E 627 Comments No. 10[•] by Frank P. Maier-Rigaud

Starting from the economic analysis of asymmetric information, better informed agents are assumed to be capable of reproducing the choice environment and judgement of less informed agents. This assumption is systematically violated in the experiments conducted in "The Curse of Knowledge in Economic Settings" (COK). Better informed agents seem to be unable to ignore additional private information while predicting behavior of less informed agents. This "curse of knowledge" is particularly significant on the individual level. Judgements made in market experiments reduce the curse by about 50 percent but do not eliminate it completely. The data collected in the experiments suggest that the error-correcting power of markets cannot be derived from the feedback they provide, but must emanate from the disproportionate activity of more rational traders. The authors conclude that, despite popular assumptions, "more information is not always better".

Before turning to the experimental design, I will describe the motivation of the paper. In many economic transactions, informational asymmetry plays a fundamental role. The standard approach to asymmetric information is that the agent that has more knowledge about the characteristics of the used car he wants to sell (to use Akerlof's classic example) is aware of the information asymmetry and exploits this information gap to his advantage. To be able to exploit the asymmetric character of a situation to his advantage, the agent has to be aware that he knows more about the product than the potential buyer does, and he must use that information wisely. This presumes accurate anticipation of the judgement of a less informed potential buyer. If the agent is not able to correctly anticipate the judgement of the potential buyer, he might tend to assume similar knowledge about the product and be willing to sell for a lower price. Thus, as the authors state, the curse of knowledge can mitigate market consequences resulting from information asymmetry and reduce the degree of market failure.[1]

[•] Critical summary of: The Curse of Knowledge in Economic Settings: An Experimental Analysis by Camerer, C., Loewenstein, G. and Weber, M., Journal of Political Economy, 1989, Vol. 97, 5

[1] This cannot, however, be concluded without specification. If prices are already adjusted for the average information asymmetry, which tends to be the case (e.g., a new car's price drops by an incredible amount of money as soon as it is

The "Curse of Knowledge" can formally be presented the following way. Information set I_0 is a subset of I_1. The variable to be forecasted is X. The optimal forecast of X given the information set I_0 is $E(X|I_0)$. If agents with information set I_1 are asked to predict the forecasts made by agents with information set I_0 the estimate is $E[E(X|I_0)|I_1]$. Following the law of iterated expectations, $E[E(X|I_0)|I_1]$ must equal $E(X|I_0)$ if I_1 includes I_0. This means that agents should ignore information irrelevant to their task. The curse of knowledge is then defined as the inequality between $E[E(X|I_0)|I_1]$ and $E(X|I_0)$. By introducing w, as a measure of the degree of curse of knowledge, we can write:

$$E[E(X|I_0)|I_1] = w\,E(X|I_1) + (1-w)\,E(X|I_0) \qquad [1]$$

If w = 0, the agent is applying the law of iterated expectations correctly. If w = 1, the agent is not capable of shutting out the additional information: he assumes that all other agents have the same information set as he does.

The actual experiment consists of two stages. In the first stage, Wharton students received a Value Line report containing information on the annual earnings of several companies from 1970 to 1979 and information about the prospective earnings for 1980. The students were then told to estimate the actual 1980 figures for the companies. As incentive for accuracy, subjects received $1 for every estimate within a 10% range of the actual figure.

The second stage experiments consisted of eight identical markets (one for each of the eight companies) that were split into two periods (A and B). At the beginning of each period, subjects received $50 in cash which, along with a lump sum tax of $3.50 (the reason for the tax is unclear), had to be repaid at the end of the period. The subjects had several choices. They could either trade assets in a double-oral auction environment or keep them. In addition to those rather standard features, subjects

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driven off the seller's lot. The few minutes between new and used are the most expensive ones), then the curse of knowledge increases "market failure" to the detriment of the seller so that individual irrationality can actually reduce

could sell short and thereby discipline the market. At the end of period B, subjects received all dividends for all assets they held at the end of each period (A and B)(the expired assets were worthless). The dividend amount paid per share was equal to the mean earnings prediction of the subjects in the first stage of the experiment. Subjects in stage 2 were given the same information as subjects in stage 1 with the exception that they were given the actual 1980 earnings as well. In addition to earning money by trading assets, subjects also received $0.25 for every prediction of the average estimate of stage 1 lying within a 10% range.

The resulting data shows that prices generally begin between the pure-bias and no-bias predictions and move slightly towards the no-bias prediction. By looking at the judgements made before and after each of the two periods, the authors conclude that market experience reduces bias. In order to shed additional light on the issue, another experiment, this time with Chicago MBA students was conducted. The Chicago students' task was identical to the one in the market experiments. Knowing the actual 1980 earnings, they were asked to estimate the prediction made by subjects who had predicted those earnings earlier. They earned $1 if their judgement was within the 10% range of the actual mean prediction. In the feedback environment, they were told the actual mean prediction of the uninformed subjects after each guess. In order to compare the degree of bias, the authors converted the subject's judgements into a curse of knowledge bias index.[2]

Since this calculation did not lead to any significant differences between biases of subjects in the incentives as opposed to the feedback environment, the authors pooled the data. The pooled data shows that individuals in both environments exhibit some positive bias, but the market reduces bias by about 50%. In order to explain why the market reduced bias more than individual judgements tempered by incentives and feedback, the authors conjectured that the mistakes of less rational traders would become less significant with higher trade volumes created by rational traders (importance of short

collective rationality.

[2] $W = \{E[E(1980\ earnings|I_0)|I_1] - E(1980\ earnings|I_0)\} / \{E(1980\ earnings|I_1) - E(1980\ earnings|I_0)\}$ with zero bias at w =

selling). In analogy to information aggregation models in which uninformed traders can infer the information of insiders from their trading activity, the authors point out that even though there are no insiders in the experiments conducted, "less biased traders are like insiders because they are better informed about the true value of the assets".[3] In order for this analogy to apply, subjects would need to have a fair amount of self-insight in order to know whether they are more or less biased than others. In order to measure self-insight, subjects were asked to predict their rank relative to each other in trading profits as well as prediction profits. Correct rankings were rewarded with $2. The results obtained are rather astonishing. If the subjects know their relative performance to such a high degree, and if this knowledge is associated with being biased or not as the authors suggest, why didn't the subjects correct their individual bias? Either relative performance has something to say about individual bias awareness or it has not. If it does, the big question arises why the biased subjects did not do anything about it.[4] Finally, I see my doubts verified by the statement that "less biased traders know roughly who they are and act disproportionately often, as the information aggregation account suggests, but the effect is small in magnitude". That traders that perform better than others have a higher trading volume does not prove that those traders are actually aware that they are less biased.

When concluding that "more information is not always better", the authors state the obvious. Information per se is never valuable if it is not used appropriately and efficiently. To have perfect information and still make mistakes is not paradoxical if perfect information is not defined as a perfect processing and application of perfect knowledge. From that perspective, the title of the paper and its main conclusion are wrong. It is **not** information or knowledge that is a curse, but the improper usage of it. For the phenomenon of the curse of knowledge to occur, a greater information set is a necessary

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0 and perfect prediction of the 1980 earnings at w = 1.

[3] Again, less biased traders are not like insiders because "they are better informed" but because they are better (more versatile) in processing information. Like the title, this sentence is misleading because information was identical and therefore no trader was better informed than anybody else.

[4] The authors seem to be aware of this problem to some extent when they focus their argument on the less biased. Nevertheless, with close to perfect relative ranking, it is clearly not only the less biased that are aware of their performance. If this is the case, relative ranking capabilities do not give any insights into whether subjects know that they are biased or

but not sufficient condition. In some situations greater knowledge or better "irrelevant knowledge" might render the processing more difficult. In those cases, agents have to decide which information is not relevant for the particular problem they are trying to solve. The higher the ratio of useful to useless information (at least up to some point), the easier decisions will be. More information is only a curse in a specific environment, namely when agents are imperfect information processors and the informational input is controlled exogenously. I think it would not be very astonishing to find that two groups of people equipped with two identical puzzles with the only exception being that one puzzle also contains a certain amount of pieces that do not belong to the specific puzzle they are told to put together, the group with the additional "irrelevant" pieces will take longer on average. The practical relevance of this insight is limited, however, because separation into relevant and irrelevant is not as clear-cut in field settings, especially if it is up to the agents to gather information. In addition to those fundamental concerns, the paper contains several mistakes.[5]

not. They may simply know that they are better than others but not why.

[5] A funny mistake can be found directly on page 1232. Institut fuer Wirtschaftswissenschaften, the affiliation of Martin Weber, simply means Department of Economics, unfortunately the name of the University has been dropped. A somewhat more serious mistake can be found on page 1246. In the sentence "As a result, agents will be excessively penalized for negative outcomes and insufficiently rewarded for favorable results," "insufficiently rewarded" needs to be replaced by excessively rewarded.