

Overconfidence, Gender and Skills

Xiaolou Yang, Ph.D.

Associate Professor of Finance Department of Accounting and Finance Williamson College of Business
Youngstown State University

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ABSTRACT

corresponding Author:

Xiaolou Yang

Associate Prof. of Finance at
Youngstown State University,
Youngstown

Overconfidence is overrating of individual's own competence and thus the feeling of competence controls the action (Griffin the Tversky, 1992). This emotional bias comes to financial decisions, we ask the question in this study: is overconfidence independent of an individual's objective knowledge? This paper presents the results of a laboratory experiment designed to deal with the questions of whether measured overconfidence and competence influence an individual's willingness to pay for an investment. In addition, we examine whether overconfidence and competence may explain the contradictory evidence on gender differences. The empirical tests provide strong support for the behavioral finance model. Men trade more than women and thereby reduce their returns more than do women. Furthermore, these differences are most pronounced between single men and single woman. We believe that there is a simple and powerful explanation for the high levels of counterproductive trading in financial markets: overconfidence.

KEYWORDS: *overconfidence, rationality, financial decisions*

Introduction and Literature

Modern financial economics based on traditional rational the or assumes that we behave with extreme rationality; but, we do not. Interestingly, the deviations from rationality are often systematic. Behavioral finance relaxes the traditional assumptions of concavity of utility function by incorporating these observable, systematic, and very human departures from rationality into behavioral models of financial markets. Overconfidence is one such departure. Models that assume market participants are overconfident yield one central prediction: overconfident investors will trade too much!

Psychological studies show that most people are overconfident about their own relative abilities,

and unreasonable optimistic about their futures (Neale, 1990). This paper explores whether this emotional biases could plausibly and predictably influence economic behavior in one particular setting—entry into competitive games or markets. In the past, unrealistic optimism about the future was regarded as a defensive phenomenon, a distortion of reality motivated to reduce anxiety (Lundeberg, 1994). The present article has described several ways in which purely cognitive errors might be responsible for optimistic biases. Two studies were carried out to test hypotheses about the conditions under which unrealistic optimism would appear, hypotheses derived from both cognitive and motivational considerations. Although the results provide some support for

both points of view, the studies were not designed to pit on against the other, nor is there any reason why optimism cannot have both cognitive and motivational sources.

Various data suggest that people do tend to be unrealistically optimistic about the future. Surveys concerning automobile accidents (Russo et al, 1992), crime and disease (Harris and Raviv, 1993) find many people who say their risk is less than average but few who say their risk is greater than average. When people are asked to predict the outcomes of social and political issues, their predictions tend to coincide with their preferences (Camerer, 1999). Even for purely chance events (picking a card out of a deck, for example), people sometimes show optimistic biases (Loomes, 1982, Yang, 2011). None of these studies, however, has examined a range of positive and negative events to determine the extent of optimistic biases and the conditions under which they occur. Prior research has indicated that financial analysts tend to provide optimistic earnings forecasts (Caballe et al, 1998, Danie et al, 1998, Yang, 2013). The tendency of analysts to overestimate earnings is often heightened immediately after the issuance of "bad news" (Tversky, 1991, Yang, 2011). Odean (1999) develops models in which overconfident investors overestimate the precision of their knowledge about the value of a financial security. They overestimate the probability that their personal assessments of the security's value are more accurate than the assessments of others. Thus, overconfident investors believe more strongly in their own valuations, and concern themselves less about the beliefs of others. This intensifies differences of opinion. And differences of opinion cause trading (Harris and Raviv 1993). Rational investors only trade and only purchase information when doing so increases their expected utility (Grossman and Stiglitz (1980)). Overconfident investors, on the other hand, lower their expected utility by trading too much; they hold unrealistic beliefs about how high their

returns will be and how precisely these can be estimated; and they expend too many resources (e.g., time and money) on investment information (Odean 1999). Overconfident investors also hold riskier portfolios than do rational investors with the same degree of risk aversion (Odean 1999).

Barber and Odean (2000) and Odean (1999) test whether investors decrease their expected utility by trading too much. Using the same data analyzed in this paper, Barber and Odean show that after accounting for trading costs, individual investors underperform relevant benchmarks. Those who trade the most realize, by far, the worst performance. This is what the models of overconfident investors predict. With a different data set, Odean (1999) finds that the securities individual investors buy subsequently underperform those they sell. When he controls for liquidity demands, tax-loss selling, rebalancing, and changes in risk aversion, investors' timing of trades is even worse. This result suggests that not only are investors too willing to act on too little information, but they are too willing to act when they are wrong.

The result that individuals are overconfident, i.e., overestimate their self-assessed knowledge, is perhaps the most robust finding in the judgment literature (DeLong et al, 1991). Recently, the concept has received increasing attention in economic literature. Overconfidence in financial decision-making has received much attention in analytical studies (Odean, 1999) as well as empirical studies (Camerer and Lovallo, 1999). These studies use interpretations of overconfidence derived from the psychological literature. In the psychological literature, calibration studies are used to describe overconfidence. In such studies subjects are asked to answer a question and to state how sure they are about the correctness of their response by indicating a judged probability of correctness. These probability judgments may be interpreted as confidence levels. They are collected in categories and then compared with

subjects' accuracy, i.e., percentage of correct answers. It turns out that most individuals are overconfident.

Basically overconfidence is then the overrating of the individual's own competence and thus the feeling of competence controls the action (Griffin the Tversky, 1992). When it comes to financial decisions, the question is: do overconfidence and competence measure the same effect or is overconfidence independent of an individual's objective knowledge?

Gender

There is evidence that women are less overconfident when the domain is more male oriented (Beyer and Bowden, 1997). Financial markets are populated by more men than women (Meehan and Overton, 1986). In addition, women seem to be perceived as more conservative investors and are offered less risky investments by brokers (Yates, 1990). In general, women have portfolios with a lower degree of risk than men (Jianakoplos and Bernasek, 1998). But if women perceive themselves as less knowledgeable in financial markets, competence effects as well as (over)confidence effects may play a role.

Psychological research demonstrates that, in areas such as finance, men are more overconfident than women. I test this prediction by partitioning investors on gender. Psychologists find that in areas such as finance men are more overconfident than women. This difference in overconfidence yields two predictions: men will trade more than woman, and the performance of men will be hurt more by excessive trading than the performance of women.

Gervais and Odean (1998) develop a model in which investor overconfidence results from self-serving attribution bias. Investors in this model infer their own abilities from their successes and failures. Due to their tendency to take too much credit for their successes, they become overconfident. Deaux and farris (1977), Meehan

and Overton (1986), and Beyer (1990) find that the self-serving attribution bias is greater for men than for women. And so men are likely to become more overconfident than women.

These studies demonstrate that investors trade too much and to their detriment. The findings are inconsistent with rationality and not easily explained in the absence of overconfidence. Nevertheless, overconfidence is neither directly observed nor manipulated in these studies. A yet sharper test of the models that incorporate overconfidence is to partition investors into those more and those less prone to overconfidence. The models predict that the more overconfident investors will trade more and realize lower average utilities. To test these predictions, I partition our data on gender.

While both men and women exhibit overconfidence, men are generally more overconfident than women (Lundeberg, Fox, and Puncochar 1994). Gender differences in overconfidence are highly task dependent (Lundeberg, Fox, and Puncochar 1994). Deaux and Farris (1997) write "Overall, men claim more ability than do women, but this difference emerges most strongly on...masculine tasks." Several studies confirm that differences in confidence are greatest for tasks perceived to be in the masculine domain (Deaux and Emswiler 1974; Lenney 1977). Men are inclined to feel more competent than women do in financial matters (Prince 1993). Indeed, casual observation reveals that men are disproportionately represented in the financial industry. We expect, therefore, that men will generally be more overconfident about their ability to make financial decisions than woman.

In summary, use a natural experiment to (almost) directly test theoretical models of investor overconfidence. This study predicts: Men trade more than women. By trading more, men hurt their performance more than do women.

Skilled versus Unskilled

Another factor that should influence people's beliefs about their chances of experiencing an event is past personal experience (Lichten-sein, Slovic, Fischhoff, Layman, & Combs, 1978; Hoffman & Brewer, Note 3). Personal experience should make it easier to recall past occurrences of the event and to imagine situations in which the event could occur, leading to greater perceived probability through the mechanism of "availability" (Tversky & Kahneman, 1991). Furthermore, for many events causal sequences can be constructed which imply that past experience increases the probability of future experience. Someone who has had a heart attack or has close relatives with heart disease is more likely to have a heart attack in the future than someone who has had no contact with heart ailments.

Research suggests that non-expert individuals are typically overconfident; they overestimate the quality of their own abilities or knowledge (Svenson 1981, Weinstein 1980) and state extreme probabilities more often than they should. Work in economic theory, particularly with business-related forecasting, has provided further support for this behavioral phenomenon (Camerer and Lovo, 1999)

The reasons for overconfidence when answering trivia questions are a subject of intense debate among decision theorists (Ayton and McClelland 1997). Three prominent explanations have emerged. One argument is that it is an illusion created by asymmetrically misleading items in investigation methods (Juslin 1994, Gigerenzer et al. 1991) for example, one question used was: which city is farther north Rome or New York. Most Americans seem to believe that the correct answer is New York, and are quite confident, even though that answer is incorrect. Soll (1996) found that overconfidence persists even when questions are sampled randomly. A third explanation is that overconfidence is a cognitive bias due to anchoring on an intuitive answer or snap

judgment, and adjusting insufficiently for the ways in which the answer could be wrong (Kahneman 1996). An important qualification is that many expert populations e.g. weather forecasters (Murphy, 1984), blackjack dealers and others (Camerer, 1995) and highly experienced subjects in repeated games (Camerer, Ho and Chong, 2002) do not show overconfidence in their field of expertise. Consequently, I predict: previous personal experience with an event increases the likelihood that people will believe their own chance are greater than average.

Therefore this paper presents the results of a laboratory experiment designed to deal with the questions of whether measured overconfidence and competence influence an individual's willingness to pay for an investment. In addition, research is extended to examine whether overconfidence and competence may explain the contradictory evidence on gender differences. In order to separate effects resulting from different attitudes from effects resulting from different constraints (such as income, wealth, or professional carriers), I use the method of a controlled laboratory experiment. Measures of overconfidence and competence originating in the psychology literature are connected with laboratory decision-making in a financial setting. A direct test of whether overconfidence contributes to excessive market trading is to separate investors into those more and those less prone to overconfidence. Such a test is the primary contribution of this paper.

Experiment Designs and Analysis

In this study college students estimated how much their own chances of experiencing future life events differed from the average chances of their classmates. If all students claimed that their chances of experiencing a negative event were less than average (or that their chances of experiencing a positive event were greater than average), this would clearly indicate unrealistic

optimism. However, a simple comparison of the numbers of optimistic and pessimistic responses is not sufficient to demonstrate a systematic bias. Unless the median and the mean of the actual probability distribution happen to coincide, there is no reason why the number of people whose chances are below the average (below the mean) should equal the number whose chances are above the average. If the probability distribution is positively skewed, for example, most people's chances will be below the average.

To determine the presence of a systematic bias we have to consider the degree of optimism or pessimism expressed. The comparative judgment students were asked to make in the present studies concern the difference between their own individual chances and the population average. (the population, as defined here included all the other student at the same college) mathematically, this difference is $(\pi - P)$, where π is the probability that the event will happen to a particular individual and P is the population mean of π . Because P is defined as the average of π over the population, the mean value of this difference score ought to be zero. In other words, if the judgments students generate are unbiased and the students form a representative sample of the population, the mean value of their comparative judgments should be zero. If the mean of their judgments is significantly different from zero, it indicates that their judgments have a systematic bias. Whenever the mean value of students' comparative judgments departs significantly from zero in an optimistic direction, this will be interpreted as unrealistic optimism, and the size of the mean will be taken as a measure of the magnitude of the optimistic bias.

120 college students from Youngstown State University are split to 6 group with 20 students in each group. There are 3 groups of male students and 3 groups of female students. All subjects will be asked to read the following paragraphs and

provide answers and ratings of the listed questions.

BABA is one of the largest internet sellers their stock is traded on the New York Stock Exchange. If your answer to the following question is right then you will get \$50.

1. Are you a business major student?
2. Do you think that BABA stock will close higher or lower tomorrow than today? (Circle one)
 - a. BABA will close higher
 - b. BABA will close the same or lower
4. What is the probability you think your will win?
5. Do you think that the inflation rate in Poland over the past 12 months is greater than or less than 3.0 percent? (Circle one)
 - a. Less than 3.0 percent
 - b. At least 3.0 percent
6. Rate your knowledge of financial market and stocks: above average, average or below average.

First, the experimental is conducted for all students without gender and skill difference. More than 65% of the students think they are likely to win. This result is statistically different from zero. 50% of the students rank their knowledge of financial market above average. 30% rank them average and 20% rank them below average. More than 68% of the students feel inflation rate in Poland over the past 12 months is less than 3% and about 30% indicate it is at least 3%. This indicating over optimistic projection. While for stock price on BABA, more than 70% of the students predict the stock will close high and less than 30% predict stock price will close low. These results are consistent with our prediction that overall people are overconfident on their financial skill and they are over optimistic on financial market conditions and stock price.

Then I partition the groups into 3 male groups and 3 female groups with 20 students in each group. I conduct the experimental again. The results

showing that male are more overconfident than female students. In particular, more than 75% of male students think they are likely to win, which is statistically higher than female students who think they are likely to win. Slightly over 60% of the male students rank their financial knowledge above the average which is also statistically higher than female students of 40%. For stock price of BABA, more than 80% of male students think BABA will close high and only about 20% predict the stock will close low. This also statistically higher than prediction made by female students. For inflation. More than 75% of female students indicate the inflation of Poland will be less than 3% and less than 25 indicate the inflation will be more than 3%. The results on female students are less optimistic in this matter.

Finally, I distinguish the results between skilled versus unskilled students, where I identify students in business major as skilled and unskilled otherwise. Interestingly, within the groups of skilled students, there is no statistical difference between male and female; while male and female differences are statistically significant within the unskilled groups. This results indicate that skill and knowledge mitigates the difference in gender. This is one of the new finding of this study.

Conclusions

This experiment was designed to identify the relationship between attitudes toward overconfidence and competence in a financial decision context. I found that two variables are of special importance for the explanation of financial decision and forecast: overconfidence and objective knowledge. In addition, our results show that gender plays an important role in predicting choices.

What these investigations have demonstrated is the existence of an optimistic bias concerning many future life events. In particular, students tend to believe that they are more likely than their peers to experience positive events and less likely to experience negative events. Cognitive and

motivational considerations led to the identification of five event characteristics—degree of desirability, perceived probability, personal experience, perceived controllability, and stereotype salience. I test this prediction by partitioning investors on the basis of a variable that provides a natural proxy for overconfidence—gender. The results showed that men are more prone to overconfidence than women, particularly so in male-dominated realms such as finance. Rational investors trade only if the expected gains exceed transactions costs. Overconfident investors overestimate the precision of their information and thereby the expected gains of trading. They may even trade when the true expected net gains are negative.

Our results indicate that an increase in knowledge in a financial decision making context can create a near role reversal between men and women in attitudes toward uncertainty. It seems that the acquisition and rating of an individual's contextual knowledge may help explain some of the puzzles pertaining to gender differences in labor market and financial market outcomes. Interestingly, within the groups of skilled students, there is no statistical difference between male and female; while male and female differences are statistically significant within the unskilled groups. This results indicate that skill and knowledge mitigates the difference in gender. This is one of the new finding of this study.

Yet, the way in which increased knowledge changes men's and women's attitudes toward uncertainty is not completely clear. Therefore, further research should concentrate on reasons why knowledge and overconfidence are important predictors for choice behavior and on the links between knowledge and overconfidence. It would be particularly interesting to conduct further experiments which are able to track down "credit and blame" effects. The hypothesis that credit and blame personality attributes have a gender effect could be consistent with our empirical results.

This hypothesis, i.e. the hypothesis that credit and blame attributions interact with other group affiliations if fertile ground for future research.

Our empirical tests provide strong support for the behavioral finance model. Men trade more than women and thereby reduce their returns more so than do women. Furthermore, these differences are most pronounced between single men and single woman. We believe that there is a simple and powerful explanation for the high levels of counterproductive trading in financial markets: overconfidence.

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Xiaolou Yang is an associate professor of finance at Youngstown State University. She has published dozens of papers in the field of finance in recent years in including: *The Quarterly Review of Economics and Finance*, *International Review of Economics and Finance*, *Journal of Economics and Business*, *Journal of Applied Finance and Banking*, *Journal of Finance and Economic Practice*, *International Journal of Business, Accounting and Finance*, *International Review of Economics and Finance*, *Global Business and Finance Review*, *International Journal of Business and Economic Perspective*, *Journal of Applied Business Research*, *Journal of Applied Research in Finance*, *Banking and Finance Review*, *Journal of Global Business Development*, *Journal of Applied Research in Finance* etc.