



# Overconfidence, experience, and professionalism: An experimental study

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## ABSTRACT

This paper presents an online-experiment on overconfidence in the context of financial markets. Our subject pool consists of institutional investors, investment advisors and individual investors, all of them being registered users of a large online platform for market sentiment data. Due to their registration, several socioeconomic characteristics of participants can be controlled for in our analysis. It turns out that there are stable differences in overconfidence between the three investor groups. Moreover, investment experience and age have a significant impact on the degree of overconfidence which goes surprisingly in opposite direction. We argue that these results have important implications for studies analyzing the impact of experience on behavior in (financial) markets.

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## 1. Introduction

An important issue in the behavioral economics literature is the question whether observed behavioral biases and market anomalies are persistent or whether they tend to wash out with increasing experience of subjects. To analyze this question, many studies run repeated experiments and compare behavior in later rounds with that in earlier rounds (e.g. Dufwenberg et al., 2005; Plott and Zeiler, 2005). Another approach is to compare behavior of students or other lay people with that of professionals who are assumed to be more experienced (e.g. List and Haigh, 2005; Glaser et al., in press). Our experiment on overconfidence in financial markets takes the second approach but introduces two innovations compared to earlier studies: First, we compare behavior of professionals and lay people while controlling for experience at the same time. This allows us to detect differences between the groups which cannot be attributed to experience. Second, we consider two different groups of professionals, institutional investors and investment advisors.

Overconfidence is a robust phenomenon in the psychology of judgment which has received increasing attention in the behavioral economics literature. Although the phenomenon is rather general, substantial differences depending on the type of questions (Lichtenstein and Fischhoff, 1977; Klayman et al., 1999; Soll, 1996) and respondents (Yates et al., 1997,

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1998) have been observed. In the context of financial markets overconfident investors tend to overestimate their abilities or the precision of their knowledge. As a consequence, they usually hold riskier portfolios and trade more than maximizing expected utility would suggest (e.g. Odean, 1998). There exist numerous theoretical and empirical studies analyzing the impact of overconfidence on investment decisions and financial market outcomes (e.g. Barber and Odean, 2001; Biais et al., 2005). Some of these studies are, as our experiment, devoted to the relation between overconfidence and experience.<sup>1</sup> The model of Gervais and Odean (2001) predicts that after an initial period overconfidence should decrease with experience. Evidence supporting this result has been reported by Locke and Mann (2001) and Christoffersen and Sarkissian (2002). However, several studies in the psychological literature show that experts are more likely to be overconfident than relatively inexperienced subjects (see e.g. Heath and Tversky, 1991; Frascara, 1999). Similar results have been obtained by Kirchler and Maciejovsky (2002); in their experimental asset markets the degree of overconfidence increases during the experiment. Also in the experiments of Glaser et al. (2007a,b, in press) professional traders usually have a higher degree of overconfidence than students. Altogether the relation between overconfidence, experience and professionalism remains unclear. Our experiment tries to analyze whether this ambiguity is caused by the fact that the mentioned studies only analyze the effect of experience or professionalism isolatedly while we take both factors into account simultaneously. Moreover, some studies take the age of respondents as proxy for their experience. However, also the relation between age and overconfidence seems to be unclear as some studies found that overconfidence is increasing with age (Job, 1990; Crawford and Stankov, 1996; Hansson et al., 2008) while others came to opposite results (Pliske and Mutter, 1996; Touron and Hertzog, 2004).

In our online-experiment subjects have to state confidence intervals as well as point estimates for two major stock indices and to evaluate their own performance and information in relation to other investors. Altogether 496 subjects participated in the experiment, all of them being registered users of a large online platform for market sentiment data. Due to this registration, we can distinguish individual investors and professionals and infer that 74 of our subjects are institutional investors and 78 are investment advisors. Moreover, several socioeconomic characteristics of subjects are available as control variables, in particular age and investment experience. Our results show that there are systematic differences in the overconfidence between professionals and individual investors even if we control for experience. However, the group of professionals cannot be considered as a homogeneous group since investment advisors turn out to be substantially more overconfident than institutional investors.<sup>2</sup> Age and experience have a significant impact in nearly all of the tasks of our experiment, the direction of their impact is, however, opposite and depends on the specific task. The latter point indicates that different facets of overconfidence should be clearly distinguished (see also Glaser et al., in press; Menkhoff et al., 2006).

Altogether, our study has several major implications for the behavioral finance literature and also for other fields of behavioral economics where it has become an important question whether behavioral biases and market anomalies tend to wash out with market experience (e.g. Shogren et al., 2001; Loomes et al., 2003). First, there exist systematic differences between professionals and lay people even if we control for experience. Therefore, the impact of experience should not be identified by simply comparing the behavior of the two groups as done in many studies in different fields of behavioral economics (e.g. Fox et al., 1996). Second, even if the behavior of professionals and lay people is compared one should take some care in choosing the right group of professionals. Third, experience and age may have contrary effects on behavior although they are usually correlated (see Feng and Seasholes, 2005, for tentative positive correlation). Therefore, studies assessing the impact of experience by comparing younger and older subjects should be taken with some caution.

The paper is organized as follows. The next section provides a more detailed discussion of the concept of overconfidence, presents the experimental design, and contains information on the online platform which was used for the experiment. Section 3 provides our results. We present some descriptive statistics and run several regression analyses in order to assess the influence of the control variables. Finally, Section 4 contains some concluding observations.

## 2. Overconfidence and experimental design

Overconfidence is a rather robust phenomenon in the psychology of judgment (see Odean, 1998; Klayman et al., 1999, and, more recently, Glaser et al., 2004, for a broad overview over the relevant literature). In the finance literature, overconfidence is usually regarded as a systematic overestimation of the precision of own knowledge and implies an underestimation of the variance of random variables. This type of overconfidence is often referred to as miscalibration (Lichtenstein et al., 1982). Experimental research usually analyzes miscalibration by asking for confidence intervals of random variables or for knowledge questions, e.g. subjects should state an upper and a lower bound of the length of the river Nile such that they are 90% sure that the true value will fall inside this range (see Lichtenstein et al., 1982; Russo and Schoemaker, 1992; Klayman et al., 1999). An additional concept of overconfidence is given by unrealistically positive self-evaluations (Greenwald, 1980). A popular example is the study of Svenson (1981) who asked a sample of students to assess their own driving safety: 82% of the students judged themselves to be in the top 30% of the group. A third stream of literature regards overconfidence as illusion

<sup>1</sup> One motivation for analyzing this relation is the observation of Chevalier and Ellison (1999), Liang (1999), and Edwards and Caglayan (2001) that inexperienced fund managers have significantly higher returns than their more experienced colleagues. If inexperienced managers are more overconfident, this observation could be explained without contradicting market efficiency since a higher degree of overconfidence corresponds to higher risk taking.

<sup>2</sup> There is further evidence that a somewhat higher degree of information – indicating professionalism – does not need to improve outcome monotonically (see Huber et al., 2008).

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