



# An empirical evaluation of the overconfidence hypothesis

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## Abstract

Recently, several behavioral finance models based on the overconfidence hypothesis have been proposed to explain anomalous findings, including a short-term continuation (momentum) and a long-term reversal in stock returns. We characterize the overconfidence hypothesis by the following four testable implications: First, if investors are overconfident, they overreact to private information and underreact to public information. Second, market gains make overconfident investors trade more aggressively in subsequent periods. Third, excessive trading of overconfident investors in securities markets contributes to the observed excessive volatility. Fourth, overconfident investors underestimate risk and trade more in riskier securities. To document the presence of overconfidence in financial markets, we empirically evaluate these four hypotheses using aggregate data. Overall, we find empirical evidence in support of the four hypotheses.

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## 1. Introduction

It has been a challenge for financial economists to explain some stylized facts observed in securities markets, among them, a short-term continuation (momentum) and a long-term reversal in stock returns, high levels of trading volume, excessive volatility, and a disproportionate amount of risk borne by investors. Recently, a growing number of researchers have made an effort to develop theoretical models built on the assumption of investor overconfidence to account for these observed anomalies.

The momentum effect, the continuation of short-term returns, remains one of the strongest and most puzzling asset-pricing anomalies (e.g., [Jegadeesh and Titman, 1993, 2001](#)).<sup>2</sup> By contrast, [De Bondt and Thaler \(1985, 1987\)](#) document return reversals over longer horizons. Several possible explanations for these types of return patterns have been investigated in the literature, including data mining and behavioral patterns. However, data mining and risk seem to have difficulty in explaining these two coexistent phenomena.

[Daniel et al. \(1998\)](#) (hereafter, DHS) show that if investors are overconfident, they overweight their own private information at the expense of ignoring publicly available information. As a result, investors overreact to private information and underreact to public information, and this asymmetric response of overconfident investors induces short-horizon momentum and long-horizon reversal in stock returns (see also [Odean, 1998](#)).

It has been argued that trading volume in speculative markets is too large to be justified on rational grounds. Trading motivated from hedging and liquidity purposes seems to explain only a small fraction of the observed trading activity and fails to support a substantial amount of trade in the real world. Overconfidence has been advanced as an explanation for the observed excessive trading volume. For example, [Gervais and Odean \(2001\)](#) develop a model predicting that overconfident investors mistakenly attribute market gains to their ability to pick winning stocks, and the process of wealth accumulation makes them trade more aggressively following market gains. A similar argument that overconfidence leads to greater trading is made in [De Long et al. \(1991\)](#), [Kyle and Wang \(1997\)](#), [Benos \(1998\)](#), [Odean \(1998\)](#), [Wang \(1998, 2001\)](#), [DHS \(2001\)](#), [Hirshleifer and Luo \(2001\)](#), [Scheinkman and Xiong \(2003\)](#). [De Bondt and Thaler \(1995, p. 393\)](#) state, "... the key behavioral factor needed to understand the trading puzzle is overconfidence".

A large volume of empirical work has documented that stock prices are more volatile than an efficient market hypothesis can explain (e.g., [Shiller, 1981](#)). One rational solution to this volatility puzzle is [Campbell and Cochrane's \(1999\)](#) habit formation model in which changes in consumption relative to habit lead to changes in risk aversion and hence variation in price-to-dividend ratios. This variation helps to reduce the gap between the volatility of dividend growth and the volatility of returns. By circumventing the relation between price movement and firms' fundamentals, overconfidence is proposed as an important reason for excessive volatility. [Benos \(1998\)](#), for example, proposes a model in which overconfident traders' aggressive exploitation of their profitable information, together with rational traders' conservative trading strategy, leads prices to move too much in one or the other direction. The prediction that volatility increases with

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<sup>2</sup> [Fama and French \(1996\)](#) show that their three-factor model helps to explain many observed anomalies, except for the continuation of short-term stock returns.

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