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Confidence interval estimation tasks and the economics of overconfidence

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Abstract

We investigate the robustness of results from confidence interval estimation tasks with respect to a number of manipulations: frequency assessments, peer frequency assessments, iteration, and monetary incentives. Our results suggest that a large share of the overconfidence in interval estimation tasks is an artifact of the response format. Using frequencies and monetary incentives reduces the measured overconfidence in the confidence interval method by about 65 percent. The results are consistent with the notion that subjects have a deep aversion to setting broad confidence intervals, a reluctance that we attribute to a socially rational trade-off between informativeness and accuracy.

JEL classification: C91; D80; Z13

Keywords: Overconfidence; Uncertainty; Monetary incentives; Experiments

1. Introduction

'*When Parisian taxi drivers want to press a point on the municipal authorities about regulations or fees, they sometimes launch a work-to-rule strike. It consists merely in following meticulously all the regulations in the Code routier and thereby bringing traffic throughout central Paris to a grinding halt. The drivers thus take tactical advantage of the fact that the*

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circulation of traffic is possible only because drivers have mastered a set of practices that had evolved outside, and often in contravention, of the formal rules' (*Scott, 1998, p. 256*).

A growing literature in economics explores the economic consequences of overconfidence, a psychological bias often considered an important departure from the *homo oeconomicus* paradigm. The term overconfidence has been used to describe two distinct phenomena. The first is the tendency of individuals to express excessive belief in their own capacity, for example the ability to drive safely (Svenson, 1981). The second phenomenon is the tendency of individuals to overestimate the preciseness of their knowledge, which is a lack of metacognitive capacity.[1] Henceforth, we will use the term overconfidence to denote the second phenomenon.

Alpert and Raiffa (1969) are usually credited with the first 'discovery' of overconfidence. In the finance and economics literature, a very influential study, which we take as our point of departure, is Russo and Schoemaker (1992). This article has reached an academic audience outside the realm of management and psychology, and the Social Science Citations Index reports references to this paper in for example the Quarterly Journal of Economics (Barber and Odean, 2001), the American Economic Review (Moskowitz and Vissing-Jorgensen, 2002) and the Journal of Finance (Kyle and Wang, 1997, Daniel et al., 1998, Odean, 1998).

Russo and Schoemaker (p. 8) use a confidence interval assessment test where the test subjects are given the following instructions: 'For each of the following questions, provide a low and a high estimate such that you are 90 percent certain the correct answer will fall within these limits. You should aim to have 90 percent hits and 10 percent misses'. Ten tailor-made questions are then provided, in some cases at the industry level and in some cases at the firm specific level. The sample is roughly 2000 professionals. Even though a well-calibrated individual following the test instructions should on average err in 10 percent of cases if a confidence interval of 90 percent is provided, typical outcomes are in the range of 50–60 percent.[2]

The seemingly substantial observed overconfidence in the Russo and Schoemaker study has also been documented in several other interval estimation studies in psychology (see, for example, Juslin et al., 1999), and the mainstream view in psychology is that it is a very important phenomenon. Myers (1993, p. 126), for example, refers to overconfidence as a 'fact of psychology', and von Winterfeldt and Edwards (1986, p. 539) call it a 'reliable and reproducible finding'. If overconfidence is a pervasive feature of behavior, this will also have profound implications for economics. Overconfidence will, for instance, affect behavior on financial markets. Recently, a number of theoretical models on financial markets that attempt to incorporate overconfident judgments have also been developed (Odean, 1998, De Long et al., 1991, Kyle and Wang, 1997). Odean (1999) provides evidence of excessive trading and negative abnormal returns amongst certain stock market traders and interprets this in terms of overconfidence. In the finance literature, the presence of overconfidence has become well established. DeLong et al., for example, refer to it as 'one of the best documented biases'.

Overconfidence may also be relevant for macroeconomics. The disagreements about the desirability of activist monetary policy originate in conflicting views about the preciseness with which policymakers can assess the contemporaneous state of the economy. In a similar vein, Orphanides (2000, p. 10) has recently argued that the cause of the great inflation was a reliance on the 'heroic

[1] The term overconfidence has further been used to denote the tendency of people to express excessive optimism concerning the probability of a certain favorable/unfavorable outcome in the future (Babad, 1987).

[2] Other response formats than the confidence interval method has also been employed to measure overconfidence. For comprehensive reviews of the calibration literature, see Keren (1991), Lichtenstein et al. (1982) and Yates (1990).