



Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Journal of Economic Behavior & Organization

journal homepage: www.elsevier.com/locate/jebo



Gender differences in decisions under profound uncertainty are non-robust to the availability of information on equally informed others' decisions^{☆,☆☆}

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ARTICLE INFO

Article history:

Received 15 October 2012
Received in revised form 23 June 2014
Accepted 15 July 2014
Available online xxx

JEL classification:

D81
J16

Keywords:

Decision-making
Uncertainty
Gender differences
Experiment
Social information

ABSTRACT

We investigated in the laboratory whether gender differences in decisions made under uncertainty *without* information on decisions of equally informed others are robust to the availability of that information. Participants specified in each of at most 60 periods four capital volumes making up the skeletal balance sheet of a financial institution in a computer-simulated environment with rare but potentially payoff-devastating crises. In the main study, we compared decision outcomes from two treatments: in the first, a participant had access to information on business numbers of two other participants, at least one of whom – unknown to the participant – was of the opposite sex (treatment with group information); in the second, no such outside information was available (treatment without group information). Our main finding is that, without group information, men adopted significantly more risk-exposed financial positions than women, whereas this pattern did not obtain beyond the first few periods when group information was available. A further study produced evidence that this effect of the availability of group information upon risk exposure is moderated by the gender composition of the groups. We also confirm the well-established tendency of social information to diminish cross-sectional variability in decisions.

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[☆] Funding by the *Nordrhein-Westfälische Akademie der Wissenschaften und der Künste* through the *Academies' Program* of the *German Academies of Sciences and Humanities* financed by the German Federal Government and the state governments is gratefully acknowledged.

^{☆☆} We are greatly indebted to several colleagues who enabled us to run our experiments at their home universities, often providing critical technical support: Marc Adam, Max Albert, Volker Benndorf, Olaf Bock, Andreas Hildebrand, Maik Kecinski, Hans-Theo Normann, Vanessa Mertins, Jan Papmeier, Fabian Pätzelt, Clemens Puppe, Thomas Riechmann, Marc Oliver Rieger, Michael Seebauer, Stefan Traub, Christof Weinhardt. We also received excellent technical support from our student and research assistants Felix Bürder, Markus Hertel, Jonas Klein, Moritz Kunze and Rachid Rabah. Comments from the Associate Editor in charge Ragan Petrie and two anonymous referees were substantial and very helpful, as were discussions with Judith Avrahami, Yaakov Kareev, Graham Sutherland and Eldad Yechiam. The experiment interface was programmed in JAVA. All statistical analyses were performed using R (*R Core Team, 2012*).

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<http://dx.doi.org/10.1016/j.jebo.2014.07.011>

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Please cite this article in press as: Hohnisch, M., et al., Gender differences in decisions under profound uncertainty are non-robust to the availability of information on equally informed others' decisions. *J. Econ. Behav. Organ.* (2014), <http://dx.doi.org/10.1016/j.jebo.2014.07.011>

1. Introduction

Recent advances in behavioral economics have been based to a considerable degree on incorporating the social environment of economic actors into their utility functions (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002). For decisions under uncertainty, an analogous approach has recently been implemented by Linde and Sonnemans (2012) and Rohde and Rohde (2011), for instance. The recognition of the social environment as an important determinant of individual decisions under uncertainty is already well-established in the behavioral sciences (Blank, 1968; Yechiam et al., 2008).

A robust result from this line of research is that when individuals can observe the decisions of others they tend to align their own decisions towards them (Yechiam et al., 2008; Bougheas et al., 2013). In the present study we aimed at testing an immediate implication of this result – an attenuating effect of social information upon gender differences in decisions under uncertainty. Such differences constitute an ordinal pattern of behavior at the population level which has been widely studied experimentally (Byrnes et al., 1999; Eckel and Grossman, 2008; Croson and Gneezy, 2009). These studies, however, have been restricted to situations where participants took their decisions in informational isolation from each other. We therefore designed an experiment testing whether any gender differences in decisions under uncertainty made without information on equally informed other participants' decisions are robust to the availability of that information.

In our experiment, participants specified in each of at most 60 periods four capital volumes making up the skeletal balance sheet of a financial institution in a computer-simulated environment with crises which were rare but potentially devastating. A crisis could lead to the insolvency of a financial institution, terminating the game for the corresponding participant and entailing the loss of three quarters of the payoff accumulated up to that point. In our main study, we compared decision outcomes from two treatments. In the first treatment, called *with group information*, a participant had access to information on business numbers of two other participants with whom s/he jointly formed a group throughout the experiment. Unknown to the participants, at least one of the other two participants in the group was of the opposite sex. Each group's progress through the experiment was synchronized in such a way that a participant proceeded to the following period only when all participants in the group had made their decisions. Due to this synchronization the information on others' decisions could provide neither representative feedback, i.e. information about the *overall* performance-related payoff of others, nor information regarding the consequences of a crisis. In the second treatment, called *without group information*, participants played on their own and at their own pace.

Importantly, all hypotheses formulated in the present paper apply only to the portion of the game prior to the first crisis period encountered by a participant. There are a number of reasons for this: Firstly, in many cases the first crisis reduced the number of other group members about whom a solvent participant could obtain information, undermining the main feature of our experimental design. Secondly, even if a group remained complete, the individual members' decision situations might have become quite disparate as a result of the losses incurred in the crisis. This again would invalidate a basic feature of our experimental design. Thirdly, after a crisis period a solvent participant had access to information about the crisis default rates. This knowledge crucially reduced the uncertainty of the decision situation and thus the value of group information.

Our aim in choosing a relatively complex task was not comprehensively to reflect the intricacies of real-world financial institutions. Indeed, by that measure our model is still so crude as to remain essentially an abstract problem.¹ Rather, this aspect of our design was motivated by the assumption that the assimilation of information about how equally informed others have decided in the same situation will be at its greatest when the task is complex and the decision environment profoundly uncertain. That is to say, whenever a decision problem involves one or a series of difficult judgments, prone to errors and miscalculations, individuals will more readily tend to compare their judgments to those of others, if that possibility exists. However, this attempt to sharpen the treatment effect by no means suggests that we question the influence of equally informed others on simpler types of decision under uncertainty (see Cooper and Rege, 2011; Yechiam et al., 2008; Bougheas et al., 2013).

The result of our main study (Study I) is that, without group information, men adopted significantly more risk-exposed financial positions than women, whereas this pattern did not obtain beyond the first few periods when group information was available. Furthermore, we reproduced the stylized fact that social information diminishes cross-sectional variability in decisions. Study II provided evidence that the gender composition of the group moderates the effect of group information upon risk exposure: while risk exposure increased with group information, with mixed-sex groups only the effect for women was found to be statistically significant; with single-sex groups, by contrast, a significant increase of risk exposure occurred only for men. Study III picked up on the role of task complexity. It investigated whether the complexity of the task context engendered cognitive overload or a feeling of being inadequate to the experiment task, bearing the potential to induce participants to resort to a practice of simply adopting the observed decision of others. While this would have provided an alternative explanation for the attenuation of gender differences in decisions found in Study I, Study III found no evidence that the complexity of the experiment task had any such effect.

¹ While the participants – business and economics students – were familiar enough with the notions and structures involved, they had no model-specific a-priori knowledge of the problem.

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