

Overconfidence and trading volume

Markus Glaser – Martin Weber

❖ Objectives and motivations of the study :

« Theoretical models predict that overconfident investors will trade more than rational investors. We directly test this hypothesis by correlating individual overconfidence scores with several measures of trading volume of individual investors. »

How overconfidence can lead to underestimation of the variance of signals received by investors ? Analyze the link or correlation between judgement biases and economic variables such as trading volume in this study.

❖ Used data :

- Main dataset : 563 04 buy and sell transactions of 3000+ individual investors from a German online broker (1997 to 2001).
- Second dataset consists of several demographic and other self-reported information such as age, gender, income ... that was collected by the online broker.
- Third dataset consist of the answers to an online questionnaire that was designed to elicit measures of overconfidence.

❖ Indicators / Méthods / Models used :

#0 : Model used to compare descriptive statistics of 2864 investors who did not answer and the 215 investors who answered (at least one question) : Non-parametric tests (see last column with p-values).

#1 : Indicator : Trading volume, purchases and sales per month of each investor.

Method : We calculate the sum of the absolute values of purchases and sales per month for each investors by the respective end of month stock portfolio position. To calculate the monthly average turnover per investor we only consider investors who have at least five end of month portfolio positions.

#2 : Indicator : Miscalibration, measure of the frequency of well calibrated investors. (based on knowledge). (misc)

Method : The investors were asked to state upper and lower bounds of 90% confidence intervals to five questions concerning general economics and finance knowledge. (Answer 5 questions, threw a questionnaire.)

#3 : Indicator : Stock market forecasts (volest)

Method : The investors were asked to provide median as well as upper and lower bounds of 90% confidence intervals to five questions concerning stock market forecasts for the end of the year 2001.

Model used : We first transform these price or index value forecasts of individual k into returns

$$r(p)_{ik} = \frac{x(p)_{ik}}{value_{it_j}} - 1, \quad p \in \{0.05, 0.50, 0.95\}, \\ i \in \{1, 2, 3, 4, 5\}, \quad j \in \{1, 2\}, \quad k \in \{1, \dots, 215\}.$$

#4 : Indicator : Better than average effect

Method : We measure the degree of the better than average effect using the following two questions concerning skills and performance relative to others.

#5 : Indicator : Correlation of overconfidence measures

Modeled used : Spearman rank

#6 : Indicator : Portfolio performance and overconfidence.

Method : We correlate overconfidence scores with the performance of the investors in the past. We analyze the relation between portfolio performance and portfolio turnover.

Modeled used :

We calculate the monthly gross portfolio performance of each investor making the following simplifying assumptions :

- We assume that all stocks are bought and sold at the end of the month.
- We ignore intra-month trading.

The gross portfolio return R_{ht}^{gr} of investor h in month t is calculated as follows:

$$R_{ht}^{gr} = \sum_{i=1}^{S_{ht}} w_{iht} R_{it} \text{ with } w_{iht} = \frac{P_{it} n_{iht}}{\sum_{i=1}^{S_{ht}} P_{it} n_{iht}} \quad (5)$$

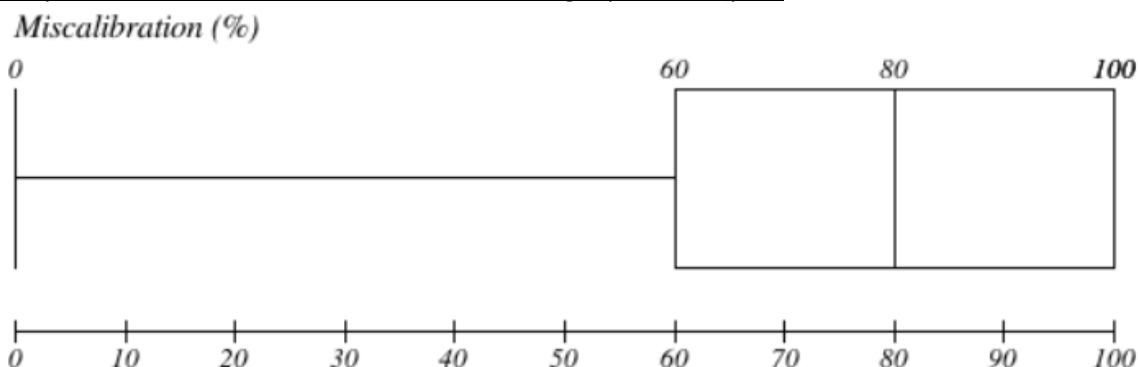
❖ Observations :

#0 : p value $> 5 \cdot 10^{-2} \Rightarrow$ None of the differences in both groups is significant.

#1 : An investor who wants to buy a security has the choice between thousands of stocks whereas a sell decision only requires an analysis of the usually very few stocks in the investor's own portfolio. The effect of overconfidence is stronger when only buying transactions are considered.

#2 : Percentage of surprises in the range from 42% to 64% (far from 10% expected).

Box plot of Table 2 : Overconfidence in knowledge questions (p11)



Analyse : We can see that 50% of investors (215) made between 60% and 100% of errors in the questionnaire.

#3 : Table 3 shows that before September 11, 2001, objective volatility benchmarks were clearly underestimated. However, after the terror attacks, the picture is less clear. Studies show that the amount of miscalibration of people varies from task to task. (see #2).

#4 : Investors who think that they are above average in terms of investment skills or past performance did not have above average performance in the past. High standard deviations are signs of large individual differences. => Depend of the investor. People who think that they are above average trade more than others. Our better than average questions can also be interpreted as perceived competence.

#5 : $r = 0.3377$ => corrélation positive faible => Although knowledge questions and stock market prediction questions are completely different tasks, we find stable individual differences in the degree of miscalibration.

#6 : We find that investors who trade more do not have higher monthly gross returns. Furthermore, we do not find significant correlations between the monthly gross return in our 51-month period and our overconfidence measures.

❖ **Robustness Checks :**

All the results presented in the previous subsection are robust as unreported regression results show. The results hold for different turnover definitions and are always stronger when only buy transactions are considered.

❖ **Results :**

- There are stable individual differences in reasoning or decision making competence.
- There are stable individual differences in the degree of overconfidence within tasks.
- People often show different levels of overconfidence depending on the task or domain but the same rank-order over tasks or domains.
- There is evidence that overconfidence and the rank order across people is stable over time.
- Overconfidence scores based on confidence interval tasks and better than average scores are hardly correlated.
- Only the better than average scores are significantly positively related to the information variable.
- The average volume per transaction is almost completely driven by the stock portfolio value : the higher the stock portfolio value, the higher the average volume per transaction.
- High returns in the past do not lead to high overconfidence measures in our questionnaire at the end of the sample period.
- The better than average effect, not miscalibration, explains excess trading volume

❖ **Conclusion :**

We find that investors who think that they are above average trade more and are thus able to confirm other recent papers. One of the most striking results of our study is that overconfidence, as measured by calibration questions, is unrelated to trading volume. We conclude that the usual way of motivating and modeling overconfidence which is mainly based on the calibration literature has to be treated with caution.