SYLLABUS  
Tuesdays 3:50 – 6:20, Soc Sci 120

Emma Rasiel  ebr4@mail.duke.edu  
Office Hours: Tues/Thurs 2:00 – 3:00, Rm 329C Soc. Sci., or by appointment

Course Synopsis

The field of Behavioral Finance uses psychology to explain so-called anomalies that we observe in the financial markets—apparent mis-pricings and inefficiencies that are not consistent with the classical economic models of rational behavior. In behavioral models, we recognize that individuals (and markets) may behave irrationally, sometimes for extended periods of time. We also acknowledge that, for structural reasons, there may be limits to arbitrage, so that the markets cannot automatically push prices back to their fundamental values.

Using some of the more popular and accepted theories of human behavior from the fields of psychology and decision-making, we will characterize some prevalent features of irrational behavior in the financial markets. We will discuss typical errors made by financial market participants as a result of behavioral biases, and examine the extent to which irrationality can affect financial markets at the aggregate level (“bubbles”), how long irrationality may persist, and what factors will eventually cause these bubbles to burst (“crashes”).

Assignments and Grading

The course will be graded on the basis of two problem sets (10% each), three essays (10% each), reviews on other students’ essays (10%), a term paper (30%), and class participation (10%).

Problem Sets

There will be two problem sets during the early part of the course.

Essays (see pages 6-7 of this syllabus)
The essays should be 3-4 double-spaced pages (not including references or attachments), and will be based on readings and in-class discussions. Each essay will be reviewed by myself, and essays 1 and 2 will also be reviewed (anonymously) by one other student in the class, who will be chosen at random. Both reviews will include comments on style and content, and students may be expected to revise and re-submit their essays following the review process.

Student “peer reviews”

Student reviewers (for essays 1 and 2) will be encouraged to comment on clarity, structure, and concise exposition of ideas. The quality of the reviews will each account for 5% of the course grade. Reviews will be carried out anonymously.
Term paper (see page 7 of this syllabus)
The term paper should be 10-15 double-spaced pages, on a topic of the
student's choice. Students should discuss their intended topic with me prior to
Spring Break. The papers will be due three weeks after Spring Break, and may
require a revision following comments by myself.

Each student will also present a brief summary of his/her key findings in class
during the last two weeks of the semester.

Class participation
This course is offered as a discussion seminar, and in-class participation is an
important part of the course. Students are encouraged to challenge statements
made either myself or other students, and to bring to class relevant articles that
they find in the popular press or elsewhere.

Texts and Articles
Required Reading
“Prospect Theory: An Analysis of Decision under Risk” Kahneman & Tversky,
Econometrica, 1979 [handout]
“A Survey of Behavioral Finance” Barberis and Thaler 2002 [handout]
“Investor Psychology and Asset Pricing” Hirshleifer 2001 [handout]
All of these papers may be downloaded from my website at:
http://www.duke.edu/~ebr4/Econ196

The course outline (below) indicates which sections of these papers are
particularly relevant to various topics that we will cover during the semester. You
are required to review the indicated sections of the papers prior to class, as we
will discuss them during the class. However I strongly encourage you to read all
of the three papers as early as possible during the semester, so that when you
review individual sections prior to a particular class, you are able to put those
sections into context.

Optional reading
(highly recommended)
“The Winner’s Curse: Paradoxes and Anomalies of Economic Life”, Richard
Thaler, Princeton University Press 1992
“Inefficient Markets: An Introduction to Behavioral Finance”, Andrei Shleifer,
Oxford University Press 2002

Optional “light-weight” reading
“Smart Money Decisions”, Max Bazerman, John Wiley & Sons, 1999
“Why Smart People make Big Money Mistakes and How to Correct Them”, Gary
Belsky and Thomas Gilovich, Simon & Schuster 1999
Course Outline

Section 1: Introduction and Expected Utility  [week 1: 1/13]
To understand how behavioral models can explain financial market anomalies, we must first consider how to categorize “anomalous” behavior. In the first class, we will discuss standard models of expected utility (the Von Neumann Morganstern framework of preferences).

Assignment: Problem Set 1 [due 1/20]

Section 2: Non-Expected Utility Preferences [week 2: 1/20]
There has been a proliferation of non-expected utility models that seek to explain observed behavior patterns that violate expected utility. In this section, we will examine some of the more popular theories, and discuss why Prospect Theory is generally accepted as being the most promising for financial applications.


Assignment: Problem Set 2 [due 1/27]

Section 3: A review of classical probability theory  [week 3: 1/27]
In addition to individuals’ preferences, behavioral models highlight systematic errors that people make when assessing probabilities. We refer to these biases as “judgment errors” or “errors in beliefs”. Before examining the different biases, we will review some basic lessons from standard probability theory.

Assignment: Essay 1 [due 2/3]
Section 4: Beliefs, Biases and Heuristics [weeks 4 – 10: 2/3 – 3/23]
In this section of the course we will examine the errors that individuals routinely make when assessing the likelihood of events. These systematic biases, or errors of judgment, can have significant impact on both individual and market-wide investment behavior.

This section of the course will take several weeks, and will cover a number of topics. There are readings required for each topic: I will announce in class each week what the topic will be in the following week, and hence which readings are applicable.

Assignments
Essay 1 anonymous review [due 2/10]
Essay 2 [due 2/17]
Essay 2 anonymous review [due 2/24]
Essay 3 [due 3/2]
Term Paper [topic to be approved prior to Spring Break: 3/5]

- **Representativeness Bias**

  Required Reading: “Investor Psychology and Asset Pricing” Hirshleifer, 2001:
  ✓ Introduction (pages 1 – 6)
  ✓ Section I: Judgment and Decision Biases (pages 6 – 8)
  ✓ Sections I.13 and I.14 (pages 12 – 16).

- **Over-confidence**

  Required Reading: “Investor Psychology and Asset Pricing” Hirshleifer, 2001
  ✓ Section I.2 (pages 16 – 18)
  ✓ Section III.1 (pages 33 – 35)

- **Framing**

  Required Reading: “Investor Psychology and Asset Pricing” Hirshleifer, 2001
  ✓ Section I.12 (pages 10 – 12).

- **Availability Bias**

  Required Reading: “Investor Psychology and Asset Pricing” Hirshleifer, 2001
  ✓ Sections I.11 (pages 9 – 10).

- **Winner’s Curse**
Section 5: Preferences and Anomalies in the Financial markets  
[weeks 11 – 12: 3/30 – 4/6]
In this section of the course, we discuss the impact of people’s non-expected utility preferences and judgment errors on both individual investment behavior and aggregate market prices.

Assignments
Term paper (first draft) [due: 3/30]
Term paper revision (if applicable) [due: 4/13]

- Bubbles and other aggregate market anomalies

  Required Reading: “Investor Psychology and Asset Pricing” Hirshleifer, 2001
  ✓ Section II.1.3 – II.1.4 (pages 26 – 29).
  ✓ Section III.2.3 (pages 37 – 40)
  ✓ Section III.3.3 (pages 45 – 46)

- Individual investor anomalous behavior

  Required Reading: “Investor Psychology and Asset Pricing” Hirshleifer, 2001
  ✓ Section III.2.4 (pages 40 – 42).
  Required Reading: “A Survey of Behavioral Finance” Barberis & Thaler, 2003
  ✓ Section 3.1 (pages 1065 – 1069).
  ✓ Section 5 (optional—pages 1087 – 1098).
  ✓ Section 7 (optional—pages 1101 – 1106)

Section 6: Limits to Arbitrage and Term Paper Presentations [week 13: 4/13]

Required Reading: “A Survey of Behavioral Finance” Barberis & Thaler, 2003
✓ Section 2 (pages 1056 – 1065).

Section 7: Term Paper Presentations (cont.) [week 14: 4/20]
Essay Questions

**Essay 1  [due 2/3]**  
**[anonymous review due 2/10]**

In 1985, Mehra and Prescott \(^1\) wrote about a phenomenon which they entitled: “The Equity Premium Puzzle”. They observed that, over the long run, equity returns are more than 7% higher than returns on bonds. However equity volatility (i.e., risk) is not sufficiently high to warrant these returns given standard expected utility models. The implication of these findings is that, on average, investors are more reluctant to hold equities versus bonds than “reasonable” levels of risk aversion would suggest. (Note that, if investors bought more equities relative to bonds, this would push equity prices up and bond prices down. Over the long run, this would result in lower excess returns on equities, consistent with standard models of risk aversion.)

Can you provide an explanation for the Equity Premium Puzzle using Prospect Theory preferences? You are welcome to make use of any existing literature from finance or economics journals.

**Essay 2  [due 2/17]**  
**[anonymous review due 2/24]**

It is well known that equity returns tend to exhibit short-run momentum.\(^2\) For example, suppose you have a portfolio strategy of buying stocks that have exhibited higher-than-average returns over the last few months, and selling stocks that have exhibited lower than average returns over the same time period. Such a portfolio will tend to perform well over the next twelve months—i.e., stocks that have been going up over the short run will continue to go up, while stocks that have been going down over the short run will continue to go down.

On the other hand, it has also been shown that equity returns tend to exhibit long-run reversal.\(^3\) Suppose you create a portfolio of NYSE equities that have performed particularly well over the last three years, and another portfolio of NYSE equities that have performed particularly badly over the last three years. The portfolio of top performers will tend to do worse than the portfolio of poor performers over the subsequent three-year period.

Provide behavioral explanations for these two observations. You may be able to point to several heuristics, biases or fallacies that could account for them. Be very sure to distinguish between those heuristics that might cause short run momentum, versus those that might account for long run reversals. Be sure to provide a complete bibliography.

---


**Essay 3 [due 3/2]**

Pick one of the following three financial market “anomalies”, and provide a behavioral explanation, using both material that we have discussed in class, and any other relevant heuristics, biases, or non-expected utility preferences that you have come across through independent research.

a. Excess Volatility in the Financial Markets
b. Holding Losers too Long
c. Selling Winners too Early

**Possible term paper topics**

*The first draft of your term paper is due 3/30 and will be returned to you on 4/6. Revisions (if required) due 4/13*

1. Self-fulfilling prophesies: find evidence of them in the financial markets. What behavioral biases cause these?

2. Find a real-world example of an apparent arbitrage that might be explained by behavioral biases? [*Discuss the arbitrage with me first, so I can comment on whether it has been addressed already in the literature.*]

3. Find or create a financial example of “Confusion of the Inverse” (ie juror’s fallacy, physicians error) and/or the conjunction effect (Bill vs Linda)

4. Address a significant political/social policy issue, and make an argument for how a government policy might have two diametrically opposite effects, depending on (1) how the policy is framed, and (2) behavioral biases of those most affected by the policy. Can you think of any examples of policies that, if written with rational decision-makers in mind (i.e., normative policies), would result in a “good” (i.e., pareto optimal) outcome, but when responded to by individuals with standard “irrational” biases, would in fact result in a “bad” (at least some people worse off) outcome.

5. At most investment banks, year-end bonuses are a significant proportion of total compensation. For more senior employees, the year-end bonus, in a good year, may be many multiples of annual salary. Many banks, particularly in good years, send out memos or emails around bonus time, reminding employees that bonuses may be lower in subsequent years depending on market conditions and other external factors. They encourage employees not to view bonus levels as a guarantee of minimum payments in future years, and particularly not to spend in anticipation of similar future bonuses. What behavioral biases are the banks trying to prevent their employees from falling prey to?

6. A topic of your own choice (must be approved by me prior to Spring break).