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Wealth Effects and Labor Supply: An Experimental Study

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WEALTH EFFECTS AND LABOR SUPPLY: AN EXPERIMENTAL STUDY*

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Abstract

The preferences introduced by Greenwood et al. [1988] (GHH preferences) are being used in the macroeconomics literature to resolve puzzles regarding the comovement of labor and consumption in response to exogenous shocks which do not change the current schedule for marginal product of labor. The GHH preferences imply that labor/leisure decision is independent of consumption decision and wealth effects on labor supply is zero. Despite its widespread usage, there is little and mixed empirical evidence regarding the wealth elasticity of labor supply.

This study is an attempt to experimentally test the behavioral foundations of the GHH preferences. Employing the BDM mechanism proposed by Becker et al. [1964], we try to elicit the subjects' innate preferences for leisure in a real effort experiment, and then observe whether these preferences change in response to an unexpected increase in non-labor income. Our results show that approximately 19% of the subjects react to the positive income shock by increasing their reservation wages. This finding on the existence of wealth effect on labor supply in the short run and even in the lab environment puts the predictions of the macroeconomic models that employ GHH preferences under scrutiny and calls for further experimental/empirical research on the topic.

Keywords: GHH Preferences, Wealth Effects, Real Effort Experiments, BDM Mechanism

JEL Codes: J22, C91

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1 Introduction

GHH preferences is a quasilinear utility function offered by Greenwood et al. [1988] which implies that the wealth effect on labor supply is zero and leisure is not a normal good. It has the following general form:

$$U(C_t, L_t) = u(C_t - G(L_t))$$

with $u' < 0$, $u'' < 0$. $G' > 0$ and $G'' > 0$ and where u is assumed to be bounded from above.

This utility function satisfies the standard properties $U_1 > 0$, $U_2 < 0$. $U_{11}, U_{22} < 0$, $U_{11}U_{22} - U_{12}^2 > 0$. Moreover, different from separable preferences which are usually employed in the literature, it implies that consumption and labor are complements (consumption and leisure are substitutes, i.e., $U_{12} > 0$). Hence, marginal utility of consumption is increasing in labor.

On the other hand, this utility function implies that labor effort is determined independent of intertemporal consumption-saving decision and that the marginal rate of substitution between consumption and labor effort which is given below depends only on labor, not on consumption.

$$MRS_t = -\frac{U_2(C_t, G(L_t))}{U_1(C_t, G(L_t))} = G'(L_t)$$

This utility function is used in the macroeconomics literature as a remedy to the comovement puzzle regarding the shocks which do not change the current schedule for labor's marginal product such as shocks to investment demand, shocks to perceived income changes¹ which was pointed out by Barro and King [1984]. Authors show that such kind of shocks cannot simultaneously increase current consumption and work effort in a model in which utility is time separable and consumption and leisure are normal goods. Hence, given the econometric evidence that such kind of shocks are among the main drivers of business cycles, the use of neoclassical preferences such as offered by King et al. [1988] (KPR preferences henceforth) poses a comovement puzzle within the RBC literature.

Even though GHH utility function helps to resolve aforementioned comovement puzzle, its usage was rather limited until Jaimovich and Rebelo [2009] proposed a generalized preference specification consistent with a balanced growth path which nests KPR preferences and GHH preferences as extreme cases.² Since then, GHH preferences has been widely used in various fields of macroeconomics literature. (See Monacelli and Perotti [2008], Raffo [2008], Dmitriev and Roberts

¹The idea that macroeconomic fluctuations are driven not only by current developments in the economy but also by changes in expectations about future fundamentals has a long history among economists. Pigou [1927] suggests that "The varying expectations of businessmen constitute the immediate cause and direct causes or antecedents of industrial fluctuations." Cochrane [1994] also suggests that news about future can trigger business cycle fluctuations.

²GHH preferences is not compatible with balanced growth path as it breaks the link between real wages and consumption.

[2012a], [Dmitriev and Roberts 2012b] for some examples.) However, the empirical evidence based on estimated DSGE models regarding the magnitude of wealth effects on labor supply is limited and mixed. Using [Jaimovich and Rebelo 2009] preferences, [Schmitt-Grohé and Uribe 2012] estimate the parameter governing the wealth effect on labor supply as close to zero whereas [Khan and Tsoukalas 2012] estimate a relatively important wealth effect on labor supply using the same methodology but a different model. On the other hand, [Gali et al. 2011] show that changing the set of observable variables used in the estimation might lead to dramatic changes in the estimate of this parameter. Finally, [Nebioğlu 2016] uses the generalized version of GHH preferences in an otherwise standard DSGE model and shows that the wealth elasticity parameter can not be identified by the data and the model using two extremes of this parameter leads to completely different interpretation of macroeconomic fluctuations and policy implications.

Apart from the macroeconomics point of view, in the field of labor economics, the common econometric finding is that leisure is an inferior good which is at odds with standard theory of labor supply.³ However, the empirical data reflect a variety of environmental factors and disentangling these factors is difficult if not impossible. First, most people work on fixed contracts and they usually do not have freedom to adjust their working hours in response to unexpected income changes, second, finding an exogenous measure of income is very difficult.

To overcome specification errors due to inelasticity of hours to income changes, a very influential literature emerged which focuses on the labor supply responses in settings in which workers are free to set their working hours. Main objective of this literature is to test if people do intertemporal substitution of labor supply as suggested by neoclassical labor supply model when they face unexpected transitory wage changes. Although the main focus is not testing normality of leisure, the findings of the literature has implications regarding wealth elasticity of labor supply. Using, daily hours of work data of New York taxi drivers, [Camerer et al. 1997] find a significant and negative wage elasticity of labor supply contrary to the predictions of the model and they conclude that taxi drivers have a one day horizon for labor supply decisions and they stop working once they reach their daily target, hence income effects due to increased wages is large. Subsequently, [Oettinger 1999] analyzes the daily labor supply behaviour of food and beverage vendors at a single stadium over an entire baseball season. In contrast to the taxi drivers' case, he finds a positive wage elasticity of labor supply and claims that negative estimations in the literature are due to the lack of suitable instruments to account for exogenous variations in the wage.⁴ In contrast to [Camerer et al. 1997], [Farber 2005] also finds that the labor supply behaviour of New York taxi drivers is consistent with the existence of inter-temporal substitution and income effects are small. Using [Camerer et al. 1997] data, they show that the difference in their findings is due to the differences in the empirical methods and the proxy used for daily wage rate. On the other hand, [Fehr and Goette 2007] investigate the hours per day and days per month of bicycle messengers and they show that increasing wages causes an increased monthly labor supply hence the intertemporal elasticity of

³ See [Pencavel 1987], [Blundell and Macurdy 1999] and [Killingsworth and Heckman 1987] for surveys of the literature.

⁴Different from taxi drivers of [Camerer et al. 1997], stadium workers cannot decide to work less or more hours during a game, their decision margin is number of days to work.

labor supply is large whereas the increase in labor supply in the form of an increase in the number of days was partially offset by a decrease in labor supply on any particular date pointing out a target earning behaviour.

Another strand of labor economics literature uses the data for unearned income such as bequests, inheritances, lottery prizes and changes in the price of housing to overcome the challenge of finding exogenous measure of unearned income. Using tax-return-generated data on the labor force behaviour of people before and after they receive inheritances, [Holtz-Eakin et al. \[1993\]](#) show that the likelihood that a person decreases his or her participation in the labor force increases with the size of the inheritance received. Using the data of Health and Retirement Study, [Brown et al. \[2006\]](#) find that inheritance receipt is associated with a significant increase in the probability of retirement and this effect is stronger when the inheritance is unexpected and thus more likely to represent an exogenous shock to wealth. Similarly, using the panel data of Household Survey, [van Huizen \[2014\]](#) analyzes the effect of wealth shocks on working hours using data on inheritances, regional house price changes and expectations about saving behaviour and finds that the working hours of woman are significantly affected by wealth shocks, while the impact on hours of men is limited. On the other hand, [Imbens et al. \[2001\]](#) survey individuals who played lottery including both winners of large prizes and small prizes to examine the relationship between the magnitude of the prize and economic behaviour as measured by subsequent earnings, consumption and savings and using their social security earnings data, they show that working hours reduce following the windfall gains. They find that this effect is stronger for individuals closer to retirement ages and it does not differ very much between men and women. Finally, using the data collected from an experimental module on the Health and Retirement Study, [Kimball and Shapiro \[2008\]](#) find a high wealth elasticity of labor supply in response to winning sweepstakes. In summary, this literature suggests that the leisure is a normal good as suggested by neoclassical theory of labor supply. However, as the subject pool is not representative of the whole population, the generalizability of the results is debatable.

Finding out if leisure is a normal good or not is useful not only for appropriate macroeconomic modelling but also for designing tax policies for bequests and inheritances, for understanding sources of wealth accumulation and for understanding retirement behaviour. The microeconomic literature is not helpful to pin down wealth elasticity of labor supply because either disentangling environmental factors embedded in the empirical data is difficult or the results are not generalizable to the whole population. On the other hand, the macroeconomic estimates of the wealth elasticity parameter depends very much on the model and the data set used, and the literature does not offer a conclusive evidence. Therefore, there is a need to test plausibility of GHH preferences (i.e., test the existence of wealth effects on labor supply) in a model-free environment. To this end, this paper adopts a controlled laboratory experimental approach which attempts to test existence of wealth effect on labor supply using a real effort labor market experiment framework. The key advantage of the experimental methodology is the ability to control conditions more tightly than in any other context. However, creating preferences for leisure in the laboratory environment under an individual decision making framework is not an easy task to do. In the literature, labor supply is measured as the effort supplied in an real effort task. However, the responsiveness of the

effort provision to the incentives depends on the framework used and as shown in [Nebioğlu and Giritligil \[2018\]](#), it poses a methodological difficulty in an individual decision making framework. Therefore, in this paper we aim to measure the labor supply of subjects as their reservation wages to participate to a one time job opportunity using the Becker, DeGroot, Marschak (1964) mechanism (BDM mechanism hereafter). BDM is an incentive compatible market mechanism which allows to measure innate preferences for a specific commodity. The procedure works as follows: the subject formulates a bid/ask for the commodity being bought/sold and then the price is determined randomly. If the subject's bid is higher than the randomly determined price, he pays the price and gets in return the commodity. Similarly, if subject's ask is lower than the randomly determined price, he sells the commodity for that price. The dominant strategy for the subjects is to bid/ask his actual willingness to pay/willingness to sell in a transaction which uses this mechanism. Hence, under the condition that subjects understand the procedure, this method allows the experimenter to measure subjects' valuation for the commodity in question.

The contribution of this paper to the literature is two-fold: First, it shows that BDM mechanism can be used to elicit labor/leisure preferences of subjects under an individual decision making framework in the controlled laboratory setting. Second, it shows that subjects respond to unexpected wealth shocks by decreasing their labor supply for a given level of wages (i.e., by increasing their reservation wages to participate to the job opportunity.). Observing negative wealth effects even in the laboratory conditions calls for doubts about the appropriateness of the use GHH preferences in macroeconomic modelling as the suggestions and the implications of these models depend very much on the assumptions on the utility function employed. Testing microeconomic foundations of these models is very important as these models are one of the main economic tools used to write policy prescriptions to stabilize the economy. This paper aims to make a modest contribution to the policy design in this respect.

Section 2 gives a brief literature survey of labor market experiments. The details of the experimental design we adopt is given in Section 3. Section 4 presents the results of the experiment and finally Section 5 offers a discussion of the results and concludes.

2 Related Experimental Literature

In the early 80s, a strand of experimental literature focused on testing applicability of consumer demand theory in describing and predicting choices of nonhuman consumers. An example to this literature is the work by [Battalio et al. \[1981\]](#) which focuses on the leisure demand of pigeons. They show that pigeons substitute income for leisure if the price is right and leisure is a normal good for them. This result points out income-leisure trade-offs as an evolutionary concept.

There are also laboratory experiments which focus on labor/leisure trade-offs faced by human subjects. [Dickinson \[1999\]](#) conducts a real effort experiment which analyzes how increased incentives affects labor supply behaviour. He runs two different treatments: in the first one, subjects can only

choose on the job leisure whereas in the second one, they can leave the experiment room early so that they can substitute on-the-job leisure with off-the-job leisure. He finds that when subjects have to stay through out the experiment, they increase their effort when incentives are strengthened. On the other hand, when they can choose to leave early, they work intensively and leave early. Hence, authors conclude that the direction of the substitution effect depends on the way the labor supply decision is defined.

There exist other experimental studies on labor supply decisions which aim to understand how leisure/labor choice of subjects are affected by taxes, reciprocal behaviour, peer effects, etc. Konow [2000] runs a two stage experiment in which subjects first play a real effort game in which the task is to prepare letters for mailing and then share the resulting output with a dictator game in the second stage. He shows that fairness, self interest and self-deception affect allocation of economic rewards. Lévy-Garboua et al. [2009] test the existence of behavioral Laffer curve using a real effort task game in which they ask subjects to decode a number from a grid of letters that appear on computer screen. In the game, subjects take the role of either a tax payer or a tax receiver. Authors run two treatments in which tax rate is determined endogenously by tax receiver or exogenously by a random device and they find that Laffer curve phenomena arises in the lab when tax receivers chose the tax rates endogenously and they conclude that the subjects in the lab responds to tax changes only if they consider those as unfair. Greiner et al. [2011] ask subjects to copy numbers on a hardcopy questionnaire form into an input mask on the computer screen. They use two treatments each of which consists of two stages. In the first stage, all workers work under the same wage conditions whereas in second stage they receive either an increase or decrease in their wages. In the first treatment, subjects can observe changes in other subjects wages whereas in second treatment they can not. Using this setup, they show that wage changes affect effort provision only if these changes are transparent. Under piece rate compensation scheme higher paid workers tend to work more accurately, and lower paid workers shirk more. Using a real effort labor market design, Blumkin et al. [2012] show that subjects reduce their labor supply significantly more in response to an income tax than a consumption tax even if they lead to identical allocations. Subjects solve two digit multiplication problems to earn points and those points are used to buy vouchers for real consumption goods. They may choose to stop working and they earn leisure goods (voucher for a soft drinks) in return. The distinctive feature of their experimental setup is existence of a payment for not performing the task. Corgnet et al. [2014] investigate the effects of providing a leisure alternative on subjects' performance in a real effort task by either allowing or restricting internet access. As real effort task, they ask subjects to sum up tables of 36 numbers without using a pen, scratch paper or calculator in a table of 6x6 consisting of random numbers from 0 to 10. Subjects get 40 cents for each correct answer whereas they lose 20 cents for incorrect answers. Subjects can switch to internet browsing anytime during the task. Two payment schemes are considered: individual pay and group pay. They show that subjects dedicate time to leisure activity during the experiment and they find that the existence of leisure activity affects performance under group pay compensation scheme more than the individual pay treatment. Abeler et al. [2011] show that subjects work longer if expected payoff is high using a real effort experiment. In their experiment, subjects count number of zeros in tables that consisted of 150 randomly ordered zeros and ones.

After each repetition they can decide whether to continue or stop. They get a piece rate wage but receive their accumulated earnings only with 50 percent probability, whereas they receive a fixed known amount with 50 percent probability. The uncertainty about the payoff is resolved only after subjects make the stopping decision. The treatment manipulation is the amount of fixed payment; by changing the amount of fixed payment, they change the expected earnings of the job hence they aim at influencing effort levels. They show that expected earnings function as a reference point in the sense that subjects work more when expectations are high and many subjects stop when piece rate earnings equal to the fixed payment. [Brüggen and Strobel \[2007\]](#) examine the differences between experiments on effort that use a cost schedule to mimic effort cost and experiments that use a real effort task using a gift exchange game. They ask subjects to solve multiplications of two numbers under piece rate compensation scheme and they find that people react similarly to wage offers in chosen effort and real effort tasks.

In the experimental literature, to our knowledge, there exists two studies which uses BDM mechanism to analyze labor/leisure preferences. [Guiteras and Jack \[2014\]](#) report the result of a field experiment which is conducted with workers in Malawi country-side. For this experiment, workers are asked to state their reservation wages to complete a one-day simple task⁵ and then experimenters set the wage and select workers using the BDM mechanism. [Weber and Schram \[2013\]](#) analyze how labor/leisure preferences are affected by income or consumption tax which leads to identical allocations. Different from the previous study, they ask subjects the maximum price they would be willing to pay to participate in the work stage instead of asking the minimum wage they would be willing to accept.

A different strand of the literature relies on the controlled field experiment methodology to analyze labor/leisure decisions. This methodology requires an experimental design which ensures that subjects perceive the experiment as a natural working environment. This methodology has the advantage of increasing the external validity of the experimental results while keeping the controlled environment. Using this methodology, [Gneezy and List \[2006\]](#) show that gift exchange is a short-run phenomena, [Falk and Ichino \[2006\]](#) show the existence of peer effect on labor supply and [Tonin and Vlassopoulos \[2010\]](#) show that warm glow altruism increases effort.

3 Design

The objective of this experiment is to test the existence of wealth effect on labor supply. In the neoclassical labor supply model, labor supply is defined as the time allocated to working out of the given time endowment. However, as shown in [Nebioglu and Giritligil \[2018\]](#), creating the intensive margin of labor supply decision in the lab is very difficult, if not impossible. Therefore, in this paper, we focus on the extensive margin of the labor supply rather than the intensive margin and we measure subjects labor/leisure preferences as the value they attach to their effort to participate in a one-time job.

⁵Bean separation task

The job is designed as a one time job opportunity which requires to be in the laboratory for a given time interval to complete a certain number of the task given. In the experiments presented in [Nebioğlu and Giritligil \[2018\]](#), we observed that participants do not value leisure in the lab and to cover the opportunity cost of being in the lab, they choose to exert the maximum effort possible even if the piece-rate wage is very low. Therefore, in this experiment, to prevent the effect of the sunk cost of being in the lab on labor/leisure preferences, the day preference measurement is taken and the working day are separated and the experiment is designed to include two sessions. The first session which is reserved to measure preferences is divided into two parts: (i) The presentation of the BDM mechanism (ii) The presentation of the task. The second session of the experiment is reserved as the working day. Hence in total, the experiment consists of three parts. Below, we explain each part in detail.

In the first session, the instructions for each part is read separately before the beginning of the relevant part, so until the beginning of the second part, participants are not informed that there would be a second day in which they could come to lab to earn money. The reason behind this design choice is to narrow the focus of the subjects to learn the BDM mechanism and to avoid possible distractions due to the next decision they would make in the following part.

The first part of the experiment is designed as a training part to make sure that the subjects understand how the BDM mechanism works. We have reserved a separate part for this training because as [Plott and Zeiler \[2005\]](#) show, the BDM mechanism serves as an incentive compatible mechanism to extract preferences only if the subjects understand that revealing their true preferences is the optimal decision for them. To this end, first the instructions explaining the BDM mechanism is read out loud and the questions of the subjects are answered in public. I present the instructions for this part in the Appendix B. After answering the questions, we conduct paid trial rounds to make sure that subjects understand the details of the procedure. In this rounds, following [Cason and Plott \[2013\]](#), subjects are endowed with a ticket worth of 1 TL and they are asked to choose which price offers they would accept to sell their ticket. We used tickets worth of 1 TL as the asset to be sold because in this case, the asset has a value that is indisputable and it allows us to track the subjects who did not understand how the BDM mechanism works.

Instead of asking the subjects the minimum price they would accept, we give them a price offer list and ask them to mark which price offers they would accept to sell the ticket. The shot of the screen in which subjects choose the price offers they would accept is given in Figure [\(1\)](#). To observe if the participants' decisions are sensitive to the range of possible offers, the price offers for the ticket are given in the interval (1 TL - 2 TL) in the first 10 rounds, and (1 TL - 4 TL) in the second 10 rounds. To prevent inconsistent decisions of the subjects, the software used ensures that when a subject declares that he would sell the ticket for a price offer, all of the price offers above this price are also selected as accepted price offers.

The success of the mechanism to extract real preferences also depends on the subjects' beliefs regarding the randomness of price selection. To make sure that their beliefs are correctly formed, in the instructions, we emphasized that the buying price is determined randomly and independent of subjects' decisions and we have placed an animation which simulates a random draw on the

experiment screen in addition.

In the instructions, we have emphasized that it is in the subjects' best interest to reveal their true preferences when choosing the price offers they would accept. To make sure that the subjects are able to match their decisions with their consequences, the participants who deviate from the optimal decision are warned about the cases they would lose some profits. A similar warning text is written on the screen where the subject observes the result of the transaction when he/she faces a potential profit loss.

In the second part, subjects are asked to state the minimum wages that they would accept to participate to a one-time job opportunity. The job is to complete a given number of the task which is explained below within 2 hours by coming to the lab in one of the specified time intervals another day.

The task is defined as moving a slider across the screen. By using the mouse⁶, the subject can position the slider at any integer location between 0 and 100 inclusive. Each slider can be adjusted and readjusted an unlimited number of times and the current position of each slider is displayed to the right of the slider. The work description is to complete 600 units of task by positioning sliders at 50 by the end of the allotted time. The slider task gives a finely gradated measure of performance and involves little randomness; thus, we interpret number of completed tasks as effort exerted in the task. The screen shot of the task is given by Figure (2).

The slider task is suggested by Gill and Prowse [2012] as a simple task which can be communicated easily and does not require any previous knowledge or experience. In our set-up, different from the task suggested in Gill and Prowse [2012], in every screen there is only one slider and to prevent learning the place of the slider is changed with every unit completed.

In the instructions, we emphasized that the wage paid for the job will be determined randomly and independent of subjects' decisions as it was for the price of the ticket and that the optimal behaviour for the subjects is to reveal their true preferences.

As in the first part, instead of asking the subjects the minimum wage they would accept, we gave them a wage offer list and asked them to mark the wage offers they would accept. To prevent inconsistent decisions, the software used ensures that when the subject declares that he would work for a wage offer, all of the wage offers above this wage level is also selected as accepted wage offers.

Before collecting the wage preferences of the subjects, we ask them to complete as many tasks as they can in 30 minutes to understand the degree of difficulty of the task for themselves. They are clearly instructed that the number of completed tasks in this trial part will not be used as any criteria to make payments. Therefore, before subjects make their decisions regarding the participation to the second session to be held the other day, they are aware of the physical and cognitive cost of the task for themselves.

⁶The right and left arrows in the keyboard is deactivated to prevent the task to get easier.

After the 30 minutes trial phase, in their screens, subjects receive a reminder about how the BDM mechanism works right before they submit their preferences. The reminder is also made verbally and questions of the subjects are received in public. After these reminders, they are asked to mark the wage offers they would accept to work.

After subjects submit their preferences, to test the existence of wealth effects of labor supply, subjects are given an unexpected bonus. They are told that they receive this bonus because they complied with the experiment rules. We frame the bonus as a return to good conduct in the experiment to prevent any reciprocity motive that might arise towards the experimenter.

We adopted within subject design approach to give this treatment effect as it lets us to observe the effect of this bonus on the individual reservation wages. Moreover, it also gives the possibility to analyze how the effect varies with the magnitude of the reservation wages. To this end, after subjects submit their work preferences, we announce that they will receive 50 TL bonus. They are told that their preferences are not yet observed and they can change their decisions if they want to. After this announcement, they are asked to resubmit their work preferences. This design allows us to observe the reservation wages before and after the bonus announcement.

The payment for each hour spent in the experiment is calibrated to be 25 TL which is the average hourly wages in student jobs in the market. Besides the bonus is equivalent to 50 TL which is the average wage for a two-hours job. We projected that the average expected earnings for the second day would be around 50 TL and we chose the bonus payment to be equal to this expectation with the idea that giving the expected wage as a bonus in the first day might help to observe the wealth effect on preferences, if it exists.

4 Results

We run 5 sessions at Istanbul Bilgi University and 2 sessions at Bilkent University. In the first day of the experiment, on average, 49 participants at Istanbul Bilgi University earned 78 TL whereas 56 participants at Bilkent University earned 80 TL. In the second day of the experiment, 18 and 24 participants earned on average 51 TL at Istanbul Bilgi University and Bilkent University, respectively.

As mentioned in the previous part, we reserved a part for the BDM mechanism training and we ran paid trial rounds with a ticket worth of 1 TL as the asset to be exchanged. The purpose of this part is to create a learning by doing environment for the participants. This part also allows us to identify the subjects who did not comprehend the mechanism. The responses of the subjects over 20 periods in Part 1 are given in Figures (3)-(9). (Each figure presents the data for a session.) As can be seen from the figures, 30 subjects consistently deviated from the optimal ask of 1 TL.⁷

⁷Subject numbers: 101, 102, 103, 107, 108, 109, 202, 204, 301, 304, 306, 307, 308, 309, 408, 503, 504, 505, 508, 511, 601, 612, 618, 622, 623, 624, 627, 705, 709, 717

Hence, we concluded that these subjects did not understand the BDM procedure and we excluded their data from the analyses that follows and used only the data of the remaining 75 subjects.

The profile of the students in the chosen sample is given by the Table (1). In Bilkent University, the ratio of male participants is somewhat higher. Both universities are private universities which give scholarship opportunities to the students with high scores in the university entrance examination. In both universities, majority of the participants are students with scholarships. Table (2) presents the distribution of students according to their field of study. The most of the participants at Istanbul Bilgi University study social sciences while in Bilkent University most of the participants study engineering.

Table 1: The profile of participants

	Men	Women	No Schol- arship	Full Schol- arship	Partial Scholarship	Total
Istanbul Bilgi University	48.3%	51.7%	13.8%	65.5%	20.7%	29
Bilkent University	63%	37%	19.6%	47.8%	32.6%	46

Table 2: Majors of the participants

	Istanbul Bilgi University	Bilkent University
Social Sciences	49%	38%
Engineering	20%	50%
Arts and Sciences	10%	2%
Other	20%	11%

First objective of this study is to extract labor/leisure preferences in the laboratory environment. Hence, our variable of interest is the participants' decisions to accept/reject the available wage offers. The minimum wage that a subject accepts to work the second day of the experiment is interpreted as his/her reservation wage to participate to the working stage; therefore, hereafter, we will refer this variable as the reservation wage of the subject.

To pool the two samples collected in two different universities, using Kolmogorov-Smirnov test and Mann-Whitney U test, we tested the equivalency of the distributions of the reservation wages both before and after the bonus announcement. Both tests suggest that there is no statistically significant difference between the samples collected in two universities for both variables.⁸ Based

⁸Pre-bonus reservation wages: $U=524.500$, $p=0.876$ and $K-S=0.782$, $p=0.574$. Post-bonus reservation wages: $U=491.500$, $p=0.557$, $K-S=0.673$, $p=0.756$

on these test results, we merged the two samples and subsequent analyses are done with this pooled sample.

The reservation wage of a person for a particular job reflects his evaluation of the cost of doing that job. As we try to extract labor/leisure preferences as the reservation wages for the job we define, we asked the subjects to experience the job before they reveal their preferences by giving them 30 minutes in which they could complete as many tasks as they wanted to. We conjecture that the effort exerted by a subject at this trial stage is related to his/her cost of effort. As we did not make any payment in this part of the experiment, subjects do not have any incentive to exert substantial effort. However as can be seen in the descriptive statistics given in Table (3) average number of completed tasks is 191 with a standard deviation of 84. Considering the repetitive and boring nature of the task and the absence of an incentive, the average number of completed tasks is surprisingly high. The histogram given in Figure (10) shows that most of the subjects completed more than 100 tasks.

Table 3: Descriptive statistics for the number of completed tasks in the trial part

	N	Range	Min	Max	Mean	Std. Dev.
Number of completed tasks	75	378	9	387	190.59	84.396

We conjecture that the participants who assess the task as rather easy would complete higher number of tasks in the trial stage; in other words, we predict a negative relationship between the reservation wages and number of tasks completed in the trial stage. To test this hypothesis, we build up a linear regression model to explain the variation in the reservation wages with the number of completed tasks. To see if this relationship changes with respect to gender and the university in which the experiment is conducted, the relevant dummy variables are also added to the model as right hand-side variables. The estimation results for the best fitted model is given in Table (4). In this model, the dependent variable is the reservation wages before the bonus announcement (W) and the independent variables are the number of completed tasks in the trial stage (E), the dummy variable for the university in which the experiment is conducted (U) and the interaction term for U and E.

The results of the regression analysis confirm the hypothesis that there is a negative relationship between the reservation wages and number of completed tasks in the trial stage. On the other hand, the interaction term for the university in which the experiment is conducted and the number of completed tasks is also statistically significant. The estimated coefficient for the interaction term suggests that the sensitivity of wage demanded with respect to number of completed tasks is higher

Table 4: Estimation Results

	Coefficients	Std. Dev	Standardized Coefficients	t-stat	p-value
Constant	64,895	11,235		5,776	0
U	20,023	15,487	0,478	1,293	0,201
E	-0,089	0,041	-0,361	-2,168	0,034
E*U	-0,166	0,079	-0,662	-2,108	0,039

for students of Bilkent University; in other words Bilkent students' assessment of the cost of the one unit of completed task is lower than that of Bilgi students.

Although it is not possible to make strong statements, the relationship established between the reservation wages and the performance in the trial period points out BDM mechanism as a useful tool to extract labor/leisure preferences. Assuming that the reservation wages we collected reflect the participants true preferences, next we analyze if these preferences are affected by changes in non-labor income which is framed as the unexpected bonus payment in our experiment. To this end, we first present the frequency distribution of the reservation wages before and after the bonus announcement in Table (5).

It can be seen that the reservation wages dispersed around all possible wage offers and the majority lies between 20 TL and 60 TL. The >90 expression in the table refers to the participants who did not accept any of the wage offers. The decision of a participant not to accept any of the wage offers can be interpreted as his reservation wage for the job being higher than the maximum of the available wage offers.⁹ Before the bonus announcement, 8 subjects declared that they would not work for any of the wage offers whereas this number drops to 7 after the bonus announcement. Individual analysis of the data show that a participant accepted to work for the wage offer of 90 TL before the bonus announcement and he/she declined all of the wage offers after the announcement. In the post experiment survey, he/she stated that his decision before the announcement was based on his earnings in the first part of the experiment and that he changed his mind after the announcement because together with the bonus payment, he/she already earned his targeted amount. On the other hand, 2 subjects who declined all of the wage offers before the announcement, changed their reservation wages as 40 TL and 55 TL. Their answers to survey questions was not consistent with their answers. Finally, 8 subjects stated that they would not work for any of the offers both before and after the announcement. Among these, 5 participants stated that they were not available for any of the work slots and 3 participants stated that they evaluated the wage offers according to the wages they usually get when they work.

An unexpected increase in non-labor income creates a wealth effect on labor supply because people perceive this as an opportunity to increase their leisure consumption without changing their total

⁹It might be also the case that he/she is not available in one of the available working slots.

Table 5: Frequency distribution of the reservation wages before and after the bonus announcement

Reservation Wage	Before bonus announcement			After bonus announcement		
	Freq	%	Cumulated %	Freq	%	Cumulated %
10	3	4	4	3	4	4
20	6	8	12	8	10,7	14,7
25	6	8	20	2	2,7	17,4
30	9	12	32	8	10,7	28,1
35	2	2,7	34,7	1	1,3	29,4
40	10	13,3	48	13	17,3	46,7
45	5	6,7	54,7	5	6,7	53,4
50	11	14,7	69,4	13	17,3	70,7
55	1	1,3	70,7	2	2,7	73,4
60	1	1,3	72	2	2,7	76,1
70	4	5,3	77,3	3	4	80,1
75	1	1,3	78,6	4	5,3	85,4
80	4	5,3	83,9	2	2,7	88,1
85	1	1,3	85,2	1	1,3	89,4
90	3	4	89,2	1	1,3	90,7
>90	8	10,7	99,9	7	9,3	100
Total	75	100		75	100	

income. As they feel wealthier following the increase in non-labor income, to supply the same amount of labor they ask for higher wages. Hence an increase in non-labor income results in increased reservation wages. Therefore in this study, we measure wealth effect as the increase in the reservation wages of the participants after the bonus announcement.

Theoretically, one's decision not to work for any of the wage offers means that the reservation wage of that person is higher than any of the available wage offers. However, it is not possible to estimate the level of his/her reservation wage. Therefore, the data for the subjects who did not accept any of the wage offers before or after the announcement can not be used to calculate statistics such as mean and median whose values are affected by the extreme data points. Therefore, we exclude the data of these participants to calculate the descriptive statistics for reservation wages both before and after the announcement which is given Table (6).

It can be seen that the median and the mean for the reservation wages data before and after the bonus announcement remains the same. (Mean=44, Median=40). We tested equality of medians before and after the bonus announcement by Wilcoxon Signed Rank test we failed to reject the

Table 6: The descriptive statistics for reservation wages before and after the bonus announcement

	N	Mean	Std. Dev.	Min	Max	Quantile		
Reservation wage						25	50	75
Before	66	43,79	19,217	10	90	30	40	50
After	66	43,48	20,267	10	90	30	40	50

hypothesis that medians are equal^[10]. This shows that the effects of the participants who increased their reservation wage and the participants who decreased their reservation wages on the central tendency of the distribution is equivalent. Therefore, it is not possible to make any inferences based on the aggregate behavior. Yet, within subject design of our experiment let's us to analyze the individual effects of the announcement.

In our sample, 14 participants (18.7 % of the sample) increased while 11 participants (14.7% of the sample) decreased their reservation wages. On the other hand, 50 subjects; hence 66.7% of the sample did not change their reservation wages after the announcement. In the subsequent analyses, we divide the sample into three groups according to the action they took after the bonus announcement. Group 1 will refer to the participants who increased their reservation wages whereas Group 2 will refer to the participants who decreased it. Finally, we will refer the subjects who did not make a change in their decisions as Group 3.

To show the individual changes in the reservation wages, we present in Table (7) the reservation wages of the participants in Group 1 and Group 2 both before and after the bonus announcement. In the post experiment survey, 10 participants in Group 1 stated that they changed their decision because they thought that they would work only if wages were higher as they already earned their targeted amount with the bonus payment. The other 4 participants gave inconsistent answers with their decisions. On the other hand, 5 participants in Group 2 stated that they changed their decisions to deserve the bonus payment and the remaining 4 participants have inconsistent answers with their decisions.

In the post experiment survey, we asked the subjects how their experimental earnings compared to their expected income from the experiment. Among the participants, 45% judged their earnings from the experiment as inline with their expectations whereas 6.7% judged it as below their expectations. Finally, 36% of the participants evaluated their earnings as above their expectations. The labor/leisure preferences of a subject can be said to change due to the wealth effect following the bonus payment, if the subject evaluates his total income as above his/her expectations. To test if the ratio of the participants who evaluated his earnings as above average is higher in Group 1, we performed a χ^2 test. When we used all of the groups, we failed to reject the hypothesis that the distribution of the level of expectation satisfaction in all of the groups is the same.^[11]

¹⁰Z=-1.091, p=0.275

¹¹ $\chi^2 = .564, p = 0.109$

Table 7: Individual data for reservation wages before and after the bonus announcement. Group 1 refers to the subjects who increased their reservation wages following the bonus announcement whereas Group 2 refers to the subjects who decreased their reservation wages.

Group 1			Group 2		
Subject No	Reservation Wage (After)	Reservation Wage (Before)	Subject No	Reservation Wage (After)	Reservation Wage (Before)
106	55	50	207	20	25
203	50	40	303	45	50
206	45	35	404	75	80
506	50	45	406	40	50
604	50	40	410	40	45
607	75	60	610	50	55
614	40	30	621	60	80
615	75	70	625	50	90
626	60	50	703	20	25
629	50	30	713	40	>90
702	40	30	724	55	>90
706	30	25			
714	30	25			
711	>90	90			

However, when we do the same analysis for each group pair, we reject the hypothesis that the distribution of the expectation fulfilment levels across Group 1 and Group 2 is the same at 10% significance level. The participants in Group 1 are more likely to assess their earnings as above average than the participants in Group 2. This finding can be seen as an indicator of the existence of wealth effect on labor supply behavior of Group 1.

The behavioral economics literature suggests that people have preferences for reciprocation. There are also experimental studies which shows that labor/leisure preferences are also affected by this factor. In our experiment, at first sight, one might conjecture that the subjects who decrease their reservation wages have this sort of motive behind their decisions. However, the analysis we reported above shows that most of these participants assessed their earnings as inline with or below their expectations. This finding weakens the hypothesis that reciprocity is the motive for their decisions and this points-out the existence of an effect that we could not capture within our framework.

Table 8: Contingency table for expectation fulfilment status and belonging to a group. Group 1 refers to the subjects who increased their reservation wages, Group 2 refers to the subjects who decreased their reservation wages and Group 3 refers to the subjects who did not change their reservation wages after the bonus announcement.

		Earnings inline with expecta- tions	Earnings below ex- pectations	Earnings above expecta- tions	Total
Group 1	Count	3	1	10	14
	Expected	6,3	0,9	6,7	14
	Count				
	% within Group	21,40%	7,10%	71,40%	100,00%
Group 2	Count	6	2	3	11
	Expected	5	0,7	5,3	11
	Count				
	% within Group	54,50%	18,20%	27,30%	100,00%
Group 3	Count	25	2	23	50
	Expected	22,7	3,3	24	50
	Count				
	% within Group	50,00%	4,00%	46,00%	100,00%
Total	Count	34	5	36	75
	Expected	34	5	36	75
	Count				
		45,30%	6,70%	48,00%	100,00%

5 Conclusion

In this experiment, labor/leisure preferences are measured through the value the subjects attach to their effort to participate in a one-time job and the change in their preferences are observed as an income shock is created in the form of an unexpected fixed bonus payment. First, we find that there is a negative relationship between the reservation wages and the performance in the trial period, hence the BDM mechanism serves as a useful tool to extract labor/leisure preferences. Second, for each subject, we elicit the reservation wage to participate the work day before and after the bonus announcement and we find that 30% of the subjects 'reacted' to this positive income shock as they altered their reservation wages after the bonus announcement. 19% (12%) of the subjects

increased (decreased) their reservation wages in response to the shock.

The low response rate of the participants clearly calls for doubts about the appropriateness of the adopted methodology to study the impact of income shock on labor/leisure preferences; however, there is a need for implementing additional treatments before concluding in that direction. The very immediate step appears to make a robustness check regarding the magnitude of the income shock, i.e., whether the magnitude of the income shock significantly changes the rate of responses and their direction.

In conclusion, our results show that the wealth effect on labor supply can be observed in the short run even in the lab environment. These results put the predictions of the macroeconomic models which use GHH preferences under scrutiny and calls for further experimental/empirical findings on the topic.

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A Figures

Tur
1 / 4
Kalan Süre (sn) 52

D

Bir sonraki aşamada aşağıdaki fiyatlardan bir tanesi bilgisayar tarafından kura ile kupon alışı fiyatı olarak belirlenecektir.
 Lütfen aşağıdaki her fiyat için kuponu satıp satmama kararınızı işaretleyiniz.

DENEY KUPONU


A

B

C

Eğer Fiyat 0.0 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.1 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.2 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.3 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.4 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.5 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.6 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.7 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.8 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 0.9 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.1 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.2 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.3 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.4 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.5 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.6 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.7 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.8 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 1.9 TL ise	Satmam	☐	Satmam	☐	Satmam	☐
Eğer Fiyat 2 TL ise	Satmam	☐	Satmam	☐	Satmam	☐

OK

A: If the price is... / B: I will not sell / C: I will sell / D: In the next stage, the computer will select one of the prices below as the ticket buying price by a random draw. Please mark your decision to accept/refuse to sell the ticket for each price.

Figure 1: Decision screen

Tur

1 / 1

Kalan Süre (sn) 1772

Tamamlanan İş Sayısı3

Number of completed tasks

Kayıdına gubuğuna bilgıayarmıcn İaresını kulanarak cıgının ola noktasında tayınmız ve bir sonraki işe geçmek için devam tuğuna basınız.

Move the slider to the middle of the line bu using the mouse of your computer and click on Continue to pass to the next task.

0

Devam Et

Continue

Figure 2: Real effort task screen

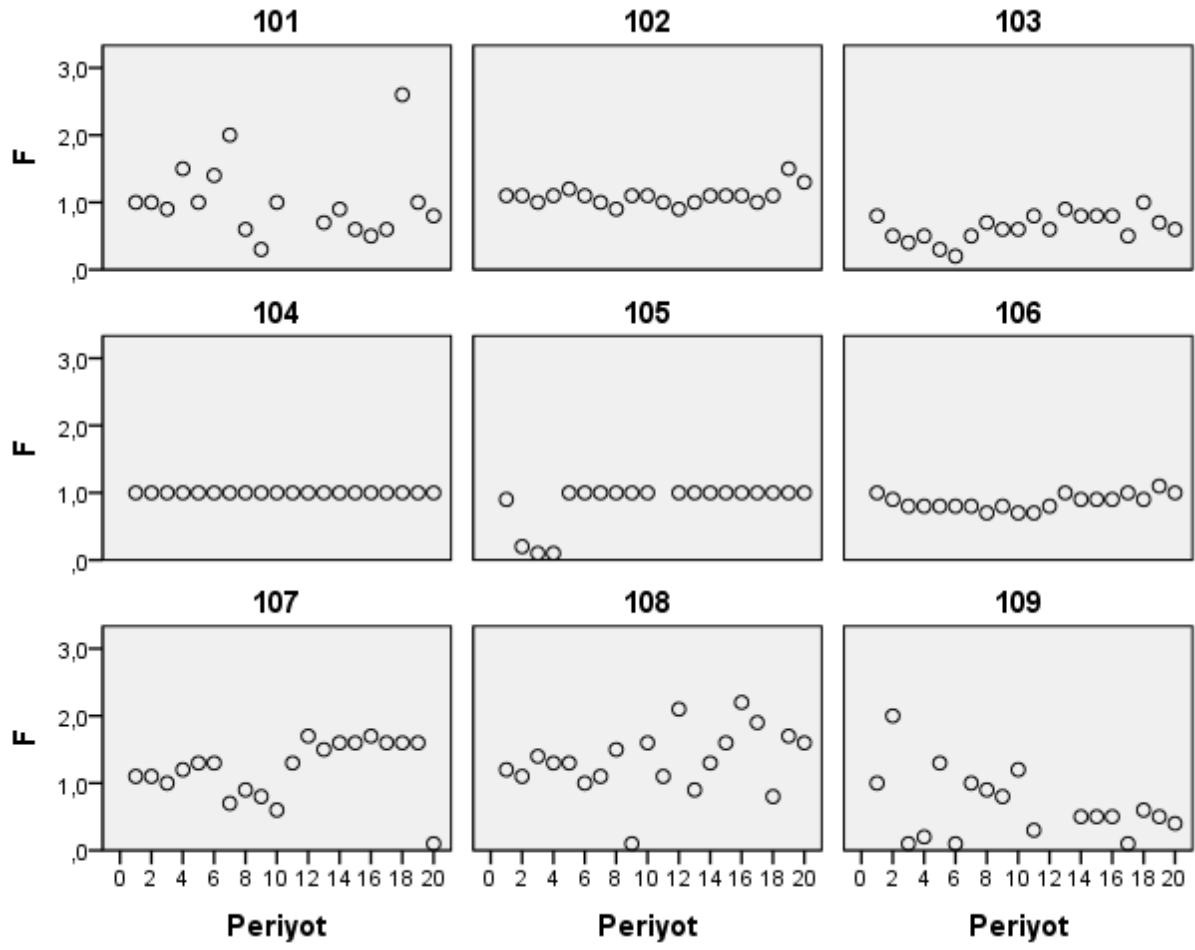


Figure 3: The price demanded over periods for the ticket worth of 1 TL in Session 1

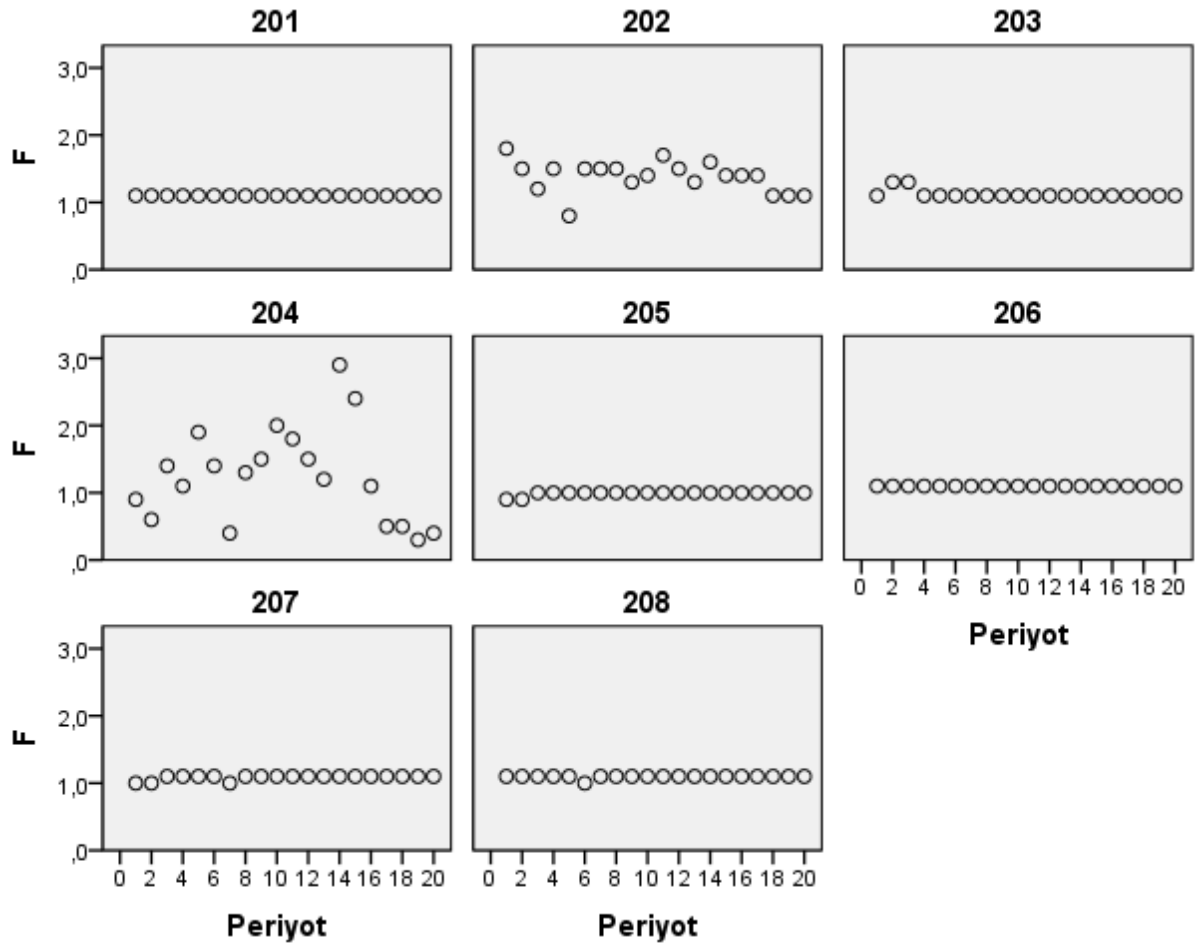


Figure 4: The price demanded over periods for the ticket worth of 1 TL in Session 2

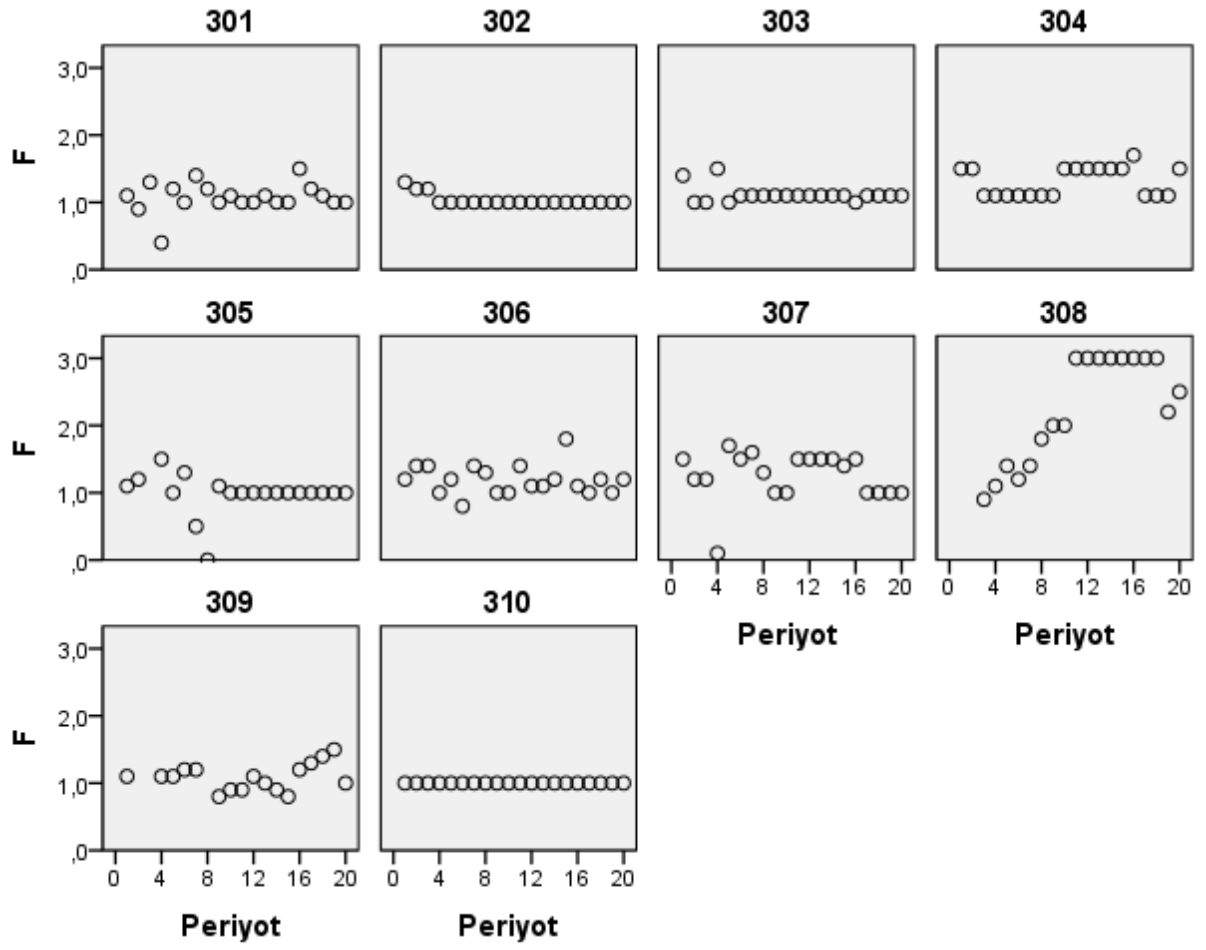


Figure 5: The price demanded over periods for the ticket worth of 1 TL in Session 3

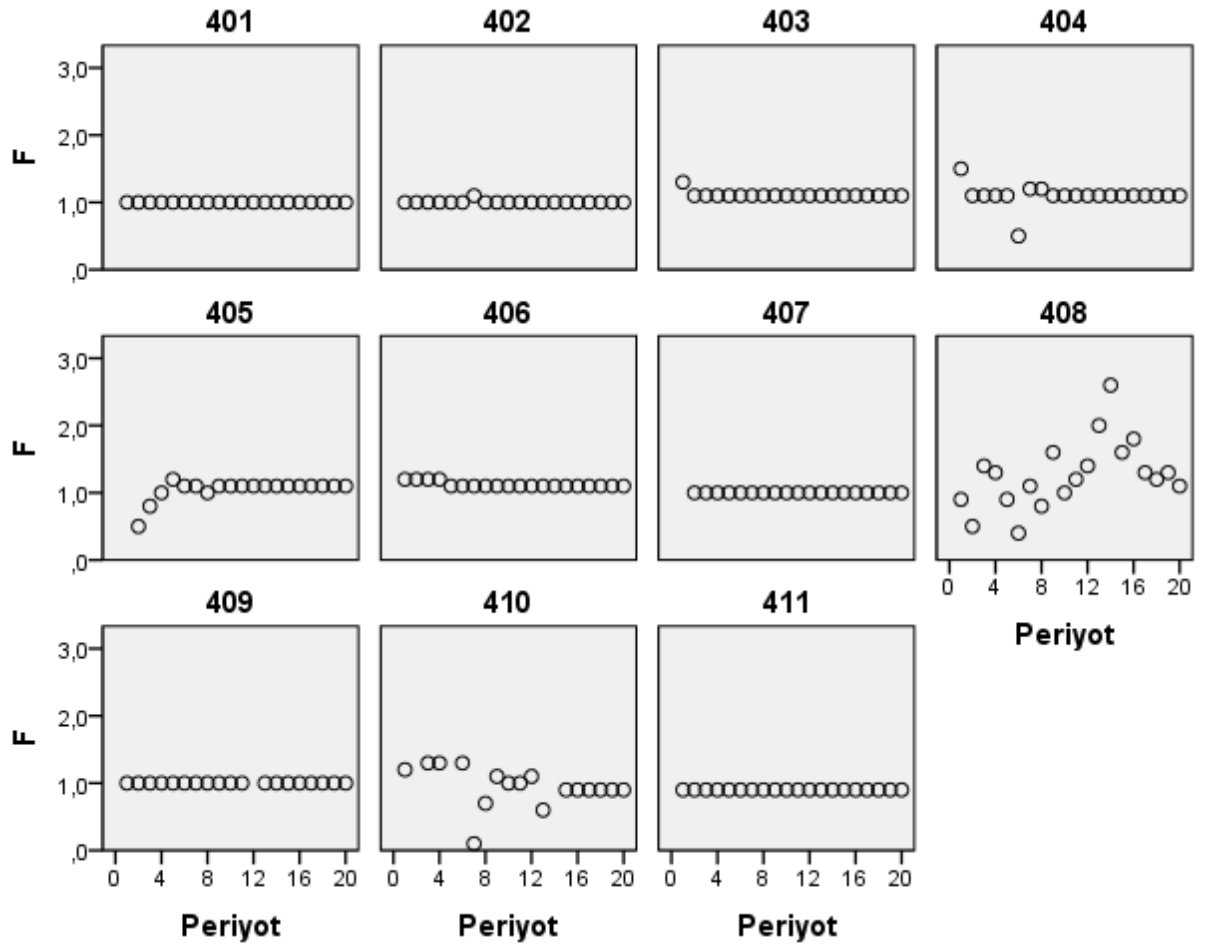


Figure 6: The price demanded over periods for the ticket worth of 1 TL in Session 4

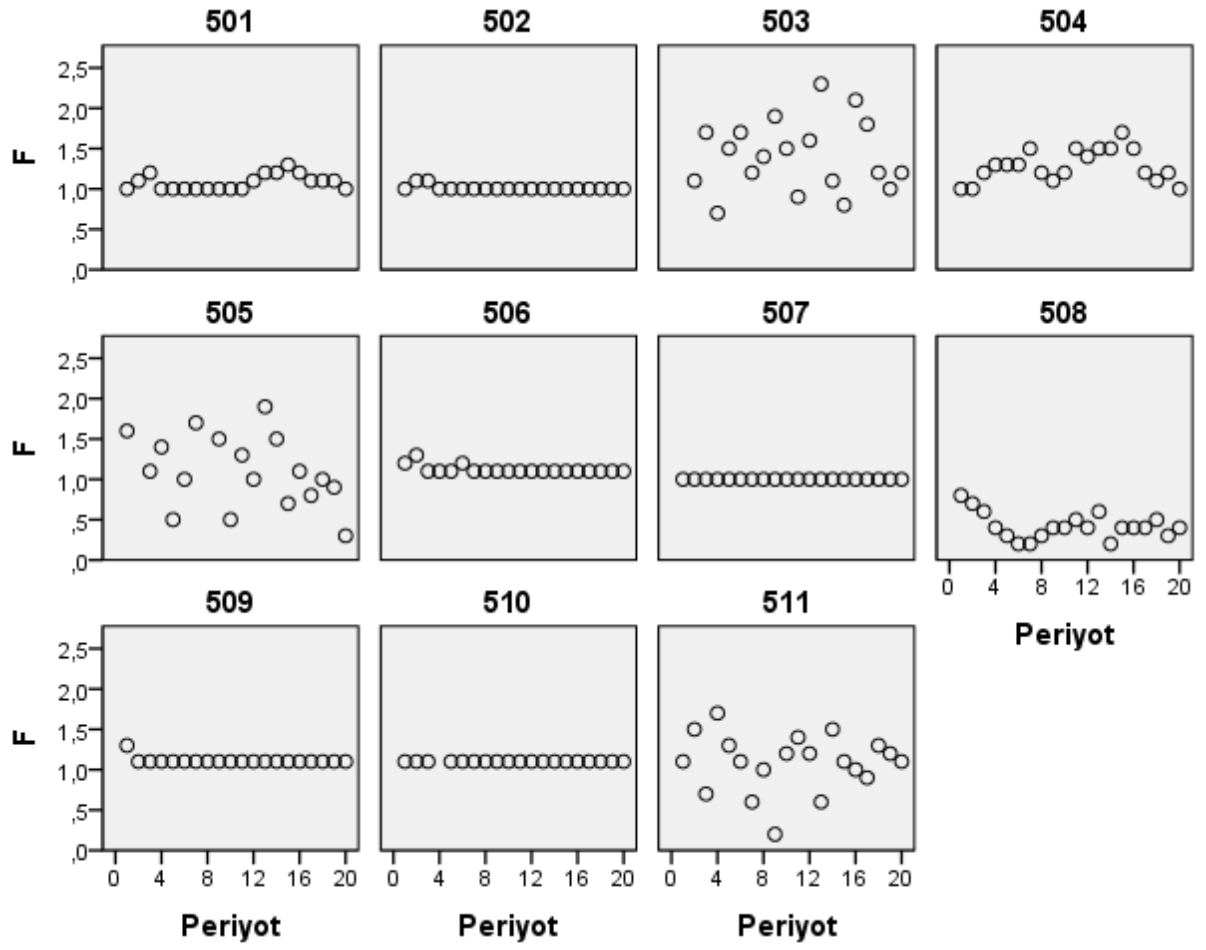


Figure 7: The price demanded over periods for the ticket worth of 1 TL in Session 5

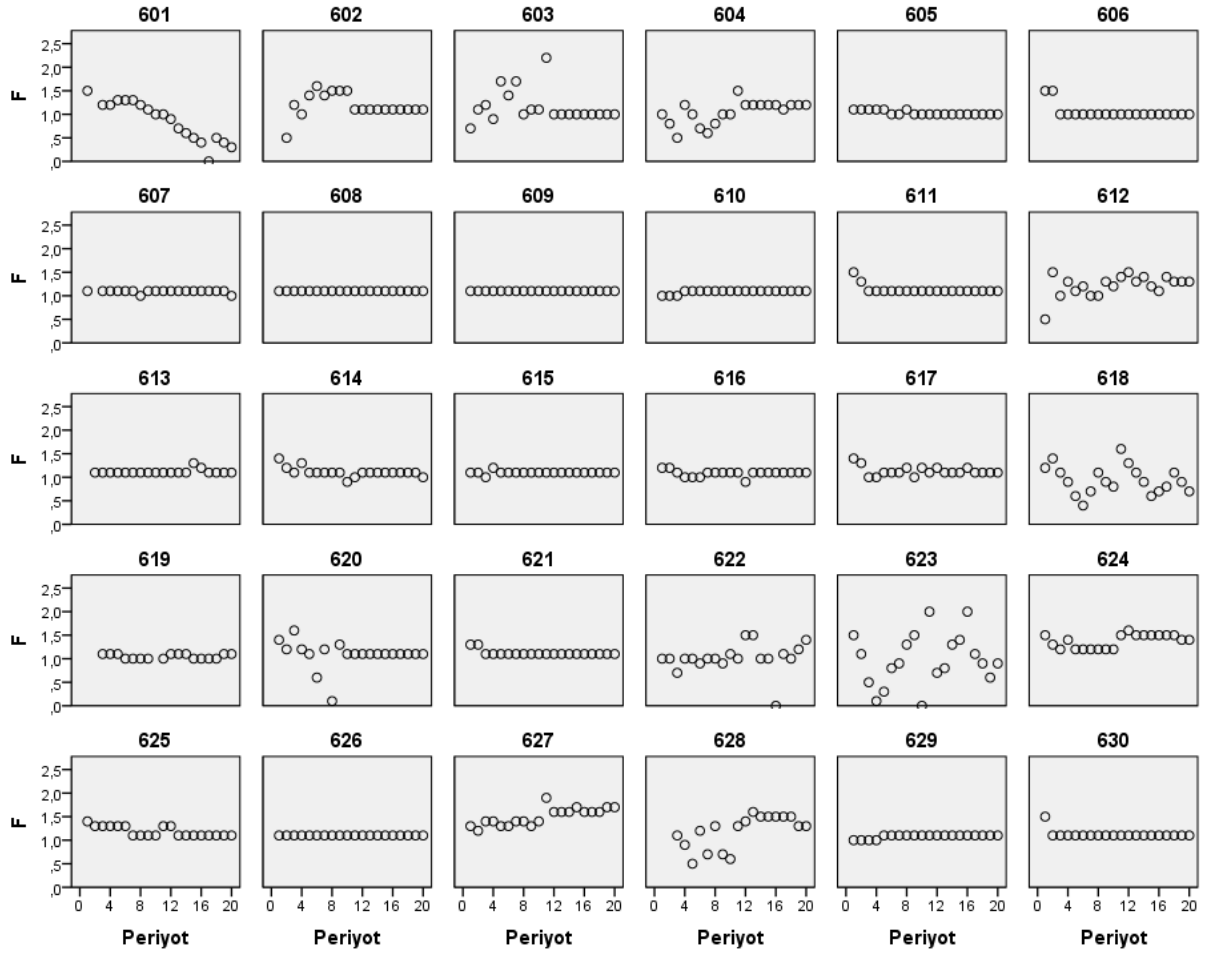


Figure 8: The price demanded over periods for the ticket worth of 1 TL in Session 6

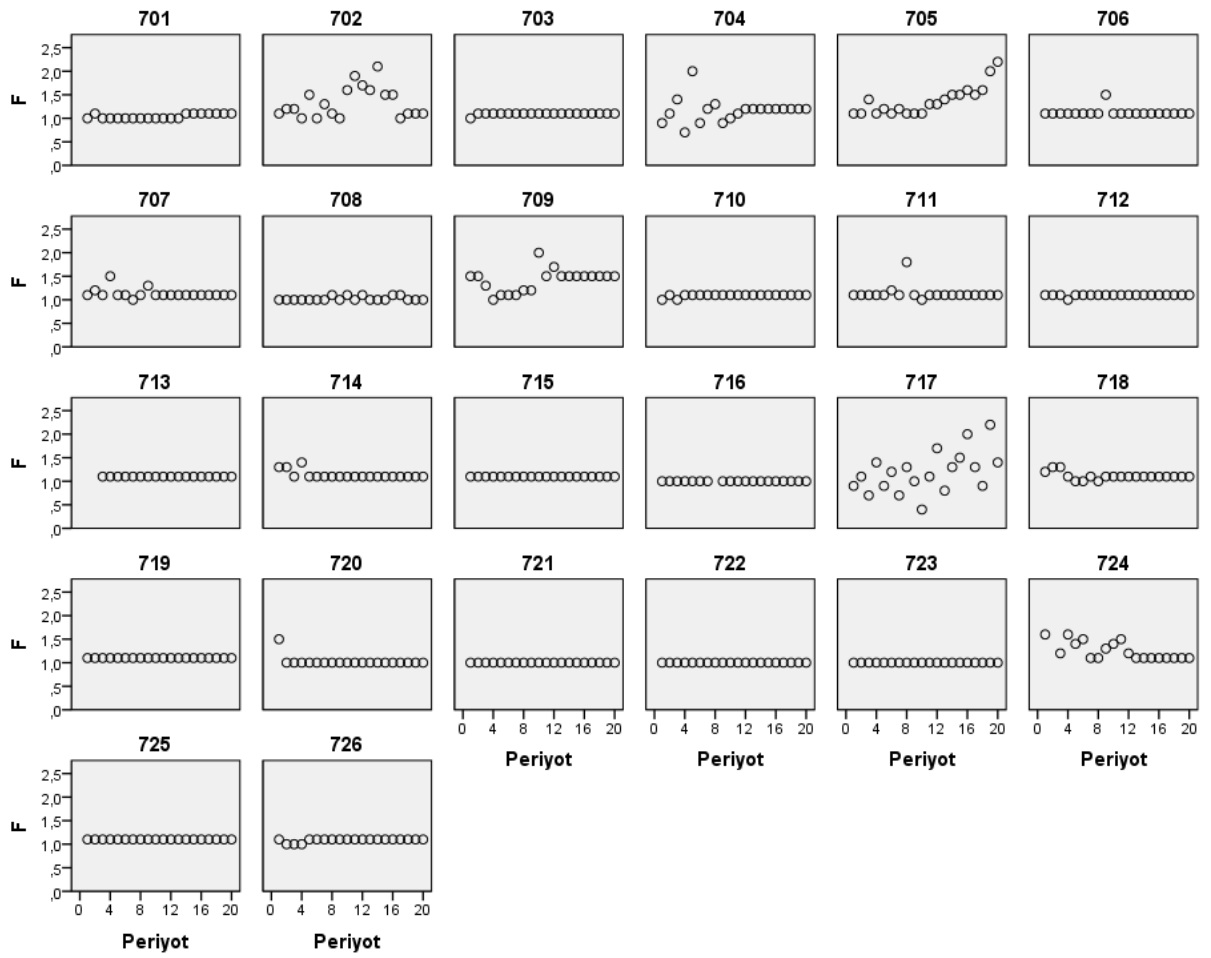


Figure 9: The price demanded over periods for the ticket worth of 1 TL in Session 7

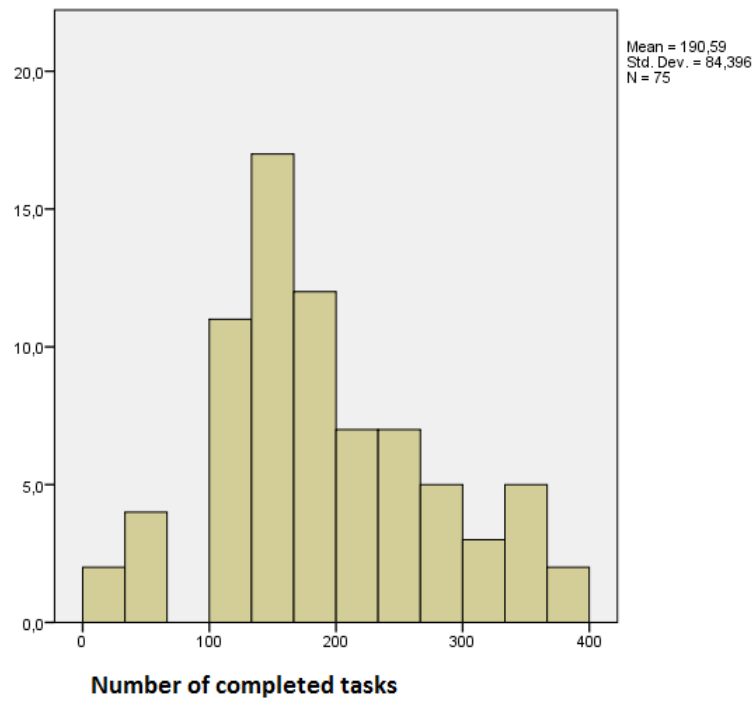


Figure 10: The number of completed tasks in the trial stage

B Instructions: Part 1

This part of the experiment consists of 20 rounds.

For each round, you will be given a (virtual) ticket and you will be asked to decide which of the price offers you would accept to sell the ticket. Subsequently, one of the price offers given in your screen will be randomly selected as the ‘ticket buying price’, if you had stated that you would not sell your ticket for this price, you will keep the ticket. For each of the tickets you keep, you will be paid 1 TL by the end of the experiment. On the other hand, if you had stated that you would sell your ticket for the randomly selected ticket buying price, then you will sell the ticket for this price and this buying price will be paid to you at the end of the experiment as the earnings of that round.

The buying/selling price of the ticket will be (as multiples of 10 kurus) between 0 and 2 TL in the first 10 rounds, and between 0 and 3 TL in the second 10 rounds.

You are given below a view of the screen where you will mark which price offers you would accept or reject for the 0-2 TL price offer range.

Tur

1 / 4

Kalan Süre (sn) 52

D

Bir sonraki aşamada aşağıdaki fiyatlardan bir tanesi bilgisayar tarafından kura ile kupon alış fiyatı olarak belirlenecektir. Lütfen aşağıdaki her fiyat için kuponu satıp satmama kararınızı işaretleyiniz.

DENEY KUPONU
1TL

A	B	C
Eğer Fiyat 0.0 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.1 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.2 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.3 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.4 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.5 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.6 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.7 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.8 TL ise	Satmam	☐ Satanım
Eğer Fiyat 0.9 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.0 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.1 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.2 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.3 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.4 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.5 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.6 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.7 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.8 TL ise	Satmam	☐ Satanım
Eğer Fiyat 1.9 TL ise	Satmam	☐ Satanım
Eğer Fiyat 2.0 TL ise	Satmam	☐ Satanım

OK

A: If the price is... / B: I will not sell / C: I will sell / D: In the next stage, the computer will select one of the prices below as the ticket buying price by a random draw. Please mark your decision to accept/refuse to sell the ticket for each price.

When you state that you would sell your ticket for a particular price offer, it will be assumed that you would sell your ticket for all of the price offers above this particular price and the choice of 'I will sell' will be selected automatically for these price offers. For example, when you tick the 'I will not sell' option for the price offers that are less or equal to 0.5 TL and when you tick 'I will sell' option for the price offer 0.6, the system will automatically select 'I will sell' option for all of the price offers above 0.6. Therefore, the minimum price you would accept to sell your ticket will be recorded as 0.6 TL.

Example: Let's assume that we are at one of the first 10 rounds where the price offers are between 0 and 2 TL. Let's say that you have ticked the option 'I will sell' for all of the prices greater or equal to 1.3 TL and in the random draw 1.8 TL is selected as the ticket buying price. In this case, you will sell your ticket for 1.8 TL and 1.8 TL will be transferred to your earnings account to be paid at the end of the experiment.

Example: Let's assume that we are at one of the second 10 rounds where the price offers are between 0 and 3 TL. Let's say that you have ticked the option 'I will sell' for all of the prices greater or equal to 2.4 TL and in the random draw 1.5 TL is selected as the ticket buying price. In this case, you will not sell your ticket and you will get 1 TL in exchange of this ticket at the end of the experiment.

Don't forget;

- The buying price is selected randomly between the price offers available on your screen. Your preferences on selling/not selling your ticket for a particular price does not have any effect on the way the buying price is determined.
- It is in your best interest to state your actual preferences regarding your willingness to sell the ticket for a particular price. As the ticket buying price is selected randomly, choosing price offers you would accept different from your preferences would not bring you any benefit compared to the situation where you choose the price offers in accordance with your preferences. So, you can not increase your earnings by stating higher the minimum price you would accept to sell the ticket. In the second example given above, if you had asked for 1.5 TL instead of 2.4 TL you would have sold the ticket and you would have earned 1.5 TL instead of 1 TL.

PAYMENT

The total earnings you get from this part will be paid to you in cash by the end of the experiment.

**YOU WILL BE INFORMED ABOUT SUBSEQUENT PARTS OF THE EXPERIMENT
RIGHT AFTER THIS PART IS COMPLETED**

C Instructions: Part 2

In the rounds of the first part of the experiment, you were asked to state which price offers you would accept/reject to sell the ticket given to you and subsequently your earnings were determined based on your decision to sell your ticket for the randomly selected price. In this part of the experiment, you are asked to state which wage offers you would accept/reject to to complete 600 units of the task whose details are given below in 2 hours by coming to this laboratory again tomorrow either at 15:00 or at 18:00 according to your availability.

Work Description: You are asked to move the slider by using the mouse of your computer to the middle of the line which is on your screen. You are given below the screen shot of this task:

Tur

1 / 1

Kalan Süre (sn) 1772

Tamamlanan İş Sayısı 3

Number of completed tasks

Kaydırma çubuğunu bilgisayarınızın faresini kullanarak çizginin orta noktasına taşıyınız ve bir sonraki işe geçmek için devam tuşuna basınız.

Move the slider to the middle of the line bu using the mouse of your computer and click on Continue to pass to the next task.

0

Devam Et

Continue

The screen where you will choose the wage offers that you would accept or reject to complete 600 units of task whose description is given above by working 2 hours is given below:

Tur

1 / 1

Kalan Süre (sn) 85

Tercih ettiğiniz günlerden birinde 2 saat boyunca 600 birim iş tamamlamak karşılığında kabul edeceğiniz ücret seviyelerini işaretleyiniz. Bu ücret seviyelerinden biri çalışmaya ödenecek ücret olarak bilgisayar tarafından kura ile belirlenecektir.

Eğer ücret 10 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 15 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 20 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 25 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 30 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 35 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 40 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 45 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 50 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 55 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 60 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 65 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 70 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 75 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 80 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 85 TL ise	Çalışmam	☐	Çalışm
Eğer ücret 90 TL ise	Çalışmam	☐	Çalışm

OK

Similar to the first part of the experiment, the effective wage to be paid for the job will be selected randomly among the wage offers given to you. (So, while in the first part you were asked to state the minimum price you would accept to sell the ticket which had a constant value when you did not sell it; in this part, you are asked to decide the minimum wage you would accept to take the job given your evaluation of the cost of the effort the job requires.)

- **If you have stated that you would accept to work for the randomly selected wage,** you will receive this wage by working in this laboratory to complete 600 units of task in one of the slots you prefer among the ones offered to you. (It is required that you spend exactly 2 hours in the laboratory and you complete 600 units of task. So, if you leave the laboratory before 2 hours or if you complete less than 600 units of task, you will not receive any payment.) The wage you will get for the job will be paid to you at the end of the working time. This payment is independent of the earnings you made at the first part of the experiment and which will be paid to you in cash shortly after.

- **If you have stated that you would not work for the randomly selected wage**, you will not work by coming to the laboratory and you will not get any wage. The earning you made in the first part of the experiment will be paid to you in cash shortly after.

Do not forget;

- The wage to be paid in exchange for the job defined above is selected randomly among the wage offers available on your screen. Your preferences on accepting/rejecting to work for a given wage does not have any effect on the way the effective wage rate is determined.
- As the wage that will be paid to you for your work by completing 600 units of task during 2 hours is determined independently of your preferences regarding the wage offers you would accept to work, it is in your best interest to state your actual preferences regarding your willingness to work for a particular wage rate. For instance, let's assume that you stated the minimum wage you would accept below your actual preference. In this case, if this particular wage rate is selected in the random draw, then you will have to work for a wage you do not want. On the other hand, if you state the minimum wage you would accept above your actual preference and the randomly selected wage happens to be below this wage, you can not work even though you wanted to work.

Before you state your preferences regarding the wage offers you would accept/reject, it is necessary that you understand the difficulty of the task, you get used to the task and you need to consider the minimum wage you would accept to complete the given number of tasks within given time. For this reason, for 30 minutes, you will receive on your screen the task defined above one after another. Once you complete the one unit of task that is on your screen, you will receive the next unit. You are advised to complete as many tasks as you can complete and to try to estimate the effort required to complete 600 units of this task.

Your performance in this 30 minutes trial stage will not be used as a criteria or to make a payment to you.

PLEASE WAIT UNTIL THE TRIAL STAGE STARTS IN YOUR SCREEN.

D Instructions: Bonus Announcement

The random draw to determine the effective wage to be paid in exchange of working 2 hours to complete 600 units of the given task is not yet materialized. The information about the screen where you have marked your preferences to accept or reject the given wage offers is not yet observed and transferred to the system.

We thank you for complying with the rules and the instructions in the lab. According to a particular protocol specific to this experiment, the experimenters commit to pay 50 TL extra to each participant for having obeyed the experimental rules in the lab. Therefore, 50 TL will be added to your earnings you made in the first part of the experiment (you made by selling/keeping you ticket in 20 rounds) and the total amount will be paid to you in cash by the end of the experiment.

As mentioned previously, your preferences regarding the wage offers is not yet transferred to the system. Therefore, the screen where you will mark which wage offers you would accept/reject to complete 600 units of task in two hours by coming to the laboratory tomorrow at your preferred slot will appear again in your monitor. You can make a different decision than the one you made earlier or you can keep it the same.

E Post Experiment Questionnaire

1. How did you decide on the minimum wage you would accept to work during the second day of the experiment? (Choose the option which is most appropriate for you)
 - According to my earnings for the first part of the experiment (before the bonus payment).
 - According to hourly wage I usually earn in other jobs.
 - According to the minimum and maximum of possible wages.
 - According to the average of possible wages.
 - According to my availability during work days.
2. If you changed your decision after the bonus announcement, how did you decide on the new minimum wage you would accept to work for the second day of the experiment? (Choose the option which is most appropriate for you)
 - As I already earned my targeted amount, I thought I would work only if wages were higher.
 - I lowered the minimum wage I demanded to deserve the bonus payment.
 - I did not change my decision.
 - I decided according to my availability during work days.
3. How do you evaluate your earnings from the experiment?
 - Below my expectations
 - As I expected
 - Above my expectations
4. For which of the following items are you getting support from your family? (you can choose more than one option)
 - Accomodation
 - Expenses related to your study
 - Basic expenditures (food, clothing, transportation)
 - Pocket money
 - None of the above
5. Which of the following is true for you?
 - I work in a part-time job.

- I work occasionally whenever I need
 - None of the above
6. Which defines your objective to participate to this experiment?
- Earning Money
 - Curiosity
7. Do you have a car which you own or you use?
- Yes
 - No
8. Do you know anybody among the participants?
- Yes
 - No
9. What is your major?
10. State your scholarship status:
- Full scholarship
 - 50% scholarship
 - 25% scholarship
 - None
11. Do you take courses during the summer school?
12. The level of education of your father:
- Elementary school
 - Middle school
 - High school
 - University (Bachelor, Master, PhD)
13. The level of education of your mother:
- Elementary school
 - Middle school
 - High school
 - University (Bachelor, Master, PhD)

14. What is your gender?

15. Please state if you would like to add further comments

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