	En az bir kere bungee jumping yapmayı denerim.	1	2	3	4	5
77.	Yapabilsem küçük uçağımın pilotluğunu yapardım.	1	2	3	4	5
78.	Şehrin tekin olmayan bir bölgesinde gece yarısı tek başıma eve yürürüm.	1	2	3	4	5
79.	Düzenli olarak yüksek kolesterollü yiyecekler tüketirim.	1	2	3	4	5

CİNSİYETİNİZ: ☐ Kadın ☐ Erkek

YAŞINIZ:_____

AYLIK GELİRİNİZ: ☐ 0-500TL

☐ 501-1000TL

☐ 1001-1500TL

☐ 1501-2000TL

☐ 2000TL ve üzeri

BÖLÜMÜNÜZ:_____

SINIFINIZ: ☐ Hazırlık

☐ 1.Sınıf

☐ 2.Sınıf

☐ 3.Sınıf

☐ 4.Sınıf

☐ Yüksek lisans

☐ Doktora

Adım 2: Şimdi size **deprem ve yangın gibi doğal afetlerin oluşumu** ile ilgili farklı senaryolar sunulacak. Aşağıda gördüğünüz **300.000TL değerindeki evin** size ait olduğunu düşünerek eviniz bu afetlere karşı korumak için bazı önlemleri alma kararları vereceksiniz. Senaryolarda almaya **karar verdiğiniz önlemler her senaryo başında sahip olduğunuz 300.000TL'lik evinizi korumak için olacak.**

Senaryolarda deprem ve yangın afet riskine karşı alabileceğiniz önlemlerle ilgili açıklamalar:

Deprem Felaketi İçin Alınabilecek Önlemler:

- **Evinizi depreme karşı sağlamlaştırmak:** Evinizi sağlamlaştırmaya karar verirseniz, depremin olma olasılığını etkileyemeyeceksiniz fakat olduğu takdirde evinizde hasar oluşmayacak.

- **Piyasada mevcut sigortayı satın almak:** Piyasada mevcut sigortayı satın almaya karar verirseniz, depremin olma olasılığını etkileyemeyeceksiniz. Deprem olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak.

Yangın Felaketi İçin Alınabilecek Önlemler:

- **Evinizi yangına dayanıklı malzeme ile kaplamak:** Evinizi yangına dayanıklı malzeme ile kaplamaya karar verirseniz, yangın olma olasılığını etkileyemeyeceksiniz. Fakat yangın olduğu takdirde evinizde hasar oluşmayacak.

- **Yangın alarmı satın almak:** Yangın alarmı satın almaya karar verirseniz, alarm sistemi çok duyarlı olduğu ve sizi hemen uyaracağı için, yangın olma olasılığı "0" olacak, yani yangın olayı gerçekleşmeyecek.

- **Piyasada mevcut sigortayı satın almak:** Piyasada mevcut sigortayı satın almaya karar verirseniz, yangın olma olasılığını etkileyemeyeceksiniz. Yangın olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak.

Adım 4: Senaryolardaki kararlarınız tamamlandığınızda **katılım ücreti olan 25TL** tarafınıza ödenecektir.

Senaryolarda verdiğiniz kararlara göre **katılım ücretine ek bir para kazanabilirsiniz**. Bunun için, tüm senaryoların bitiminde katılımcılar arasından bir kişi kurayla seçilecek ve seçilen öğrenci için senaryolardan bir tanesi, kurayla seçilerek gerçekmiş gibi oynanacak ve sonuca göre ödeme yapılacaktır.

KURALLAR:

- **Deney süresince hiçbir şekilde diğer katılımcılarla iletişim kuramazsınız.**
- **İletişim kurduğunuz takdirde deneyden çıkarılacak, katılım ücreti dâhil olmak üzere tarafınıza hiçbir ödeme yapılmayacaktır!**

BÖLÜM 1

Bu bölümdeki senaryolarda her bir önlem için ödemeye razı olduğunuz **maksimum fiyatı** belirteceksiniz.

Deney sonunda bu senaryolardan biri seçilirse ödeme aşağıdaki gibi yapılacaktır.

ÖDEME:

Bilgisayar 0 ile 300.000 arasında rastgele bir rakam seçecek.

- **Eğer bu rakam sizin verdiğiniz fiyattan yüksekse, önlemi almak sizin için çok pahalı ve önlemi alamıyorsunuz demektir.**
    - ***Eğer afet olursa Kazancınız = 0TL***
    - ***Eğer afet olmazsa Kazancınız=300.000TL***

- **Eğer bu rakam sizin verdiğiniz fiyattan düşükse, önlemi alabiliyorsunuz demektir.**
    - ***Eğer afet olursa Kazancınız = 300.000- Rastgele çekilen rakam***
    - ***Eğer afet olmazsa Kazancınız = 300.000- Rastgele çekilen rakam***

DENEY SONUNDA ÖDEMELER İLGİLİ FİYATTAN ÜÇ SIFIR ATILARAK YAPILACAKTIR!

Senaryo1: **Olma oranı 1000'de 10 olan deprem** felaketine karşı evinizi sağlamlaştırmaya karar verirseniz, deprem olduğu takdirde evinizde hasar oluşmayacak. Fakat bu önlemi almazsanız deprem gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak.** ***Evi sağlamlaştırmak*** için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.

_____TL

Senaryo2: **Olma oranı 1000'de 500 olan deprem** felaketine karşı evinizi sağlamlaştırmaya karar verirseniz, deprem olduğu takdirde evinizde hasar oluşmayacak. Fakat bu önlemi almazsanız deprem gerçekleştiği takdirde evinizi

kaybedeceksiniz, yani **300.000TL'lik zararınız olacak.** ***Evi sağlamlaştırmak*** için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo3: **Olma oranı 1000'de 800 olan deprem** felaketine karşı evinizi sağlamlaştırmaya karar verirseniz, deprem olduğu takdirde evinizde hasar oluşmayacak. Fakat bu önlemi almazsanız, deprem gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak.** ***Evi sağlamlaştırmak*** için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo4: **Olma oranı 1000'de 10 olan deprem** felaketine karşı piyasada mevcut sigortayı satın almaya karar verirseniz, deprem olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak. Fakat bu önlemi almazsanız, deprem gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Piyasada mevcut sigortayı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo5: **Olma oranı 1000'de 500 olan deprem** felaketine karşı piyasada mevcut sigortayı satın almaya karar verirseniz, deprem olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak. Fakat bu önlemi almazsanız, deprem gerçekleştiği takdirde evinizi kaybedeceksiniz, **yani 300.000TL'lik zararınız olacak.** ***Piyasada mevcut sigortayı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo 6: **Olma oranı 1000'de 800 olan deprem** felaketine karşı piyasada mevcut sigortayı satın almaya karar verirseniz, deprem olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak. Fakat bu önlemi almazsanız, deprem gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Piyasada mevcut sigortayı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo7:**Olma oranı 1000'de 10 olan yangın** felaketine karşı yangın alarmı satın almaya karar verirseniz, alarm sistemi çok duyarlı olduğu ve sizi hemen uyaracağı için, yangın olma olasılığı "0" olacak, yani yangın olayı gerçekleşmeyecek. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, **yani 300.000TL'lik zararınız olacak**. ***Yangın alarmı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo8:**Olma oranı 1000'de 500 olan yangın** felaketine karşı yangın alarmı satın almaya karar verirseniz, alarm sistemi çok duyarlı olduğu ve sizi hemen uyaracağı için, yangın olma olasılığı "0" olacak, yani yangın olayı gerçekleşmeyecek. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde

evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Yangın alarmı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo9:Olma oranı 1000'de 800 olan yangın felaketine karşı yangın alarmı satın almaya karar verirseniz, alarm sistemi çok duyarlı olduğu ve sizi hemen uyaracağı için, yangın olma olasılığı "0" olacak, yani yangın olayı gerçekleşmeyecek. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Yangın alarmı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo10:Olma oranı 1000'de 10 olan yangın felaketine karşı evinizi yangına dayanıklı malzeme ile kaplamaya karar verirseniz, yangın olduğu takdirde evinizde hasar oluşmayacak. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Evi yangına dayanıklı malzemeden yapmak*** için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo11: Olma oranı 1000'de 500 olan yangın felaketine karşı evinizi yangına dayanıklı malzeme ile kaplamaya karar verirseniz, yangın olduğu takdirde evinizde hasar oluşmayacak. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, **yani 300.000TL'lik zararınız olacak.** ***Evi yangına dayanıklı malzemeden yapmak*** için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo12:Olma oranı 1000'de 800 olan yangın felaketine karşı evinizi yangına dayanıklı malzeme ile kaplamaya karar verirseniz, yangın olduğu takdirde evinizde hasar oluşmayacak. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak.** ***Evi yangına dayanıklı malzemeden yapmak*** için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo13:Olma oranı 1000'de 10 olan yangın felaketine karşı piyasada mevcut sigortayı satın almaya karar verirseniz, yangın olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Piyasada mevcut sigortayı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.

_____TL

Senaryo14:Olma oranı 1000'de 500 olan yangın felaketine karşı piyasada mevcut sigortayı satın almaya karar verirseniz, yangın olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak.

Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Piyasada mevcut sigortayı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

Senaryo15: **Olma oranı 1000'de 800 olan yangın** felaketine karşı piyasada mevcut sigortayı satın almaya karar verirseniz, yangın olduğu takdirde eviniz zarar görebilir, fakat satın aldığınız sigorta tüm maddi hasarınızı karşılayacak. Fakat bu önlemi almazsanız, yangın gerçekleştiği takdirde evinizi kaybedeceksiniz, yani **300.000TL'lik zararınız olacak**. ***Piyasada mevcut sigortayı*** satın almak için ödemeye razı olduğunuz **maksimum fiyatı** belirtiniz.
_____TL

BÖLÜM 2

Bu bölümdeki senaryolar için, her fiyat seçeneğini birbirinden bağımsız düşünerek, **her fiyat seçeneği için** alıp almayacağınızı belirtin.

Deney sonunda ödemeler aşağıdaki şekilde yapılacaktır.

ÖDEME:

Eğer afet olursa;

- ***Önlemi satın aldıysanız =300.000TL - Önlemi satın almak için ödeyeceğiniz fiyat***
- ***Herhangi bir önlem satın almadıysanız=0TL***

Eğer afet olmazsa;

- ***Önlemi satın aldıysanız =300.000TL - Önlemi satın almak için ödeyeceğiniz fiyat***
- ***Herhangi bir önlem satın almadıysanız=300.000TL kazanacaksınız.***

DENEY SONUNDA ÖDEMELER İLGİLİ FİYATTAN ÜÇ SIFIR ATILARAK YAPILACAKTIR!

Senaryo16: Bir **DEPREM** felaketinin **gerçekleşme oranı 1000'de 10'dur. Deprem** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***evinizi sağlamlaştırırsanız,*** hiçbir zararla karşılaşmayacaksınız. Aşağıda evinizi sağlamlaştırmak için farklı fiyatlar verilmiştir. **Her fiyat için evi sağlamlaştırma önlemi alıp almayacağınızı işaretleyiniz.**

Evi Sağlamlaştırma Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo17: Bir **DEPREM** felaketinin **gerçekleşme oranı 1000'de 500'dür. Deprem** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***evinizi sağlamlaştırırsanız,*** hiçbir zararla karşılaşmayacaksınız. Aşağıda evinizi sağlamlaştırmak için farklı fiyatlar verilmiştir. **Her fiyat için evi sağlamlaştırma önlemi alıp almayacağınızı işaretleyiniz.**

Evi Sağlamlaştırma Fiyatı	ALIRIM	ALMAM
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo18: Bir **DEPREM** felaketinin **gerçekleşme oranı 1000'de 800'dür. Deprem** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***evinizi sağlamlaştırırsanız,*** hiçbir zararla karşılaşmayacaksınız. Aşağıda evinizi sağlamlaştırmak için farklı fiyatlar verilmiştir. **Her fiyat için evi sağlamlaştırma önlemi alıp almayacağınızı işaretleyiniz**.

Evi Sağlamlaştırma Fiyatı	ALIRIM	ALMAM
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo19: Bir **DEPREM** felaketinin **gerçekleşme oranı 1000'de 10'dur. Deprem** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***piyasada mevcut sigortayı*** satın alırsanız**,** hiçbir zararla karşılaşmayacaksınız. Aşağıda piyasada mevcut sigortayı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için piyasada mevcut sigorta önlemi alıp almayacağınızı işaretleyiniz.**

Piyasada Mevcut Sigortanın Fiyatı	ALIRIM	ALMAM
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo20: Bir **DEPREM** felaketinin **gerçekleşme oranı 1000'de 500'dür. Deprem** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***piyasada mevcut sigortayı*** satın alırsanız**,** hiçbir zararla karşılaşmayacaksınız. Aşağıda piyasada mevcut sigortayı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için piyasada mevcut sigorta önlemi alıp almayacağınızı işaretleyiniz.**

Piyasada Mevcut Sigortanın Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo21: Bir **DEPREM** felaketinin **gerçekleşme oranı 1000'de 800'dür. Deprem** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***piyasada mevcut sigortayı*** satın alırsanız**,** hiçbir zararla karşılaşmayacaksınız. Aşağıda piyasada mevcut sigortayı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için piyasada mevcut sigorta önlemi alıp almayacağınızı işaretleyiniz.**

Piyasada Mevcut Sigortanın Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo22: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 10'dur. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***piyasada mevcut sigortayı*** satın alırsanız**,** hiçbir zararla karşılaşmayacaksınız. Aşağıda piyasada mevcut sigortayı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için piyasada mevcut sigorta önlemi alıp almayacağınızı işaretleyiniz.**

Piyasada Mevcut Sigortanın Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo23: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 500'dür. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***piyasada mevcut sigortayı*** satın alırsanız**,** hiçbir zararla karşılaşmayacaksınız. Aşağıda piyasada mevcut sigortayı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için piyasada mevcut sigorta önlemi alıp almayacağınızı işaretleyiniz.**

Piyasada Mevcut Sigortanın Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo24: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 800'dür. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***piyasada mevcut sigortayı*** satın alırsanız**,** hiçbir zararla karşılaşmayacaksınız. Aşağıda piyasada mevcut sigortayı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için piyasada mevcut sigorta önlemi alıp almayacağınızı işaretleyiniz.**

Piyasada Mevcut Sigortanın Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo25: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 10'dur. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***yangın alarmı*** satın alırsanız yangın hiçbir şekilde gerçekleşmeyecek. Aşağıda yangın alarmı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için yangın alarmı önlemi satın alıp almayacağınızı işaretleyiniz.**

Yangın Alarmının Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo26: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 500'dür. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***yangın alarmı*** satın alırsanız yangın hiçbir şekilde gerçekleşmeyecek. Aşağıda yangın alarmı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için yangın alarmı önlemi satın alıp almayacağınızı işaretleyiniz.**

Yangın Alarmının Fiyatı	ALIRIM	ALMAM
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo27: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 800'dür. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***yangın alarmı*** satın alırsanız yangın hiçbir şekilde gerçekleşmeyecek. Aşağıda yangın alarmı satın almak için farklı fiyatlar verilmiştir. **Her fiyat için yangın alarmı önlemi satın alıp almayacağınızı işaretleyiniz.**

Yangın Alarmının Fiyatı	ALIRIM	ALMAM
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo28: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 10'dur. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***evinizi yangına dayanıklı malzemeden*** yaparsanız, hiçbir zararla karşılaşmayacaksınız. Aşağıda evinizi yangına dayanıklı malzemeden yapmak için farklı fiyatlar verilmiştir. **Her fiyat için evi yangına dayanıklı malzemeden yapma önlemi alıp almayacağınızı işaretleyiniz.**

Dayanıklı Malzeme Fiyatı	ALIRIM	ALMAM
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo29: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 500'dür. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***evinizi yangına dayanıklı malzemeden*** yaparsanız, hiçbir zararla karşılaşmayacaksınız. Aşağıda evinizi yangına dayanıklı malzemeden yapmak için farklı fiyatlar verilmiştir. **Her fiyat için evi yangına dayanıklı malzemeden yapma önlemi alıp almayacağınızı işaretleyiniz.**

Dayanıklı Malzeme Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

Senaryo30: Bir **YANGIN** felaketinin **gerçekleşme oranı 1000'de 800'dür. Yangın** gerçekleştiği takdirde **300.000TL'lik** bir zarar meydana gelecektir. Eğer ***evinizi yangına dayanıklı malzemeden*** yaparsanız, hiçbir zararla karşılaşmayacaksınız. Aşağıda evinizi yangına dayanıklı malzemeden yapmak için farklı fiyatlar verilmiştir. **Her fiyat için evi yangına dayanıklı malzemeden yapma önlemi alıp almayacağınızı işaretleyiniz.**

Dayanıklı Malzeme Fiyatı	**ALIRIM**	**ALMAM**
3000 TL	_____	_____
150.000 TL	_____	_____
240.000 TL	_____	_____

BÖLÜM 3

Bu bölümde her bir senaryo için hiç önlem almayabilirsiniz, önlemlerden birini alabilirsiniz veya her iki önlemi de alabilirsiniz.

ÖDEME:

Eğer afet olursa;

- ***Önlemi/Önlemleri satın aldıysanız =300.000TL – Önlemi/Önlemleri satın almak için ödeyeceğiniz fiyat***
- ***Herhangi bir önlem satın almadıysanız=0TL***

Eğer afet olmazsa;

- ***Önlemi/Önlemleri satın aldıysanız =300.000TL – Önlem/Önlemleri satın almak için ödeyeceğiniz fiyat***
- ***Herhangi bir önlem satın almadıysanız=300.000TL kazanacaksınız.***

DENEY SONUNDA ÖDEMELER İLGİLİ FİYATTAN ÜÇ SIFIR ATILARAK YAPILACAKTIR!

Her bir senaryo için yalnızca bir seçeneği işaretleyin.

Senaryo31:Olma oranı 1000'de 10 olan bir **DEPREM** felaketi durumunda **zararınız 300.000TL** olacaktır.

Evi sağlamlaştırma fiyatı =3000TL
Piyasada mevcut deprem sigortasının fiyatı= 3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo32:Olma oranı <u>1000'de 10</u> olan bir **<u>DEPREM</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır**.**

Evi sağlamlaştırma fiyatı=3000TL
Piyasada mevcut deprem sigortasının fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo33:Olma oranı <u>1000'de 10</u> olan bir **<u>DEPREM</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Evi sağlamlaştırma fiyatı=3000TL
Piyasada mevcut deprem sigortasının fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo34: Olma oranı <u>1000'de 500</u> olan bir **<u>DEPREM</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Evi sağlamlaştırma fiyatı=150.000TL
Piyasada mevcut deprem sigortasının fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo35:Olma oranı 1000'de 500 olan bir **DEPREM** felaketi durumunda **zararınız 300.000TL** olacaktır.

Evi sağlamlaştırma fiyatı=150.000TL
Piyasada mevcut deprem sigortasının fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo36:Olma oranı 1000'de 500 olan bir **DEPREM** felaketi durumunda **zararınız 300.000TL** olacaktır.

Evi sağlamlaştırma fiyatı=150.000TL
Piyasada mevcut deprem sigortasının fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo37:Olma oranı 1000'de 800 olan bir **DEPREM** felaketi durumunda **zararınız 300.000TL** olacaktır.

Evi sağlamlaştırma fiyatı=240.000TL
Piyasada mevcut deprem sigortasının fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo38:Olma oranı <u>1000'de 800</u> olan bir **<u>DEPREM</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Evi sağlamlaştırma fiyatı=240.000TL
Piyasada mevcut deprem sigortasının fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo39:Olma oranı <u>1000'de 800</u> olan bir **<u>DEPREM</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Evi sağlamlaştırma fiyatı=240.000TL
Piyasada mevcut deprem sigortasının fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Deprem Sigortası satın alırım ☐

Sadece Evi Sağlamlaştırma satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo40:Olma oranı <u>1000'de 10</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=3000TL
Piyasada mevcut yangın sigortasının fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo41:Olma oranı <u>1000'de 10</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=3000TL
Piyasada mevcut yangın sigortasının fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo42:Olma oranı <u>1000'de 10</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=3000TL
Piyasada mevcut yangın sigortasının fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo43:Olma oranı <u>1000'de 500</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=150.000TL
Piyasada mevcut yangın sigortasının fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo44:Olma oranı <u>1000'de 500</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=150.000TL
Piyasada mevcut yangın sigortasının fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo45:Olma oranı <u>1000'de 500</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=150.000TL
Piyasada mevcut yangın sigortasının fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo46:Olma oranı <u>1000'de 800</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=240.000TL
Piyasada mevcut yangın sigortasının fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo47:Olma oranı <u>1000'de 800</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=240.000TL
Piyasada mevcut yangın sigortasının fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo48:Olma oranı <u>1000'de 800</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=240.000TL
Piyasada mevcut yangın sigortasının fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Yangın Sigortası satın alırım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo49:Olma oranı <u>1000'de 10</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=3000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo50:Olma oranı <u>1000'de 10</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=3000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo51:Olma oranı <u>1000'de 10</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=3000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo52:Olma oranı <u>1000'de 500</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=150.000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo53:Olma oranı <u>1000'de 500</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=150.000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo54:Olma oranı <u>1000'de 500</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=150.000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo55:Olma oranı <u>1000'de 800</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=240.000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=3000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo56:Olma oranı <u>1000'de 800</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=240.000TL
Evi yangına dayanıklı malzemeden yapma fiyatı=150.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

Senaryo57:Olma oranı <u>1000'de 800</u> olan bir **<u>YANGIN</u>** felaketi durumunda **<u>zararınız 300.000TL</u>** olacaktır.

Yangın alarmının fiyatı=240.000TL
Evi yangına dayanıklı malzemeden yapma=240.000TL

HANGİ ÖNLEMİ ALIRSINIZ?

Sadece Evi Yangına Dayanıklı Malzemeden yaparım ☐

Sadece Yangın Alarmı satın alırım ☐

Her ikisini de satın alırım ☐

Hiç birini satın almam ☐

APPENDIX B

REGRESSION ASSUMPTIONS OF MAXIMUM WILLINGNESS TO PAYS

1.Normality Tests of Dependent Variables

Normality Test of Self-Insurance Mechanism for Earthquake at 0.50 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Insurance for Earthquake at 0.50 is normal with mean 115,980.77 and standard deviation 78,556.51	One sample Kolmogorov-Smirnov Test	0.149	Retain the null hypothesis

Normality Test of Self-Insurance Mechanism for Earthquake at 0.80 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Insurance for Earthquake at 0.80 is normal with mean 161,602.56 and standard deviation 89,129.30	One sample Kolmogorov-Smirnov Test	0.149	Retain the null hypothesis

Normality Test of Market Insurance Mechanism for Earthquake at 0.50 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Market Insurance for Earthquake at 0.50 is normal with mean 94723.08 and standard deviation 82640.17	One sample Kolmogorov-Smirnov Test	0.089	Retain the null hypothesis

Normality Test of Market Insurance Mechanism for Earthquake at 0.80 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Market Insurance for Earthquake at 0.80 is normal with mean 144,188.46 and standard deviation 101,838.03	One sample Kolmogorov-Smirnov Test	0.133	Retain the null hypothesis

Normality Test of Self-Protection for Fire Mechanism at 0.50 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Protection for Fire at 0.50 is normal with mean 152.53 and standard deviation 103,000.93	One sample Kolmogorov-Smirnov Test	0.374	Retain the null hypothesis

Normality Test of Self-Protection for Fire Mechanism at 0.80 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Protection for Fire at 0.80 is normal with mean 126,760.26 and standard deviation 103,000.93	One sample Kolmogorov-Smirnov Test	0.075	Retain the null hypothesis

Normality Test of Self-Insurance Mechanism for Fire at 0.01 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Insurance for Fire at 0.01 is normal with mean 9.49 and standard deviation 1.51	One sample Kolmogorov-Smirnov Test	0.284	Retain the null hypothesis

Normality Test of Self-Insurance Mechanism for Fire at 0.50 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Insurance for Fire at 0.50 is normal with mean 85,673.08 and standard deviation 74,117.57	One sample Kolmogorov-Smirnov Test	0.071	Retain the null hypothesis

Normality Test of Self-Insurance Mechanism for Fire at 0.80 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Self-Insurance for Earthquake at 0.80 is normal with mean 127,967.95 and standard deviation 94,901.81	One sample Kolmogorov-Smirnov Test	0.092	Retain the null hypothesis

Normality Test of Market Insurance Mechanism for Fire at 0.50 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Market Insurance for Fire at 0.50 is normal with mean 230.37 and standard deviation 142.05	One sample Kolmogorov-Smirnov Test	0.343	Retain the null hypothesis

Normality Test of Market Insurance Mechanism for Fire at 0.80 Probability Level

Null Hypothesis	Test	Sig.	Decision
The distribution of Market Insurance for Fire at 0.80 is normal with mean 297.95 and standard deviation 164.50	One sample Kolmogorov-Smirnov Test	0.238	Retain the null hypothesis

2.Linearity Tests between Dependent and Independent Variables

Linearity Test of Self-Insurance Mechanism for Earthquake at 0.50 Probability Level

		Investment	Self-Insurance for Earthquake at 0.50
Investment	Pearson Correlation	1	.264*
	Sig. (2-tailed)		.019
	N	78	78
Self-Insurance for Earthquake at 0.50	Pearson Correlation	.264*	1
	Sig. (2-tailed)	.019	
	N	78	78

Linearity Test of Self-Insurance Mechanism for Earthquake at 0.80 Probability Level

		Investment	Self-Insurance for Earthquake at 0.80
Investment	Pearson Correlation	1	.223*
	Sig. (2-tailed)		.05
	N	78	78
Self-Insurance for Earthquake at 0.80	Pearson Correlation	.223*	1
	Sig. (2-tailed)	.05	
	N	78	78

Linearity Test of Self-Insurance Mechanism for Earthquake at 0.80 Probability Level

		Investment	Market Insurance for Earthquake at 0.50
Investment	Pearson Correlation	1	.349**
	Sig. (2-tailed)		.002
	N	78	78
Market Insurance for Earthquake at 0.50	Pearson Correlation	.349**	1
	Sig. (2-tailed)	.002	
	N	78	78

Linearity Test of Market Insurance Mechanism for Earthquake at 0.80 Probability Level

		Investment	Market Insurance for Earthquake at 0.80
Investment	Pearson Correlation	1	.348**
	Sig. (2-tailed)		.002
	N	78	78
Market Insurance for Earthquake at 0.80	Pearson Correlation	.348**	1
	Sig. (2-tailed)	.002	
	N	78	78

Linearity Test of Market Insurance Mechanism for Earthquake at 0.50 Probability Level

		Recreational	Self-Protection for Fire at 0.50
Recreational	Pearson Correlation	1	.223*
	Sig. (2-tailed)		.050
	N	78	78
Self-Protection for Fire at 0.50	Pearson Correlation	.223*	1
	Sig. (2-tailed)	.050	
	N	78	78

Linearity Test of Self-Protection Mechanism for Fire at 0.80 Probability Level

		Investment	Self-Protection for Fire at 0.80
Investment	Pearson Correlation	1	.241*
	Sig. (2-tailed)		.034
	N	78	78
Self-Protection for Fire at 0.80	Pearson Correlation	.241*	1
	Sig. (2-tailed)	.034	
	N	78	78

Linearity Test of Self-Insurance Mechanism for Fire at 0.01 Probability Level

		Age	Self-Insurance Mechanism for Fire at 0.01
Age	Pearson Correlation	1	-.350**
	Sig. (2-tailed)		.003
	N	77	72
Self-Insurance Mechanism for Fire at 0.01	Pearson Correlation	-.350**	1
	Sig. (2-tailed)	.003	
	N	72	73

Linearity Test of Self-Insurance Mechanism for Fire at 0.50 Probability Level

		Investment	Self-Insurance Mechanism for Fire at 0.50
Investment	Pearson Correlation	1	.288*
	Sig. (2-tailed)		.01
	N	78	78
Self-Insurance Mechanism for Fire at 0.50	Pearson Correlation	.288*	1
	Sig. (2-tailed)	.01	
	N	78	78

Linearity Test of Self-Insurance Mechanism for Fire at 0.80 Probability Level

		Investment	Self-Insurance Mechanism for Fire at 0.80
Investment	Pearson Correlation	1	.302**
	Sig. (2-tailed)		.007
	N	78	78
Self-Insurance Mechanism for Fire at 0.80	Pearson Correlation	.302**	1
	Sig. (2-tailed)	.007	
	N	78	78

Linearity Test of Market Insurance Mechanism for Fire at 0.50 Probability Level

		Investment	Market Insurance for Fire at 0.50
Investment	Pearson Correlation	1	.282*
	Sig. (2-tailed)		.012
	N	78	78
Market Insurance for Fire at 0.50	Pearson Correlation	.282*	1
	Sig. (2-tailed)	.012	
	N	78	78

Linearity Test of Market Insurance Mechanism for Fire at 0.80 Probability Level

		Investment	Market Insurance for Fire at 0.80
Investment	Pearson Correlation	1	.341**
	Sig. (2-tailed)		.002
	N	78	78
Market Insurance for Fire at 0.80	Pearson Correlation	.341**	1
	Sig. (2-tailed)	.002	
	N	78	78

*. Correlation is significant at the 0.05 level (two-tailed)

**. Correlation is significant at the 0.01 level (one-tailed)

3.Residual Analyses

Residual Analysis of Self-Insurance Mechanism for Earthquake with Probability of 0.50

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.714	Retain the null hypothesis

Residual Analysis of Self-Insurance Mechanism for Earthquake with Probability of 0.80

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.478	Retain the null hypothesis

Residual Analysis of Market Insurance Mechanism for Earthquake with Probability of 0.50

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.456	Retain the null hypothesis

Residual Analysis of Market Insurance Mechanism for Earthquake with Probability of 0.80

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.647	Retain the null hypothesis

Residual Analysis of Self-Protection Mechanism for Earthquake with Probability of 0.50

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.471	Retain the null hypothesis

Residual Analysis of Self-Protection Mechanism for Earthquake with Probability of 0.80

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.268	Retain the null hypothesis

Residual Analysis of Self-Insurance Mechanism for Earthquake with Probability of 0.01

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.242	Retain the null hypothesis

Residual Analysis of Self-Insurance Mechanism for Earthquake with Probability of 0.50

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.344	Retain the null hypothesis

Residual Analysis of Self-Insurance Mechanism for Fire with Probability of 0.50

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.492	Retain the null hypothesis

Residual Analysis of Market Insurance Mechanism for Fire with Probability of 0.50

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.888	Retain the null hypothesis

Residual Analysis of Market Insurance Mechanism for Fire with Probability of 0.80

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.713	Retain the null hypothesis

Residual Analysis of Self-Insurance Mechanism for Earthquake

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.874	Retain the null hypothesis

Residual Analysis of Market Insurance Mechanism for Earthquake

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.557	Retain the null hypothesis

Residual Analysis of Self-Protection Mechanism for Fire

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.356	Retain the null hypothesis

Residual Analysis of Self-Insurance Mechanism for Fire

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.300	Retain the null hypothesis

Residual Analysis of Market Insurance Mechanism for Fire

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.114	Retain the null hypothesis

APPENDIX C

REGRESSION ASSUMPTIONS OF RISK ATTITUDES

1.Normality Test for Dependent Variables

Normality Test for Social Risk

Null Hypothesis	Test	Sig.	Decision
The distribution of Social Risk is normal with mean 26.97 and standard deviation 3.70	One sample Kolmogorov-Smirnov Test	0.646	Retain the null hypothesis

Normality Test for Recreational Risk

Null Hypothesis	Test	Sig.	Decision
The distribution of Recreational Risk is normal with mean 21.92 and standard deviation 6.75	One sample Kolmogorov-Smirnov Test	0.789	Retain the null hypothesis

Normality Test for Health Risk

Null Hypothesis	Test	Sig.	Decision
The distribution of Health Risk is normal with mean 20.77 and standard deviation 5.65	One sample Kolmogorov-Smirnov Test	0.342	Retain the null hypothesis

Normality Test for Ethical Risk

Null Hypothesis	Test	Sig.	Decision
The distribution Ethical Risk is normal with mean 16.72 and standard deviation 5.59	One sample Kolmogorov-Smirnov Test	0.559	Retain the null hypothesis

Normality Test for Investment Risk

Null Hypothesis	Test	Sig.	Decision
The distribution of Investment Risk is normal with mean12.12 and standard deviation 4.20	One sample Kolmogorov-Smirnov Test	0.083	Retain the null hypothesis

2.Linearity Tests between Dependent and Independent Variables

Linearity Test for Social Risk

		Social	Openness to Experiences
Social Risk	Pearson Correlation	1	.275*
	Sig. (2-tailed)		.015
	N	78	78
Openness to Experiences	Pearson Correlation	.275*	1
	Sig. (2-tailed)	.015	
	N	78	78

Linearity Test for Recreational Risk

		Recreational	Income
Recreational Risk	Pearson Correlation	1	-.294**
	Sig. (2-tailed)		.009
	N	78	77
Income	Pearson Correlation	-.294**	
	Sig. (2-tailed)	.009	
	N	77	77

Linearity Test for Health Risk

		Health	Gender	Conscientiousness
Health Risk	Pearson Correlation	1	-.440**	-.372**
	Sig. (2-tailed)		.000	.001
	N	78	77	78
Gender	Pearson Correlation	-.440**	1	.194
	Sig. (2-tailed)	.000		.091
	N	77	77	77
Conscientiousness	Pearson Correlation	-.372**	.194	1
	Sig. (2-tailed)	.001	.091	
	N	78	77	78

Linearity Test for Ethical Risk

		Ethical	Agreeableness	Gender
Ethical Risk	Pearson Correlation	1	-.332**	-.306**
	Sig. (2-tailed)		.003	.007
	N	78	78	77
Agreeableness	Pearson Correlation	-.332**	1	.079
	Sig. (2-tailed)	.003		.494
	N	78	78	77
Gender	Pearson Correlation	-.306**	.079	1
	Sig. (2-tailed)	.007	.494	
	N	77	77	77

Linearity Test for Investment Risk

		Investment	OpennesstoExperinces
Investment Risk	Pearson Correlation	1	.366**
	Sig. (2-tailed)		.001
	N	78	78
OpennesstoExperinces	Pearson Correlation	.366**	1
	Sig. (2-tailed)	.001	
	N	78	78

*. Correlation is significant at the 0.05 level (two-tailed)

**. Correlation is significant at the 0.01 level (one-tailed)

3. Residual Analyses for Risk Attitudes

Residual Analysis for Social Risk

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.776	Retain the null hypothesis

Residual Analysis for Recreational Risk

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.879	Retain the null hypothesis

Residual Analysis for Health Risk

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.825	Retain the null hypothesis

Residual Analysis for Ethical Risk

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.427	Retain the null hypothesis

Residual Analysis for Investment Risk

Null Hypothesis	Test	Sig.	Decision
The Distribution of Unstandardized Residual is Normal	One sample Kolmogorov-Smirnov Test	0.112	Retain the null hypothesis

APPENDİX D

TEZ FOTOKOPİ İZİN FORMU

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TEZ FOTOKOPİ İZİN FORMU

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