Pragmatic beliefs and overconfidence

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Abstract

Several studies indicate that humans are overconfident about their own (relative) abilities. We propose a notion of pragmatic beliefs, and show through an example that this concept can shed light on why overconfidence emerges. Through the example, we also shed light on the idea that 'bounded rationality' may arise endogenously in a game—without assuming complexity costs. © 2002 Elsevier Science B.V. All rights reserved.

1. Introduction

Several studies from psychology and experimental economics indicate that agents are overconfident about their own (relative) abilities: for a variety of skills, agents seem to believe they are more skillful than they really are. [1] Although 'rational' theories of belief formation, like the Bayesian paradigm, can easily be made consistent with *some* individuals in a population being overconfident, it is hard to make such theories consistent with most, or a majority of, a population being overconfident, and across different settings. Hence, rational theories of belief formation seem unfit to explain overconfidence.

The purpose of the present paper is to propose a notion of *pragmatic beliefs*, and to suggest that this concept can shed light on why overconfidence can occur. In short, we attempt

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[1] The classic example is car-driving, as in Svensson (1981). Most of the literature on overconfidence is based on interview data. An exception is Camerer and Lovallo (1999), who reports on overconfidence in entry decisions in games of skill (with monetary incentives). An interesting example of overconfidence in market data appears in Ausubel (1991), whose findings indicate that the credit card market is characterized by users of credit cards being overconfident about their future ability to avoid overdrawn accounts. For references to the psychologically minded literature on overconfidence, see Camerer and Lovallo (1999).

to show with a simple game-theoretic example that if agents form beliefs pragmatically, overconfidence can be the equilibrium outcome.

An agent that forms beliefs pragmatically forms beliefs that are (the most) *useful* to him. The pragmatic explanation of beliefs should be contrasted with 'rational' approaches to beliefs, which focus on agents that try to reflect the 'world as it is' in their beliefs (with tools like Bayes' law, the law of double expectation and so forth). As will become clear, pragmatic beliefs need only have a weak relation to 'the world as it is'. We also contrast the pragmatic explanation of beliefs to approaches assuming that beliefs are of intrinsic value to agents, as with wishful thinking and with cognitive dissonance.

To show how the idea of pragmatic beliefs can shed light on overconfidence, we consider a simple model of a job market. An agent is matched with a firm, and the firm makes a take-it or leave-it offer. If the agent accepts the offer, the game ends, while if the agent rejects the offer, he gets an outside opportunity. The take-it or leave-it offer made by the firm will in equilibrium depend partly on the worker's productivity in the firm, and partly on the agent's beliefs about his outside opportunity, which is commonly known between the firm and the worker. The key feature of this example is that instead of taking the agent's beliefs as a primitive, we let the agent's beliefs about his outside opportunity be an endogenous variable. We show that if agents form beliefs pragmatically, then in equilibrium these beliefs will be inflated compared to the true distribution of the outside opportunity, and interpret this as overconfidence.

A way to interpret the result is that overconfidence is a way for the agent to obtain a first mover advantage towards the firm; overconfidence acts as if the first mover privilege is shifted from the firm to the agent. Although this analogy is useful, we also consider the case when both firms and workers form beliefs pragmatically, and show that the same type of overconfidence results carry through to this case.

An immediate criticism against the idea of pragmatic belief formation is that human agents are incapable of constructing beliefs that they do not really believe in. We should therefore stress from the outset that the main justification for pragmatic beliefs is dynamic; pragmatic beliefs in a population are formed either by this selection pressure towards agents that are born pragmatists, or by agents gradually learning that a certain way of forming beliefs is more rewarding than other ways. Hence, we make no assumptions on the agents' awareness about their own overconfidence. This, and other criticisms against the notion of pragmatic beliefs will be discussed in a separate section.

The paper is structured as follows. In Section 2, we discuss the definition of 'overconfidence' and relate it to rationality. In Section 3, we analyze the job market example, and in Section 4 we provide a discussion of the approach to beliefs outlined in this paper. Finally, in Section 5 we conclude.

1.1. Related literature

The paper is related to several strands of the literature. In this section, we consider this relation in some detail. The section can be skipped on first reading.

First, the paper is related to a new school of thinking on bounded rationality, exemplified by Rubinstein (1997), and surveyed by Lipman (1995). A central feature of this school is that humans are information processors that are imperfect when compared to the standard