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Decision time and steps of reasoning in a competitive market entry game

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Decision time and steps of reasoning in a competitive market entry game

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Highlights

- I study level-*k* reasoning and time pressure in a market entry game.
- I also examine these effects in combination with two rank assigning processes.
- Subjects using relatively more steps of reasoning show higher entry rates.
- With randomly assigned ranks, risk preferences and reasoning levels are relevant.
- Individual characteristics are less important in less competitive markets.

Abstract

Entry decisions in market entry games usually depend on the belief about how many others are entering the market, the belief about the own rank in a real effort task, and subjects' risk preferences. In this paper I am able to replicate these basic results and examine two further dimensions: (i) the level of strategic sophistication, which has a positive impact on entry decisions, and (ii) the impact of time pressure, which has a (partly) negative influence on entry rates. Furthermore, when ranks are determined using a real effort task, differences in entry rates are explainable by higher competitiveness of males. Additionally, I show that individual characteristics are more important for the entry decision in more competitive environments.

JEL Classification: C72; C91; D81.

Keywords: Market entry game; Time pressure; Level-*k* reasoning; Risk; Competitiveness; Experiment.

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1. Introduction

In a recent paper, Madiès et al. (2013) studied the attitudes of junior and senior employees towards strategic uncertainty and competition in a market entry game inspired by Camerer and Lovallo (1999). Typical for market entry games is the presence of several pure asymmetric Nash and also symmetric and asymmetric mixed equilibria, which make coordination difficult. Laboratory and field experiments have shown that subjects rarely play the equilibrium strategies, although repetition and feedback lead to some learning (Erev and Rapoport, 1998; Ochs, 1998; Duffy and Hopkins, 2005; Erev et al., 2010). There furthermore is evidence of higher entry rates (and overconfidence) when ranking (i.e. the determination of entry order) is done by relative ability instead of a random draw (Camerer and Lovallo, 1999; Madiès et al., 2013).

The market entry game I use is close to those employed by Madiès et al. (2013). They run an experiment with three different market capacities, i.e. c = 2, 4, 6, meaning that 2, 4, or 6 subjects who enter the market win a positive amount while all further entrants lose a certain negative amount of money. Additionally, two rank determining processes are imposed: random assignment of subjects' rank and a performance dependent rank, where subjects' relative ability is measured in a post-game real effort task. The main advantages of this design is that it does not only allow for studying subjects' behavior under strategic uncertainty, but also for analyzing the explanatory power of one's preferences toward uncertainty, the beliefs about competitiveness of others and own relative abilities.

In this paper, I investigate (i) how strategic sophistication is related to an entry decision under uncertainty, and (ii) whether time pressure has an effect on subjects' behavior. The first seems to be a natural step to control for reasoning levels in a rather complex environment. For this reason, I use a recently introduced two-player game by Arad and Rubinstein (2012), called the 11-20 money request game, to measure level-*k* reasoning.[1] The effect of time pressure on economic decision making is addressed in a growing body of literature (see Kocher et al., 2012, for a recent contribution and a brief review of economic literature on the topic). Due to the fact that many important decisions have to be made under severe time pressure, such as last-minute bidding in auctions (Roth and Ockenfels, 2002), bargaining decisions (Sutter et al., 2003), or decisions in financial markets, it is important to understand whether decision behavior changes in stressful and demanding environments.

[1] Lindner and Sutter (2013) study (i) the influence of time pressure on level-*k* reasoning within this game and find behavior (perhaps coincidentally) close to the equilibrium prediction, and (ii) learning in a five-fold repetition of this game, which does not lead to a convergence towards equilibrium play.

2. Experimental design

The design for this experiment is close to that introduced by Madiès et al. (2013) and consists of several parts.[2] In the first part of a session, before they play the market entry game, I elicit subjects' non-strategic risk and uncertainty attitudes (see Fox and Tversky, 1995), by having subjects make two sets of 20 decisions, between an increasing certain payoff and extracting a ball from an urn, each (for details see the online supplement (Appendix)). In the first set the numbers of differently colored balls are common knowledge, which allows measuring attitudes towards risk, as indicated by the switching point from the lottery to the certain payoff. In the latter the mixture is unknown, and the difference between the switching points indicates subjects' attitudes towards uncertainty.

In the market entry game (part 2) each player is initially endowed with 10 points to avoid any net losses from the entry decision. The game is played for two sequences of two periods each, one for both market capacities: $c = 2$ and $c = 6$, i.e. a maximum of 2 (respectively 6) players can make a profit by entering the market. Each sequence uses one of two treatments: ***Random*** and ***Performance***.[3] The differences between the treatments are explained in detail in the paragraph below. Participants were randomly teamed up in groups of 10 at the beginning of each of the four periods. Table 1 shows subjects' payoffs depending on market capacity and subject's rank among the entrants. The top c entrants share 60 points, implying that higher-ranked subjects receive higher payoffs. When a player is ranked below the top c, he/she will lose 10 points upon entering, while non-entering subjects do not earn or lose anything. On the decision screen subjects are informed about the sequence, the market capacity, and the amount they win/lose for each rank. They thus have this information before they decide about entering and stating their beliefs about the number of other entrants in their group.

Table 1 about here

The differences between the *Random* and the *Performance* treatments concern the rank assignment. In the *Random* treatment, subjects' rank is randomly assigned, while in the *Performance* treatment, subjects are ranked according to their relative performance in a real

[2] In particular the market entry game differs in the number of periods (4 instead 18), market capacities (2 instead 3), the feedback subjects receive after each period (none instead of the number of entrants), and the task used to elicit performance. The feedback about all decisions and payoffs participants get is given at the very end of the experiment directly before payment.

[3] The order of the sequences and the order of the market capacity within a sequence were random across subjects.

effort task (part 3) involving correctly positioning sliders on the computer screen (introduced by Gill and Prowse, 2012).[4] In my design, similar to Camerer and Lovallo (1999) and Maldiès et al. (2013), subjects completed the slider task after the market entry game, which leads to a situation where subjects hold an a-priori belief about their subsequent relative performance when making the entry decision. The performance is measured by counting the number of correctly positioned sliders within two minutes.[5] The subject with the highest number is assigned the first rank within the group, the subject with the second highest is assigned the second rank, etc. The point belief elicitation is incentivized with 5 points for a correct guess.

Making use of the forecasted belief about the number of entrants, I determine how players' behavioral adjustment is influenced by their perception of others' competitiveness. The difference in entry decisions between the two treatments provides information about how behavior is influenced by the belief about relative performance. For instance, whenever a player believes his/her relative ability to be better than that of a randomly selected other player, the likelihood of entry should be higher in the *Performance* than in the *Random* treatment (for given capacity and beliefs).

To study the effects of time pressure, the market entry game (part 2) of the experiment is played with two different time constraints: in **INDIV**, subjects face a time limit of 3 minutes in every period, which was designed not to introduce any pressure on the entry decision and belief forecasting.[6] In **TIME**, they are limited to (17 - t) seconds, where t indicates the period. This decrease of time available over periods is designed to compensate for shorter decision-times in later periods observed in treatment INDIV, and guarantees a constantly highly challenging environment.

In part 4 of the experiment, strategic sophistication is measured using a new and straightforward level-k reasoning game named the "11-20 Money Request Game" (Arad and Rubinstein, 2012). This is a two player simultaneous move game where players request between 11 and 20 points, which they receive for sure. Furthermore, a player who requests exactly one point less than the other receives 20 extra points. See Arad and Rubinstein (2012) for an extensive discussion of the notable features of this easily implementable and very suitable game for studying level-k reasoning.

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[4] The code implementing the slider task is based on the code developed by Gill and Prowse (2012), which they kindly provide online.

[5] Subjects played two trial periods to get used to the task before the ability-relevant third period. For more details on the task and instructions see the online supplement (Appendix).

[6] All participants in INDIV were able to finish the decision and belief forecasting within the 3 minutes; median decision time in the first period was 21.5 seconds.

I conducted four sessions with 20 subjects each, for each of the two time constraints (using zTree, Fischbacher, 2007, and ORSEE, Greiner, 2004). This yields 80 subjects per time treatment, for a total of 160 participants. Experiments were conducted at the University of Innsbruck using a standard subject pool with students from all faculties. In the sample, 50% of the participants were female. The average subject earned 13.25 Euros.

3. Results

In TIME, 67 out of the 80 participants succeeded in making a decision within the time constraint. The others did not receive any payment for the market entry game and are excluded from all analysis. Descriptive statistics on subjects' decisions, beliefs, and performance in the real effort task in both time constraint treatments are shown in Table 1. Statistical tests show no significant differences between the two environments (INDIV; TIME). Figure 1 presents mean entry decisions by market capacity, time constraint, and treatment. In line with the findings of Madiès et al. (2013), mean entry rates are always between the market capacity and the equilibrium for risk-neutral individuals.[7] Figure 2 splits the results from Figure 1 by gender. With a market capacity of $c = 2$, I find a clear gender effect: females enter the more competitive markets less often than male subjects do. Interestingly, this effect vanishes under time pressure in the *Random* treatment, where own performance has no effect on rank determination.

Table 2, Figure 1, and Figure 2 about here

In order to implement a test of entry decisions and to understand how they are affected by individual characteristics, Table 3 presents the results of individual random effects probit regressions for both time constraints and treatments with a market capacity of 2. In the first two Models, one can see that more players enter the market in the performance treatment, females enter less frequently than males, and beliefs are a significant driver of decisions. Additionally, without time pressure (Model 1) a higher degree of risk aversion leads to lower entry rates, while subjects which are classified as more sophisticated (more steps of reasoning) enter the market more often.

[7] The risk-neutral equilibrium is $c + 5$ or $c + 6$ for $c = 2$, with the $c+6^{th}$ player being indifferent because his/her expected payoff from entering is zero. For $c = 6$, all players should enter the market ceteris paribus. For a more detailed discussion see Madiès et al. (2013).

Result 1: *Without time pressure, the likelihood of subjects entering the market is higher the more steps of reasoning they reach. Entering the market is rational in terms of the equilibrium prediction for risk-neutral individuals. This effect is not observed in an environment with tight time constraints.*

The models for the *Random* and *Performance* treatments (Models 3 and 4, respectively) show, as mentioned above, that males and females enter the market with the same frequency in the *Random* treatment, and that entry is driven by subjects' attitudes toward risk, their reasoning steps, and time pressure.[8] In Model 4 gender is the main factor explaining the result.

Result 2: *The within-treatment entry rate differences in the Performance treatment are due to a strong gender effect, whereas in treatment Random risk preferences and time pressure have a negative, and the level of sophistication has a positive effect on higher entry rates.*

Table 3 about here

Table 4 reports the same items as Table 3, but for a higher market capacity (c = 6). Remember that with this capacity all subjects should enter irrespective of others' behavior.

Result 3: *The entry rate is higher with higher market capacity and the main explanatory variable for this is one's belief regarding the number of entrants, regardless of gender and time constraints.*

Table 4 about here

4. Conclusion

In this paper I provide insights regarding subjects' motives to enter competitive markets, extending the findings of Madiès et al. (2013). Specifically, I add two important new explanatory dimensions: (i) the level of strategic sophistication, and (ii) the impact of time pressure. Subjects enter the market more often if they are classified as higher reasoning types in a setting where decision time is not binding, which can also be seen as more reasonable (or

[8] A post estimation Wald test shows no gender differences (*Female* + *Performance* X *Female* = 0, p = 0.153).

slower) decision making, as described by Rubinstein (2007). However, this finding does not hold in situations where time is scarce and decisions are taken in a more intuitive manner.[9] Furthermore, risk preferences, time pressure and the level of reasoning have a significant impact on entry rates when ranks are determined randomly, whereas in ability-dependent assignment conditions, differences are due to higher competitiveness of males. Lastly, I show that individual characteristics are more important for the entry decision in more competitive environments.

[9] For a discussion of fast and slow decision making in a different setting see Lindner and Sutter (2013).

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Table 1: Payoff matrix in the market entry game (in points)

Rank among the entrants	Market capacity c = 2	c = 6
1	38	18
2	22	14
3	-10	10
4	-10	8
5	-10	6
6	-10	4
7	-10	-10
8	-10	-10
9	-10	-10
10	-10	-10

Table 2: Descriptive statistics

	INDIV	TIME	*p*-values
Entry rate in the 4 periods (%)	58.44 (49.36)	60.45 (48.99)	0.621
Entry rate in the random treatment (%)	53.75 (50.02)	59.70 (49.23)	0.306
Entry rate in the performance treatment (%)	63.13 (48.40)	61.19 (48.91)	0.734
Predicted number of entrants in excess of capacity	1.65 (1.16)	1.77 (1.18)	0.145
Effort in the slider task	15.31 (8.25)	16.10 (5.95)	0.708
Belief of one's rank (out of 10) before effort task	4.15 (1.87)	3.90 (1.51)	0.546
Belief of one's rank (out of 10) after effort task	4.54 (2.37)	4.39 (1.85)	0.962

Standard deviations are in parentheses, and *p*-values are from MW-U tests.

Table 3: Determinants of the entry decision when the market capacity is 2

Dependent variable: decision to enter capacity = 2	(1) INDIV	(2) TIME	(3) RANDOM	(4) PERFORM
Performance treatment	0.681***	0.941**		
	(0.237)	(0.388)		
Female	-0.178	0.519	0.00494	-0.693**
	(0.327)	(0.371)	(0.349)	(0.316)
Performance X Female	-0.693*	-1.272**		
	(0.368)	(0.502)		
Risk preference	-0.103*	-0.0388	-0.139***	-0.0392
	(0.0526)	(0.0526)	(0.0459)	(0.0447)
Ambiguity aversion	0.0176	-0.00905	0.0174	0.0264
	(0.0516)	(0.0652)	(0.0490)	(0.0510)
Belief about # of entrants in excess of capacity	0.150**	0.203**	0.235***	0.179**
	(0.0753)	(0.0808)	(0.0777)	(0.0742)
Belief rank	-0.297***	-0.335***	-0.410***	-0.252***
	(0.101)	(0.107)	(0.101)	(0.0837)
Level-*k*	0.243**	-0.0444	0.192**	-0.0208
	(0.104)	(0.0805)	(0.0835)	(0.0796)
Time pressure			-0.592*	0.0116
			(0.348)	(0.311)
Time pressure X Female			0.545	-0.0980
			(0.493)	(0.455)
Constant	1.212*	0.827	2.000***	1.468**
	(0.723)	(0.771)	(0.641)	(0.685)
# of observations	160	134	147	147
R^2	0.2572	0.1818	0.2424	0.1896
Prob > χ^2	0.0000	0.0102	0.0001	0.0005

Individual random effects probit regressions of the entry decision, with robust standard errors (in parentheses), clustered at the individual level. ***, ** and * represent significance at the 1, 5 and 10 percent levels, respectively.

Table 4: Determinants of the entry decision when the market capacity is 6

Dependent variable: decision to enter capacity = 6	(1) INDIV	(2) TIME	(3) RANDOM	(4) PERFORM
Performance treatment	0.292	-0.596		
	-0.354	-0.464		
Female	0.332	0.294	0.281	0.243
	-0.322	-0.489	-0.391	-0.449
Performance X Female	-0.0952	0.224		
	-0.499	-0.574		
Risk preference	-0.0503	0.0229	-0.00548	-0.0498
	-0.0564	-0.0751	-0.0488	-0.0658
Ambiguity aversion	-0.027	-0.0527	-0.0389	-0.0175
	-0.0498	-0.0988	-0.0564	-0.0533
Belief about # of entrants in excess of capacity	0.516***	0.841***	0.689***	0.530***
	-0.107	-0.138	-0.143	-0.0957
Belief rank	-0.0199	0.0739	0.021	-0.0285
	-0.0799	-0.125	-0.0844	-0.0912
Level-*k*	0.0586	0.165	0.158	0.0735
	-0.112	-0.12	-0.0968	-0.106
Time pressure			0.311	-0.36
			-0.446	-0.427
Time pressure X Female			-0.0493	0.101
			-0.572	-0.591
Constant	0.621	-0.737	-0.359	0.915
	-0.863	-1.216	-0.889	-0.891
# of observations	160	134	147	147
R^2	0.2965	0.4669	0.3725	0.3482
Prob > χ^2	0.0003	0.0000	0.0000	0.0000

Individual random effects probit regressions of the entry decision, with robust standard errors (in parentheses), clustered at the individual level. ***, ** and * represent significance at the 1, 5 and 10 percent levels, respectively.

Figure 1: Market entry rates in percent by capacity, time constraint, and treatment

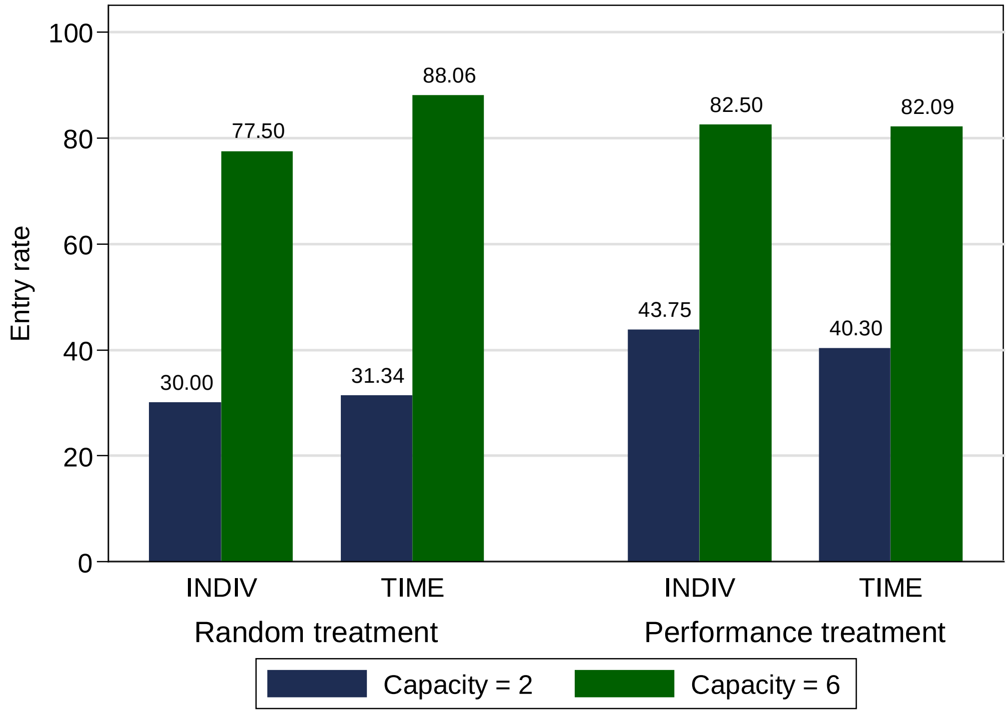
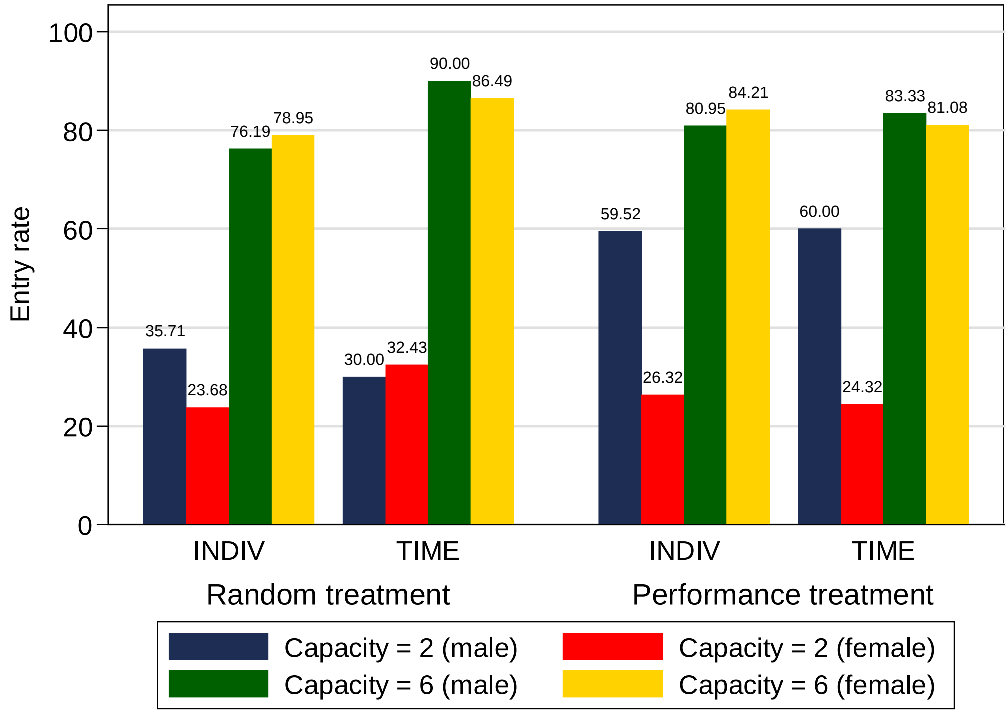


Figure 2: Market entry rates in percent by capacity, gender, time constraint, and treatment



ONLINE-SUPPLEMENT

accompanying

Decision time and steps of reasoning in a competitive market entry game

Florian Lindner

In this supplementary material, I provide the full instructions from the experiment.

Instructions Treatment INDIV:[1,2]

Welcome to an experiment on decision making. We thank you for your participation! The experiment will be conducted on the computer. All decisions and answers will remain confidential and anonymous. Please do not talk to each other during the experiment. If you have any questions, please raise your hand and we will come by and answer it. During the experiment, you and the other participants will be asked to make a series of decisions. Your payment will be determined by your decisions as well as the decisions of the other participants according to the following rules. During the experiment you will be earning points. At the end of the experiment, points will converted to Euros at a rate of 5 points = 1 Euro. Today's experiment consists of several parts. The instructions for the first part are given below.

Part 1

Part 1 consists in two sub-parts:

- *Description of the 1st sub-part*

Imagine an urn that contains 10 balls, **5 yellow balls and 5 blue balls**. You must make 20 successive choices between extracting a ball from this urn with replacement (for each decision, there are always the same 10 balls in the urn) or earning a certain amount of money. Additionally you have to decide which color of the ball will be your winner color.

If you extract a ball from the urn with your chosen color, you earn 25 points; if you extract a ball from the urn with the other color, you earn 0 points.

As an alternative to extract a ball from the urn, we propose you **20 certain amounts possible, from 1.25 to 25 points**; the certain amount increases by 1.25 points at each new decision.

[1] The only difference between Treatment INDIV and Treatment TIME was that subjects had 180 seconds to enter their decision in INDIV and (17 - *t*) seconds in TIME.

[2] The instructions are close to those used by Madiès et al. (2013).

You must indicate on your computer screen for each decision if you prefer receiving the certain amount or extracting a ball from the urn.

The following table will appear on your screen:

	This urn contains 10 balls, 5 yellow balls and 5 blue balls.	
	I want to choose the color: blue O O yellow	
1	O I choose the certain amount of 1.25 points.	O I choose to extract a ball.
2	O I choose the certain amount of 2.50 points.	O I choose to extract a ball.
3	O I choose the certain amount of 3.75 points.	O I choose to extract a ball.
4	O I choose the certain amount of 5.00 points.	O I choose to extract a ball.
5	O I choose the certain amount of 6.25 points.	O I choose to extract a ball.
6	O I choose the certain amount of 7.50 points.	O I choose to extract a ball.
7	O I choose the certain amount of 8.75 points.	O I choose to extract a ball.
8	O I choose the certain amount of 10.00 points.	O I choose to extract a ball.
9	O I choose the certain amount of 11.25 points.	O I choose to extract a ball.
10	O I choose the certain amount of 12.50 points.	O I choose to extract a ball.
11	O I choose the certain amount of 13.75 points.	O I choose to extract a ball.
12	O I choose the certain amount of 15.00 points.	O I choose to extract a ball.
13	O I choose the certain amount of 16.25 points.	O I choose to extract a ball.
14	O I choose the certain amount of 17.50 points.	O I choose to extract a ball.
15	O I choose the certain amount of 18.75 points.	O I choose to extract a ball.
16	O I choose the certain amount of 20.00 points.	O I choose to extract a ball.
17	O I choose the certain amount of 21.25 points.	O I choose to extract a ball.
18	O I choose the certain amount of 22.50 points.	O I choose to extract a ball.
19	O I choose the certain amount of 23.75 points.	O I choose to extract a ball.
20	O I choose the certain amount of 25.00 points.	O I choose to extract a ball.

- *Description of the 2nd sub-part*

This sub-part is similar to the previous one, except that we use a new urn and you do not know its composition.

You must again make 20 decisions between receiving a certain amount or extracting a ball from the new urn. The certain amounts are the same as in the previous sub-part. The new urn also contains 10 balls, yellow balls and blue balls.

However in contrast with the previous sub-part, you do not know the number of yellow balls and blue balls in the urn.

How are payoffs determined in this part?

At the end of the session, the computer program will randomly draw one of your 40 decisions. Each decision has the same chance to be selected. You should therefore give the same attention to each decision.

- If you have chosen the certain amount, we will add this amount to your other earnings in the experiment.
- If you have chosen the random draw, the computer program will extract one ball. If it is the same color you have chosen, 25 points will be added to your other payoffs; if it is the other color, you will earn 0 points.

If you have any question regarding these instructions, please raise your hand and do not speak aloud. We will answer your questions in private.

Part 2 (distributed after Part 1 was completed)

You receive an **initial endowment of 10 points** in this part. This part consists of 4 periods during which you must decide to enter or not a market.

These 4 periods are grouped in two sequences of 2 periods each:

- the **"Random"** sequence,
- the **"Performance"** sequence.

Your computer screen will indicate if you start with the Random sequence or the Performance sequence. The two sequences will succeed automatically. You are informed on your screen of the current sequence.

Description of the Random sequence

1. At the beginning of each of the 4 periods of this sequence, you are grouped with 9 other participants. You do not receive any information about these participants.

2. Then, each group member is informed on the value of a number "C". Imagine that C is the market capacity, i.e. the number of participants who can make profits on this market. For example, if C = 5, then 5 participants who decided to enter the market will be able to make benefits. The other participants who decided to enter will lose 10 points.

3. Then, you have to decide if you enter or not the market.

   - If you decide not to enter, you do not earn anything and you do not lose anything either.
   - If you enter, your payoff depends on the market capacity and your rank among the participants from your group who have decided to enter (the "entrants"). We explain below how your rank is assigned to you.

4. Additionally, we will ask you to estimate the number of the other group members who will enter the market (between 0 and 9, you excluded).

The following table indicates for market capacity C = 5 the payoffs of the entrants (in points) according to their rank.

Rank	1	2	3	4	5	6	7	8	9	10
Points	20	16	12	8	4	-10	-10	-10	-10	-10

For example, suppose you have decided to enter. If you have the first rank among the entrants, you earn 20 points. If you have the second rank among the entrants, you earn 16 points, and so on. If you have the sixth rank and beyond you lose 10 points.

Determination of ranks

In the Random sequence, the ranks of the entrants are randomly determined by the computer program. For example, if there are 6 individuals who decide to enter the market in a period, the program will assign randomly a rank between 1 and 6 to these entrants. If the market capacity is 5 (C = 5) and your randomly determined rank is 6, then you make a loss.

You do not know your rank when making your entry decision.

What does change from one period to the other in this sequence?

- the composition of your group of 10 participants,
- the market capacity, C (i.e. the number of entrants who can make gains on the market),
- the payoffs associated with each rank,
- your rank if you decide to enter the market.

You will get informed in every period of the new market capacity C and the associated table is displayed on the decision screen.

Description of the Performance sequence

This sequence consists also of 2 periods. Each period is similar to the Random sequence except for one thing: **the ranks of the entrants do not depend of a random draw any more.**

The ranks of the entrants depend on their relative performance in a slider task in which you should move sliders with the mouse in a position determine within 120 seconds. Details will be presented to you in Part 3.

For a given period, the computer program will compare at the end of the session the performance in the slider task of each entrant on the market. The entrant who will have the most number of correctly positioned sliders will get the first rank. The entrant who will have the least number of correctly positioned sliders will get the last rank among the entrants. In case of ties, ranks are assigned randomly among the ex-aequo entrants.

Since the slider task is administered in the next part, you do not know your rank when you decide to enter the market or not.

Determination of payoffs in this part

At the end of the session, the computer program will select randomly one period out of 4. Each period has the same chance to be selected for payment. It is therefore important to give the same attention to each of your 4 decisions.

- For this period, the program calculates the number of participants who decided to enter the market in your group of 10 participants. If your prediction of the number of entrants in this period is exact, you earn 5 points.
- If you decided to enter, the program assigns you a rank and compares your rank to the rank of the other entrants in your group. If your rank is lower or equal to the capacity of the market, C, you make a benefit and you earn the amount corresponding to your rank for this capacity. If your rank is higher than the market capacity you lose 10 points.
- If you decided not to enter, you do not earn and you do not lose anything.
- Your total payoff in this part is therefore equal to:
    - 10 points (your initial endowment)
    - + 5 points if your prediction of the number of entrants in the selected period is exact
    - + the points earned or the points lost due your decision to enter the market in the selected period.

At the end of the session, you are informed on your payoffs. If you entered the market, we also inform you about your rank among the entrants. You are also informed on whether, in this period, your rank depended on a random draw or on your relative performance in the slider task.

You have **up to 180 seconds** to enter your choice and click on the OK button of the screen. If you do not do that, you will receive 0 points.

We invite you to read again these instructions and to answer the comprehension questionnaire that has been distributed. If you have any question, please raise your hand and we will answer your questions privately.

Part 3 (distributed after Part 2 was completed)

This part consists of two practice rounds and a round which is used to determine your rank in the Performance sequence for the previous part. Here your task is to move as many sliders as possible within 120 seconds correctly. On this screen you will see 48 sliders; at the beginning of the period all are at 0 and can be moved to 100. The current position of the slider is displayed next to them. Your performance in this task depends on how many sliders you can precisely position within the 120 seconds at 50. For this you can use the mouse and may adjust the slider as often as you like.

If you have any question, please raise your hands and we will answer your questions in private.

Part 4 (distributed after Part 3 was completed)

You and another player (who will be assigned randomly by the computer) are playing a game in which each player requests a number of points. The amount must be (an integer) between 11 and 20 points. Each player will receive the amount he (or she) requests. A player will receive an additional amount of 20 points if he asks for exactly one point less than the other player.

You have up to 180 seconds to enter your choice and click on the OK button of the screen. If you do not do that, you will receive 0 points.

If you have any questions (during the experiment), raise your hand. We will come to your place and answer the question for you (personally).

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Florian Lindner

Decision time and steps of reasoning in a competitive market entry game

Abstract
Entry decisions in market entry games usually depend on the belief about how many others are entering the market, the belief about the own rank in a real effort task, and subjects' risk preferences. In this paper I am able to replicate these basic results and examine two further dimensions: (i) the level of strategic sophistication, which has a positive impact on entry decisions, and (ii) the impact of time pressure, which has a (partly) negative influence on entry rates. Furthermore, when ranks are determined using a real effort task, differences in entry rates are explainable by higher competitiveness of males. Additionally, I show that individual characteristics are more important for the entry decision in more competitive environments.

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