Behavioral Finance: Arbitrage and Psychology in Financial Markets

Sections: C15.0029.01 and B40.3329.20
Term: Spring 2009
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Office: KMEC 9-54
Office hours: W 4:30-5pm (or as late as necessary if anyone remains as of 5pm) starting 1/28
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Course page: Key course documents are maintained on the Blackboard system (http://sternclasses.nyu.edu/)

Class meetings: C15.0029.01 on MW at 12:30-1:45pm is in T-201
B40.3329.20 on MW at 3-4:20pm is in 2-90
Final exam: C15.0029.01 on W 5/6 from 12:00-1:50pm
B40.3329.20 on W 5/6 from 3:45-5:45pm

Over the past several decades, the field of finance has developed a successful paradigm based on the notions that investors and managers were generally rational and the prices of securities were generally “efficient.” In recent years, however, anecdotal evidence as well as theoretical and empirical research has shown this paradigm to be insufficient to describe various features of actual financial markets. In this course we examine how the insights of behavioral finance complements the traditional paradigm and sheds light on the behavior of asset prices, corporate finance, and various Wall Street institutions and practices.

The course is taught through lectures, case studies, our own discussions, and perhaps a guest speaker if appropriate. Grading is as follows:

10% Class participation
55% Problem sets (3) and case write-up (1)
35% Final exam

For the problem sets and case write-up, teams of up to three (no more than three, thank you) may hand in a joint solution. These assignments are due at the beginning of class (see schedule next page), with a 1/3 letter grade penalty for each calendar day late (i.e., max grade goes from A to A- with first day, etc.).

Grading for PhD students is handled separately. PhD grades are based 10% on class participation and 90% on four “referee reports” – 4-5 page, in-depth critical reviews of selected papers. They are due on the same four days as the problem sets and case write-ups are due (see schedule next page).
## Class schedule

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<thead>
<tr>
<th>B40.3329.20</th>
<th>C15.0029.01</th>
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<td>MW 3-4:20pm in 2-90</td>
<td>MW 12:30-1:45pm in T-201</td>
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| 1/26, 1/28, 2/2, 2/4 | 1/21, 1/26, 1/28, 2/2, 2/4 | I. **Non-behavioral finance:** Introduction; Why we care: The roles of securities prices in the economy; Efficient markets hypothesis (EMH): Definitions; EMH in supply and demand framework; Theoretical arguments for flat aggregate demand curve; Equilibrium expected returns models; Key methodologies; Pro-EMH evidence  
| 2/9, 2/11, 2/18, 2/23 | 2/9, 2/11, 2/18, 2/23 |  
| 3/30, 4/1, 4/6, 4/8, 4/13, 4/15* | 3/30, 4/1, 4/6, 4/8, 4/13, 4/15* | III. **Demand by arbitrageurs:** Definition of arbitrageur; Long-short trades; Risk vs. Horizon; Transaction costs and short-selling costs; Fundamental risk; Noise-trader risk; Professional arbitrage; Destabilizing informed trading (positive feedback, predation); Case: Strategic Capital Management, LLC.  
| 4/20, 4/22, 4/27, 4/29* | 4/20, 4/22, 4/27, 4/29* | IV. **Demand by average investors:** Definition of average investor; Belief biases; Limited attention and categorization; Nontraditional preferences – prospect theory and loss aversion; Bubbles and systematic investor sentiment  
| 5/4 | 5/4 |  
| 5/6 (3:45-5:45pm ) | 5/6 (12:00-1:50pm) | V. **Supply by firms and managerial decisions:** Supply of securities and firm investment characteristics (market timing, catering) by rational firms; Associated institutions; Relative horizons and incentives; Biased managers  
|  
* = Homework due  
** = Case write-up due
Reading list

One of the truly liberating features of this field is the fact that there is not yet any full-blown textbook. The closest thing is *Inefficient markets* (Oxford UP) by Andrei Shleifer, and you should buy this book in paperback at the bookstore. In the absence of a suitable textbook, we will read straight from original academic research papers. In most cases these papers are but a few years old.

Required readings are marked with a (*) below. This reading list may seem intimidating at first glance, but fear not! The most important formal models and statistical techniques will be covered in class and reviewed in problem sets. When sitting down to read a paper on your own, try to take away the key intuition and results of the paper. Don’t dwell on the details unless you have a particular interest in the topic. Please do make a special effort at the required readings, which are less technical, and at least skim the supplemental readings. I will discuss all or almost all of the articles below in class, at least briefly.

I. Non-behavioral finance

*In the beginning (i.e. the 1960s), there was the efficient markets hypothesis.*


*Early authors found strong empirical support for the efficient markets hypothesis.*


II. Some motivating evidence

*Over the past few decades, a number of curious patterns in asset returns have been discovered. Such patterns include the market reaction to news and non-news.*


*And patterns of return predictability in stocks.*


There are also curious predictability patterns in bonds, options, forex, futures, real estate, and sports bets.


Bodoukh, Jacob, Matthew Richardson, YuQing Shen, and Robert Whitelaw, 2002, Do Asset Prices Reflect Fundamentals?: Freshly Squeezed Evidence from the FCOJ Market, NYU working paper.


III. Demand by arbitrageurs

Market prices reflect supply and demand. Aggregate demand can be usefully broken down into the demand of rational and/or highly sophisticated investors, which we’ll call arbitrageurs, and the demand of typical human investors.

(*) Shleifer, Andrei, Inefficient Markets (first chapter).


There are a range of costs and risks that deter would-be arbitrageurs.


In certain circumstances, the smart-money trade may actually reduce market efficiency.


This case reviews the limits of arbitrage.

(*) Mitchell, Mark, Todd Pulvino, and Erik Stafford, 2002, Strategic capital management, LLC series, Harvard Business School case # 5-202-028

IV. Demand by average investors

Typical human investors hold divergent opinions about individual assets, but on any given day opinions tend to move in the same direction.


Barber, Brad, Terrance Odean, and Ning Zhu, 2003, Systematic noise, UC Davis working paper.

Systematic investor sentiment ultimately derives from common cognitive limitations and systematic biases in investors’ perceptions.


These individual-level biases are consolidated and amplified by social interaction.


Armed with some understanding of arbitrageurs’ and average investors’ demands for securities, we are ready to take a more nuanced look at what goes on in “bubbles”

(*) Shleifer, Andrei, Inefficient Markets (sixth chapter, p. 169-174).


V. Supply by firms and managerial decisions

Rational managers try to ‘time’ inefficient capital markets to reduce their overall cost of capital – they supply more of the currently overpriced securities, and buy back the underpriced ones.


Dong, Ming, David Hirshleifer, Scott Richardson, and Siew Hong Teoh, 2003, Does investor misvaluation drive the takeover market?, Ohio State U. working paper.

*Rational firms also try to keep their stock prices high by “catering” to investors – i.e., adopting whatever characteristics that investors currently demand.*


*Managers, like average investors, are also subject to psychological biases.*


Malmendier, Ulrike, and Geoffrey Tate, 2003, CEO overconfidence and corporate investment, Stanford University working paper.


Malmendier, Ulrike, and Geoffrey Tate, 2003, Who makes acquisitions? CEO overconfidence and the market’s reaction, Stanford University working paper.

*Survey of behavioral corporate finance*


*Revised March 10, 2009.*