Universität
Konstanz

Rechts-, Wirtschafts- und Verwaltungswissenschaftliche Sektion
Fachbereich
Wirtschaftswissenschaften

Erik E. Lehmann
Susanne Warning

The Impact of Gender on Individual Decisions: Evidence from the "Millionaire Show"

Diskussionsbeiträge

78457 Konstanz

Serie I — Nr. 325
Juli 2003

The Impact of Gender on Individual Decisions: Evidence from the "Millionaire Show"

Erik E. Lehmann* Susanne Warning**,

* *University of Konstanz, Germany*

Abstract

In order to analyse whether women and men differ in their decision making under risk and uncertainty, we use data from the game show 'Who Wants to be a Millionaire?'. It turns out that i) there are gender differences in choosing a lottery or a certain value only for "large-stakes" lotteries, ii) the decision making process differs significantly between "small" and "large" stake lotteries for both women and men, and iii) people with lower income tend to react more reluctant to choose a kind of certain value in order of a lottery. The results hold even after controlling for socio-economic variables.

Keywords: Decision-making under uncertainty, Gender differences, gambling

JEL classification: D 81, J 16

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*Department of Economics, University of Konstanz, Box D 144, 78457 Konstanz, Germany Tel: +49-7531-883359; fax: +49-7531-884456. *E-mail*: Erik.Lehmann@uni-konstanz.de, Susanne.Warning@uni-konstanz.de

We are grateful to Richard Deaves, Oliver Fabel, Nicolaus Hautsch, Anke S. Kessler, Adam Lederer, Erik Lueders, Thomas Plümper, and Günther G. Schulze for helpful comments and suggestions. The paper also benefited from presentations at the ZEW Mannheim and the Indiana University, Bloomington.

I. Introduction

Decision making is associated with balancing the potential rewards against the possible losses of a particular decision. Such evaluations are often influenced by the financial situation of the decision makers, their educational levels, professions, age, and gender (Bajtelsmit 1999; Donkers et al. 2001). The role of these criteria on the individual decision making process could be explained – more or less – by economic theory with one exception: the role of gender. Although the degree of risk aversion and the decision making behaviour may be endogenous and depend on income and wealth, there is no economic explanation why women should be different from men. It is often taken for granted that women tend to be more risk-averse[1] and thus receive lower expected returns from their investments. This perception has been put forward as a major cause for "glass ceilings" in corporate promotion ladders (see Johnson/Powell 1994): If female managers undertake less risky projects with lower expected returns, equity markets will then evaluate firms controlled by male managers with higher share prices.[2]

The empirical evidence, whether women are in fact more conservative investors than men, is not as clear cut as the assumed consequences. Several studies provide evidence that women undertake less risky investments (see Jianakoplos/Bernasek 1998; Bajtelsmit 1999), while other studies do not (Lusardi 1997, Schubert et al. 1999). Most results are based on experimental investigations (see Eckel/Grossman 2000 for a survey), since real-life data on gender differences in their individual decision making process are not easy to collect.

We add further evidence to this literature by analysing data from a "natural experiment": the TV-show 'Who wants to be a millionaire'. This show can easily be perceived as a two-point lottery: Candidates can choose between taking a certain amount of money without risk or playing a risky lottery. Since prizes vary from 100 DM up to 1 Million DM[3], the gambling show resembles an experiment with both, "large" and "small" stakes (see Rabin 2000, Holt/Laury 2002 for implications of small and large stakes on decision makers).

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[1] From a biological point of view, gender differences in risk behavior are due to a higher testosterone level by men. Testosterone makes individuals more aggressive and less risk averse.

[2] Although this argument is often mentioned in the literature, there is no evidence that firms run by women are in fact associated with lower returns.

[3] All prices in the show are in DM and not in Euro (1 Euro ~ 1.9956 DM).

In contrast to other studies dealing with gambling and lotteries (like Beetsma/Schoetman 2001, Donkers et al. 2001, Jullien/Salanie 2000), our focus lies on the evaluation of simple decision criteria as “rules of thumb”. Such rules of thumb are the absolute gain and loss of a lottery, the expected value of a lottery, and the difference between the expected value and the certain value of the lottery. In this study we analyse whether and how the individual decisions made by the candidates in the TV Show 'Who Wants To Be A Millionaire' can be explained by those criteria.

At a first glance, our results provide evidence that the decisions taken by male candidates depend on a rational calculus, while the decisions of the female candidates seem to be made “by chance”. Controlling for the size of stakes, the results differ significantly from the first estimation. Splitting the sample at the median payoff, we cannot find any significant differences between women and men below that threshold level. However, man and women differ significantly if we solely consider the subsample above the threshold level. The results are robust controlling for socio-economic variables like age, profession, status and location. Thus, our study suggests that gender differences occur if the risk associated with choice is relatively high.

The remainder of the paper is structured as follows: In section 2 we describe the rules of the game as a natural experiment. After introducing decision criteria and the estimation equations in section 3 the results are provided in section 4. We conclude with summarising the results and offer some implications.

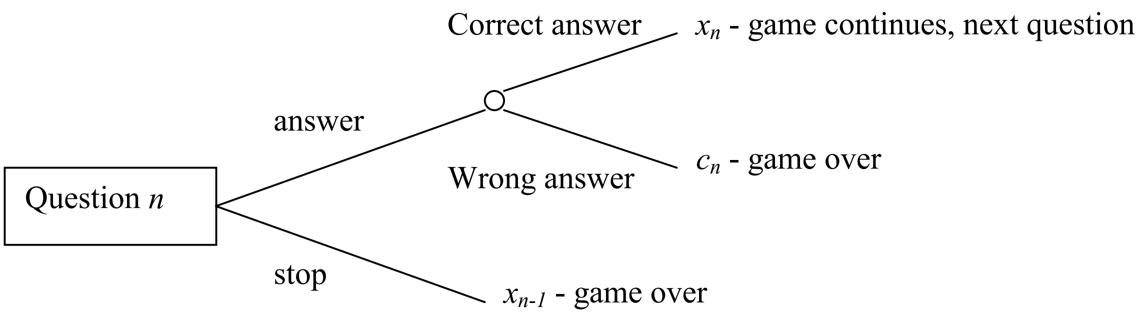
II. The Rules of the Game

In the following we describe the game and transfer it into a decision theoretic notation. The winner of an initial contest of ten candidates is entitled to answer up to fifteen general knowledge questions, $n = 1,...,15$. There are always four possible answers for each question. If the candidate answers the question correct - or takes the right answer - he receives an amount of money expressed by x_n, with the subscribed n denoting the n’th question. This amount of money increases from the first question with 100 DM (about 50 US Dollar or Euro) up to 1 Million DM (about 500.000 US Dollar or Euro). This is shown by the first two columns in Table 1.

If the candidate can give the correct answer to a question, he has the chance to answer the question. Following the decision-tree as described in figure 1, the candidate now has to decide whether he likes to answers the question and thus continue the game or to stop and quit it voluntarily. If the candidate decides to stop and quits the game voluntarily, she or he receives the money earned with the previous question.

Otherwise, there are two possible outcomes: Answering correctly and receiving the amount of the current question, x_n plus the chance to continue the game with the next question. Answering incorrectly leads only to the lower value of the category, c_n. This value is zero for the first category ($n = 1,...5$), 1,000 DM for the second ($n = 6,...10$), and 32,000 DM for the third category (see column 3 in table 1). As an example, if the candidate quits voluntarily before answering question number 7, the payoff is 2000 DM (see column 4 in table 1). If the candidate decides to answer question 7, he has a chance to answer this question correctly and the game starts with this next decision problem. If the candidate fails, she or he receives only 1,000 DM.

Figure 1: Simple illustration of the Game "Who wants to be a Millionaire"



As long as a player knows the correct answer exactly, the situation could be described as a risk less quiz instead a lottery. If we assume that the candidate reaches one point in the game, where she or he is unsure of the right answer and indifferent which of the four answers is correct. Now, the situation can be described as a decision under uncertainty. The candidate can choose between a certain value x_{n-1} (column 4 in table 1) and a two outcome-lottery l^n. The payoff of this lottery can be expressed by x_n with the probability p for a correct answer and the lower value c_n in the case of failure with probability (1-p). This leads to

$l^n = [x_n, p, c_n]$. For simplicity we assume that the probability p equals 0.25 if the candidate is indifferent between the four answers given to him or her. Also the real probability for one question may be higher than 0.25, it could be assumed that is the same for women and men. The player in round n has to decide whether he takes the lottery l^n or the certain value x_{n-1}. This decision problem can be expressed by

$$(1) \qquad l^n = [x_n, p, c_n] \overset{\prec}{\underset{\succ}{\sim}} x_{n-1},$$

whereas all values for the n situations are given in table 1 (columns 1 to 4).

We now introduce five decision criterions as rational rules of thumb for the choice between a lottery and a certain value. They are based both on plausibility considerations and in a broader sense implied by theory. The first two criterions – the absolute gain and loss associated with a decision - are based on Kahnemann and Tversky (1979). They state that absolute losses have a deeper impact in decisions under uncertainty than potential gains. If this holds, candidates are more likely to take the absolute loss associated with the decision problem as the relevant decision criterion compared to the absolute gain of the lottery. We compute the absolute gain as the difference between the possible payoff for a correct answer, x_n, and the certain payoff x_{n-1} up to this question:

(2a) $Gain = x_n - x_{n-1}$ (see column 2a in table 1).

The absolute loss of the lottery is calculated as the difference between the certain payoff x_{n-1} resulting from a voluntary end of the game and the payoff of the lower category c_n from answering the question n wrong:

(2b) $Loss = x_{n-1} - c_n$ (see column 2b in table 1).

In contrast to the absolute gain and loss of the lottery, the following two decision criteria are based on expectation values. As implied by utility theory, we consider the amount of the expectation value of the lottery of question *n*, calculated as:

(2c) $\textit{Expectation value} = (0.25\ x_n + 0.75\, c_n)$ (see column 2c in table 1).

This criterion implies that candidates are focussed on the average payoff of the lottery of question *n*. However, candidates may also consider the difference between the expectation value and quitting the game voluntarily. This is considered by the fourth decision criterion. We construct this criterion in analogy to the certainty equivalent, i.e. the difference between the *expectation value* of the lottery and the *certain value*:

(2d) $\textit{Difference} = (0.25\ x_n + 0.75\, c_n) - x_{n-1}$, (see column 2d in table 1).

Up to now, we assumed that candidates only consider the possible outcome of the next question. However, candidates also take into account that they might win the Million. Thus, leaving the game voluntarily is associated with the loss of loosing the chance winning the Million. In addition, candidates can choose to drop out at each later stage.

We now proceed to calculate the expected utility of taking the risk at earlier stages. As the certain value from each question also increases from question to question, concretely it doubles, this potential gain is also regarded in this criterion. Considering the possibility to continue when choosing the lottery, the candidate has the opportunity to win higher amounts of money, expressed by (2e):

$$(2e)\quad \begin{aligned} Exp\_new &= E[(x_n + E\left(l^n\right), 0.25, c_n)] \\ &= \sum_{i=n}^{15} 0.25^{i-n+1} x_i + 0.75 \sum_{i=n}^{15} 0.25^{i-n} c_i \end{aligned}$$

From our empirical analysis we expect that the *absolute gain*, the *expected value* and the *modified expected value* associated with the next question as well as the *difference* between the two questions will increase the conditional probability to continue the game and to select the lottery. For those decision criteria we thus expect negative signs. In contrast, we expect a positive sign for the *absolute loss*, assuming it increases the probability to quit the game voluntarily.

III. Database and Descriptive Statistics of the Game

We analyse the decision making of 249 persons in the gambling show "Who wants to be a Millionaire" broadcasted from January 2000 until March 2001 in Germany. The study contains individual playing characteristics for 105 women and 144 men.[4] We collected this database via searches on the web.

Question 11 is the median question and consequently the median payoff is 32,000 DM, both, for men and women. This question also acts as a benchmark, since candidates can choose the next question without the risk of loosing the whole money. This value is thus determined by the rules of the game (see column 3b in table 1). Also, this question may be used as an individual benchmark or focal point by the candidates, since it is well known by the audience that most of the candidates reach up to this point. If the candidate quits before this question, either voluntarily or not, he or she may be ridiculed by the family, friends, neighbours, or colleagues.

In the following, we take this benchmark to divide our database into two sub samples. The first sample (question number 7 to 10) serves as a proxy for a "small-stake" lottery, although their payoffs may exceed the monthly income of the player. The second sample (question number 12 to 14) represents the large stake lottery. Furthermore, we also skipped the 6th. question where the expected loss is also zero. This ensures a kind of monotony for all decision criteria (see table 1).

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[4] Since the show definitely ends after the 15th. question, we dropped the two candidates who received the Million - one man and one woman.

Tables 2.1 – 2.3. show the descriptive statistics. Table 2.1 predicts that the mean payoff for men exceeds the one for women in the whole sample by about 16% and also the standard deviations as a measurement of risk differs among both groups (see table 2.1-3). Interestingly, this difference in the standard deviations is the lowest in the “large stake”-lottery (see table 2.3) and highest in the “low-stake”-lottery (see table 2.2). Furthermore, male candidates choose – on average - the certain value more often than female players (see table 2.1). Based on this findings, we cannot conclude that men are less risk avers then women.

IV. Measurement and Empirical Results

In the following empirical analysis we take only the last question given to a candidate into account. In this case, the candidate does not know the correct answer and enters a lottery as described above: Either the candidate chooses the certain amount of money and quits the game voluntarily or she or he fails. In this stage of the game, we assume that the candidate chooses the answer randomly with $p = 0.25$. Though, there is a real lottery as the alternative to a certain value. The candidate either quits the game voluntarily and takes x_{n-1} or enters the lottery and receives the amount c_n with probability p=0.75 and x_n with probability p=0.25.

However, a gimmick of the show is the usage of lifelines. Candidates can choose between three different lifelines to improve or support their decisions. The usage of lifelines may lead to an updating of the prior beliefs and thus increase the probability of a correct answer to a value p>0.25. Unfortunately, we have no detailed information whether or not candidates used one of the lifelines in the last question. Our results are only biased in this way if women and men differ in their usage of lifelines.

Since the questions get increasingly more difficult as the game processes, it could be reasonable to expect that the probability of a correct answer decreases with each question, approximately to p=0.25. If candidates differ in their knowledge and skills, we assume that this approximation is given for each stage of the game when the candidate reaches her or his final question. For candidates with higher knowledge and skills this may occur in a later stage of the game et vice versa.[5] Nevertheless, we control for knowledge and skills by including socio-economic variables.

We construct the dichotomous endogenous variable *y* reflecting the way the game ends. It takes the value *1* if the candidate closes the game by choosing the 'certain value', x_{n-1}, and zero when he or she decides to answer and enters the lottery.

In a first step, we only examine the influence of gender on the underlying decision. Following studies like Bajtelsmit (1999) or Donkers et al. (2001) we include background information on individual candidate characteristics. Although we do not suppose that these variables influence the choice of the underlying decision criterions, they may have an impact on the decision for the certain value and thus influence the conditional probability for y=1.

We include the age (AGE) of a candidate as a proxy for the accumulation of income as a "physical capital stock" or "stock of human capital". Also candidates with a low actual income, like students or unemployed candidates (LOW INCOME) may be more reluctant to take the certain value. Furthermore, the kind of employment may have an impact on the underlying decision. Self-employed (SELF-EMPLOYED) candidates may be less risk-averse than employees (EMPLOYEE) – which act as the control group to avoid perfect multicollinearity , while civil servants (CIVIL SERVANT) are often described as rather risk-averse. We also include a dummy variable which takes the value one for towns with more then 500,000 people (CITY).

A further assumption is that gender differences in the decision making process are neither influenced by knowledge nor experience. Specifically, we introduced a dummy variable indicating whether the candidate received an academic degree (diploma, master, doctor, or professor) or not (ACADEMIC). This information is derived by the kind of job he fulfils and the information about academic degrees. However, the expected signs of both variables are ambivalent. On the one hand, academic candidates could have a higher degree of human capital and 'might know they really do not know the correct answer' and are reluctant to take the certain value. Otherwise, they may be more over confidential about their skills and abilities and choose the lottery (see Hvide 2002, p.19). Finally, since the broadcast space is

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[5] However, also a genius may fail in an early stage of the game when she or he has to find an answer for Brittney Spears recent boy friend. In this case, p=0.25 is a good approximation for the lottery also in an earlier stage of the game.

limited to 60 minutes, the candidates at the end of every show have the opportunity to take a longer break and thus may have more time to reflect their future decisions, i.e. whether to continue the game or quit voluntarily in the next round. To control for this effect, we included an additional dummy variable indicating the break between episodes (EPISODE BREAK).

Table 2.4 reflects the differences in the control variables, divided for each subgroup - the lower and upper category (the candidates leaving the game at question six and seven are excluded from the regressions).

The first empirical estimation is based on the following equation. Here we assume a random term with a binomial distribution with mean zero and variance $P_i(1-P_i)/m_i$ with P_i as the true proportions of the i's independent variables with m_i observations:

$$prob(y=1)=\alpha_t+\beta_1(male)+\sum_{j\geq 2}\beta_{jt}X_{ijt}(age, profession, low\ income, citysize, academic)+\varepsilon_{ijt} \quad (3)$$

In the second step we include the decision criteria stepwise as interaction variables with the gender dummy into the probit estimations. Again, we use the above cited control variables.

$$prob(y=1)=\alpha_t+\beta_1(male)*(decision\ criterion)+\beta_2(1-male)*(decision\ criterion)+\sum_{j\geq 3}\beta_{jt}X_{ijt}(age, profession, low\ income, citysize, academic)+\varepsilon_{ijt} \quad (4)$$

The coefficients of these interaction variables are then compared by means of Wald-tests to reveal potential gender-specific impact of a decision criterion. The estimations are carried out for the whole sample (table 3.1) and for the two sub samples (table 3.2 and 3.3).

The first regression (column 2 in table 3.1) predicts that the conditional probability to quit the game voluntarily is significant influenced by the gender dummy. It indicates that the certain value is more likely to be chosen by men then by women. This, however, would contradict the view that women are more risk-averse then men. If the decision criterions are included, the gender effect remains significant indicating that the decisions made by the male candidates could be explained by those exogenous variables. However, only two variables, the potential loss and the difference between both questions show their expected signs. However, both the gain and the expected value are highly correlated. The gender differences could also be stated by the Wald-Statistics. The control variables show no significant influence. So far, the results provide evidence that women and men differ in the evaluation of their decisions.

In the next step, we ran the regression separately for each sample (see table 3.2). Now, in contrast to the overall sample, the results for the small sample differ significantly. First of all, there is no significant effect caused by the gender-dummy. This result remains robust through all estimations. Second, all decision criterion seem to have a highly significant impact on the zero-one choice of the lottery. This may indicate that the decision between the lottery and the certain value is based on a rational basis instead of a choice by chance. Also the Wald-Statistics reflects no difference between the coefficient of female and male candidates. The sign of the coefficients remain the same as in the previous regression for the whole sample (table 3.1). and also the control variables remain insignificant.

Interestingly, the results from the second sub sample (question n = 12,13,14) are completely different. Like in the first equation (column 2 in table 3.1), the gender dummy is significant. Also, the significant effect of most the decision criterions diminishes. This may indicate that now the decisions seem more to be influenced by chance then by a rational basis based on the included variables. Thus the candidates may use this chance to gamble for larger prices either to finance indivisible expenditures (as proposed by Ng 1975) or to move them into a higher social class.

In all regressions, the coefficient signs differ between female and male candidates. This can be stated by the Wald-Statistics. While the coefficient signs do not differ from the other regressions for the male candidates between “small” and “large” stake lotteries, the opposite holds for the female players. We interpret this results that men tend to base their decisions on basic rules of thumb, while women just gamble.

Finally, the results provide evidence that people with lower income and wealth are more reluctant to choose the certain value. This finding is in line with implications derived from the utility theory. It thus contradicts the assumption made by Sadler (2000), that larger prices could help people escaping the poverty trap. Although only significant on the 15%-level, civil servants seem to prefer the certain value in large stake lotteries. Compared to the other estimations, academic candidates are more likely to take the lottery instead of the certain value. This finding, however only significant at a 15%-level, could be explained by overconfidence of that subgroup of candidates. Interestingly, but far away from any significant level, the coefficient signs in the group of self-employed differs between small and large stakes. Perhaps, as Robson (1996) proposed, they need the money to improve their “competitive strength”.

V. Concluding Remarks

This paper takes data from a natural experiment, the TV-show 'Who Wants to be a Millionaire?', to analyse gender differences in their individual decision making. The individual decision making is expressed by the usage of decision criteria. Our results show that the individual decisions made by women and men did not differ significantly in low stake lotteries. For large stakes in contrast, we find some evidence that the decisions made by men are more aligned with those decision criteria. The coefficients of the regressions show the expected sign for men and the opposite sign for women.

The results are robust in a broad vary of specifications of the decision criteria. They are also robust controlling for socio-economic variables which might have an influence on the outcome of the game. Only the dummy variable indicating a low income has a significant influence on the decision, but only in large stake lotteries. Although the structure and the rule of the game may be causal for some effects, there seem to be broad evidence that people react different in small and large stake lotteries and that those differences may be gender specific.

One shortcoming of this study is that we cannot control for other effects which may influence the individual decision making like overconfidence. Since millions of people are watching this TV show, candidates may react different on being on TV. If women and men differ in their overconfidence, this may also affect the individual decision process. The results let us presume that in this TV Show, women are more likely to be overconfident than men, as they are more likely to gamble "by chance".

However, the results in this study could not deny the underlying assumptions for a “glass ceiling” phenomenon, especially when promotions are associated with investment decisions of a huge amount of capital. If female managers really act different from their male counterparts in the big business, comparable with large stake lotteries, is not answered yet.

Zusammenfassung:

Wir verwenden Daten der Spielshow "Wer wird Millionär", um der Frage nachzugehen, ob sich Frauen und Männer im Treffen von Entscheidungen unter Unsicherheit und Risiko unterscheiden. Insbesondere untersuchen wir, ob sich Frauen und Männer in der Anwendung von Entscheidungskriterien unterschieden. Dabei zeigen sich geschlechtsspezifische Unterschiede bezüglich der Entscheidung für eine Lotterie oder eine sichere Auszahlung nur für sogenannte "Large Stake" Lotterien, also solche mit sehr hohen Auszahlungen. Die Anwendung von Entscheidungskriterien scheint zudem in kleineren Lotterien ausgeprägter zu sein- unabhängig vom Geschlecht. Zudem zeigt sich ein Vermögenseffekt, wonach Kandidaten mit geringerem Einkommen eher das sichere Ereignis wählen. Die Ergebnisse zeigen sich robust auch nachdem für andere sozio-ökonomische Variablen kontrolliert wird.

Summary

In order to analyse whether women and men differ in their decision making under risk and uncertainty, we use data from the game show 'Who Wants to be a Millionaire?' Especially, we focus on the question whether women and men differ in the use of decision criteria to make their decisions. It turns out that there are gender differences in choosing a lottery or a certain value only for "large-stakes" lotteries. Furthermore, the decision making process differs significantly between "small" and "large" stake lotteries for both women and men. Finally, we find a kind of wealth effect that candidates with lower income are more reluctant to choose the certain value in order of a lottery. The results hold even after controlling for socio-economic variables.

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Table 1: Calculation of the decision criteria

n	x_n	c_n	x_{n-1}	(3a) $(x_n - x_{n-1})$	(3b) $(x_{n-1} - c_n)$	(3c) $(0.25x_n + 0.75c_n)$	(3d) $(0.25x_n + 0.75c_n) - x_{n-1}$
1	100	0	0	100	0	25	25
2	200	0	100	100	100	50	- 50
3	300	0	200	100	200	75	- 125
4	500	0	300	200	300	125	- 175
5	1000	0	500	500	500	250	- 250
6	2000	1000	1000	1000	0	1250	250
7	4000	1000	2000	2000	1000	1750	- 250
8	8000	1000	4000	4000	3000	2750	- 1250
9	16000	1000	8000	8000	7000	4750	- 3250
10	32000	1000	16000	16000	15000	8750	- 7250
11	64000	32000	32000	32000	0	40000	8000
12	125000	32000	64000	64000	32000	55250	- 8750
13	250000	32000	125000	125000	93000	86500	- 38500
14	500000	32000	250000	250000	218000	149000	- 101000
15	1 Mio.	32000	500000	500000	468000	274000	- 226000

Table 2.1: Descriptive Statistics for all questions

Variable	Women			Men		
	Mean	Median	Std.dev	Mean	Median	Std.dev
"Last Question"	10.9	11	1.92	10.8	11	2.08
"Payoff"	42704.8	32000	46720.92	49549.3	32.000	54088.5
"Voluntary Quit"	0.41	-	0.495	0.510	-	0.500

Table 2.2: Descriptive Statistics for questions n = 7,8,9,10

Variable	Women			Men		
	Mean	Median	Std.dev	Mean	Median	Std.dev
"Payoff"	7176.47	1000	4793.31	7447.37	4500	7709.94
"Voluntary Quit"	0.441	0	0.504	0.500	0.500	0.507

Table 2.3: Descriptive Statistics for questions n = 12,13,14

Variable	Women			Men		
	Mean	Median	Std.dev	Mean	Median	Std.dev
"Payoff"	82000	64000	53868.79	88553.85	64000	58009.9
"Voluntary Quit"	0.70	-	0.464	0.815	-	0.391

Table 2.4: Descriptive Statistics of the control variables for the two categories

		Lower category (72 obs.) (53% male)		Upper category (105 obs.) (61% male)	
		Mean	Std. Dev.	Mean	Std. Dev.
Age	female	34.91	10.58	37.25	9.67
	male	34.26	8.25	36.41	7.89
	all	34.57	9.36	36.74	8.57
City	female	0.53	0.51	0.40	0.50
	male	0.50	0.51	0.42	0.49
	all	0.51	0.50	0.41	0.49
Low income	female	0.41	0.50	0.30	0.46
	male	0.16	0.37	0.15	0.36
	all	0.28	0.45	0.21	0.41
Self-employed	female	0.18	0.39	0.13	0.33
	male	0.11	0.31	0.22	0.41
	all	0.14	0.35	0.18	0.39
Civil Servant	female	0.15	0.36	0.28	0.45
	male	0.21	0.41	0.25	0.43
	all	0.18	0.39	0.26	0.44
Episode break	female	0.29	0.46	0.60	0.50
	male	0.18	0.39	0.45	0.50
	all	0.24	0.43	0.50	0.50
Academic	female	0.32	0.47	0.33	0.47
	male	0.37	0.49	0.46	0.49
	all	0.35	0.48	0.41	0.49

Table 3.1: Probit estimations for all questions except of number 6 and 11, 179 observations

Variable	(1)	(2a)	(2b)	(2c)	(2d)	(2e)
Constant	0.220 (0.4253)	0.119 (0.2354)	0.1404 (0.2788)	0.1182 (0.2321)	0.1812 (0.3624)	0.064 (0.1244)
Gain*Male		1.33*** (4.4117)				
Gain*Female		0.304 (1.5646)				
Loss*Male			1.71*** (0.2788)			
Loss*Female			2.47 (1.1053)			
Expectation Value*Male				1.90*** (4.7969)		
Expectation value*Female				0.608** (1.9840)		
Difference*Male					-3.73*** (-3.5962)	
Difference*Female					-0.349 (-0.7483)	
Exp_new*Male						1.26*** (4.9913)
Exp_new*Female						0.488** (2.3398)
Male	0.479** (2.2979)					
Episode break	0.346* (1.6658)	0.116 (0.5235)	0.166 (0.7618)	0.070 (0.3114)	0.203 (0.9437)	0.050 (0.2173)
Age	-0.005 (-0.4120)	-0.007 (-0.5244)	-0.006 (-0.4370)	-0.008 (-0.6134)	-0.005 (-0.3887)	-0.009 (-0.6607)
City	-0.283 (-1.4098)	-0.196 (-0.9325)	-0.213 (-1.0195)	-0.184 (-0.8701)	-0.228 (-1.0976)	-0.186 (-0.8759)
Academic	-0.219 (-0.9945)	-0.253 (-1.0888)	-0.235 (-1.0160)	-0.276 (-1.1835)	-0.222 (-0.9677)	-0.280 (-1.1937)
Self-employed	-0.005 (-0.0158)	-0.118 (-0.3435)	-0.105 (-0.3102)	-0.120 (-0.3499)	-0.093 (-0.2754)	-0.122 (-0.3521)
Civil Servant	0.325 (1.1742)	0.394 (1.3636)	0.407 (1.4193)	0.377 (1.2987)	0.412 (1.4425)	0.380 (1.3030)
Low income	0.374 (1.3497)	0.467 (1.6286)	0.460 (1.6138)	0.461 (1.6033)	0.441 (1.5552)	0.469 (1.6174)
Wald-St. (χ^2 , dof)		(11.694)***	(11.760)***	(10.290)***	(10.632)	(9.399)***
Mc-Fadden R-sq.:	0.0569	0.1468	-100.858	0.1584	0.1164	0.1668
loglikelihood	-109.506	-99.0674	0.1313	-97.717	-102.596	-96.739

Notes: coefficient with z-values in parenthesis. All regressions were estimated with the Huber/White standard errors and covariances. *, **, *** coefficient is significant at the 10, 5, 1 percent level. Wald-Test includes (χ^2 -value). The decision criteria are multiplied by 100.000 in the table.

Table 3.2: Probit estimations for the first interval (*n* = 7,8,9,10), 72 observations

Variable	(1)	(2a)	(2b)	(2c)	(2d)	(2e)
Constant	0.745 (0.8944)	0.067 (0.0767)	0.205 (0.2286)	-0.141 (-0.1537)	0.274 (0.3068)	0.205 (0.2299)
Gain*Male		0.0001 (3.4608)***				
Gain*Female		0.0001 (3.2538)***				
Loss*Male			0.0001 (3.4246)***			
Loss*Female			0.001 (3.1940)***			
Expectation Value*Male				0.0003 (3.5033)***		
Expectation Value*Female				0.0002 (3.3281)***		
Difference*Male					-0.0003 (-3.4035)***	
Difference*Female					-0.0002 (-3.1607)***	
Exp_new*Male						0.0001 (3.3148)***
Exp_new*Female						0.0001 (3.1123)***
Male	0.135 (0.3990)					
Episode break	-0.326 (-0.8982)	-0.320 (-0.82003)	-0.322 (-0.8257)	-0.318 (-0.8143)	-0.323 (-0.8289)	-0.328 (-0.8469)
Age	-0.017 (-0.8625)	-0.029 (-1.2963)	-0.029 (-1.2991)	-0.029 (-1.2925)	-0.0292 (-1.3005)	-0.029 (-1.2839)
City	-0.363 (-1.1742)	-0.549 (-1.6156)	-0.550 (-1.6175)	-0.549 (-1.6130)	-0.550 (-1.6185)	-0.529 (-1.5717)
Academic	-0.224 (-0.5993)	-0.272 (-0.6397)	-0.266 (-0.6273)	-0.279 (-0.6545)	-0.263 (-0.6200)	-0.278 (-0.6584)
Self-employed	-0.473 (-0.7641)	-0.631 (-0.9486)	-0.636 (-0.9577)	-0.625 (-0.9377)	-0.639 (-0.9629)	-0.607 (-0.9200)
Civil Servant	0.228 (0.5271)	-0.033 (-0.0726)	-0.034 (-0.0737)	-0.033 (-0.0709)	-0.034 (-0.0743)	-0.006 (-0.0139)
Low income	0.210 (0.4887)	0.064 (0.1350)	0.0545 (0.1146)	0.077 (0.1604)	0.049 (0.1030)	0.061 (0.1304)
Wald-St. (χ^2)		(0.0054)	(0.829)	0.991	0.7899	0.7778
Mc-Fadden R-sq.:	0.0702	0.2261	0.2254	0.2271	0.2249	0.2129
loglikelihood	-46.230	-38.535	-38.5721	-38.4884	-38.593	-39.195

Notes: coefficient with z-values in parenthesis. All regressions were estimated with the Huber/White standard errors and covariances. *, **, *** coefficient is significant at the 10, 5, 1 percent level. Wald-Test includes (χ^2 -value).

Table 3.3: Probit estimations for the second interval (*n* = 12,13,14), 105 observations

Variable	(2)	(3a)	(3b)	(3c)	(3d)	(3e)
Constant	0.409 (0.5000)	0.608 (0.6960)	0.593 (0.6991)	0.674 (0.7252)	0.609 (0.7297)	0.678 (0.7144)
Gain*Male		4.71 (1.2233)				
Gain*Female		-3.51 (-1.2508)				
Loss*Male			6.46 (1.4086)			
Loss*Female			-4.41 (-1.500)			
Expectation Value*Male				6.03 (0.8916)		
Expectation Value*Female				-5.43 (-0.9785)		
Difference*Male					-10.50 (-1.461)	
Difference*Female					10.0* (1.6567)*	
Exp_new*Male						0.366 (0.8000)
Exp_new*Female						-0.343 (-0.8676)
Male	0.793 (2.4640)**					
Episode break	0.118 (0.3765)*	0.0850 (0.2707)	0.066 (0.2115)	0.099 (0.3180)	0.051 (0.1632)	0.104 (0.3302)
Age	-0.004 (-0.1923)	0.0005 (0.0245)	0.001 (0.0507)	-0.0005 (-0.0260)	0.001 (0.0548)	-0.0006 (-0.0280)
City	-0.140 (-0.4230)	-0.111 (-0.3291)	-0.1042 (-0.3080)	-0.120 (-0.3560)	-0.101 (-0.2979)	-0.124 (-0.3704)
Academic	-0.427 (-1.2615)	-0.4904 (-1.4029)	-0.489 (-1.3996)	-0.484 (-1.3905)	-0.4823 (-1.3836)	-0.475 (-1.3683)
Self-employed	0.230 (0.5073)	0.2921 (0.6257)	0.3074 (0.6576)	0.275 (0.5916)	0.316 (0.6779)	0.270 (0.5835)
Civil Servant	0.590 (1.3367)	0.682 (1.5016)	0.692 (1.5227)	0.661 (1.4609)	0.6906 (1.5243)	0.654 (1.4505)
Low income	0.765 (1.6750)*	0.822 (1.7450)*	0.810 (1.7197)*	0.818 (1.7445)*	0.7906 (1.6828)*	0.814 (1.7389)
Wald-St. (χ^2)		(7.219)***	(6.824)***	(7.217)***	(6.329)**	(7.137)***
Mc-Fadden R-sq.:	0.0908	0.1135	0.1135	0.1107	0.1108	0.1074
loglikelihood	-45.499	-44.359	-44.361	-44.503	-44.495	-44.665

Notes: coefficient with z-values in parenthesis. All regressions were estimated with the Huber/White standard errors and covariances. *, **, *** coefficient is significant at the 10, 5, 1 percent level. Wald-Test includes (χ^2 -value). The decision criteria are multiplied by 100.000 in the table.

Verzeichnis der seit Juli 2003 erschienenen Diskussionsbeiträge

325. **Erik E. Lehmann, Susanne Warning**
The Impact of Gender on Individual
Decisions: Evidence from the „Millionaire
Show“, Juli 2003

326. **Nikolaus K. A. Läufer**
Gibt es aus portfoliotheoretischer Sicht
eine Liquiditätsfalle?, August 2003 [erscheint ca. April 2004]