



To see is to believe: Common expectations in experimental asset markets



Stephen L. Cheung^{a,b,*}, Morten Hedegaard^c, Stefan Palan^{d,e}

^a The University of Sydney, School of Economics, Merewether Building H04, Sydney NSW 2006, Australia

^b Institute for the Study of Labor, Bonn, Germany

^c University of Copenhagen, Department of Economics, Øster Farimagsgade 5 Building 26, Copenhagen K, Denmark

^d University of Innsbruck, Department of Banking and Finance, Universitätsstraße 15/4, 6020 Innsbruck, Austria

^e University of Graz, Institute of Banking and Finance, Universitätsstraße 15/F2, 8010 Graz, Austria

ARTICLE INFO

Article history:

Received 22 October 2012

Accepted 15 November 2013

Available online 27 November 2013

JEL classification:

C92

D84

G12

Keywords:

Asset market experiment

Mispricing

Confusion

Common expectations

ABSTRACT

We experimentally manipulate agents' information regarding the rationality of others in a setting in which previous studies have found irrationality to be present, namely the asset market experiments introduced by Smith et al. (1988). Recent studies suggest that mispricing in such markets may be an artefact of confusion, which can be reduced by training subjects to understand the diminishing fundamental value. We reconsider this view, and propose that when it is made public knowledge that training has occurred, this may also reduce uncertainty over the behavior of others and facilitate the formation of common expectations. Our design disentangles the direct effect of training from the indirect effect of its public knowledge, and our results demonstrate a distinct and statistically significant effect of public knowledge over and above that of training alone.

© 2013 Elsevier B.V. All rights reserved.

In a wide range of decision problems, the optimal course of action depends critically on agents' expectations regarding the behavior – and therefore implicitly the rationality – of others. This is the case not only in many applied problems of business strategy, but also in the corpus of theory that economists have developed to model such interactions. As is well known, standard solution concepts such as rationalizability and backward induction demand high levels of mutual knowledge of rationality, resulting in stark equilibrium predictions that frequently fail in the experimental laboratory (Nagel, 1995; McKelvey and Palfrey, 1992). Yet, what is less commonly acknowledged is that these settings arguably also stretch the limits of the experimental method itself. For while an experimenter can control such features as the set of players, the strategies at their disposal and resultant material payoffs, it is far more difficult for the experimenter to credibly control the *epistemic* conditions that are also required for equilibrium predictions to obtain – in particular the beliefs that players hold regarding the rationality of their counterparts. Nonetheless, when experimental findings fail to confirm equilibrium predictions, it is tempting to conclude that this might reflect some failure of rationality itself rather than the common knowledge thereof.

* Corresponding author at: The University of Sydney, School of Economics, Merewether Building H04, Sydney NSW 2006, Australia. Tel.: +61 2 9351 2135.

E-mail addresses: Stephen.Cheung@sydney.edu.au (S.L. Cheung), czq148@alumni.ku.dk (M. Hedegaard), Stefan.Palan@uni-graz.at (S. Palan).

In this paper, we examine these issues in the context of the mispricing observed in the asset market experiments introduced by Smith et al. (1988, hereinafter SSW). In particular, we reconsider the recent suggestion that this mispricing is due to confusion, and can be ameliorated by training subjects to understand fundamental value (FV). We reassert the importance of subjects' expectations by proposing that when it is made public knowledge that training has taken place, the coordination of expectations may also be facilitated. To test this conjecture, we manipulate whether or not it is public knowledge that all traders in a market have undergone training. We thus distinguish the direct effect of training from the indirect effect of its public knowledge, and we find that there is a distinct and significant effect of public knowledge over and above that of training alone.

The phenomenon of price “bubbles and crashes” in SSW-style asset market experiments was for many years considered a paradox or anomaly. Over the quarter century that followed publication of SSW, a large body of research sought to identify and eliminate the sources of this mispricing, with only limited success.¹ SSW's original interpretation of their discovery was that differences between price and FV “may be due to a lack of common, not irrational, expectations” (p. 1120), and that “it is the failure of the assumption of common expectations, *not backward induction incompetence by subject agents* that explains bubbles” (p. 1148, emphasis added). That is, although the dividend structure of the asset was made public knowledge by the experimenter, each subject might still have been uncertain as to how others would use that information. However, in SSW's interpretation, it was not necessary that subjects actually failed to comprehend the information itself.

More recently, a new interpretation has proposed that mispricing in SSW markets is largely a product of confusion over the FV process, which declines over time due to the finite life of the dividend-paying experimental asset (and may thus be inconsistent with subjects' homegrown expectations derived from real-world assets). Consistent with this view, several recent studies find that when care is taken to train subjects to correctly understand declining FV, mispricing in SSW markets is substantially diminished.² Huber and Kirchler (2012, p. 89) summarize these results by stating that “all bubble reducing factors have one common feature: they allow subjects to understand the non-intuitive declining FV-process of the SSW-model better and thus reduce subjects' confusion”.³

The first conclusive evidence of confusion was provided by Lei et al. (2001, hereinafter LNP). They made explicit the implication of SSW's conjecture that mispricing arises from uncertainty over the behavior of others – namely that some subjects must doubt the rationality of others, and thus perceive an opportunity for speculation. To test this, LNP designed treatments in which speculation was not possible (by prohibiting subjects in the role of buyers from reselling, and subjects in the role of sellers from repurchasing), and nonetheless observed many transactions at prices that were as a consequence certain to be unprofitable. From this, LNP were careful to conclude that “the lack of common knowledge of the rationality of market participants ... can be ruled out as being the *only* cause of the bubble phenomenon” (p. 834, emphasis in original).⁴

In this paper, we reaffirm the role of common expectations, as first emphasized by SSW, in the wake of the finding of confusion in SSW markets. Since LNP establish that doubts over the behavior of others are well-founded, it follows that protocols that facilitate common expectations cannot wholly substitute for ones that address the underlying confusion. However, it does not follow that the two may not be complements. Nonetheless, we submit that all recent training protocols in fact share a second common feature – namely *the fact that it is public knowledge that all subjects in the market have been jointly exposed to the protocol*.

We believe that in making the training of declining FV public knowledge, these recent studies may also have the effect of reducing uncertainty over the behavior of others and resolving the problem of coordinating subjects' price expectations – and that this may in itself have contributed to the finding of diminished mispricing.⁵ To evaluate this conjecture, we report new experiments in which we manipulate both whether or not subjects are trained to understand FV, and whether or not it

¹ King et al. (1993), Van Boening et al. (1993), Porter and Smith (1995), and Haruvy and Noussair (2006) manipulate aspects of the rules of the institutions that govern exchange. Porter and Smith (1995), Smith et al. (2000), Noussair et al. (2001), and Hussam et al. (2008) manipulate aspects of the dividend process of the experimental asset. James and Isaac (2000) and Cheung and Coleman (in press) study the effect of incentives; Dufwenberg et al. (2005) study the effect of experience; Haruvy et al. (2007) elicit subjects' price predictions; and Cheung and Palan (2012) study the effect of group decision-making. Recent surveys of this literature include Porter and Smith (2008), and Palan (2013).

² Noussair and Tucker (2006) sequentially open a complete set of futures markets, in reverse order of maturity, prior to opening the spot market; they state explicitly that this is intended to facilitate backward-induction reasoning over the FV. Lei and Vesely (2009) introduce a pre-market phase in which subjects passively experience a flow of dividends. After this they ask subjects to state, for each period, the value of an asset that pays dividends in every remaining period of its life. Kirchler et al. (2012) introduce a new framing “stocks of a depletable gold mine” intended to call to mind a declining FV. Huber and Kirchler (2012) present FV information in a graph instead of a table, and ask subjects to state their estimate of the FV before the start of each period. Each of these protocols is found to produce patterns of mispricing that are less pronounced than is typical in SSW-style markets.

³ The specific factors named by Huber and Kirchler (2012) are “experience, special emphasis on the dividend process, a better understandable context, a graphical representation of the FV, a stronger focus on the FV in each period” (pp. 96–97). Thus, for example, the well-known result that mispricing in SSW markets is diminished with repetition – which SSW interpreted to show that subjects came to form common expectations by learning the behavior of others through experience – is reinterpreted to indicate that subjects were instead learning to understand FV. It follows that an appropriate training protocol could serve as a substitute for such experience (Lei and Vesely, 2009, p. 258).

⁴ Smith (2010, p. 6) acknowledges that SSW's original interpretation of their finding was falsified by the LNP result; however he does not wholeheartedly endorse the notion that the subjects were “confused”.

⁵ Noussair and Tucker (2006, p. 169) acknowledge that their futures market protocol cannot discriminate between the effects of coordinating expectations and reducing confusion. Lei and Vesely (2009, p. 256) are less circumspect, asserting that “individual rationality induced in the pre-market phase was so profound that uncertainty about the behaviour of others ... never became strong enough to divert market prices away from the fundamental values”. This overlooks the possibility that behavioral uncertainty might itself have been diminished as a byproduct of the protocol.

Download English Version:

<https://daneshyari.com/en/article/5066860>

Download Persian Version:

<https://daneshyari.com/article/5066860>

[Daneshyari.com](https://daneshyari.com)