Behavioral Finance & Experimental Finance
March 2009
*** PRELIMINARY ***

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Class times: 6 Classes, Tuesday Evening (March 31 – May 5, 2009)

Course website: Accessed via Blackboard system (http://sternclasses.nyu.edu/)

Final exam: TBD

Course description: Finance theory has long relied on a descriptively sparse model of behavior based on the premise that investors and managers are rational. Another critical assumption is that misjudgments by investors and managers are penalized swiftly in competitive markets. In recent years, both assumptions have been questioned as the standard model fails to account for various aspects of actual markets.

Behavioral finance, which allows that investors and managers are not always rational and may make systematic errors of judgment that affect market prices, has emerged as a credible alternative to the standard model. This course provides an exposition of the insights and implications of behavioral finance theory, showing how it can explain otherwise puzzling features of asset prices and corporate finance.

Notwithstanding the inroads of the new theory, the standard model retains strong support amongst many academics & practitioners who make criticisms of behavioral finance that deserve serious consideration. An important challenge that we will address in this course is identifying the respective domains of each perspective and whether there are tradable opportunities.

Class procedures: The course is taught through lectures, assignments, and discussions. Grading is as follows:

20% Class participation
30% Mini-assignments (3)
50% Final exam

For the mini-assignments and major assignment, teams of up to three (but no more) students may hand in a joint solution. These assignments are due at the beginning of each class – schedule to be provided.

All students are expected to follow the **Stern Code of Conduct**:
(http://www.stern.nyu.edu/uc/codeofconduct)
A student's responsibilities include, but are not limited to, the following: A duty to acknowledge the work and efforts of others when submitting work as one's own. Ideas, data, direct quotations, paraphrasing, creative expression, or any other incorporation of the work of others must be clearly referenced. A duty to exercise the utmost integrity when preparing for and completing examinations, including an obligation to report any observed violations.

Behavioral Finance
Class schedule

Class 1	**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
Class 2	**II. Some motivating evidence:** Return predictability in the stock market; Data mining; Joint hypothesis problem; Prediction markets.
Class 3**	**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); Major Assignment: Arbitrage opportunity on ADRs of BHP Billiton
Class 4**	**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
Class 5**	**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
Class 6	**Final Exam**

* = Mini-Assignments due

Reading List

Required readings are marked with a (*) below and will be made available via package also sold at the bookstore. When sitting down to read a paper on your own, try to take away the key intuition and results of the paper.

I. Non-behavioral finance

The standard model, based on rational expectations and competitive markets with negligible trading frictions.

(*) Fama., Eugene, Lawrence Fisher, Michael C. Jensen, and Richard R. Roll, 1969, "The adjustment of stock price to new information" *International Economic Review* v10:1-21.

Jensen., Michael C., 1968, "The performance of mutual funds in the period 1945-1964" *Journal of Finance* v23:389-416.

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

Fama., Eugene, 1970, "Efficient capital markets: A review of theory and empirical work" *Journal of Finance* v25:383-417.

Market efficiency could be "explained" by a highly abstracted model of behavior

Friedman, Milton, 1953, "The methodology of positive economics" In Essays in Positive Economics University of Chicago Press (1966), pp 3-16, 30-43.

II. Some motivating evidence

Since 1970, 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* v15(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* v56(1):387-396

Shiller., Robert J., 1981, "Do stock prices move too much to be justified by subsequent changes in dividends?" *American Economic Review* v71:421-36.

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.
Fama, E. F., 1998, "Market efficiency, long-term returns, and behavioral finance" *Journal of Financial Economics* v49:283-306.

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

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.
Boudoukh, Jacob; Matthew Richardson, YuQing (Jeff) Shen, Robert F. Whitelaw, 2007, "Do asset prices reflect fundamentals? Freshly squeezed evidence from the OJ market" *Journal of Financial Economics* v83:397–412
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.
Edmans., Alex, Diego García & Oyvind Norli, 2007, "Sports sentiment and stock returns" Journal of Finance v62(4):1967-1998.

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.
Fama, Eugene, and Kenneth R. French, 2007, "Disagreement, tastes, and asset pricing," Journal of Financial

Economics v83:667-689.
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, 2005. Predatory trading. Journal of Finance v60(4):1825-1863.
Brunnermeier, Markus K., and Stefan Nagel, 2004. Hedge funds and the technology bubble, Journal of Finance v59(5): 2013-2039

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, 2005, 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). Judgment 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. (2005) Comovement, Journal of Financial Economics v75:283-317.
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, 2004, Social Interaction and Stock-market participation, Journal of Finance v59(1):137-163
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, 2005, Thy neighbor's portfolio: Word-of-mouth effects in the holdings and trades of money managers, Journal of Finance v60(6):2801-2824

Armed with some understanding of arbitrageurs' and average investors' demands for securities, we 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, 2006, Investor sentiment and the cross-section of stock returns, Journal of Finance v61(4):1645-1679.
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, 2004, Aggregate short interest and market valuations, American Economic Review v94(2):29-32

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, 2005, Market timing and managerial portfolio decisions. Journal of Finance v60(4):1903-1949.
(*) 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, 2006, World markets for raising new capital, Journal of Financial Economics v82:63-101
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, 2006, Does investor misvaluation drive the takeover market?, Journal of Finance v61(2):725-762

Rational firms also try to keep their stock prices high by "catering" to investors – i.e., adopting whatever characteristics 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 (2004). A catering theory of dividends. Journal of Finance, v59(3):1125-1165.

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, 2005, CEO overconfidence and corporate investment, Journal of Finance v60(6):2661-2700

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

Survey of behavioral corporate finance

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