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Coordination Problems Triggered by Sunspots in the Laboratory

Abstract

A sunspot variable is any random variable that is not related to fundamental factors of the economy but a potential coordination device. The coordination power of sunspots has been analysed in theory and in experiments. However, some have discussed whether sunspots, e.g., public announcements such as financial market ratings, can create coordination problems. That discussion reached a new peak during the European sovereign debt crisis. We ask: can a sunspot variable, in form of a random forecast, trigger coordination problems? To answer that, we use a repeated three-player stag hunt game with fixed groups. In our experiment, a sunspot variable points randomly at the risk-dominant or the payoff-dominant choice. We find out-of-equilibrium behaviour caused by the sunspot variable in the short run. In the long run, the sunspot variable can lead to coordination on payoff-dominated equilibria. Only if the sunspot variable points more often to the payoff-dominated alternative, some groups use the sunspot variable consistently as a coordination device.

JEL-Code: C92, C72, D81, E40, J52

Keywords: Sunspot; coordination; equilibrium selection; correlated equilibria; focal point

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1 Jan Siebert, University of Duisburg-Essen; Guanzhong Yang, University of Duisburg-Essen. *– We thank Jeannette Brosig-Koch, Michael Roos, Christoph Helbach, Matthias Giesecke, Timo Heinrich, Franziska Brendel, and Franziska Then as well as seminar participants at the University of Duisburg-Essen for their helpful comments and suggestions. The Ruhr Graduate School in Economics supported this work.* *– All correspondence to: Jan Siebert, Chair for Economic Policy, Faculty of Economics and Business Administration, University of Duisburg-Essen, Universitätsstraße 12, 45141 Essen, Germany, e-mail: jan.siebert@uni-due.de.*

1 Introduction

The term "sunspot" can be traced back to Jevons (1878) because he mistakenly believed that solar activity drives the business cycle. In modern macroeconomic parlance, a sunspot variable is any random variable that is not related to fundamental factors (Farmer, 1999).[1] That variable can be a coordination device in a situation where agents face multiple equilibria. A public announcement can be a sunspot variable (e.g., economic forecasts, financial market ratings, or communicated inflation rate targets of central banks). Such an announcement can be a self-fulfilling prophecy, even if its informative value about fundamentals is zero. The coordination power of sunspot variables has been analysed in theory and in experiments. Recently, Fehr et al. (2019) have shown the coordination power of sunspots in the laboratory. They conclude: "Salient public messages can indeed change beliefs and behaviour in the desired direction, even if they are not backed by a commitment to actions affecting fundamentals. However, in a world of public and private messages, the power of public messages may be lower and adding public signals to existing private signals may even reduce welfare."

The latter aspect, namely the welfare reduction or coordination *problems* caused by a sunspot variable, is the focus of the paper at hand. Cole and Kehoe (2000) present a model where self-fulfilling debt crises are possible. Krugman (1996) explains in their model, "a crisis can occur depending on the realization of a random event that is extrinsic to the fundamentals of the model, a sunspot variable. An unfavorable realization of this sunspot variable can lead to a panic[...]." Some discuss whether financial market ratings are such destabilizing variables (see, e.g., Kaminsky (2002), Andritzky et al. (2007), Gärtner and Griesbach (2012), or Alsakka and ap Gwilym (2013)). To some degree, destabilizing effects of financial market ratings are spillovers due to costly information and, therefore, have nothing to do with sunspots (see, e.g., Calvo and Mendoza (2000)). However, Böninghausen and Zabel (2015) show that the informative value of the ratings is not the only force behind the spillovers: "Strikingly, this [the spillover effect] cannot be explained by fundamental linkages and similarities between countries." A financial market rating in the form of a forecast for country x that has no informative value about country y can be seen as a sunspot variable for country y. In reality, it is difficult to measure the real informative value of a forecast. However, in the laboratory, it is easy to generate a random, information-free forecast.

We design a laboratory experiment to answer the question: **Can a sunspot variable, in form of a random public forecast, trigger coordination problems?**

We use a three-player stag hunt game. It has a payoff-dominant equilibrium (Equilibrium A), in which all players use the cooperative choice, and a divergent risk-dominant equilibrium (Equilibrium B), in which all players choose the safe option. Coordination problems in the game are either unequal actions

[1] The theory of sunspots (see, e.g., Cass and Shell (1983)) is closely related to the theory of correlated equilibria (Aumann, 1987) and to the focal point theory (Schelling, 1980). The term "sunspot" is related to dynamic stochastic general equilibrium models, while the theory of correlated equilibria is part of game theory.

(no equilibrium) or coordination on the payoff-dominated equilibrium (inefficient equilibrium). We use fixed groups to also show whether sunspot variables *delay* convergence. A blog entry of Krugman (2011) illustrates the parallels between a stag hunt game and a sovereign debt crisis. He explains: "Equilibrium A is where investors don't believe you will default, so interest rates are low, so you don't. Equilibrium B is where investors believe you will, so rates are high, so you do." However, to our knowledge, there is no experimental paper that focuses on coordination problems caused by a sunspot variable in a stag hunt game. Using this game, we can see whether a sunspot variable triggers out-of-equilibrium-behaviour, but also whether it triggers coordination on payoff-dominated equilibria.

The sunspot variable in our experiment is semantically a forecast (either "the majority will choose strategy A" or "the majority will choose strategy B"), but it is random (determined by rolling a die) and non-binding, which is common knowledge. We use the term "sunspot" for the announcement because we interpret our results from a macro perspective (like, e.g., Fehr et al. (2019) or Beugnot et al. (2012)). However, our experiment is not a general equilibrium experiment (like, e.g., Arifovic et al. (2013)). It belongs to the class of experiments with recommended strategies (like, e.g., Cason and Sharma (2007)) or correlated equilibria (like, e.g., Duffy et al. (2017)).

We vary the random sunspot-generating process to change the risk and the payoff related to the coordination on the sunspot variable. There is no sunspot variable in the control treatment. In the so-called neutral treatment, the sunspot variable points with an equal probability to the payoff-dominant strategy and to the risk-dominant strategy. In the so-called negative treatment, the sunspot variable points with a higher probability to the risk-dominant strategy than to the payoff-dominant strategy.

We find that the sunspot variable dissuades people from choosing the payoff-dominant strategy. Furthermore, the sunspot variable delays the convergence to an equilibrium. The groups with sunspot variables converge more often to a payoff-dominated equilibrium than the control groups. We observe convergence to the sunspot equilibrium only in the negative treatment.

The rest of this paper is organized as follows. Section 2 describes our experimental design and provides details about the variation of the treatment parameters. We present the results of our experiment in section 3. Section 4 discusses earlier research and relates our experiment to it.

2 The experimental design

The experiment is computer-based and took place at the "Essen Laboratory for Experimental Economics" (elfe) at the University of Duisburg-Essen.[2] We recruited the participants via ORSEE (Greiner, 2015).

[2] You can find the data, the raw data, the zTree code, the original instructions, and translated instructions of the experiment in Siebert and Yang (2019).

We coded the experiment with zTree (Fischbacher, 2007). A total of 6 sessions with 87 participants were conducted. The participants were mainly undergraduate students from the University of Duisburg-Essen with an average age of 24.15 years. The sessions lasted at most 60 minutes. Average payoff for the participants was 12.66 Euros with a minimum payoff of 3.00 Euros and a maximum payoff of 15.00 Euros.

The participants of the experiment form groups of three. The groups play a repeated stag hunt game over 40 periods. The groups are randomly matched and stay together over all 40 periods. We use a between-subject design, where each participant only participates in one of the treatments. The detailed course of events in the experiment is as follows. On entering the laboratory, the participants are randomly allocated to different workstations. They receive instructions (see Appendix A for the translated instructions) and have the opportunity to ask questions which are answered privately by the experimenter. Once all participants indicate that they understood the instructions, they have to answer a set of four or six control questions[3] which are mainly concerned with the general set-up of the experiment and the payoff rules. After all participants answered the questions correctly, the experiment starts. Each period consists of two stages. In the first stage, participants in the same group receive an identical announcement. The announcement is either "**the majority will choose strategy A**" (A-sunspot; the payoff-dominant strategy) or "**the majority will choose strategy B**" (B-sunspot; the risk-dominant strategy). These announcements are random since they are determined by rolling a die. The experimenter throws the die into an open box in front of all participants in all sessions. The participants are not able to see the die result directly. Instead, the participants see the number on the die via video transmission in the first session. The participants see the taped videos of the first session in the following sessions to keep the results fixed. The participants have to write the number that they see in a dialogue box on their computer screen. Participants receive one of the two announcements according to the different treatments.

In the second stage, the participants play a standard stag hunt game with three players. A participant has to choose between alternative A and alternative B. The participants' payment is based on their decisions and the decisions of the other players in the group. All groups in this experiment receive the same payoff table. Table 1 shows the payoff. In this table, the rows show the participants' decision for A or B and the columns show the decisions of the other players in their group. Each cell shows what a participant will receive depending on their decision and the decisions of the others in the group. If the participant chooses A and if any of the other members of their group choose B, the participant receives 0 Euros, whereas if the participant chooses A and if both of the other players also choose A, the participant receives 12 Euros.

At the end of each period, the participant is informed about their current decision, the current decisions

[3] All participants have to answer four questions; the participants in sunspot treatments have to answer two more questions about the sunspot variables.

Table 1: The three-player stag hunt game

		Other players' decisions in your group		
Your decision		If **BOTH** of the other participants choose A	If **ONE** of the other participants chooses A and the other chooses B	If **BOTH** of the other participants choose B
	A	12	0	0
	B	7	7	7

of their group members, and their payment from that period. Moreover, in each period, the participants can see information from the earlier periods (their decisions, the announcements, the decisions of the others, and their payments). These pieces of information should enable learning from one period to the next and, thereby, convergence to an equilibrium. For the final payoff, one period is randomly chosen from the 40 periods. The participants receive their earnings in that period plus a show-up fee of 3 Euros, as mentioned at the beginning of the experiment.

We use two kinds of random sunspot-generating processes: A neutral random sunspot-generating process, which points with equal probability to the payoff-dominant strategy or to the risk-dominant strategy (neutral treatment), and a negative random sunspot-generating process, which points with higher probability to the risk-dominant strategy than to the payoff-dominant strategy (negative treatment). As a benchmark, we are also interested in the game without a sunspot variable. Therefore, we run a control treatment without sunspots.

The announcements are chosen by rolling a die. In the neutral treatment, the participants see both announcements with a probability of 1/2. The participants in that treatment receive the A-sunspot if the die shows 1, 2, or 3 and the B-sunspot with 4, 5, and 6. In the negative treatment, the participants see the B-sunspot with a probability of 5/6 (if the die shows 2, 3, 4, 5, or 6). Accordingly, the A-sunspot appears with a probability of 1/6 (if the die shows 1).[4] The rules are common knowledge to the participants. Table 2 gives an overview of the different treatments.

Table 2: Treatment overview

Treatment	Number of participants	Number of groups
Control	21	7
Neutral	30	10
Negative	36	12
Total	87	29

[4] We also ran a session with a positive random sunspot-generating process (A-sunspot with probability 5/6; B-sunspot with probability 1/6). While we obtained interesting findings in the neutral treatment and the negative treatment, we did not see any effect in the positive treatment. Therefore, we decided not to run further sessions of the treatment with the positive random sunspot-generating process. We excluded the observations in that treatment from the analyses.

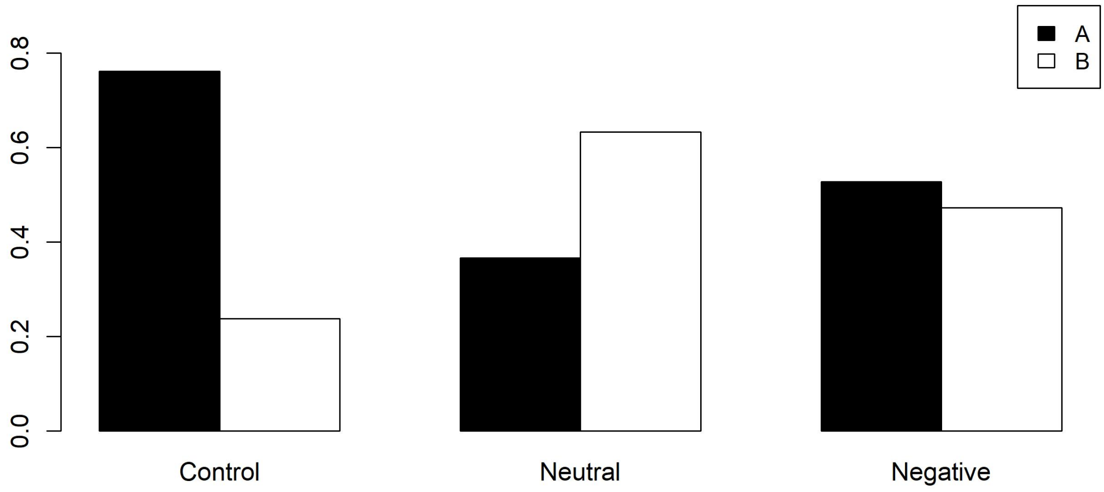

Figure 1: Shares of participants choosing A in the first period

3 Results

We organize section 3 as follows. In section 3.1, we discuss the decisions and the equilibria of the first period. In section 3.2, we consider the decisions, equilibria, and earnings of the entire game. We analyse the convergence types in section 3.3.

3.1 The first period

In this subsection, we look at the decisions in the first period. Of the 21 participants in the control treatment, 16 (76%) choose alternative A. Of the 30 participants in the neutral treatment, 11 (37%) choose alternative A. Of the 36 participants in the negative treatment, 19 (53%) choose alternative A. Figure 1 shows the shares of participants choosing A in the first period. Both sunspot treatments differ from the control treatment (Fisher test: control vs. neutral p=0.01; control vs. negative p=0.098). Note that the participants of both treatments see a B-sunspot in the first period.

We also compare the equilibria reached in the first period. In the control treatment, 3 of 7 (43%) groups are in equilibrium. In the neutral treatment, 4 of 10 (40%) groups are in equilibrium. In the negative treatment, all 12 groups fail to reach an equilibrium. The Fisher tests show significant differences between the negative and the control treatment (p=0.04), as well as between the negative and the neutral treatment (p=0.03). However, the neutral treatment and the control treatment do not differ significantly (p=1).

To sum up the observations in the first period, the sunspot variable keeps people from the payoff-dominant outcome. Additionally, the negative sunspot-generating process leads to an increase of out-of-equilibrium behaviour.

3.2 All Periods

Now we consider the entire game. The control groups reach the payoff-dominant equilibrium in 76% of the periods. The neutral groups reach the payoff-dominant equilibrium in 64% of the periods. The groups in the negative treatment choose the payoff-dominant equilibrium in 54% of the cases. However, a two-sided Mann-Whitney U test shows no significant differences (neutral vs. control p=0.26; negative vs. control p=0.15; negative vs. neutral p=0.95). The results for the average payoffs over all periods are similar. The average payoffs over all periods are higher in the control group (10.45 Euros on average) than in the neutral treatment (9.82 Euros) or in the negative treatment (9.08 Euros). However, the differences are not significant (neutral vs. control p=0.22; negative vs. control p=0.12; negative vs. neutral p=0.76).

The picture changes when we focus on the periods in which the sunspot variable points on the risk-dominant choice (B-sunspot). In these periods, the groups in the neutral treatment reach the payoff-dominant equilibrium in 51% of the cases. The groups in the negative treatment reach the payoff-dominant equilibrium in 45% of the periods. We compare the share of periods in which the payoff-dominant equilibrium is reached per group only in periods with a B-sunspot. We look at all periods in the control treatment. Using a two-sided Mann-Whitney U test, we find slight differences (neutral vs. control p=0.08; negative vs. control p=0.06; negative vs. neutral p=0.84). This has an effect on the earnings. The average payoffs per period are 9.16 Euros in the neutral treatment and 8.58 Euros in the negative treatment in the periods with a B-sunspot. We compare the average payoff per group only over periods with a B-sunspot. Again, we look at all periods in the control treatment. A two-sided Mann-Whitney U test shows significant differences in the payoffs (neutral vs. control p=0.13; negative vs. control p=0.046; negative vs. neutral p=0.47). To conclude, (B-) sunspots dissuade people from making the payoff-dominant choice, as we have already seen in the first period. This has a negative influence on the payoffs. However, the differences in the payoffs are stronger in periods with a B-sunspot than over the entire game.

3.3 Convergence

We define convergence as follows: all participants choose the same alternative in each of the last ten periods. If these decisions are always A (always B), we label it "A-convergence" ("B-convergence"). If these decisions always follow the sunspot variable, we label it "sunspot-convergence." If there is at least

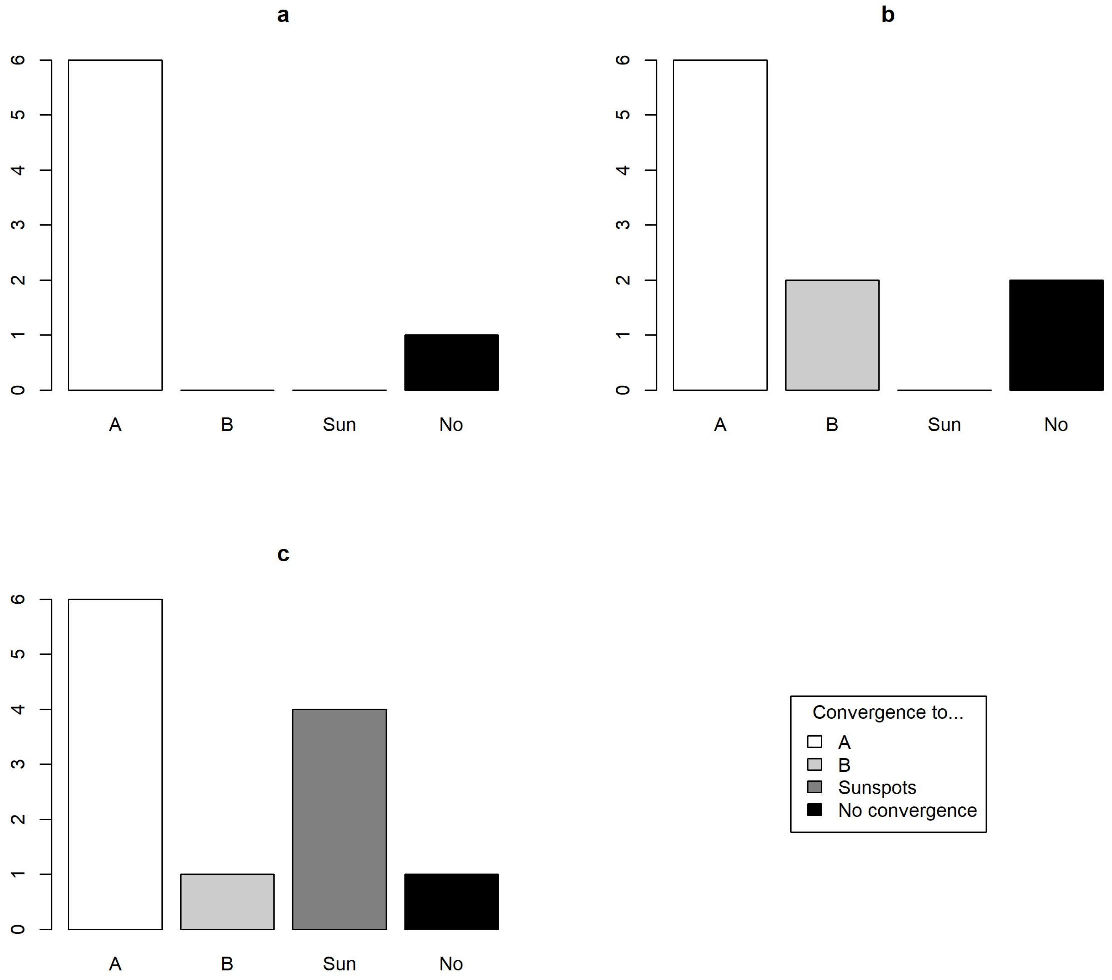

FIGURE 2: The composition of different convergence types among treatments (a: Control treatment; b: Neutral treatment; c: Negative treatment)

one deviation of one participant in the last ten periods, we label it “no convergence.”

In the control treatment, six groups reach A-convergence (86%), while one group reaches no convergence (14%). In the neutral treatment, six groups (60%) reach A-convergence, while two groups (20%) reach B-convergence, and two groups (20%) reach no convergence. In the negative treatment, six groups (50%) reach A-convergence, one group (8%) reaches B-convergence, four groups (33%) reach sunspot-convergence, and one group (8%) reaches no convergence. Figure 2 shows the composition of different convergence types.

A Fisher test shows that the neutral treatment has a slight effect on A- or B-convergence (p=0.054) compared to the control treatment. The same is true for the negative treatment. A Fisher test shows that B-convergence is reached slightly more often than A-convergence in the negative treatment than in the control treatment (p=0.054). A Fisher test also shows that the negative treatment makes the sunspot equilibrium slightly more likely than A-convergence (p=0.08) compared to the neutral treatment.

The differences in the convergence speed are also interesting. The convergence speed is the number of periods needed to achieve accord (the last period with a deviation in a group plus one). Convergence is achieved slightly faster in the control treatment than in the neutral treatment (two-sided Mann-Whitney U test p=0.09) and in the negative treatment (p=0.07). There is no significant difference in the convergence speed between the neutral treatment and the negative treatment (p=0.94).

To conclude, nearly all groups converge in the long run. Although there is coordination in nearly all groups, groups with sunspot variables coordinate more often on the payoff-dominated equilibrium. Only some groups in the negative treatment use the sunspot variable as a coordination device. They coordinate on the payoff-dominated sunspot equilibrium. Additionally, the groups with sunspot variables need more periods to converge. Once more, we can say sunspot variables lead to out-of-equilibrium behaviour in the short run and to coordination on the payoff-dominated equilibria in the long run.

4 Discussion

Many experiments show the coordination power of sunspot variables. Marimon et al. (1993) were the first to run a laboratory experiment to investigate sunspot equilibria. They used an overlapping generation design with a stationary equilibrium and a cyclic equilibrium. They showed blinking squares in red and yellow on the computer screen. Marimon et al. (1993) found that, without training, participants ignored the sunspot variable. In training periods, the experimenter artificially correlated the occurrence of real shocks with the colours. After the training periods, they removed the real shocks. The price fluctuations persisted without a tendency of convergence to the cyclic equilibrium. Although they found some sunspot-influenced behaviour in the laboratory, they did not generate a sunspot equilibrium.

We group the following sunspot experiments roughly into four classes: first, experiments in which the sunspot equilibrium is payoff-equivalent to the other equilibria; second, experiments in which the sunspot variable points to the payoff-dominant equilibrium; third, the sunspot variable points to a payoff-dominated equilibrium; fourth, the sunspot variable switches between payoff-rankable equilibria. Duffy and Feltovich (2010) report an experiment that compares these classes. They search for the circumstances under which a sunspot equilibrium can be set up. They find that people can play a sunspot equilibrium even if it is not a Nash equilibrium (NE). However, it is necessary that the sunspot equilibrium is Pareto-efficient. Similarly, Bone et al. (2013) conclude that the sunspot equilibrium prevails if it is Pareto-efficient in a game with an asymmetric payoff function.

Examples of the first class – the sunspot equilibrium is payoff-equivalent to the other equilibria – are provided by Duffy and Fisher (2005) and Fehr et al. (2019). Fehr et al. (2019) conduct a two-person coordination game where agents have to pick a number from zero to one hundred. Players are punished according to the deviation in their respective decisions. Each combination of two equal numbers is an NE. In this game, fifty is the risk-dominant NE. They use a semantically salient message in the form of an extrinsic public/private signal as the sunspot variable.

Examples of the second class – the sunspot variable points to the payoff-dominant equilibrium – are provided by Cason and Sharma (2007), Devetag et al. (2013), and Arifovic et al. (2019). Cason and Sharma (2007) show that a lack of knowledge of others' expectations can inhibit the sunspot equilibrium, even though it is a payoff-dominant equilibrium. To show this, they let participants play against robots with straightforward and known decision rules.

An example of the third class – the sunspot variable points to a payoff-dominated equilibrium – is given by Bosch-Domènech and Vriend (2013). They find that people coordinate on the only payoff-dominated equilibrium, which simultaneously makes it a focal point.

Examples of the fourth class – the sunspot variable alternatively points to payoff-rankable equilibria – are presented by Beugnot et al. (2012), Arifovic and Jiang (2014), and Shurchkov (2016). Beugnot et al. (2012) conduct a base game with Pareto-ranked equilibria where the payoff-dominant equilibrium is the same as the risk-dominant equilibrium. They use an unbinding random public announcement as sunspot variable. They find that 27% of the participants fail to coordinate on the Pareto-superior equilibrium due to the sunspot variable.

The paper at hand belongs to the fourth class. Like Arifovic and Jiang (2014) and Shurchkov (2016), our base game has a payoff-dominant and a divergent risk-dominant equilibrium. However, Arifovic and Jiang (2014) and Shurchkov (2016) do not compare a situation with a sunspot variable to a situation without a sunspot variable. Therefore, and in contrast to our work, they do not investigate coordination problems caused by a sunspot variable. Arifovic and Jiang (2014) and Shurchkov (2016) both change the risk of the payoff-dominant alternative. They find that the sunspot variable is only relevant if the sunspot equilibrium lies in the middle of the risk-dominant and the payoff-dominant alternatives. This result corresponds with our results. Given the fact that our negative sunspot-generating process is more effective than the neutral sunspot-generating process, we can add: the sunspot variable is more relevant if convergence to it is not much riskier than convergence to the risk-dominant equilibrium, but much less risky than convergence to the payoff-dominant equilibrium.

Like Beugnot et al. (2012), we focus on coordination problems by comparing a situation with a sunspot variable to a situation without a sunspot variable. In contrast to Beugnot et al. (2012), however, the base game of our experiment has fixed groups a payoff-dominant, and a divergent-risk dominant equilibrium. We can, thus, observe not only whether a sunspot variable leads to out-of-equilibrium behaviour, but also whether it leads to coordination on payoff-dominated equilibria. Beugnot et al. (2012) find frequent out-of-equilibrium behaviour caused by sunspot variables. Our results partly support their findings. In fact, we find out-of-equilibrium behaviour in the short run. In the long run, we find evidence for coordination on payoff-dominated equilibria caused by a sunspot variable. The divergent payoff-dominant and risk-dominant equilibria together with the fixed groups seem to help coordination, but not necessarily on the payoff-dominant equilibrium.

To sum up, a sunspot variable, in the form of a random public forecast, can, indeed, trigger coordination problems. It leads to out-of-equilibrium behaviour in the short run and coordination on payoff-dominated equilibria in the long run.

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A Instructions for control treatment [neutral treatment] [negative treatment]

Welcome to the experiment!

Preliminary remark

You take part in a study on decision-making behaviour within the framework of experimental economic research. During the research, you and the other participants will be asked to make decisions. None of the participants will be informed about your decisions during or after the experiment. Please read the following instructions. After you have read the instructions, we will come to you to answer open questions. When all questions are answered, the experiment will start. If you have any questions during the experiment, you can contact us at any time by hand signal. During the experiment, you are not allowed to talk to the other participants in the experiment. At the end of today's experiment, you will receive your payment for the experiment plus 3 Euros for showing up in cash.

Decision situations

The experiment lasts for 40 rounds. At the beginning of the first round, you and two other participants randomly form a group of 3. Please note that **the members of the group are the same in each of the 40 rounds**. The members of a group are randomly assigned. All groups in the experiment consist of 3 members.

In each round, you and your group members can choose between two alternatives; "**A**" or "**B**".

[Announcement

You and your group members will receive an announcement at the beginning of each round. The announcement will be either "**the majority will choose strategy A**" or "**the majority will choose strategy B**". The announcement is ***the same*** for all participants in the experiment and therefore for all members in your group.

The **announcements are random** and are determined by rolling a die. The experimenter will roll it in front of all participants. You have the possibility to watch the roll of the die live by video transmission on one of your screens and, thus, see the cast number. The announcement is "**the majority will choose strategy A**" if the number cast is 1, 2, or 3 and "**the majority will choose strategy B**" if the number cast is 4, 5, or 6.]$^{\text{neutral treatment}}$

[<u>Announcement</u>

You and your group members will receive an announcement at the beginning of each round. The announcement will be either "**the majority will choose strategy A**" or "**the majority will choose strategy B**". The announcement is ***the same*** for all participants in the experiment and therefore for all members in your group.

The **announcements are random** and are determined by rolling a die. The experimenter will roll it in front of all participants. You have the possibility to watch the roll of the die live by video transmission on one of your screens and, thus, see the cast number. The announcement is "**the majority will choose strategy A**" if the number cast is 1 and "**the majority will choose strategy B**" if the number cast is 2, 3, 4, 5, or 6.]$^{\text{negative treatment}}$

Your payout is based on **your decisions and the decisions of your group members in each round**. All groups in the experiment receive the same payout table below.

		Other players' decisions in your group		
Your decision		If **BOTH** of the other participants choose A	If **ONE** of the other participants chooses A and the other chooses B	If **BOTH** of the other participants choose B
	A	12	0	0
	B	7	7	7

In this table, the rows show your possible decisions, "**A**" or "**B**", while the columns show the decisions of your group members. Each cell represents a decision combination and shows the merits in Euro, should this decision combination materialize. It is important that your payout is, thus, dependent on your decision **and** the decisions of your group members. For example, if you choose "**A**" and both of your group members choose "**B**", you receive **0 Euros**; if you choose "**A**" and both of your group members choose "**A**", you receive **12 Euros**.

<u>Information</u>

After each round, you will be informed of your decision, the decisions of your group members, and your resulting payout in that round. In addition, you will see information about the past rounds (your decisions, the decisions of your group members, and your payouts). In the table displayed, each row represents one of the past rounds. Your past decisions are displayed in the second column and the past decisions of your group members are displayed in the third column. The last column shows your payouts from past rounds. The screen you will see later, looks like this:

ROUND	Your decision	Decisions of your group members	Your payout in round
...	...	...	...

Your payout

At the end of the experiment, one of the 40 rounds is randomly selected. This randomly selected round is relevant for your payout. In addition to the payout from the randomly selected round, you will receive a show-up fee of 3 Euros.