# ON THE ABSORBABILITY OF HERD BEHAVIOUR AND INFORMATIONAL CASCADES: AN EXPERIMENTAL ANALYSIS

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# ON THE ABSORBABILITY OF HERD BEHAVIOUR AND INFORMATIONAL CASCADES: AN EXPERIMENTAL ANALYSIS

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*Abstract*

*A theory is said to be fully absorbable whenever its own acceptance by all of the individuals belonging to a certain population does not question its predictive validity. This accounts for strategic equilibria and can be related to the logic underlying convergence of behaviour and intentional herding in sequential games. This paper discusses the absorbability of informational cascades' theory by bounded rational decision-makers and analyses whether providing individuals with theoretic information on informational cascades affects overall probability of herding phenomena to occur as well as whether an incorrect cascade can be reversed because of bounded rational adapting of the theory's prescriptive.*

*Keywords:* Theory absorption, Herd behaviour, Informational cascades.
*JEL classification:* C72, C91, D8

## 1 Introduction

The concept of "theory absorption" points at the recursive effects economic theories may have on the system they aim at describing. Although potentially any economic theory can be absorbed for the resolution of a concrete problem (Dacey, 1976), the way a theory gets absorbed may differ from case to case, depending on its formulation, its accessibility, its understanding, and its acceptance by the individuals (Morgenstern, 1972). Adding to that, past experiences and learning may matter as well.

A theory is said to be absorbed by an individual if that individual accepts its logical and prescriptive content and chooses to act according to it. In interactive contexts, theory absorption will also be strongly related to the supposed behaviours of the others. Thus, it can be distinguished among **unilaterally-absorbable theories**, **partially-absorbable theories**, and **fully-absorbable theories**, depending on the number of individuals – from one to all – who follow its prescriptions and are satisfied with the result, so that, *ceteris paribus*, there would not be any reason for the individuals to modify the theory on which to rely, or in other words the theory to absorb (Güth and Kliemt, 2004).

Whereas relying on a neoclassical approach, a strong form of theory absorption should be unquestionable, focussing on the boundaries of individual rationality implies theory absorption to be adapted at least to the individual predictions of the others' behaviour.

Based on an experiment on informational cascades we discuss the requirements of equilibrium theory absorption and test experimentally the effects of informing the players about how to derive the individual optimal decision rule.

In this paper we will try to apply the notion of theory absorption to the analysis of herd behaviour and in particular to the occurrence of informational cascades in an experimental investment task. Providing the subjects with theoretic information on probability assessment could make them aware of fragility and idiosyncrasy of informational cascades and thus affect the probability of (erroneous) cascades to occur.

The paper is organized as follows: after a short review of studies on herding and informational cascades, a simple model provides the theoretical framework for explaining the phenomenon of informational cascades (section 2). The experimental design is presented in section 3, followed by the experimental results (section 4), to which the conclusions inform (section 5).

## 2 Herding and Informational Cascades

Conformity and fluctuations in mass behaviour are frequent features characterising many social and economic situations (see e.g. Welch, 1992; Neeman and Orosel, 1999, Avery and Zemsky, 1998; Welch, 2000; and Kennedy, 2002). Individuals are influenced by the behaviour of the others, as it can be informative to many extends and promote what has been depicted as social learning (see Douglas and Gale, 1996; and Bikhchandani et al., 1998, for surveys). Trying to learn from the others typically induces imitative behaviour, that can be under some circumstances rational even when it implies choosing differently than solely relying on own information. Thus, it can come to situations in which erroneous, inefficient outcomes arise, despite individual rational behaviour.

In the last decade, studies on 'herding' were abundant. Herd behaviour refers to the phenomenon according to which people follow the example of other people ignoring their private information. This kind of behaviour was first pointed out by Becker (1991) and was then developed by Banerjee (1992) and Bikhchandani *et al*. (1992)

Herding models and informational cascades have several attractive features for studying rationality and learning: the rational action is independent by subjects' preference. Additionally, herding model and informational cascades are interactive, have a clear economic interpretation, and are very simple to explain. They represent therefore an excellent framework to tackle our research objective, namely, experimentally testing theory absorption among bounded rational decision makers.

Studying herd behaviour could be useful to explain countless social and economic issues. In the real world people make their decision sequentially. In the process of decision making, subjects will observe the decisions taken by previous subjects, and will surely be influenced by that information. For example, when having to choose between two restaurants, in absence of other information, we will often prefer the one more crowded. This behaviour seems intuitively rational because we assume that someone among the diners knows something about the quality of the restaurant. This kind of logic holds for all subjects. Consequently, if the first few subjects, in absence of other information, decide to queue in front of a restaurant randomly, then all the latter subjects, in absence of other relevant information, will join the queue. This will produce a perverse mechanism: joining the queue will become more likely each time a new subject queues up (Becker, 1991).

The basic idea of herd behaviour is very simple: ignoring private information and joining the queue. The assumption that agents possess rational expectations is usually being used to assert that an agent, although not familiar with the true model, could reach an efficient outcome drawing on all available information including the one acquired observing other people's actions. In a standard decision-making process, we assume that people act sequentially and that the history of the game is common knowledge[1]. Hence, subjects' decisions are influenced both by their private information and by the actions of previous players, not knowing, of course on which information the choices were based upon. People's choices will therefore be correlated even if their personal information and background are different, and mistakes by early decision-makers will influence the choices of latter ones. This will, most probably, result in the delay of the discovery of the 'right' answer and may even prevent it altogether.

Banerjee (1992) and Bikhchandeni *et al* (1992) proposed, respectively, a simple model of herd behaviour and a model of informational cascades. In these models subjects act sequentially and have to detect a 'winning action' $a$ among a set of possible actions. In the first model this set is the interval $[0, 1] \in$

[1] By common knowledge we mean that at time $t$ player $t$ knows all the actions taken by previous players.

R, while in the second one *a* is an element of [0, 1] $\in$ N. Additionally, while Banerjee's model differentiates between two kinds of subjects – informed subjects and un-informed subjects – in the model proposed by Bikhchandeni *et al,* all subjects are informed.

Bikhchandeni *et al* (1992) analysis is devoted to explain not only conformity among agents but also "rapid and short-lived fluctuations such as fads, fashions, booms and crashes". They point out that the conformity of followers in a cascade contains no informational value. In this sense, the cascade is fragile, as it can be upset by the arrival of new public information (note that if superior information does not arrive it is impossible to reverse the cascade), and idiosyncratic, "in that random events combined with the choices of the first few players determine the type of behaviour on which individuals herd" (Bikhchandani and Sharma, 2001).

Fragility of informational cascades was experimentally investigated by Willinger and Ziegelmeyer (1998). The authors develop a model based on Bikhchandani *et al* in which some agents receive more accurate information[2]. They find that this mechanism decreases the occurrence of cascades and breaks off herding.

## *2.1 A Simple Model of Informational Cascades: a Dichotomy Choice Model*

An informational cascade occurs when people prefer to ignore their own piece of information and follow what others are doing. The game involves N players who must decide sequentially between two options: urn B (for black) and urn W (for white). In urn B there are two black balls and one white ball, whereas in urn W there are two white balls and one black ball. One of the two urns is randomly chosen. Player 1 draws a ball, and then guesses the chosen urn. Her payoff is 1 if her guess is correct and 0 otherwise. Player 2 observes player 1's choice, draws a ball from the same urn, and then makes her choice. Player 3 observes both previous players' choice, draws a ball and makes her choice, and so on until player N. Rationality requires player 1 to choose the black (white) urn when she draws a black (white) ball.

Player 2 therefore faces one of the following scenarios:

1. She draws a black ball, after having observed player 1 to choose the black urn;
2. She draws a white ball, after having observed player 1 to choose the black urn;
3. She draws a black ball, after having observed player 1 to choose the white urn;
4. She draws a white ball, after having observed player 1 to choose the white urn;

A rational player 2 should choose the black urn in scenario (1) and the white urn in scenario (4). In scenarios (2) and (3), she should be indifferent between the two urns, and assign equal probability to each of them.

[2] More precisely, those agents who have to decide immediately after the occurrence of a cascade can observe an additional private signal.

Under these assumptions, Bikhchandani, Hirshleifer and Welch calculate the unconditional ex-ante probabilities of "White-cascade", "No-cascade" and "Black-cascade"after two individuals have played: "White-cascade" = $\frac{1-p+p^2}{2}$ ; "No-cascade" = $p-p^2$ (2); "Black-cascade" = $\frac{1-p+p^2}{2}$ ; and after an even number of players $n = 2m$ have played we have: "White-cascade"= $\frac{1-(p-p^2)^m}{2}$ ; "No-cascade" = $(p-p^2)^m$ ; "Black-cascade"= $\frac{1-(p-p^2)^m}{2}$, where $p$ is the probability of observing a correct signal. Note that the bigger $p$ is, the sooner an information cascade can start (figure 2).

Bikhchandani, Hirshleifer and Welch calculate also the probability of ending up in the correct cascade after two players have played, given that the chosen urn is W: "White-cascade" = $\frac{p(p+1)}{2}$ ; "No-cascade" = $p(1-p)$ ; and "Black-cascade" = $\frac{(p-2)(p-1)}{2}$ ; and in the general case (figure 2):

$$\text{"White-cascade"} = \frac{p(p+1)\left[1-(p-p^2)^m\right]}{2(1-p+p^2)} \qquad (1)$$

$$\text{"No-cascade"} = (p-p^2)^m \qquad (2)$$

$$\text{"Black-cascade"} = \frac{(p-2)(p-1)\left[1-(p-p^2)^m\right]}{2(1-p+p^2)} \qquad (3)$$

Equation (1) is the probability of observing a correct cascade. Although this probability increases in $p$ and $m$, even for very informative signals ($p$ close to 1), the probability of a wrong cascade (equation (3)) remains remarkably high.

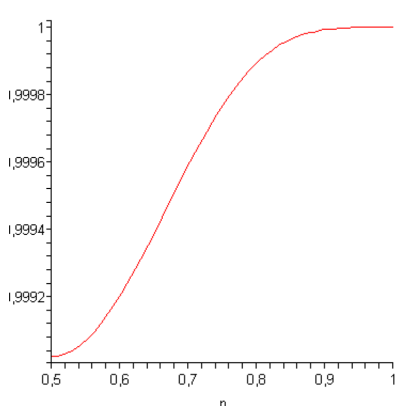


**Figure 1:** Probability of starting a cascade as a function of $p$, the correctness of the signal ($N$ = 10)

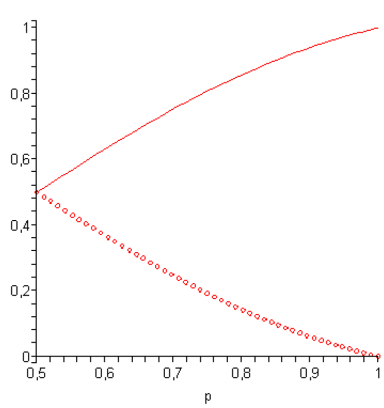


**Figure 2:** Probability of a correct (continuous line) and incorrect cascade (dotted line) as a function of $p$, the correctness of signal ($N$ = 10)

## 3 Experimental Design

To test experimentally this theoretical prediction, we ran two treatments. The control one replicated the design by Bikhchandani *et al*. The 'absorption' treatment the participants received theoretical information about informational cascades. More precisely, the respondents in the absorption treatment were provided with an illustration of how to infer the expected value of adoption and rejection in dependency on the accuracy of the private signal and of how to deduce the individual optimal decision rule.[3] The experimental hypothesis underlying the absorption treatment is that the theoretic information provided can prevent incorrect cascades to occur.

The experiment was programmed using the Z-tree software of Urs Fischbacher (1999) and was run at the laboratory of ESSE at the University of Bari.

Each treatment, lasting for about an hour, was made up of 22 periods, 2 of which were trial ones. The trial periods were necessary for subjects to become friendly with the treatment, allowing them to ask questions about the experiment's instructions (available on request). The final payment was made on only the 20 real periods and paid at the end of each treatment.

In each session we had $N = 10$ subjects, sitting next to a PC terminal connected by a net. The subjects could not see each other or communicate. All of them were undergraduate students in Economics not familiar with previous similar experiments.

Subjects in the experiment were asked to decide whether to invest in a new product or not. In each period, lasting for about two minutes, subjects played sequentially in a randomly determined order. They were informed about their turn via a message on their PC screen. Subjects did not know whether the new product would be profitable or not. There were two equally likely events. If the product was successful ($V = 1$), they would gain 0.5€ in case of investment, and zero otherwise. If the product was not successful ($V = 0$), they would gain 0.5€ in case of non investment (the right decision), and zero otherwise. To exclude losses by participants, we did not consider the cost of adopting as Bikhchandani et al. did. In each period the true value of $V$ was exogenously determined but not revealed to the subjects, who saw only a free-of-charge signal $S$ (a sort of a result of a market survey) that had a probability $p = 0.75$ of being correct.

In every period of the control treatment, subjects were informed about: their own turn to play, all previous guesses, and their own signal. In the 'absorption' treatment, subjects received, in addition to such information, a decisional aid. This was formulated in form of tips about the game and contained theoretic information on how to derive, in dependency of individual turn to make his / her choice, the unconditional ex-ante probabilities of ending up respective in a correct or in an incorrect cascade, rather than to escape it.

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[3] Example: "[…] if all the 4 players before you have chosen to invest, they all probably received a signal equal "1". Therefore, if you receive a signal equal "1", you better choose to invest, too. BUT, what would you do, if you receive a signal equal "0"? You can think that, if the signal was "1" in 4 of the 5 cases, and "0" just in your one case, the probability that given all signals sales will go well can be calculated this way: $1/5 \cdot 0.75+1/5 \cdot 0.75+1/5 \cdot 0.75+1/5 \cdot 0.75+1/5 \cdot 0.25$. This is because, in the first fifth of cases (for the 1st out of 5 players) the probability that given the signal sales will go well is 0.75, so that it counts for $1/5 \cdot 0.75$. […]"

At the end of each period, subjects in both treatments were informed about the true value of *V*, and their period-payoff. When all periods were played, the subjects were paid and could leave the laboratory. Average earnings were 7€.

## 4 Results

The experimental results enable to discuss some aspects of absorbability of informational cascades' theory by bounded rational decision-makers. The experimental hypothesis which argues whether providing individuals with theoretic information on informational cascades affects the overall probability of herding phenomena and that of their reversal will be in particular discussed focussing on the general effects of theory absorption, comparing the social efficiency of outcomes among treatments and testing for directional learning. The main results this experiment accounts for can be discussed as follows.

### *4.1 General Effects of Theory Absorption*

Considering the benchmark provided by the theory on herding (and informational cascades), it is possible to qualify the individual choices observed in the experiment as rational or irrational, respectively if they are conform to the optimal strategy or not. In the experimental simple set-up, where the two states of nature are equally probable and the private signals identically distributed, the optimal strategy in a Bayesian sense can be defined taking into account the decision of the predecessors and the individual's private information, as doing the count on the previous decisions (the one's own signal being included)[4] and adopting the most chosen option. The adoption of the tie-breaking rule if indifferent has been assessed as rational (optimal) behaviour, both if generating a cascade or not. Further, the case in which *"an imbalance of previous inferred signals causes a person's optimal decision to be inconsistent with his or her private signal"*[5] has been considered as a cascade.

Choice which were not consistent with these rules has been qualified as irrational, whereas it has been distinguished between two subspecies of irrational behaviour, which have been labelled as "signal-keeping" and "not-rationalized." They respective correspond to the cases in which following one's own private signal can provide a somehow logical explanation of the individual's choice and to those in which there is no plausible explanation for it. According to these criteria the choices of the experimental subjects can be grouped and summarized as shown by Table 1.

[4] Cf. Anderson and Holt (1997).
[5] Cf. Anderson and Holt (1997), p. 851.

| | Signal | Rational (Bayes' rule) | Irrational | |
|---|---|---|---|---|
| | | | not rationalized | Signal-keeping |
| Control Treatment | 0,72 | 0,725 | 0,15 | 0,135 |
| Absorption Treatment | 0,715 | 0,935 | 0,035 | 0,04 |

**Table 1: Classification of the individual behaviours observed**

It can be clearly noted that providing the respondents with theoretical information about the optimal Bayesian strategy yields for higher consistency of behaviour with the theoretical predictions and among the irrational choices for the lowering of adoption of non-rationalized behaviours.

The higher compliance with the Bayesian optimal strategy provides evidence for the absorption of the theoretical predictions[6].

A further interesting feature which emerges from the experimental data is that while the frequency of optimal behaviour is higher in the absorption than in the control treatment, the overall frequency of signal following is almost the same among treatments (72 % in the control treatment versus 71.5 % in the absorption one). This seems to further hint at the internalization of the optimal decision-rule and further corroborate the hypothesis of absorption of informational cascades' theory by bounded rational decision-makers.

The two treatments gave account for a different occurrence of informational cascades. It has been in particular considered, how many informational cascades which could have formed occurred in fact. In this insight, a cascade has been considered as possible to occur whenever the choice between following one's own private information and Bayesian optimization are mutually exclusive. In all of these cases, an informational cascade takes place if the individual ignore her own signal and prefer to herd.

According to these criteria, while in the control treatment 25 of the 52 possible informational cascades formed in the absorption treatment 51 out of the 59 informational cascades that would have been possible established. This acknowledges for the percentages which are shown by Table 2.

| | Cascades occurrence (%) | Correct cascades (%) | Wrong cascades (%) |
|---|---|---|---|
| Control Treatment | 48.07 | 24 | 76 |
| Absorption Treatment | 86.66 | 49.02 | 50.98 |

**Table 2: Perceptual occurrence of informational cascades**

[6] At a 0.01 significance level.

Fragility of cascades is higher in the control treatment, in which in particular it never happened that a cascade starts at the beginning of the period and last until the end of it. Instead, in the absorption treatment, informational cascades and herding seem to be more difficult to reverse. In this insight, it should be however considered that the occurrence of correct cascades is higher in the absorption than in the control treatment: while in the control treatment only 9 of the 25 informational cascades which affirmed were correct, in the absorption 25 correct and 26 wrong cascades formed. Table 2 summarizes the relative occurrence of correct and wrong cascades in perceptual values.

### *4.2 Social Efficiency*

For testing if proving the respondents of theoretical information on the optimal decision-rule enhances their profits, improves their winning chances and better therefore the efficiency degree of the outcome, the earnings distribution per position in the queue per treatment can be compared (see figure 2).

We can accept at a 95% significance level that earnings are higher, on average, in the absorption than in the control treatment.

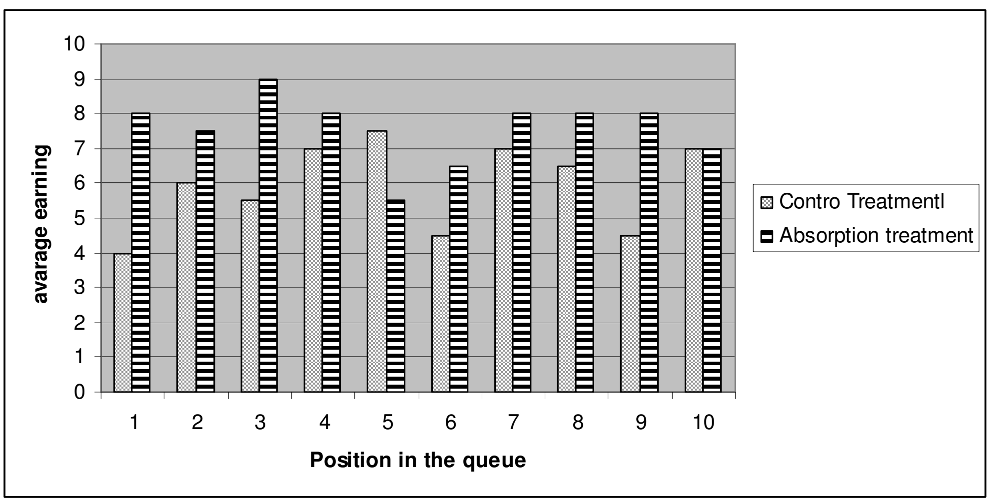


**Figure 2: Average earnings per position in the queue per treatment**

The percentage of winning per position in the queue (see figure 3) which can be considered as a proxy for the individual utility is clearly higher in the absorption than in the control treatment, this difference being significant with $p<0.043$

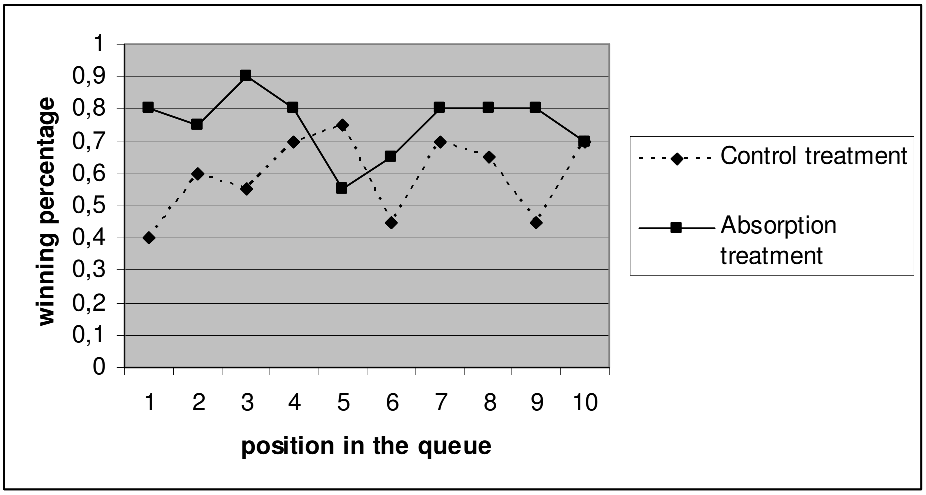


**Figure 3: Percentages of winning per position in the queue per treatment**

In this sense, providing the individuals with theoretical information on herding behaviour and informational cascades reveals to be a device which can be preferable both from the social and from the individual point of view.

Figure 4 illustrates the percentages with which the winning strategy has been per period adopted in each treatment. At a significance level of 99% higher adoption of the optimal decision-rule implies that the individuals are able to conceptualize the theory and to refer it on the setting they face.

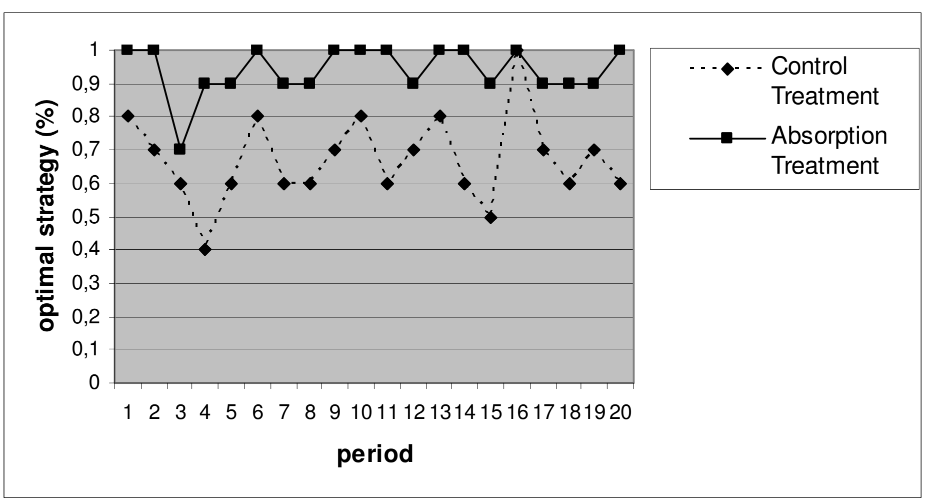


**Figure 4: Percentages of optimal strategy per treatment**

### *4.3 Learning*

In order to appreciate whether learning effects occurred in the experimental setting the 20 game-playing periods can be divided onto 4 groups. The average percentages of deviations from the optimal strategy per classes of periods (see figure 5) does seem to corroborate the idea of a marked learning process, neither in the control nor in the absorption treatment. In particular in the control treatment, a slight tendency toward the reduction of deviant choices can be noted.

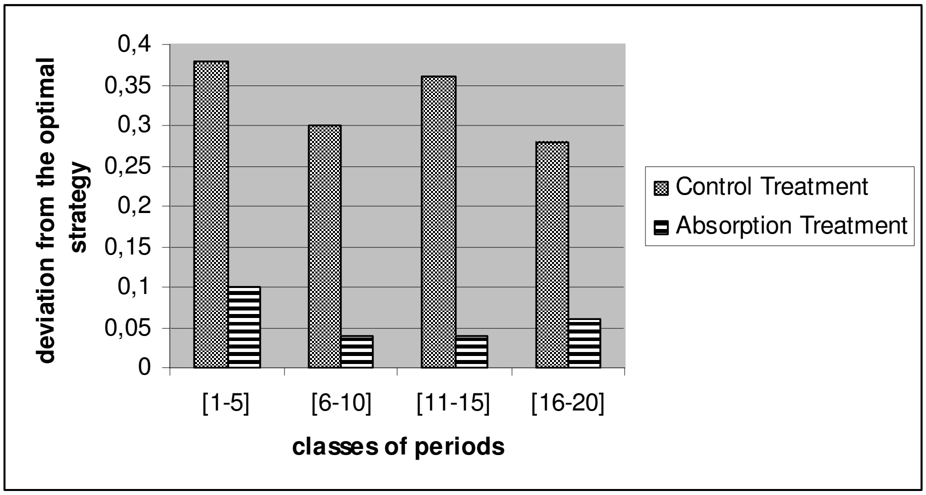


**Figure 5: Average percentages of deviant strategies per classes of periods**

The occurrence of directional learning can be further investigated by constructing a simple learning model in which choices are associated with a set of variables. These are respective the period number ("Time"), the eventual concavity of the learning process ("Time$^2$") and a determinant detecting the presence of directional learning.[7] That for it has been made use of a dummy variable equal to 1 whenever the subject made the theoretically correct decision and won ("Correctwon") as well as of a dummy equal to 1 in case that theory conform behaviour did not ensure a positive payoff ("Correctlost"). Finally, the dummy "Correct," which equals 1 if the subject choice complies with the theory, has been chosen as the dependent variable for running a probit estimation procedure whose results are visualized in table 3.

[7] Directional learning has been also labelled "Cournot behaviour" (Selten and Buchta, 1998).

| Dep. Variable: *Correct* | Marginal Effect | Std. Error | p-value |
|---|---|---|---|
| *Time* | .01244 | .01398 | 0.374 |
| $Time^2$ | -.00045 | .00064 | 0.485 |
| *Correctwon* | -.07991 | .04271 | 0.067 |
| *Correctlost* | -.09943 | .07300 | 0.130 |
| *'absorption' treatment* | .27888 | .03797 | 0.000 |
| | | | |
| Log likelihood | -169.982 | | |
| Pseudo $R^2$ | 0.1387 | | |
| NOBs | 400 | | |

**Table 3: Maximum Likelihood probit estimation for a learning model**

From our results, we can notice no trend in observing a more consistent decisions over time: indeed, *Time* is not statistically significant. As a consequence, concavity for learning is not statistically significant, either. Yet, directional learning is not a determinant of learning. Indeed, even if *Correctwon* is significant, nevertheless it does not present the correct direction (positive sign) in our analysis. In fact, we expect probability of making the correct decision to increase if in the previous period subject made correct decision and won.

However, we can observe that the dummy variable for the 'absorption' treatment is highly statistically significant; providing the subjects with theoretical information on informational cascades constitutes a decisional aid which is effective in increasing the probability of making the correct decision by 28 %.

## 5 Conclusion

Herding behaviour and informational cascades refer to cases in which individual rational behaviour may result in a non-optimal strategy at aggregate level. As suggested by Becker (1991), these phenomena deal with situations in which information can be somehow linked with negative externalities. By conformity to the behaviour of the preceding subjects ignoring ones' own private information, the behaviour of the others stops being informative. Therefore, some studies on herding argue if *"society may actually be better off by constraining some of the people to use only their own information"* (Banarjee, 1992, p. 798).This has been also acknowledged by some empirical evidence (see e.g. Fiore and Morone, 2007). Shifting the perspective, the present study investigates whether providing the individuals acting in settings in which herding and informational cascades are likely to occur with the theoretical principle of Bayesian optimization constitute an alternative mechanism for improving the degree of social efficiency.

The evidence from this experiment seems to corroborate this idea, in that average earnings and the percentage of winning per position in the queue were higher among the responders who received the theoretic information than among those who did not. In this sense, providing the individuals with theoretical information on herding behaviour and informational cascades reveals to be preferable both from the social and from the individual point of view.

The experimental evidence further proves that theoretic information on informational cascades affects the overall probability of herding phenomena and that of their reversal. It could be in particular observed that the behaviour of the respondents who received the theoretic information revealed a higher consistency and compliance with the theoretical prescriptions and yields for lowering the occurrence of non-rationalized behaviour. The higher compliance with the Bayesian optimal strategy corroborates the hypothesis of absorbability of informational cascades' theory, revealing its understanding and acceptance by bounded rational individuals. The theoretic information did not affect the propensity of the individuals to rely on their own private information.

The overall occurrence of informational cascades was higher among informed than among uniformed individuals, whereas the frequency of correct cascades was more than double. Thus providing the individuals with theoretical information on herding behaviour and informational cascades reveals to be a device improving the occurrence of case in which a cascade can be associated with an individually and collectively favourable outcome. Informational cascades seem however to be less fragile and more difficult to be reversed among individuals who are aware of the theoretical prescriptions.

The experimental results provide, in none of the treatments, significant evidence for marked patterns of directional learning concerning the application of the optimal decision-rule. Directional learning could not namely be acknowledged, as decisions do neither become more consistent over time, nor the probability of choosing correctly is directly correlated with having won because of having chosen right in the precedent period. From the evidence of the absorption treatment, however, providing the subjects with theoretical information on herding reveals to be an efficient device for increasing the accuracy of decision.

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A – *Instructions* (original provided in Italian)

Welcome! This experiment is designed to study how people make decisions. The experiment is very simple, and you will have the possibility of earning money, which will be paid to you in cash at the end of the experiment.

This amount will depend, on the one hand, on your decisions and, on the other hand, on luck.

You will play as an entrepreneur and your task will be to decide to develop a new product or not.

Two scenarios will have the same probability to occur: or all goods will be sold or not a single one.

You will repeat your task 20 times. In each period, the computer will choose the scenario. The scenario will be the same for all the participant, but different in each period.

Whenever you take the right decision, you will earn 0.5€, nothing otherwise, as shown in the table:

| | Decision: to invest | Decision: not to invest |
|---|---|---|
| All goods sold | 0.5€ | 0 |
| No good sold | 0 | 0.5€ |

It is important to know that you make your decision in sequence and the order is randomized in each period.

However, you will be provided with two different kinds of information before making your decision.

First, you will receive results from a market survey reliable at 75%. In particular, during the experiment you will be provided with a signal according to the result of the survey. As shown in the table, to each signal is connected a different likelihood of the two scenarios:

| | Signal = 1 | Signal = 0 |
|---|---|---|
| All goods sold | 75% | 25% |
| No good sold | 25% | 75% |

Second, you will be informed about decisions already made by all entrepreneurs before you.

You will not be required to pay for these pieces of information. These will appear automatically on your PC screen when it is your turn to play.

It is important to note that the first four players will not receive this second kind of information. On the contrary, from the fifth player onwards, players will receive all relevant information regarding previous decisions.

Whenever you make your decision, you have to press the OK button to confirm your choice.

As soon an all players have made their decision, on your PC screen you will be informed about the right choice to take in that period and your relative payoff.

You will play for 20 periods, in addition to two trial periods at the beginning of the experiment.

At the end, you will be paid (except for the payoff earned during the trial periods) and you will be free to leave the laboratory.

The rules are very simple. However, please do not communicate with other participants during the experiment. You are free to put questions to experimenters at any time during trial periods raising your hands.

Good luck!