FINM3407 - Behavioural Finance

Tutorial 4 Overconfidence and Investors Questions/Answers

Note: This topic has more questions than can be covered in a 2-hour session. The questions to be covered by your tutor are indicated by an asterisk (*); the rest questions should be viewed as extra practice problems.

In this tutorial, we are going to cover the following relevant topics: Overconfidence and The Impact of Overconfidence on Financial Decision-making

There are a few references reading for these two relevant topics:

AckertDeaves Chapters 6 & Chapter 9

- **PART ONE: Overconfidence**

1*. **Differentiate the following terms/concepts:**

a. Miscalibration and excessive optimism

A person who suffers from miscalibration overestimates the precision of his knowledge, whereas one who suffers from excessive optimism thinks good things (e.g., succeeding in a business venture) are more likely to happen than objectively should be thought.

b. Better-than-average effect and illusion of control

The better-than-average effect refers to the tendency for a person to rate himself as above average. If you are subject to illusion of control, this indicates a tendency to think that you have more control over events than can objectively be true.

c. Self-attribution bias and confirmation bias

Self-attribution bias is the tendency to attribute successes to one's own abilities, while blaming failures on circumstances beyond one's control. Confirmation bias is the tendency to search out evidence consistent with prior beliefs and ignore conflicting data.

d. Pros and cons of overconfidence

Research shows that predictions about the future tend to be more optimistic when the event forecasted is in the more distant future or when a person has committed to a course of action. When these conditions are met, excessive optimism may be useful in enhancing performance. Otherwise, it can lead to biased decision-making.

2*. Is miscalibration greater for easy questions or hard questions? Is it greater when we look at 50% confidence ranges or 98% confidence ranges?

Miscalibration tends to be greater for hard questions. Sometimes one can even be underconfident in the case of easy questions. This is called the hard-easy effect. Also, miscalibration tends to be greater in the tails (98% ranges vs. 50% ranges).

3. Provide an example where someone can be both excessively optimistic and miscalibrated at the same time.

Many examples could be provided. To repeat the one from the chapter, let's suppose you are about to bowl with your friends. In standard 10-pin bowling, 300 is the maximum score, and 200 an excellent one. You are feeling buoyant today and boldly predict 225 as your score, with a 90% confidence range of between 200 and 250. Over the year you have averaged 175, with 90% of your results falling within 50 points of this magnitude (i.e., between 125 and 225).

On the basis of your season record, you are excessively optimistic (by 50 points). Moreover, you are miscalibrated, with your confidence interval being only 50% as wide as it should be.

4*. Overconfidence does not quickly dissipate via learning because of the existence of contributing biases. Explain.

Self-attribution bias, the tendency for people to attribute successes or good outcomes to their own abilities, while blaming failures on circumstances beyond their control, can lead to an increase in overconfidence. Suppose an overconfident individual observes personal performance outcomes that are logically a combination of external and internal (to the individual) forces. If things go well, the thinking will be that this is because of great ability, skill or knowledge (much more so than an objective consideration of circumstances would warrant), and the result will be an increase in overconfidence. On the other hand, adverse events, being only moderately ascribed to personal forces, will not lead to symmetric (but of opposite sign) revisions in overconfidence. As it were, people "learn" to be overconfident. Another contributing bias is hindsight bias, which pushes people into thinking that "they knew it all along." Going hand in hand with hindsight bias is confirmation bias, the tendency to search out evidence consistent with one's prior beliefs and to ignore conflicting data.

5*. In 2007 the New England Patriots (an American football team) had a banner year winning all 16 regular season games. In these 16 games their points were: 38, 38, 38, 34, 34, 48, 49, 52, 24, 56, 31, 27, 34, 20, 28, and 38. Despite this obvious success, their fans were still a bit overconfident going into the playoffs. The consensus among fans was that they would average 50 points per game in the playoffs. Plus their fans were 95% sure that they would be within five points of this number (45 to 55). Illustrate the dimensions of their overconfidence. (For the purpose of this question, assume the Patriots participated in four playoff games.)

As in question 3, both miscalibration and excessive optimism are present. To illustrate, the Patriots scored on average 36.81 points. It is believed that they will score 50 points in the playoffs. This seems to be a case of excessive optimism. (Also it is likely that their opponents will be better in the playoffs.) As for miscalibration, the standard deviation of points scored during the season is easily calculated to be 10.19. The standard deviation of the mean based on four observations is 10.19 / 2 = 5.09. A 95% confidence interval should be about four standard deviations in width, or in this case over 20 points. This is twice as wide as the actual standard deviation of the fans of the Patriots.

	A	B	C	D	E	F
1	38				"=stdev(A1:A4)"	
2	38			first	2	
3	38			four		
4	34			observation		
5	34					
6	48					
7	49					
8	52		"=stdev(A1:A16)"			
9	24		10.18639			
10	56					
11	31					
12	27					
13	34					
14	20					
15	28					
16	38					
17						

Notes:

The purpose of this question is to illustrate the dimensions of Foot Fans' Overconfidence:

= > Step 1:

From the question we can see: *Plus, their fans were 95% sure that they would be within five points of this number (45 to 55) = > this is what the fans estimated.*

Estimation from fans based on 95% sure = > they will get the score between [45, 55] = [50-5, 50+5] estimated by fans (note that 50 is the average score for the 16 games)

Note: they will get the score between [45, 55] = [50-5, 50+5] estimated by fans = > due to miscalibration (One Dimensions of Overconfidence).

= > Step 2:

What we need to do is to find the FAIR Performance based on the statistical value the solve the FAIR Interval:

In statistics, when you're interested in the distribution of a sample mean (in this case, the mean of points scored in four playoff games), the standard deviation of that distribution (known as the "standard error") can be calculated as the standard deviation of the individual scores divided by the square root of the sample size. We can write:

$$\text{SD of mean based on four observations} = \sqrt{\frac{Variance}{4}} = \sqrt{\frac{SD^2}{4}} = \frac{SD}{2} = \frac{10.19}{2} = 5.09$$

So, the 10.19 is divided by the square root of 4 (which is 2) to give you the standard error of the mean score for those four playoff games, which comes out to 5.095 or approximately 5.09.

The reason we use standard error here is that we're interested in the distribution of the sample mean (average score over four playoff games), not the distribution of individual game scores.

The standard error tells us how "off" we could expect the sample mean to be from the true population mean. In this case, it suggests that the fans' 95% confidence interval of 45-55 points is far too narrow; a more appropriate confidence interval would be wider, reflecting greater variability, as calculated through 4 * Standard Error, or 4 * 5.09 = 20.36 as per the original example.

Based on the calculation above,

The FAIR Interval = [50-20.36, 50+20.36] = [29.64,70.36] which is broader than the estimated interval = [45, 55] we figured out via Step 1. In other words, the estimated interval is the subset of the fair interval. This is twice as wide as the actual standard deviation of the fans of the Patriots.

= > Step 3:

The fans are overconfidence with the performance of the team.

From the tutorial answer: The standard deviation of the mean based on four observations is 10.19 / 2 = 5.09. A 95% confidence interval should be about four standard deviations in width, or in this case over 20 points. This is twice as wide as the actual standard deviation of the fans of the Patriots.

- **Part TWO: Impact of Overconfidence on Financial Decision-making**

1*. Differentiate the following terms/concepts:

a. Indirect and direct tests of relationship between overconfidence and trading activity

Indirect tests are usually based on trading activity and the fact that theoretical models link overconfidence and trading activity. Direct tests are usually experimental, and they provide a direct link between overconfidence and trading activity.

b. Sensation seeking and overconfidence

Overconfidence in its various manifestations has been extensively discussed in the chapter. Sensation-seeking on the other hand is a personality trait whose four dimensions are thrill and adventure seeking (i.e., a desire to engage in thrilling and even dangerous activities); experience seeking (i.e., the desire to have new and exciting experiences, even if illegal); disinhibition (i.e., behaviors associated with a loss of social inhibitions); and boredom susceptibility (i.e., dislike of repetition of experience).

c. Under diversification and excessive trading

Trading is only excessive when it leads to deterioration in portfolio performance. This is when its cost exceeds its benefit. Under-diversification is holding too few securities in your portfolio, so that most gains from diversification are not achieved.

d. Statics and dynamics of overconfidence

Right now most people would be judged overconfident (in its various manifestations) if they were tested. This is a snapshot (or statics) issue. The question is whether people become less or more overconfident over time based on their experience. This is a dynamics issue.

2*. Consider two investors (A and B) with the following demand curves for a stock:

A: $p = 100 - q$

B: $p = 150 – 2q$

a. At a price of $50, how much will A and B purchase?

Substituting $50 into the above demand functions gives us q=50 for A and q=50 for B as well.

b. If the price falls to $30, who will increase their holdings more? Explain.

Now we redo the exercise for a price of $30. Now q=70 for A and q=60 for B. To go from 50 units, A would have to buy 20 and B would have to buy 10 units.

c. On this basis, which investor seems to be more overconfident?

In terms of overconfidence, it could be said that A is more overconfident than B.

3*. Discuss what the evidence (using naturally-occurring data, survey data, and experimental data) suggests about the relationship among overconfidence, trading activity, and portfolio performance.

Most of the evidence indicates that overconfidence leads to greater trading activity. It is appropriate to use the word “excessive” because this trading leads to poorer portfolio performance. The evidence is mixed on what manifestation of overconfidence (miscalibration vs. the better-than-average effect) contributes the most.

4*. What evidence is there that people do not diversify enough? Why is it that this occurs? What is the simplest way to "buy" a high level of diversification in an equity portfolio?

In one study 3,000 U.S. individual portfolios were examined. Most held no stock at all. Of those households which did hold stock (more than 600), it was found that the median number of stocks in portfolios was only one. And only about 5% of stock-holding households held 10 or more stocks. Most evidence says that to achieve a reasonable level of diversification, one has to hold more than 10 different stocks (preferably in different sectors of the economy). Thus it seems clear that many individual investors are quite underdiversified.

Some have linked underdiversification to overconfidence. Those who traded the most also tended to be the least diversified. It is arguable that this is because overconfidence is the driving force behind both excessive trading and underdiversification.

The simplest way to "buy" diversification is to buy an index product.

5*. Research indicates that stock market forecasters are also overconfident. Do they learn from their mistakes? Discuss.

In one study, the forecasts of a group of German market practitioners were examined. These individuals were asked to provide both forecasts for the future level of the DAX (the German counterpart to the Dow) and 90% confidence bounds. This respondent group was egregiously overconfident. Their dynamic behavior, however, seemed more in line with rational learning than self-attribution bias because respondents narrowed their intervals after successes as much as they widened them after failures. At the same time this research found that market experience made overconfidence worse, which is more consistent with a "learning to be overconfident" view and self-attribution. A likely reason for this is that experience is a double-edged sword. While we learn about our abilities (or lack thereof) from experience, those surviving in financial markets often have done so because of a run of success (good luck?) which has reinforced overconfidence through self-attribution bias.