Behavioral Finance

Term: Spring 2005, Summer 2005

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Office hours: (1) Tuesday 3:30-4pm and longer as needed
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Course page: Documents are maintained on the Blackboard system (http://sternclasses.nyu.edu/)

Class times: **B40.3329.30**: Tuesday, 6-9pm, Kmec 4-60
C15.0029.01: Tuesday and Thursday, 2-3:15pm, Tisch LC-12
B40.3329.01: (Summer module 1) Tuesday and Thursday, 6-9pm, location n/a yet

Final exam: **B40.3329.30**: Tuesday, May 3, 6pm
C15.0029.01: Thursday, May 10, 2pm
B40.3329.01: (Summer module 1): Thursday, June 23, 6pm

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 and convenient. Grading is as follows:

5%	Class participation
55%	Homeworks (3) and case write-up (1)
40%	Final exam

For the short homeworks and case write-up, teams of up to three (but no more) students 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 day late (i.e., max grade goes from A to A- with first day late, etc.). I am required to use the standard Stern grading curve to determine grades in each section.

Grading for PhD students is handled separately. PhD grades are based 5% on class participation and 95% on four "referee reports" – critical, 4-5 page, in-depth reviews of selected papers. They are due on the same four days as problem sets and case write-ups due (see schedule next page). We'll decide on the papers to be "refereed" as the class progresses.

Class schedule

Langone MBA **B40.3329.30** **T** **6-9pm** **KMEC 4-60**	**Undergraduate** **C15.0029.01** **TR** **2-3:15pm** **Tisch LC-12**	**Langone MBA** **B40.3329.01** **TR** **6-9pm** **(location n/a yet)**	
2/8	1/18, 1/20, 1/25, 1/27, 2/1	5/17	**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
2/15, 2/22* (1st half)	2/3, 2/8, 2/10, 2/15*	5/19, 5/24* (1st half)	**II. Some motivating evidence:** Return predictability in the stock market; Data mining; Joint hypothesis problem; Predictability in bonds, forex, futures, real estate, options, sports betting.
2/22 (2nd half), 3/1, 3/8**	2/17, 2/22, 2/24, 3/1, 3/3, 3/8, 3/10**	5/24 (2nd half), 5/26, 5/31**	**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.
3/22, 3/29, 4/5*	3/22, 3/24, 3/29, 3/31, 4/5, 4/7*	6/2, 6/7, 6/9*	**IV: Demand by average investors:** Definition of average investor; Belief biases; Limited attention and categorization; Nontraditional preferences – prospect theory and loss aversion; Social interaction, bubbles, and systematic investor sentiment
4/12, 4/19, 4/26* (1st half)	4/12, 4/14, 4/19, 4/21, 4/26*	6/14, 6/16, 6/21* (1st half)	**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; Regulating inefficient markets; Biased managers
4/26 (2nd half) 5/3	4/28 5/10	6/21 (2nd half) 6/23	**Review** **Exam**

* = 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 to a textbook is *Inefficient markets* (Oxford UP) by Andrei Shleifer, and I ask you to buy this book at the bookstore ($25 in paperback). In the absence of a suitable textbook, we will be reading straight from the original research papers. In many cases these papers are less than 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 details. Make a special effort at the required readings, which are generally less technical. At least skim the supplemental readings. I will discuss virtually 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.

(*) 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 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.

And patterns of return predictability in stocks.

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

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

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.

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

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.

Fama, Eugene, and Kenneth R. French, 1989, Business conditions and expected returns on stocks and bonds, Journal of Financial Economics 25: 23-49.

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

(same paper as above) Fama, Eugene, and Kenneth R. French, 1989, Business conditions and expected returns on stocks and bonds, Journal of Financial Economics 25: 23-49.

Stein, Jeremy, 1989, Overreactions in the options market, Journal of Finance 44, 1011-1022.

(*) Froot, Kenneth A., and Richard H. Thaler, 1990, Anomalies: Foreign Exchange, Journal of Economic Perspectives 4:3 (Summer 1990), 179-192.

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

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.

Case, Karl E., and Robert J. Shiller, 1989, The efficiency of the market for single-family homes, American Economic Review 79: 125-137.

Liao, Hsien-hsing, and Jianping Mei, 1998, Risk characteristics of real estate related securities: An extension of Liu and Mei (1992), Journal of Real Estate Research 16:279-290.

Hausch, Donald, and William Ziemba, 1995, Efficiency of sports and lottery betting markets, In: Handbooks in Operations Research and Management Science, vol. 9 (Elsevier).

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).

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

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

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.)

(*) 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).

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

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.

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.

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.

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