

Behavioral Finance

Term: Spring 2011

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Prerequisites: FNCE 601. FNCE 720 and FNCE 726 are recommended.

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 will use psychology and more realistic settings to guide and develop alternative theories of financial market. We will examine how the insights of behavioral finance complement the traditional paradigm and shed light on investors' trading patterns, the behavior of asset prices, corporate finance, and various Wall Street institutions and practices.

The course is taught through lectures, one or two guest lectures, two case studies, two homework assignments, and a hedge fund project. Grading is as follows:

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| 10% | Class participation |
| 8% | Homework assignments |
| 18% | Case write-up |
| 40% | Final exam |
| 24% | Hedge fund project |

Teamwork is very important for this class. Up to four students (no more than four) can form a team. A team can hand in a joint solution, for the homework assignments and case write-ups. A team will also work together in the hedge fund project.

Hedge fund project: One of the industrial fields where behavioral finance is most applied is the hedge fund industry. Many hedge fund managers use BF knowledge or at least follow BF spirit to create their trading strategies. Managers also raise capital with consideration of investors' behavioral rules (or biases).

At the beginning of the semester a team is assigned as either a hedge fund (HF) or a fund of fund (FOF). In the second half of the semester the team will switch to the other role. HF teams will directly invest in stock market but only have very small amount of capital. (All hedge fund teams will register in <http://www.wallstreetsurvivor.com>, investing in the real stock market with fake money.) FOF teams have big amount of capital but can only invest through HF teams. HF teams will "charge" 2% management fee and 20% incentive fee for the capital they manage for FOF teams.

As real hedge funds in real world, to generate high revenue, HF teams not only need to create excellent trading strategies to gain the profit in the stock market, but also compete with HF peers for marketing, including attracting more capital from FOF teams to invest initially, persuading them to raise capital with good performances, and keeping capital under management with bad performances. As real funds of funds, FOF teams need to judge not only the trading strategies but also managers of HF teams.

Grading of the hedge fund projects consists of two parts.

- 12 points are rewarded according to the revenues of funds operated by teams.
 - 8 points will be allocated based on the relative performance of HF operation;
 - 4 points will be allocated based on the relative performance of FOF operation.
- 12 points are allocated to the assignments. There will be four assignments for the entire hedge fund project:
 - Initial presentation to raise capital by HF (6 points);
 - Decision report by FOF after listening to HF initial presentations (2 points);
 - Summary report by HF (2 points);
 - Summary report by FOF (2 points).

The topics we will cover in the lectures are as follows.

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 risk models; Pro-EMH evidence

II. Some motivating evidence: Return predictability in the stock market; Data mining; Joint hypothesis problem.

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).

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

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

Special dates

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| Feb 2 | The first half of HF teams present in the lecture to raise initial capital. |
| Feb 9 | The due date of decision reports of FOF teams. |
| Feb 21 | The due date of the first case. |
| March 2 | The due date of the first homework assignment. |
| March 16 | The second half of HF teams present to raise initial capital. |
| March 23 | The due date of decision reports of FOF teams. |
| March 30 | The due date of summary reports for the first half semester (both HF and FOF teams need to hand in their own versions). |
| April 6 | The due date of the second case. |
| April 25 | The due date of the second homework assignment. |
| May 2 | The due date of summary reports for the second half semester (both HF and FOF teams need to hand in their own versions). |
| TBA | Final |

Tentative Schedule

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| 1/12, 1/19, 1/24, 1/26, 1/31 | I. Non-behavioral finance and hedge fund setup |
| 2/2, 2/7, 2/9 | II. Some motivating evidence |
| 2/14, 2/16, 2/21, 2/23, 2/28, 3/2 | III. Demand by arbitrageurs |
| 3/14, 3/16, 3/21, 3/23, 3/28, 3/30, 4/4, 4/6, 4/11 | IV. Demand by average investors |
| 4/13, 4/18, 4/25 | V. Supply by firms and managerial decisions |
| 4/25 | Review |

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 to a textbook is *Inefficient markets* (Oxford UP) by Andrei Shleifer, and you should buy this book at the bookstore (\$25-30 in paperback). In the absence of a suitable textbook, we will read straight from original academic research papers. In most cases these papers are 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. 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 try to discuss all or almost all of the articles below in class, at least briefly.

I. Non-behavioral finance

Here is a quick introduction for behavioral and non-behavioral finance.

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

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

Fama, Eugene, Lawrence Fisher, Michael C. Jensen, and Richard R. Roll, (1969), The adjustment of stock price to new information, International Economic Review, 10: 1-21.

Jensen, Michael C. (1968). The performance of mutual funds in the period 1945-1964. Journal of Finance, 23: 389-416.

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

Fama, Eugene (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. Journal of Finance, 25:383-417.

II. Some motivating evidence

Over the past few decades, a number of curious patterns in asset returns have been discovered. Such patterns include patterns of return predictability in stocks.

(* Jegadeesh, Narasimhan, and Sheridan Titman, 1993, Returns to buying winners and selling losers: Implications for stock market efficiency, Journal of Finance 48: 65-91.

(* Bernard, Victor (1992). Stock Price Reactions to Earnings Announcements. In: Thaler, R. (Ed.), Advances in Behavioral Finance. New York: Russell Sage Foundation.

Lakonishok, Josef, and Seymour Smidt, 1988, Are seasonal anomalies real? A ninety-year perspective, Review of Financial Studies 1 (4): p. 403-425.

Fama, Eugene, and Kenneth R. French (1992). The cross-section of expected stock returns. Journal of Finance 47: 427-465.

Fama, E. F. and K. R. French, 1993, Common risk factors in the returns on stocks and bonds, Journal of Financial Economics 33, 3-56.

Daniel, Kent, and Sheridan Titman, 1997, Evidence on the characteristics of cross-sectional variation in stock returns, Journal of Finance 52: 1-33.

De Bondt, Werner F.M., and Thaler, Richard (1985). Does the Stock Market Overreact? Journal of Finance, 40:793-805.

Lakonishok, J., Shleifer, A., and Vishny, R. (1994). Contrarian investment, extrapolation, and risk. Journal of Finance, 49:1541-78.

La Porta, Rafael, Lakonishok, Josef, Shleifer, Andrei, and Vishny, Robert (1997). Good News for Value Stocks: Further Evidence on Market Efficiency. Journal of Finance, 52:859-74.

Lo, Andrew, and A. Craig MacKinlay (1990), When are contrarian profits due to stock market overreaction?, Review of Financial Studies 3: 175-206.

And the market reaction to news and non-news.

Cutler, David, James Poterba, and Lawrence Summers (1989). What Moves Stock Prices? Journal of Portfolio Management, 15(3); 4-12.

Huberman, Gur, and Tomer Regev, 2001, Contagious Speculation and a Cure for Cancer: A non-event that Made Stock Prices Soar, Journal of Finance, 56(1), p. 387-396

Shiller, R.J. (1981). Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends? American Economic Review, 71:421-36.

There are also curious predictability patterns in bonds, options, forex, futures, real estate, and sports bets. Here is an example in future market.

Roll, R. (1984). Orange Juice and Weather. American Economic Review, 74:861-80.

III. Demand by arbitrageurs

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

(*) Shleifer, Andrei, *Inefficient Markets* (ch. 2 on noise trader risk; based on DeLong, Brad, Andrei Shleifer, Lawrence Summers, and Robert Waldmann, 1990, Noise trader risk in financial markets, Journal of Political Economy 98: 703-738).

(*) Shleifer, Andrei, *Inefficient Markets* (ch. 3 on closed-end funds; based on Lee, Charles M., Andrei Shleifer, and Richard Thaler, 1991, Investor sentiment and the closed-end fund puzzle, Journal of Finance 46: 75-110).

D'Avolio, Gene, 2002. The market for borrowing stock. Journal of Financial Economics 66: 271-306.

Miller, Edward M., 1977, Risk, uncertainty, and divergence of opinion, Journal of Finance 32: 1151-1168.

Chen, Joseph, Harrison Hong, and Jeremy C. Stein (2002), Breadth of Ownership and Stock Returns, Journal of Financial Economics 66:171-205.

Jones, Charles M., and Lamont, Owen A., 2002. Short sale constraints and stock returns. Journal of Financial Economics 66: 207-239.

Lamont, Owen A., and Richard Thaler (2003). Can the Market Add and Subtract? Mispricing in Tech Stock Carve-Outs, Journal of Political Economy 111: 227-268.

Mitchell, Mark, Todd Pulvino, and Erik Stafford (2002), Limited Arbitrage in Equity Markets, Journal of Finance 57, 551-584.

Ofek, Eli, Matthew Richardson, and Robert Whitelaw, 2003, Limited arbitrage and short sales restrictions: Evidence from the options markets, Journal of Financial Economics forthcoming.

Shleifer, Andrei, *Inefficient Markets* (ch. 4 on delegated arbitrage; based on Shleifer, Andrei, and Robert Vishny, 1997, The limits of arbitrage, Journal of Finance 52: 35-55.)

Froot, Kenneth A., and Dabora, Emile (1999). How Are Stock Prices Affected by Location of Trade? Journal of Financial Economics, 53(2):189-216.

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.

Wurgler, Jeffrey, and Zhuravskaya, Ekaterina (2002). Does Arbitrage Flatten Demand Curves For Stocks? Journal of Business 75: 583-608.

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

Shleifer, Andrei, *Inefficient Markets* (ch. 6 on positive feedback trading; based on DeLong, Brad, Andrei Shleifer, Lawrence Summers, and Robert Waldmann, 1990, Journal of Finance 45: 375-395).

Brunnermeier, Markus K., and Lasse Heje Pedersen, 2002. Predatory trading. NYU working paper.

Brunnermeier, Markus K., and Stefan Nagel, 2002. Hedge funds and the technology bubble, Journal of Finance forthcoming.

The following reading list is tentative. Some may be deleted and some may be added according to the process of the class.

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.

Bagwell, Laurie Simon. 1992. Dutch Auction Repurchases: An Analysis of Shareholder Heterogeneity, Journal of Finance.

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.

Tversky, Amos and Daniel Kahneman (1974). Judgement Under Uncertainty: Heuristics and Biases. Science, 185:1124-31.

Kahneman, Daniel, 2003, Maps of bounded rationality: Psychology for behavioral economics. American Economic Review 93: 1449-1475.

(*) Kahneman, Daniel, and Riepe, Mark (1998). Aspects of Investor Psychology. Journal of Portfolio Management, 24:52-65.

(*) Shleifer, Andrei, *Inefficient Markets* (ch. 5 on a model of investor sentiment; based on Barberis, Nick, Andrei Shleifer, and Robert Vishny, 1998, A model of investor sentiment, Journal of Financial Economics 49: 307-343).

Poteshman, Allen, 2001, Underreaction, Overreaction, and Increasing Misreaction to Information in the Options Market, Journal of Finance 56 (3), 851-876.

Daniel, Kent, Hirshleifer, David, and Subrahmanyam, Avanidhar (1998). Investor Psychology and Security Market Under- and Overreactions. Journal of Finance, 53:1839-85.

Hong, Harrison, and Jeremy C. Stein, 1999, A unified theory of underreaction, momentum trading, and overreaction in asset markets, Journal of Finance 54, 2143-2184.

Barberis, Nicholas, Shleifer, Andrei, 2003. Style investing. Journal of Financial Economics, 68 161-199.

Barberis, Nicholas, Shleifer, Andrei, and Jeffrey Wurgler. (2002) Comovement, Journal of Financial Economics forthcoming.

French, Kenneth R., and James M. Poterba, 1991, Investor diversification and international equity markets, American Economic Review 81: 222-226.

Huberman, Gur, 2001, Familiarity Breeds Investment, Review of Financial Studies 14(3): 659-680.

Klibanoff, Peter, Owen Lamont, and Thierry A. Wizman, 1998, Investor reaction to salient news in closed-end country funds, Journal of Finance 53: 673-699.

Shefrin, Hersh, and Meir Statman, 1985, The disposition to sell winners too early and ride losers too long: Theory and evidence, Journal of Finance 40(3): 777-790.

Odean, Terrance (1998). Are Investors Reluctant to Realize Their Losses?. Journal of Finance, 53:1775-98.

Shefrin, Hersh, and Meir Statman, 1984, Explaining investor preference for cash dividends, Journal of Financial Economics 13: 253-282.

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

Hong, Harrison, Jeffrey D. Kubik, and Jeremy C. Stein, 2003, Social Interaction and Stock-market participation, Journal of Finance, forthcoming.

Shiller, R.J. 1984. Stock Prices and Social Dynamics. Brookings Paper on Economic Activity, Feb: 457-98.

Hong, Harrison, Jeffrey D. Kubik, and Jeremy C. Stein, 2003, Thy neighbor's portfolio: Word-of-mouth effects in the holdings and trades of money managers, Stanford University working paper.

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).

(*) Baker, Malcolm, and Jeffrey Wurgler, 2003, Investor sentiment and the cross-section of stock returns, NYU working paper.

Ofek, Eli, and Matthew Richardson, 2003, DotCom mania: The rise and fall of Internet stock prices. Journal of Finance 58: 1113-1137.

Lamont, Owen A., and Jeremy C. Stein, 2003, Aggregate short interest and market valuations, American Economic Review , forthcoming.

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.

Stein, Jeremy, 1996. Rational Capital Budgeting in an Irrational World. Journal of Business, 69:429-55.

Graham, John R., and Harvey, Campbell R., 2001, The theory and practice of corporate finance: Evidence from the field. Journal of Financial Economics 60: 187-243.

Ikenberry, David, Lakonishok, Josef, and Vermaelen, Theo (1995). Market Underreaction to Open Market Share Repurchases. Journal of Financial Economics, 39:181-208.

Jenter, Dirk, 2002, Market timing and managerial portfolio decisions. MIT Sloan working paper.

(*) Loughran, Timothy, and Ritter, Jay (1995). The New Issues Puzzle. Journal of Finance, 50:23-51.

Baker, Malcolm, and Jeffrey Wurgler (2000). The equity share in new issues and aggregate stock returns. Journal of Finance, 55: 2219-2258.

Henderson, Brian, Narasimhan Jegadeesh, and Michael S. Weisbach, 2003, World markets for raising new capital, U. of Illinois working paper.

Loughran, Timothy, and Ritter, Jay (1997). The operating performance of firms conducting seasoned equity offerings. Journal of Finance 52:5, 1823-1850.

Baker, M., and J. Wurgler (2002) Market timing and capital structure Journal of Finance 57: 1-32.

Baker, Malcolm, Robin Greenwood, and Jeffrey Wurgler (2003). The maturity of debt issues and predictable variation in bond returns. Journal of Financial Economics 70, 261-291.

Teoh, Siew H., Welch, Ivo, and Wong, T.J. (1998). Earnings Management and the Post-Issue Under Performance of Seasoned Equity Offerings. Journal of Financial Economics 50:63-99.

(*) Shleifer, Andrei, and Robert Vishny, 2003, Stock market driven acquisitions, Journal of Financial Economics, forthcoming.

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.

P. Raghavendra Rau, Michael J. Cooper and Orlin Dimitrov, 2001, A rose.com by any other name, Journal of Finance 56: 2371-2388.

Baker, Malcolm, and Jeffrey Wurgler (2002). A catering theory of dividends. Journal of Finance, forthcoming.

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

Bertrand, Marianne, and Antoinette Schoar, 2003, Managing with style: The effect of managers on firm policies, *Quarterly Journal of Economics* 118: 1169-1208.

Heaton, J. B., 2002, Managerial Optimism and Corporate Finance, Financial Management, 31: 33-45.

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

Roll, R., 1986, The Hubris Hypothesis of Corporate Takeovers, Journal of Business 59: 197-216.

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

(*) Baker, Malcolm, Richard Ruback, and Jeffrey Wurgler, 2004, Behavioral corporate finance: A survey, NYU working paper.