

EFMA2013 Special Session

Behavioral Finance: State of the Research and Future Challenges

Trading Biases

Zoran Ivković
Michigan State University

June 28, 2013, Friday: 10:45 - 12:30

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Broad Overview: Creating a Context

- Behavioral finance is a vast, growing field – disclaimers...
- Elegant framework: **Barberis and Thaler (2003) survey**
- B & T (2003) abstract: Behavioral finance argues that some financial phenomena can plausibly be understood using models in which some agents are not fully rational

- (1) Correctly update beliefs in light of new information (Bayes' law)
- (2) Given beliefs, normatively acceptable (SEU) choices

- Two building blocks:
 - Limits of arbitrage
 - Rational traders might find it difficult to undo the dislocations caused by less rational traders
 - Psychology
 - Deviations from “full rationality”

Broad Overview: B & T (2003) Outline

- Limits of arbitrage
(in an economy in which rational and irrational traders interact, irrationality *can* have a substantial and long-lived effect on prices)
- **Psychology** (how agents depart from full rationality?)
 - **Beliefs**
 - Overconfidence, optimism/wishful thinking, representativeness, conservatism, belief perseverance, anchoring, availability biases, ...
 - **Preferences**
 - Prospect theory, ambiguity aversion, ...
- Applications
 - **Aggregate stock market** (equity premium, volatility, predictability)
 - **Cross-section of average returns**
 - **Closed-end funds & comovement**
 - **Investor behavior (trading biases)**
 - **Corporate finance**

Outline of Topics

- Trading Biases and Evolution, Genetics
- Neuroscience (imaging, psychopaths, IQ)
- Theoretical Work
- Experimental Studies
- Empirical Studies
 - Role of Learning, Responses to Past Returns
 - Does Behavior Affect Prices? Trading Volume?
 - Individual Investors
 - Household Finance
 - Professionals
 - Mood, Delegation
- Thoughts on Future Directions

Trading Biases and Evolution

- Psychological mechanisms leading to investment biases today optimal in the course of evolution (maximize fitness, reproductive advantage)
- **How far into the past can we trace some behavioral biases?**
- Chen, Lakshminarayanan, and Santos (JPE, 2006): Capuchin monkeys...
- Capuchin monkeys... very smart, not exposed to markets and trading (subjects previously unexposed to experiments)



Trading Biases and Evolution

- Results:**

TABLE 5
EXPECTED GAINS, LOSSES, AND VALUES FOR EACH EXPERIMENTAL CHOICE

	EXPERIMENT 1		EXPERIMENT 2		EXPERIMENT 3	
	E_1	E_2	E_1	E_2	E_1	E_2
Gamble offered	(1, 1, 1)	(2, 1, 2)	(1, 1, 2)	(2, 1, 2)	(1, 1, 1)	(2, 1, 1)
Gains	0	0	.5	0	0	0
Losses	0	.5	0	.5	0	1
Expected value	1	1.5	1.5	1.5	1	1
Trials chosen	13%	87%	71%	29%	79%	21%

NOTE.—The table is constructed pooling all subjects' last five sessions after choices stabilize (60 trials).

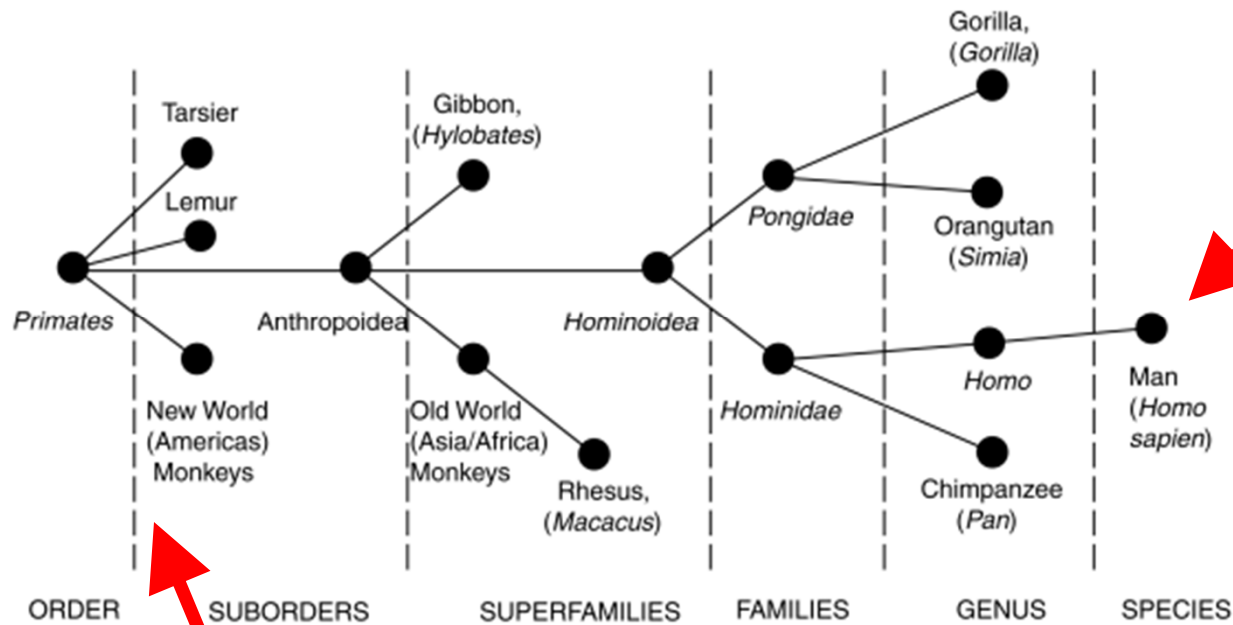
- Stochastic dominance (#1)
- Reference dependence (#2 with uncertainty; #3 no uncertainty)
- Loss aversion (#3 minus #2 = 79% - 71%)
 - An interpretation: Sure loss pinches more than half loss, half gain

$$|\text{loss}| > \frac{1}{2} |\text{loss}| + \frac{1}{2} |\text{gain}| \Leftrightarrow |\text{loss}| > |\text{gain}|.$$

Trading Biases and Evolution

- My reflections:

(1) When all is said and done, ...



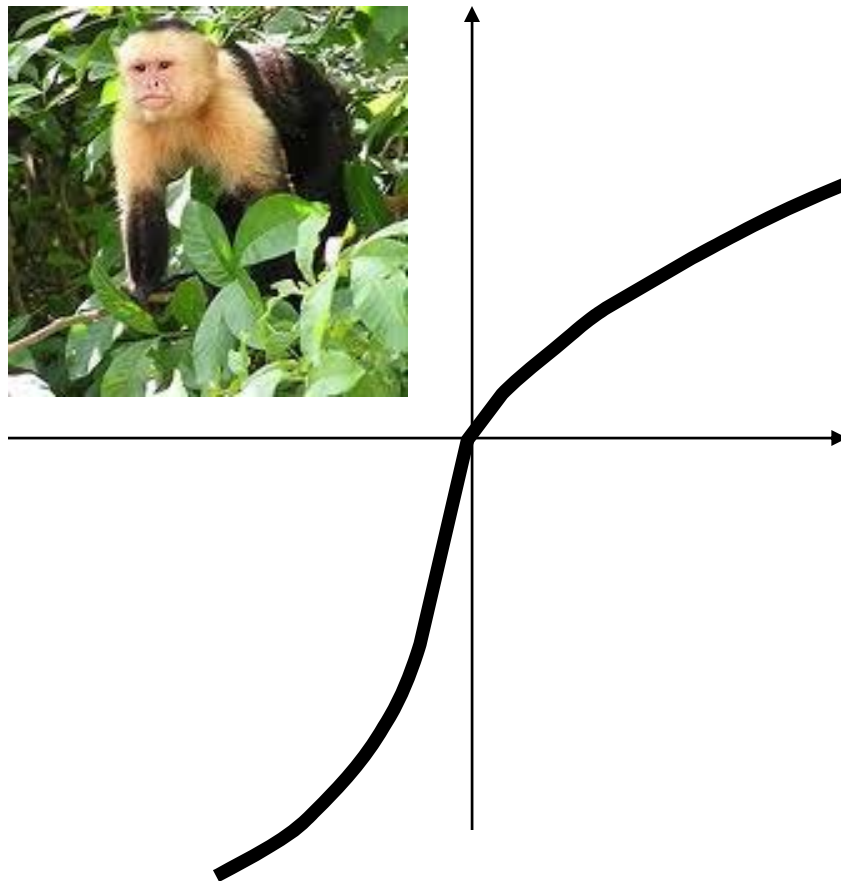
Millions of years later, we do not stand a chance!!!

This is when all the trouble started (if not earlier)

Trading Biases and Evolution

- My reflections:

(2) I will never view Capuchin monkeys, human evolution, and this graph the same way ...



Trading Biases: Nature versus Nurture

- Why do humans display behavioral biases?
- Born with biases
 - Preferences and belief formation outcomes of natural selection
 - Jack Hirshleifer (1977), Becker (1976), Robson (1996, 2001), Netzer (2009), Robson and Samuelson (2009)
 - Nature selects fitness-maximizing behaviors (reproductive advantage)
 - Environment may activate biases
 - Loss Aversion: McDermott, Fowler, Smirnov (2008) [in biology: e.g., Caraco (1980)]
 - Over-confidence: Johnson and Fowler (2011)
 - Probability Matching: Brennan and Lo (2009)
- Blank slate
 - Parenting (e.g., Bisin and Verdier (2000))
 - Information and education
 - Incentives and resources

Trading Biases: Twin Studies

Cronqvist and Siegel: Investment Biases

- Swedish Twin Registry (15,000 twin pairs)
- Estimation methodology (quantitative behavioral genetics research):
 - Random effects model with genetic effect a , common effect c , and individual-specific effect e :

$$y_{ij} = \beta_0 + \beta \mathbf{X}_{ij} + a_{ij} + c_i + e_{ij}$$

- Covariance structure (genetic theory):

$$\text{Cov}(\mathbf{a}) = \sigma_a^2 \begin{bmatrix} 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1/2 \\ 0 & 0 & 1/2 & 1 \end{bmatrix}, \text{Cov}(\mathbf{c}) = \sigma_c^2 \begin{bmatrix} 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}, \text{Cov}(\mathbf{e}) = \sigma_e^2 \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

- MLE with bootstrapped standard errors

Trading Biases: Twin Studies

Cronqvist and Siegel: Investment Biases (cont.)

➤ Variance components:

- **A-share** – genetic component (heritability): $\frac{\sigma_a^2}{\sigma_a^2 + \sigma_c^2 + \sigma_\varepsilon^2}$

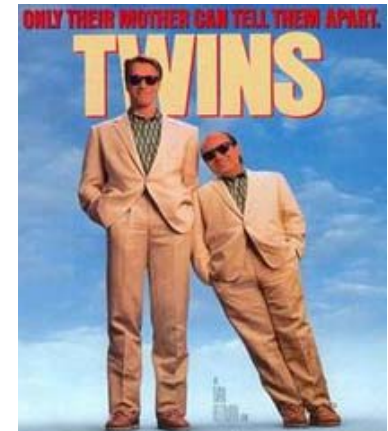
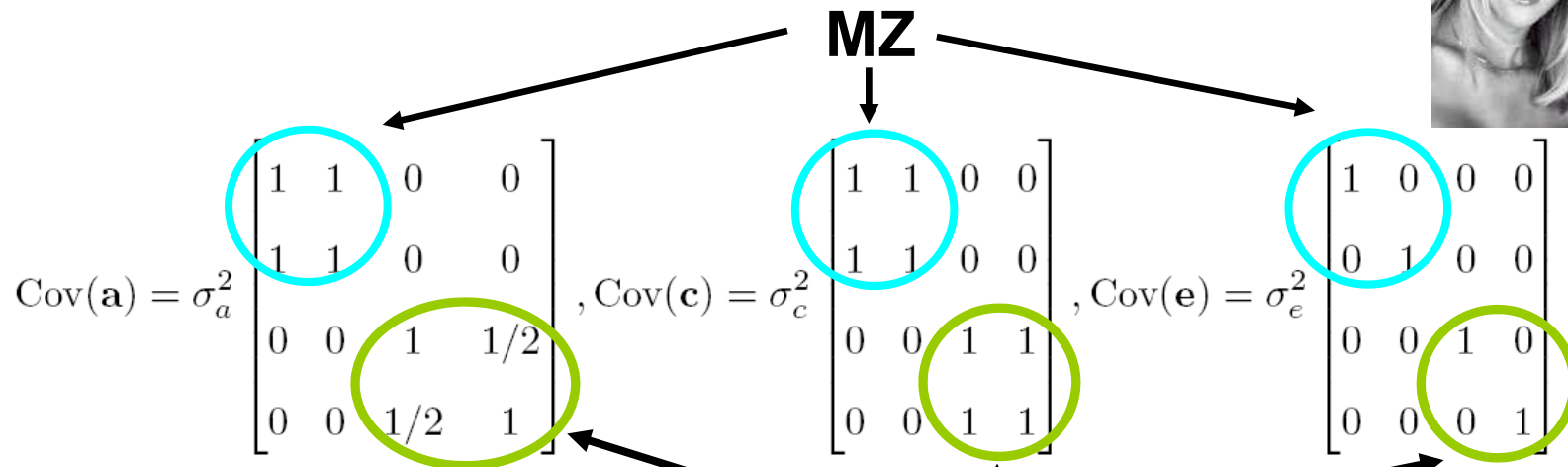
- **C-share** – common environment (parenting): $\frac{\sigma_c^2}{\sigma_a^2 + \sigma_c^2 + \sigma_\varepsilon^2}$

- **E-share** – individual environment, measurement error: $\frac{\sigma_\varepsilon^2}{\sigma_a^2 + \sigma_c^2 + \sigma_\varepsilon^2}$

Trading Biases: Twin Studies

Cronqvist and Siegel: Investment Biases (cont.)

➤ Covariance structure revisited:



Trading Biases: Twin Studies

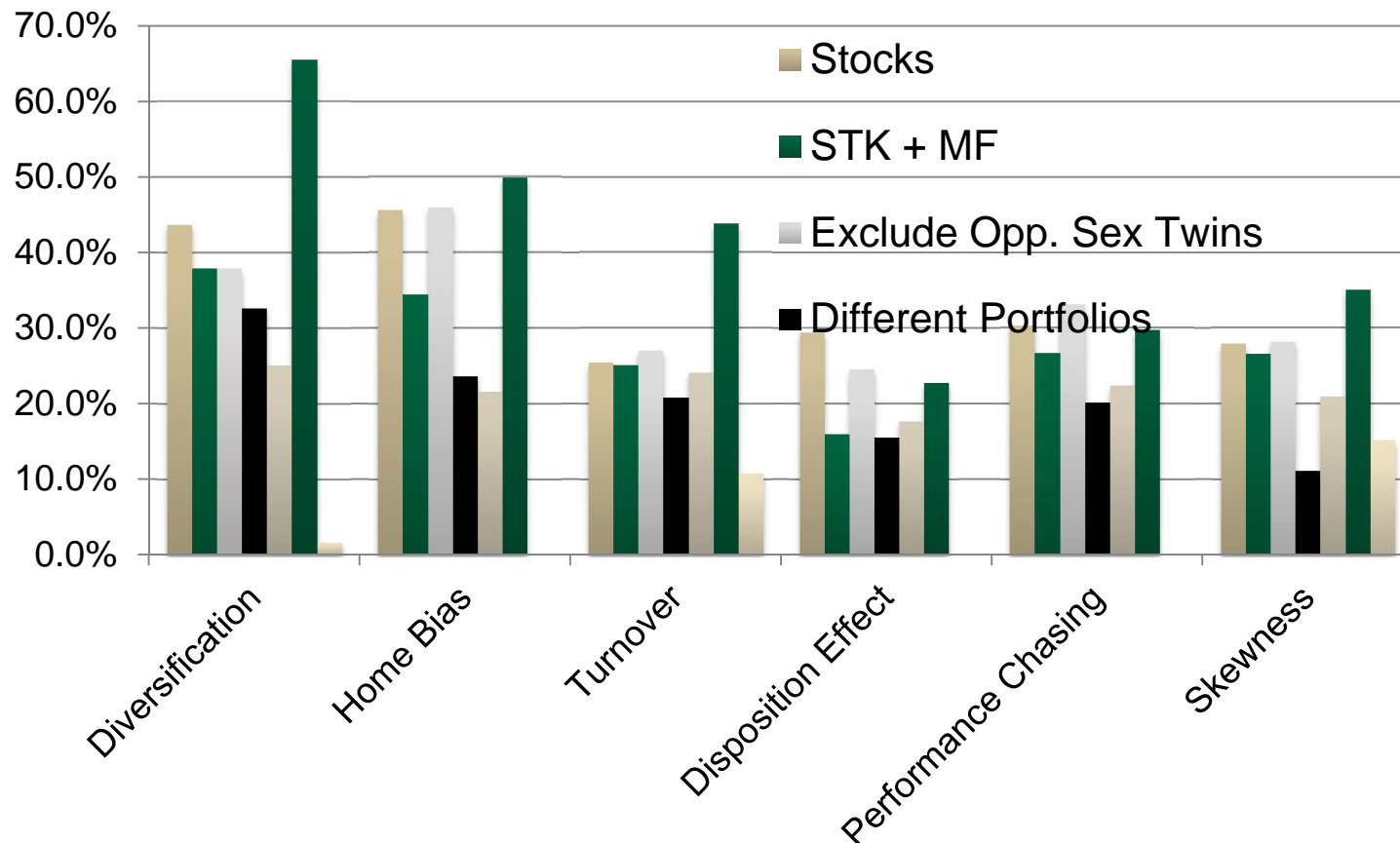
Cronqvist and Siegel: Investment Biases (cont.)

- List of investment biases:
 - **Diversification** (# of stocks in portfolio)
 - **Home Bias** (% of equity portfolio in Swedish equities)
 - **Turnover** (sales/value of portfolio at beginning-of-year)
 - **Disposition Effect** (current price - purchase price)
 - **Performance Chasing** (% equities acquired with raw returns in Q5)
 - **Skewness Preference** (% lottery securities in portfolio)

	Diver- sification	Home Bias	Turnover	Disposition Effect	Performance Chasing	Skewness Preference
A Share	0.453	0.452	0.251	0.272	0.311	0.275
	0.084	0.053	0.029	0.127	0.091	0.050
C Share	0.030	0.000	0.000	0.000	0.095	0.000
	0.052	0.028	0.007	0.045	0.065	0.028
E Share	0.516	0.548	0.749	0.728	0.594	0.725
	0.042	0.037	0.027	0.109	0.039	0.034

Trading Biases: Twin Studies

Cronqvist and Siegel: Investment Biases (cont.)



- General education does not mitigate bias, but financial experience does!
 - *Specifically targeted educational interventions* could be quite helpful

Trading Biases: Twin Studies

- **Other twin-study results reveal genetic components:**

- *Savings behavior* (33%; Cronqvist and Siegel, 2011)
- *Portfolio risk* (25%; Cesarini et al., 2010)
- *Stock-market participation, asset allocation* (33%; Barnea, Cronqvist, and Siegel, 2010)
- *Certain cognitive biases* (20-40%; Cesarini et al., 2012; survey)

- **Genetic component increases explanatory power:**

- Cesarini et al. (2010): Regression R^2 increases from 5% to about 25%

- **Challenge to “nature versus nurture” distinction:**

- Cunha and Heckman, 2011, Investing in Our Young People:

...[T]he nature versus nurture distinction is obsolete ... Additive “nature” and “nurture” models, while traditional and still used in many studies of heritability and family influence, mischaracterize how ability is manifested. Abilities are produced, and gene expression is governed, by environmental conditions. Measured abilities are susceptible to environmental influences, including in utero experiences, and also have genetic components. These factors interact to produce behaviors and abilities that have both a genetic and an acquired character. Genes and environment cannot be meaningfully parsed by traditional linear models that assign variance to each component.

Trading Biases: Twin Studies

- Challenges and opportunities:

- Noise in outcome measures (shifts everything to idiosyncratic)
- Should we accept that some individuals (genetically prone to biases) will mismanage their finances? If not, responses?
- I am getting ideas about a futuristic movie in which genetic traits that lead to investment (and other) biases can be “engineered away”
- Seriously, though, should we think about policies that promote financial literacy? If so, how should we proceed in regard to trading biases?
- Will genetic testing be able to diagnose “financial disorders”?
- Will results of genetic testing become part of our credit score (B. Barber)?

Trading Biases: Gene Association Studies

- Some biases associated with specific gene(s):
 - Table 1 from Cronqvist and Siegel (2012)
 - Most results therein are from Chew et al. (2011) and Zhong et al. (2009)

Investment behavior	Psychological mechanism(s)	Gene(s)
<i>Insufficient diversification</i>	Ambiguity aversion Familiarity	DRD5 (microsatellite marker); ESR2 (CA repeat) SLC6A4 (5-HTTLPR indel)
<i>Excessive trading</i>	Overconfidence Sensation seeking	Multiple SNPs in 4 dopamine genes
<i>Disposition effect</i>	Prospect theory	9-repeat vs. 10-repeat allele of DAT1 10-repeat vs. 12-repeat allele of STin2
<i>Performance chasing</i>	Mental accounting / Framing Excessive extrapolation Hot hands fallacy	
<i>Skewness preference</i>	Cumulative prospect theory	Monoamine oxidase A (4 repeat)

Trading Biases: The Brain Muscle

Evolution and genetics (and environment) shaped the brain

- How does that brain process the (ir)relevant information?
- What other factors affect the brain during investment decision-making?

Methodological approaches:

- Neuroscience
- Experimental (mock trading)
- Surveys
- Analysis of (actual) trading data
- Development of theoretical models
- Combinations of the above
- Each approach has advantages and challenges!

Neuroscience

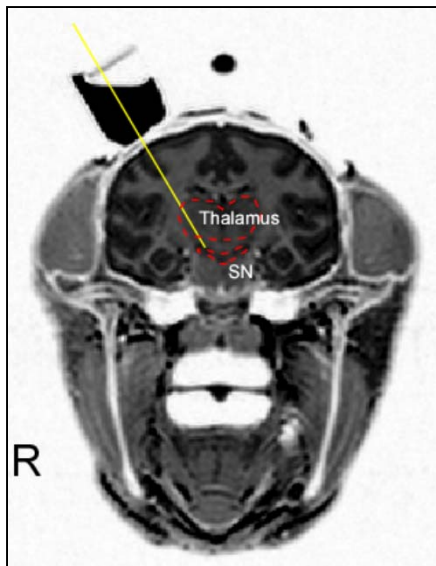
Key question

- What are the computational algorithms that the brain uses?
- Potential flaws might explain cognitive biases?

Techniques:

- Subjects perform tasks (play games) while brain activity is recorded

Single-unit recording

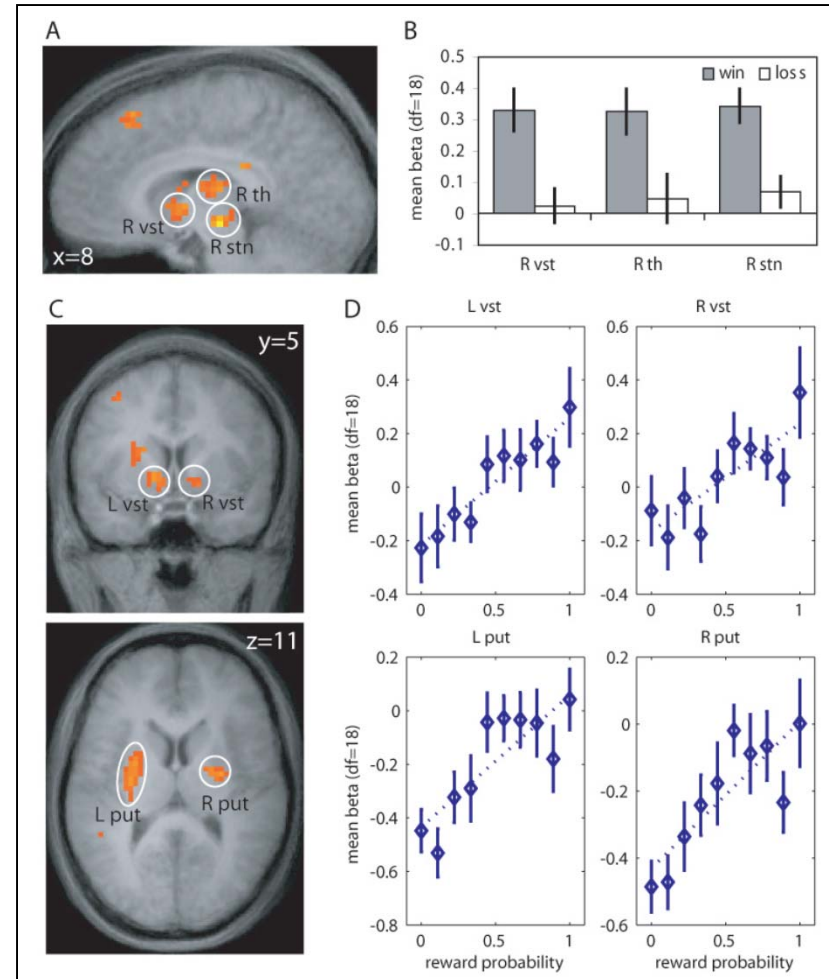


EEG



Techniques (continued):

fMRI



Neuroscience

Addressing causality:

- Pharmacology: Use drugs (polymorphisms of proteins)!
- Disrupt processes using transcranial magnetic stimulation
 - Disruption of inferior frontal gyrus leads to reduced risk aversion

fMRI evidence regarding the role of emotion:

- Frydman, Barberis, Camerer, Bossaerts, and Rangel (2012):
 - Support for the “realization utility” theory (investors derive utility directly from the act of realizing gains and losses)
 - All subjects exhibited a strong disposition effect in their trading
 - Ventromedial prefrontal cortex (area encoding the value of options during choices) activity correlates with the capital gains of potential trades
 - Neural measures of realization utility correlate across subjects with their individual tendency to exhibit a disposition effect; and
 - Ventral striatum (area encoding information about changes in the present value of experienced utility) activity responds positively when subjects realize capital gains
- Overall, this literature finds that separate valuation of gains and losses (prospect theory) aligns well with the data (reference point?) !

Sort of Neuroscience

Functional psychopaths very helpful for this line of research!

- Shiv, Loewenstein, Bechara, Damasio, and Damasio (2005):
 - Compare investment decisions (in a simulated, real-life setting) made by:
 - Normal participants,
 - Target patients (stable focal lesions in brain regions related to emotion), and
 - Control patients (stable focal lesions in brain regions unrelated to emotion)
 - Normal participants and control patients won or lost on an investment round => a conservative strategy, more reluctance to invest on the subsequent round
 - Target patients exhibited less myopic loss aversion and made better decisions
- Emotions play an important role in risk taking and risk aversion!

One measure of the brain's capability to process information: IQ

- Grinblatt, Keloharju, and Linnainmaa (2012) ... high-IQ investors are:
 - Better investors along several dimensions:
 - More aggressive about tax-loss trading, more likely to supply liquidity when stocks experience a 1-month high; superior market timing, stock-picking, and trade execution
 - In particular, less prone to the disposition effect

Theoretical Work (A Highlight)

What Drives the Disposition Effect?

- Barberis and Xiong (2009): Preference-based (Prospect Theory) explanation
- Odean (1998): Obvious potential explanations (informed trading, rebalancing, transaction costs) do not work
- Prospect theory *assumed* to drive disposition
 - Risk-averse over gains → more likely to sell,
 - Risk-loving over losses → less likely to sell
- Solve for optimal trading strategy and then simulate trading (vary μ , T)
- Two flavors:
 - G/L = profit from trading over a year-long interval (“annual gain/loss”)
 - “Realized G/L” = jolt of prospect theory utility right away, at time t (more adventurous – also differentiates between paper and realized gains)
- Two key (and somewhat surprising?!) results:
 - “Annual gain/loss”: disposition for *some* μ , T; the *opposite* for others!
 - “Realized G/L”: disposition for *most* μ , T; though occasionally the opposite
- “Realization utility” paradigm appears very promising!

Theoretical Work (A Highlight)

Realization utility merits further study:

- Barberis and Xiong (2012): A model of realization utility
- Why derive utility from realizing a G/L?
 - 1) Investment episodes: “Bought X at \$50, sold at \$60” (name, P_B , P_S)
 - 2) Evaluation of investment episodes ($P_S > P_B$ good; $P_S < P_B$ bad)
- Plausibly affects unsophisticated investors more strongly
- Baseline model (linear realization utility for simplicity):
 - Partial (later full) equilibrium → predictions about behavior (and prices)
 - Infinite horizon model; allocate W either to rf or one of a number of stocks
 - Key feature: Stock sale triggers burst of utility = $f(G/L \text{ amount})$
 - Allocation at each t maximizes the discounted sum of future utility bursts
- Rich set of implications – may help better understand many puzzling facts:
 - Disposition effect, individuals’ underperformance, higher trading volume in rising markets, individuals’ preference for volatile stocks, low average return of volatile stocks, high trading volume of highly-valued assets
- fMRI, experimental evidence supportive! (Frydman, Barberis, Camerer, Bossaerts, and Rangel, 2012, Weber and Camerer, 1998)
- Other work on prospect theory, disposition: Ingersoll, Jin (2013), Li, Yang (2013)

Other Theoretical Results (A Few)

Irrationality may have its good side(s):

- Ko and Huang (2007): **Effect of overconfidence on mispricing and information acquisition**
 - The model assumes that overconfidence prompts investors to overinvest in information acquisition, thus improving market efficiency
 - 1) Moderate **overconfidence improves pricing**
 - 2) Improvements possible even for high overconfidence (depends on the amount of private information acquired relative to public information)

- Hirshleifer, Subrahmanyam, Titman (2006): **Irrational investor success**
 - The model assumes irrational investors trade for reasons with no inherent connection with fundamentals
 - 1) (Irrational) trades affect prices (which, though they deviate from fundamentals, follow a random walk), feedback from prices to cash flows makes irrational trades influence cash flows
 - 2) **Irrational investors may earn higher risk-adjusted profits than rational investors do**

Experimental Studies (A Few)

Reference-Point Formation and Updating?

- Baucells, Weber, Welfens (2011): **Reference-Point Formation Over Time**
 - Reference price appears to be a combination of the first and last prices of the time series (intermediate prices less important), hence not recursive

Evaluation Periods (Myopic Loss Aversion):

- Gneezy, Kapteyn, Potters (2003): **More information and more flexibility results in less risk taking**
 - Myopic loss aversion: The higher the frequency of look-ups, the riskier the asset appears to be, the more loss days, the stronger the loss aversion
 - Multiple studies: Risky allocation higher when look-up frequency lower
 - This study: Will MLA effects manifest in a competitive environment?
 - Yes, they show up in experimental markets
 - Limitation: In realistic markets, information available virtually continuously; the decision to look-up (or not) is endogenous
- Haigh, List (2005): **CBOT professionals exhibit MLA to a greater extent than students do**

Empirical Studies (A Few)

Role of Learning, Responses to Past Returns

- Seru, Shumway, Stoffman (2010): **Learning by Trading**
 - Evidence of two types of learning:
 - Become better at trading with experience
 - Stop trading after realizing that their ability is poor (substantial)
 - *Attrition* important for assessing how quickly investors get better at trading
- Linnainmaa (2011): **Why (Some) Households Trade So Much? To Learn!**
 - Investors rationally “*trade to learn*” (even if expect to lose from active investing)
 - HH trading intensity ~ past performance; begin by trading small sums of money
 - Realized returns significantly downward-biased measures of true abilities
- Choi, Laibson, Madrian (2009): **Over-extrapolation of past experience**
 - *Rewarding* 401(k) outcome investors (high average, low variance) *increase 401(k) savings rate more than less rewarding* outcome investors
- Ben-David, Hirshleifer (2012): **Responses to Past Returns & Disposition**
 - Probability of selling as a function of profit V-shaped
 - Little evidence of upward jump in sale probability at zero profits
 - Realization preference does not explain trading; perhaps belief revisions?

Empirical Studies (A Few)

Does Behavior Affect Asset Prices? Trading Volume?

- Kumar, Lee (2003): **Retail Investor Sentiment and Return Comovement**
 - *Systematic retail trading explains return comovements for stocks with high retail concentration* (i.e., small-cap, value, lower institutional ownership, and lower-priced stocks), especially if these stocks are also costly to arbitrage
- Statman, Thorley, Vorkink (2006): **Investor overconfidence, trading volume**
 - Investors overconfidence can explain high observed trading volume
 - *Share turnover positively related to lagged returns* for many months
 - True for both market-wide and individual security turnover
 - *Evidence of investor overconfidence and the disposition effect*, respectively
- Grinblatt, Han (2005): **Prospect theory, mental accounting, momentum**
 - Holding on to losing stocks (prospect theory, mental accounting) → spread between fundamental values and equilibrium prices, price underreaction to information
 - A variable proxying for aggregate unrealized capital gains generates the profitability of a momentum strategy
 - Controlling for it, past returns have no predictability for cross-section of returns

Empirical Studies (A Few)

Individual Investors

- Dhar, Zhu (2006): **Investor sophistication lowers disposition effect**
 - Lower disposition effect: Wealthy, professionals, more frequent trades
- Kumar (2009): **Gambling in the Stock Market**
 - Individual investors prefer stocks with lottery features
 - Like lottery demand, lottery-type stock demand ↑ during economic downturns
 - Lottery investment levels higher in regions with favorable lottery environments
 - Gambling-related underperformance greater among low-income investors (who excessively overweight lottery-type stocks)
- Kumar, Lim (2008): **Narrow Framing Reduces Biases**
 - Trade clustering proxy for narrow framing
 - Clustered trades: Weaker disposition effects, hold better-diversified portfolios
- Malmendier, Shantikumar (2007): **Small Investors Naïve**
 - Inferior response to analyst recommendation changes (especially affiliated ones)
- Brunnermeier, Nagel (2008): **Wealth Fluctuation No Effect on Risk Aversion**
 - Share of risky assets not affected by risk changes (inertia, very slow rebalancing)

John Y. Campbell: Household Finance

- Campbell (2006): Household Finance (Presidential Address)
 - HH behavior difficult to measure (constraints not captured by textbooks)
 - Many HHs invest effectively, minority significant mistakes (poorer, less educated)
 - HHs understand own limitations (avoid strategies for which feel unqualified)
 - Investment mistakes (should- actually) central to HH finance
 - Standard finance theory: max(HHwelfare) HHs can be *educated* the make (should)
 - Behavioral finance theory: Choices HHs currently make (actually)
- 1. Equilibrium HH finance (set of products available to HHs)
 - Financial innovation slowed by costs of advertising, educating HHs, and weak patent protection; also, naive HHs cross-subsidize sophisticated HHs
- 2. HH financial engineering
 - Remedies – financial education, influencing consumer regulation, disclosure rules, and provision of default investment options
- Challenges of HH Finance
 - **Measurement** (representative, total wealth, disaggregated, accurate, panel)
 - **Modeling** (should) – many complications (horizon, frictions; should hedge not only shocks to W , but also to any X that predicts $E(W)$)
- Topics: Participation, Asset Allocation, Diversification, ...

Empirical Studies (A Few)

Professionals

- Coval, Shumway (2005): **CBOT Trader Behavior Affects Prices**
 - Highly loss-averse, above-average afternoon risk to recover morning losses
 - Affects afternoon prices (losing traders purchase/sell at higher/lower prices)
 - Market aware: Prices set by loss-averse traders reverse much more quickly
- Locke, Mann (2005): **CME Professionals hold losses longer than gains**
 - No evidence of cost associated with this behavior
 - Successful traders' behavior: Rational and "disciplined" (minimize behavioral)
- Jin, Scherbina (2011): **Inheriting Losers**
 - New MF managers sell losers (even stronger effect for external hires)
 - Continued MF managers behave differently (cannot ignore sunk costs, career?)
- Frazzini (2006): **Disposition Effect and News Underreaction**
 - MF managers display disposition effects (sell/not sell on good/bad news)
 - This amplifies the underreaction (very profitable trading strategies!)

(A Couple of) Other Topics: Mood

Emotion (mood) affects stock prices; stock prices affect mental health

- Kaplanski, Levy (2010): Aviation disasters (market ↓, implied volatility ↑)
- Parsons, Engelberg (2013): (Really) negative market returns affect mental health

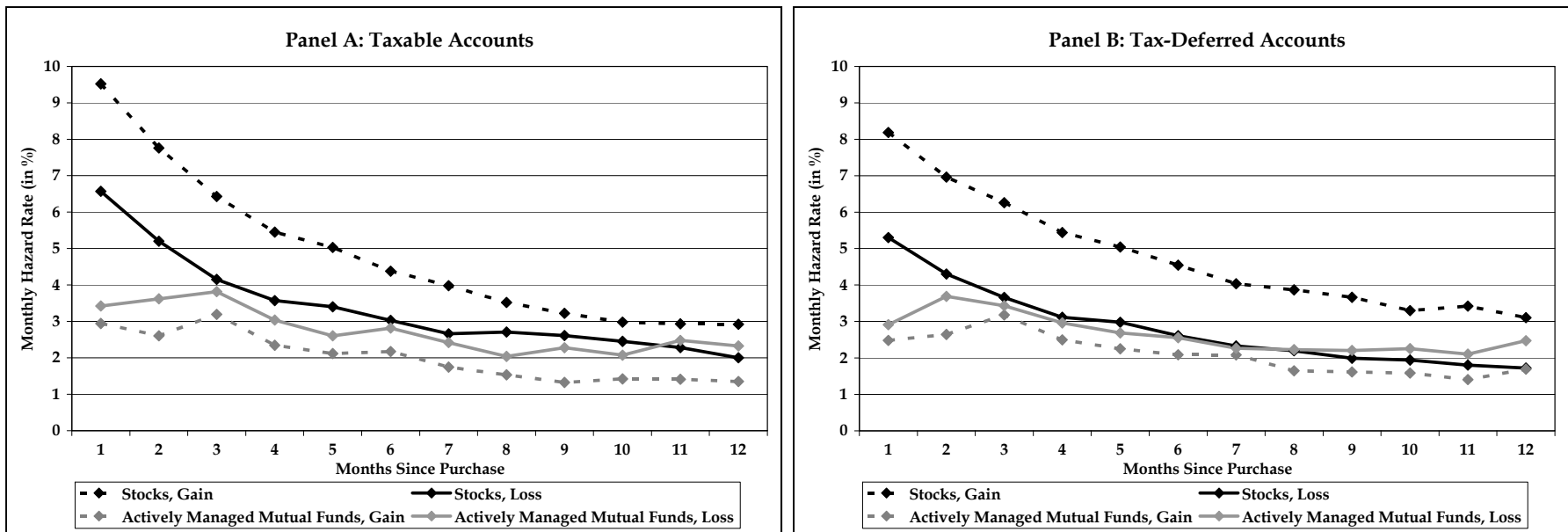
Emotion (mood) affects financial decision-making – disaggregated:

- Agarwal, Duchin, Evanoff, Sosyura (2013): **In the Mood For a Loan**
 - **Financial decision** = mortgage credit origination
 - **Decision agent** = loan officer (expert with well-defined decision criteria)
 - Clean measures of hard information available to the agent
 - Known opportunity set and exact date of the decision
 - **Decision outcome** = loan approval; ex-post loan performance
 - **Sources of variation in the sentiment** of loan officers in affected counties: Super Bowl, NBA Finals, Stanley Cup, World Series, American Idol outcomes
 - Positive (negative) sentiment events → loan approval rates 4.1% up (1.8% down)
 - Loan officers appear to use more discretion on sentiment days (lower R^2)
 - No changes in number and quality of reviewed, submitted applications
 - No evidence higher approval rates offset by higher interest rates
 - Positive/negative sentiment loans are more/as likely to default

(A Couple of) Other Topics: Delegation

Different Strokes for the Same Folks: Sale-Performance Relation is...

- Positive (disposition) if investors picked the investment (stocks)
- Negative (reverse disposition) if delegated the picks to the MF manager
- Non-parametric plots based on a brokerage data set:




- Delegation – shifting blame (Ivković, Weisbenner; Chang, Solomon, Westerfield, 2013)
- Different past performance interpretation: Stocks (reversal?) and MFs (skill)!
- Myopic loss aversion (MF performance likely checked less frequently)

Further Thoughts: Directions

- Toward a confluence of methodologies:
 - Evolution, Genetics, Experimental, Theoretical, Empirical
 - Each approach has advantages and disadvantages, none is perfect
- Investment decisions prone to bias – appreciate complexities
 - Many types of agents (professionals, individual investors) biased
 - For professionals, do their career concerns suffice to mitigate biases?
 - For individuals, financial education key
 - Help along the way: Regulation, disclosure, defaults (Campbell)
 - Ultimately, can biases be “engineered away”?
- Theoretical work
 - Multiple models characterize investor behavior and are calibrated
 - With added complexity, what happens? (“Union” of theories)
 - Align assumptions (neuroscience, experimental, empirical evidence)
 - Develop “normative” models – what *should* (rational) investors do in increasingly more complex circumstances?

Further Thoughts: Directions

- Experimental Studies
 - Gain wider acceptance (ability to take apart the full complexity of actual markets, available information, and frictions is *very* valuable)
 - Build more complex designs (I know, that is expensive...) to capture the interplay between (and, eventually, among) various phenomena
- Empirical Studies
 - Strive to obtain more (and better) data (do not make it difficult)
 - Continue exploring the effects that trading biases have on prices
 - Developing areas (e.g., emotion, identification, reference points, ...)



Various performance benchmarks, Taxable accounts		
	"Absolute"	"Abs." & "Rel."
GAIN	0.21**	-0.86***
LOSS	1.38**	0.20**
GAIN_REL_MKT		1.11***
LOSS_REL_MKT		0.11*
Price/ Max. Price Since Purchase		1.31***

- Have Fun!