

CHAPTER THREE



BEHAVIORAL FINANCE

CONVENTIONAL VS BEHAVIORAL

Two main questions

1. Market aspect
 - Are markets “efficient” or
 - Are they subject to behavioral effects?
2. Individual aspect
 - Are individual investors perfectly rational, or
 - Can cognitive and emotional errors impact their financial decisions?

CONVENTIONAL VS BEHAVIORAL

ARE MARKETS EFFICIENT?

OR

ARE THEY SUBJECT TO BEHAVIORAL EFFECTS?

CONVENTIONAL APPROACH

Market Value vs Intrinsic Value

- **Two different values of an asset**
 - Market value
 - The fundamental (intrinsic) value → fundamentals
 - The actual value of an asset based on underlying perception of its true value
- If there is a difference between them, to exploit the difference for profit
 - One should be able to consistently predict movements in asset prices
 - An individual should know more than the market knows
- Conventional wisdom
 - No one can make money by exploiting the difference
 - **Efficient market hypothesis**
 - Market prices and fundamental values are one and the same
 - Or at least the two converge so quickly
 - **Random walk hypothesis**

CONVENTIONAL APPROACH

The Efficient Market Hypothesis

Developed by Eugene Fama (University of Chicago)

- Asset prices movement: the new information about the economy
 - This information mirrors the fundamentals of the real economy
 - Asset prices reflect available information
- Investors
 - be aware of all relevant information
 - quickly and effectively process this information
 - identify the errors and biases
 - update the information.
 - *Bayesian updating.*
 - not influenced by the peers, norms, or psychological considerations
- Unbounded rationality & objective information processing
 - smart and optimal investment decisions

CONVENTIONAL APPROACH

The Random Walk Hypothesis

- Financial asset price movements follow a **random walk**
 - Burton Malkiel (Princeton University) made it famous
- Past movements in asset prices don't provide you with the ammunition required to predict future prices
 - Like flipping a coin over and over
- If you can't use past data to predict future prices, devising investment strategies to beat the market is impossible
- *You can't get rich by beating the market — but you can get rich selling advice to people who think that you can beat the market*

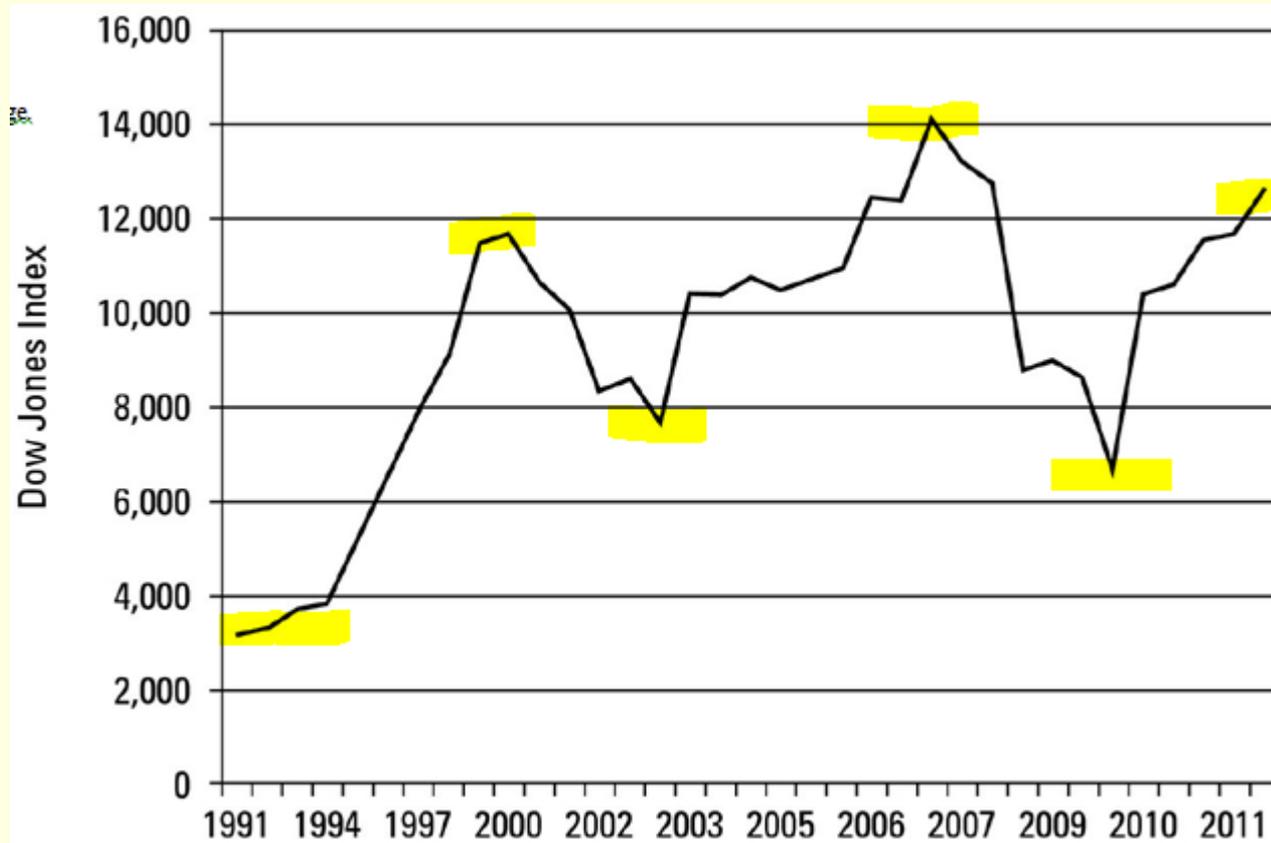
BEHAVIORAL APPROACH

Bubbles

- **Speculative bubble**
 - Confidence in price increases
 - Largely due to psychological factors,
 - News about an increase in price spreads like a virus
 - A cycle of prices increases
 - As opposed to a price increase based on increases in fundamentals
- Decision making is based on excitement and behavior of others
 - J.M. Keynes → **animal spirits** is the key driver of decision making.
- **Irrational exuberance**
 - Greenspan(1996)
 - The psychological foundation for speculative bubbles

BEHAVIORAL APPROACH

Irrational Exuberance



BEHAVIORAL APPROACH

Bubbles and Busts

- Asset prices typically don't represent fundamental values
 - Bubbles: a deviation from their fundamental values.
 - Busts: an *eventual* market adjustment to fundamental values, usually after they fall below fundamental values.
 - Cycles: movements around the fundamental values of assets.
- Documenting bubbles and subsequent busts in asset prices has been critical to the development of behavioral finance

BEHAVIORAL APPROACH

The Dutch Tulip Bulb Bubble

- Investor irrationality has existed for a long time
- A well-known historical example of irrational investor behavior dates back to the mercantilist period (16th century)
- Conrad Guestner transported tulip bulbs from Constantinople, introducing them to Holland.
- Tulips were an instant status symbol for the Dutch elite.

BEHAVIORAL APPROACH

The Dutch Tulip Bulb Bubble

Anatomy of a speculative bubble

1. Most early buyers simply adored the flowers
2. Speculators soon joined the fray to make a profit
3. Trading activity escalated, and eventually, tulip bulbs were placed onto the local market exchanges
4. The obsession trickled down to the Dutch middle class
 - Expectation: the bulbs' value would continue to grow
 - Aim: To acquire tulips and make profit
 - People were selling everything they owned—including homes, livestock, and other essentials— to buy tulip bulbs

BEHAVIORAL APPROACH

The Dutch Tulip Bulb Bubble

5. *Future contracts on tulip bulbs*

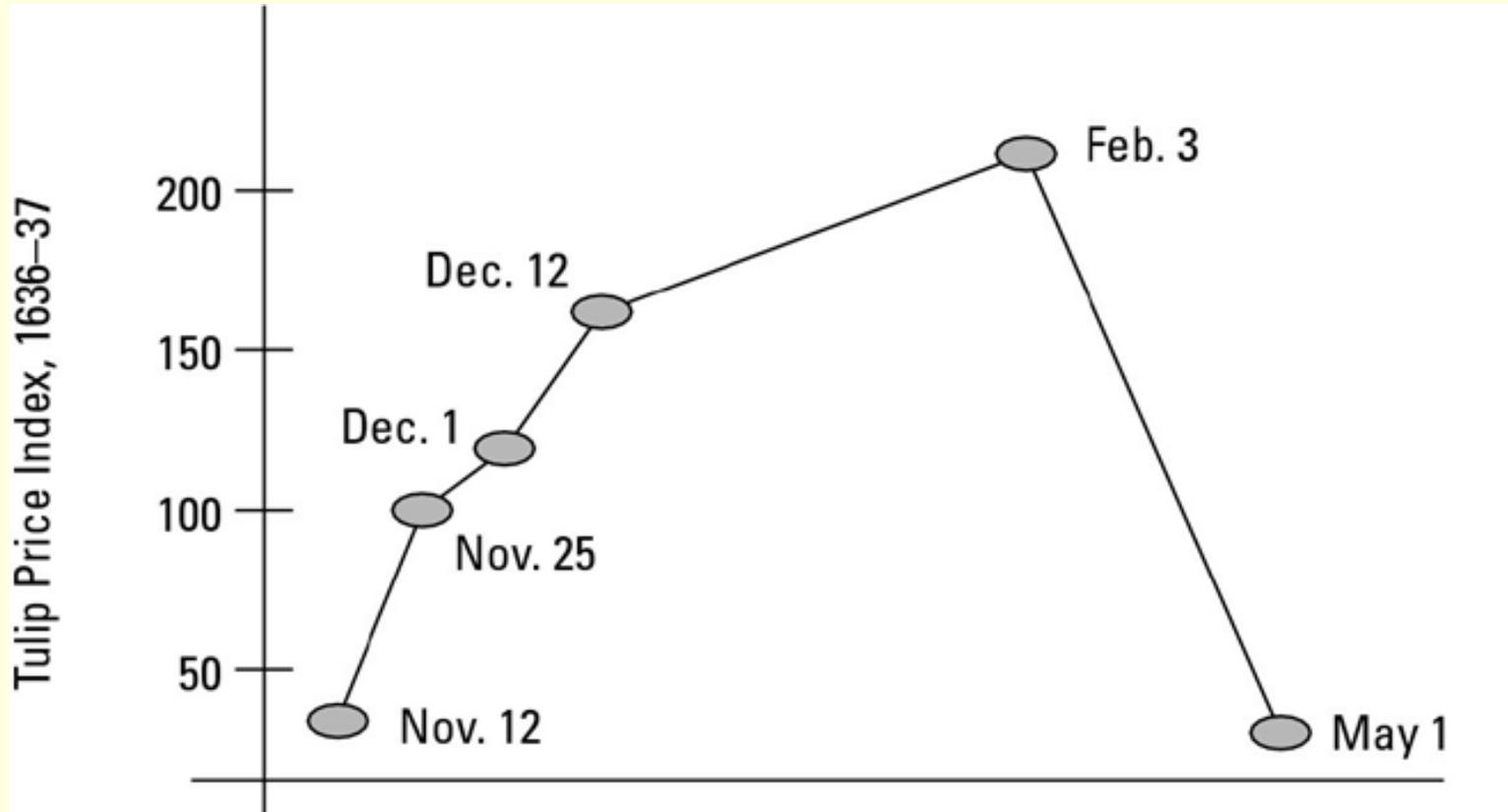
- The expectation was that prices would continue to increase.
- Buyers and sellers bet on the expected future price of tulip bulbs.
- Many future contracts were purchased on borrowed money, or *leveraged*.

6. Peak of the bubble → February 1637

- The value of a single tulip bulb was worth many times the wage of a skilled worker.
- Some tulip bulbs were worth more than 2 tons of butter or 1,000 pounds of cheese.
- One bulb even sold for the price of a house in a really classy part of Amsterdam.

BEHAVIORAL APPROACH

The Dutch Tulip Bulb Bubble



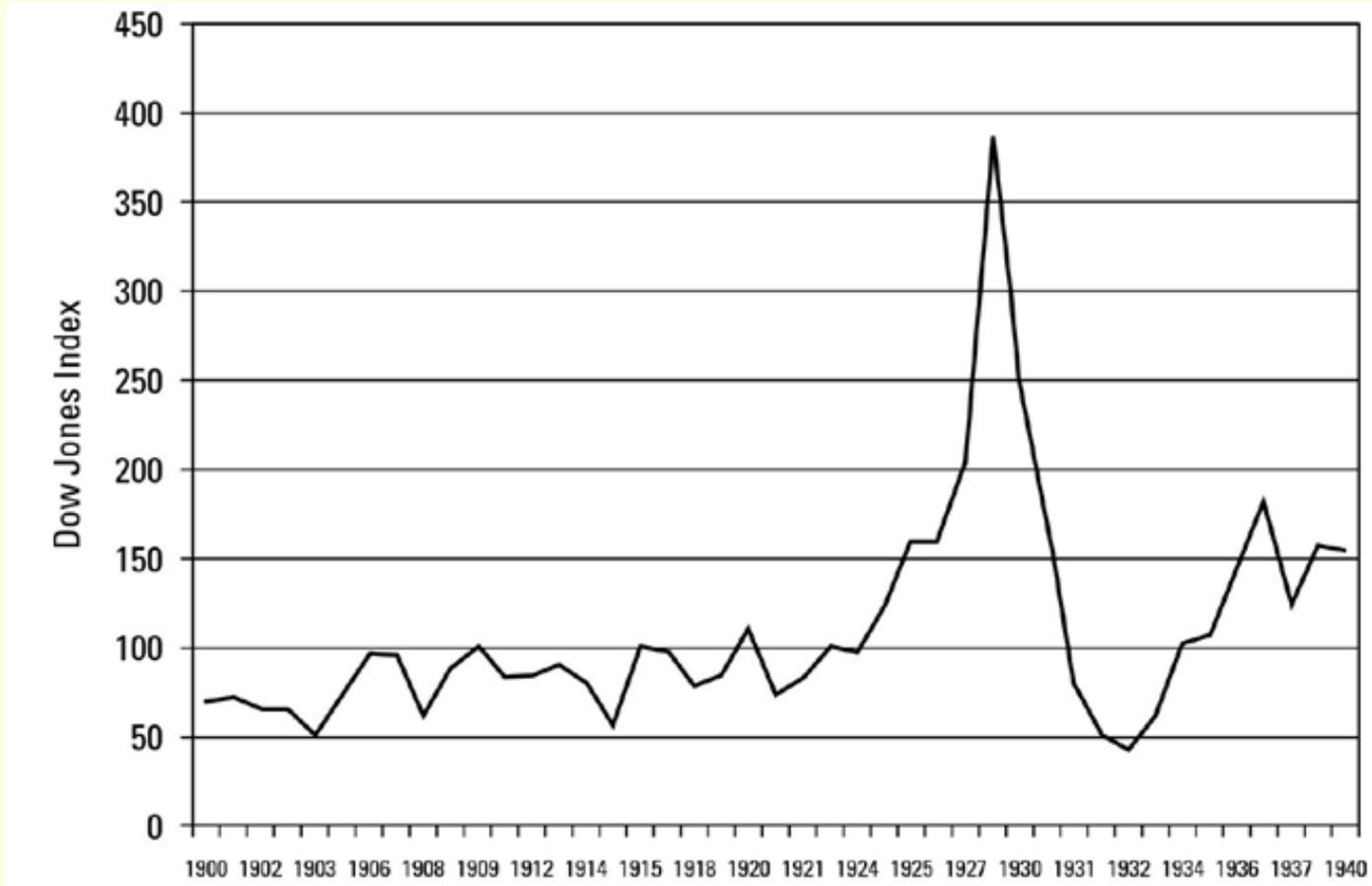
BEHAVIORAL APPROACH

The Dutch Tulip Bulb Bubble

- The increase in the price of tulip bulbs
 - Had nothing to do with the cost of producing the bulbs or their fundamental values
 - It was the result of investors believing or hoping that prices would continue to increase.
 - Many people followed the lead of other people whom they believed to be really smart.
- Eventually the bubble burst and prices collapsed toward the fundamental values of the tulip bulbs.
- There was a dramatic market correction following from the panic
- But unlike many of the more recent bubbles, the speculative tulip bubble remained on the fringes of the Dutch community.

BEHAVIORAL APPROACH

The stock market bubble of the 1920s



BEHAVIORAL APPROACH

The dot-com bubble of the 1990s



BEHAVIORAL APPROACH

The dot-com bubble of the 1990s

- Leading experts in the financial community predicted that prices should continue to climb.
- Speculators had congregated in the high-tech stocks where it seemed like a lot of easy money could be made quickly.
- Again, the smart money and those behind it were dead wrong.
- The Dow didn't move with the severity of the NASDAQ
 - Suggesting that industry share prices weren't as out of line with their fundamentals as were the share prices for the high-tech companies.
- Unlike the tulip bubble, the dot-com bubble had some impact on the real economy.

BEHAVIORAL APPROACH

The big bubble of the new millennium

A History of Home Values

The Yale economist Robert J. Shiller created an index of American housing prices going back to 1890. It is based on sale prices of standard existing houses, not new construction, to track the value of housing as an investment over time. It presents housing values in consistent terms over 116 years, factoring out the effects of inflation.

The 1890 benchmark is 100 on the chart. If a standard house sold in 1890 for \$100,000 (inflation-adjusted to today's dollars), an equivalent standard house would have sold for \$66,000 in 1920 (66 on the index scale) and \$199,000 in 2006 (199 on the index scale, or 99 percent higher than 1890).

DECLINE AND RUN-UP Prices dropped as mass production techniques appeared early in the 20th century. Prices spiked with post-war housing demand.

BOOM TIMES Two gains in recent decades were followed by returns to levels consistent since the late 1950's. Since 1997, the index has risen about 83 percent.



Source: "Irrational Exuberance," 2nd Edition, 2006, by Robert J. Shiller

Bill Marsh/The New York Times

BEHAVIORAL APPROACH

The big bubble of the new millennium

- Reasons
 - Easy access to funds and significant leveraging
 - Great confidence in increasing share prices
 - Experts contribution from Wall Street to the universities.
- Another market correction
- Bursting of this bubble almost took down the real economy.
 - Government intervention saved the day but it required significant bailouts of failing firms.
 - Throughout most of the developed world, real GDP or real income fell by at least 10 percent.
 - Unemployment soared, almost doubling in the United States.

BEHAVIORAL APPROACH

The causes of financial bubbles

- Behavioral economists pay special attention to the causes of financial bubbles.
- Many explanations are offered,
 - herding behavior,
 - relative positioning,
 - overconfidence...
- These psychological factors, sometimes referred to as
 - *animal spirits*
 - *irrational exuberance*
- Both booms and the busts will be more severe than they might otherwise be because of psychological factors.

CONVENTIONAL VS BEHAVIORAL

ARE INDIVIDUAL INVESTORS PERFECTLY RATIONAL?

OR

CAN COGNITIVE AND EMOTIONAL ERRORS IMPACT THEIR
FINANCIAL DECISIONS?

CONVENTIONAL APPROACH

Rational Investors

- To maximize utility, a rational investor will make decisions conforming to the four axioms of utility:
 - Completeness, transitivity, independence, and continuity.
- 1. Completeness:
 - Choices and preferences are known.
 - The individual is aware of all available choices and can value and assign preferences to each.
- 2. Transitivity:
 - Rankings are applied consistently.
 - If the investor prefers X to Y and prefers Y to Z, the investor will prefer X to Z.

CONVENTIONAL APPROACH

Rational Investors

3. Independence:

- Utilities are additive and divisible.
- Adding Z to both X and Y will not affect the preference ranking.
- Also, if any portion, p , of Z is added to X and Y, the investor's preference ranking does not change.

4. Continuity:

- Indifference curves are smooth and unbroken.
- There are three choices, L, M, and N,
- The investor prefers L to M and M to N.
- There must be a combination of L and N (portions a and b) that makes the investor indifferent between $(aL + bN)$ and M. This ensures that indifference curves are unbroken (i.e., continuous).

CONVENTIONAL APPROACH

Bayesian Updating

- Bayesian updating:
 - People are willing and able to modify their beliefs based on new, objective information.
 - People's current set of beliefs is a function of their initial beliefs and *new* information.

- Bayes' Formula

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$

- $P(B)$ = Unconditional probability of event B occurring
- $P(A)$ = Unconditional probability of event A occurring
- $P(A|B)$ = Probability of event A occurring given that event B has occurred; conditional probability of event A
- $P(B|A)$ = Probability of event B occurring given that event A has occurred; conditional probability of event B

CONVENTIONAL APPROACH

Utility Theory

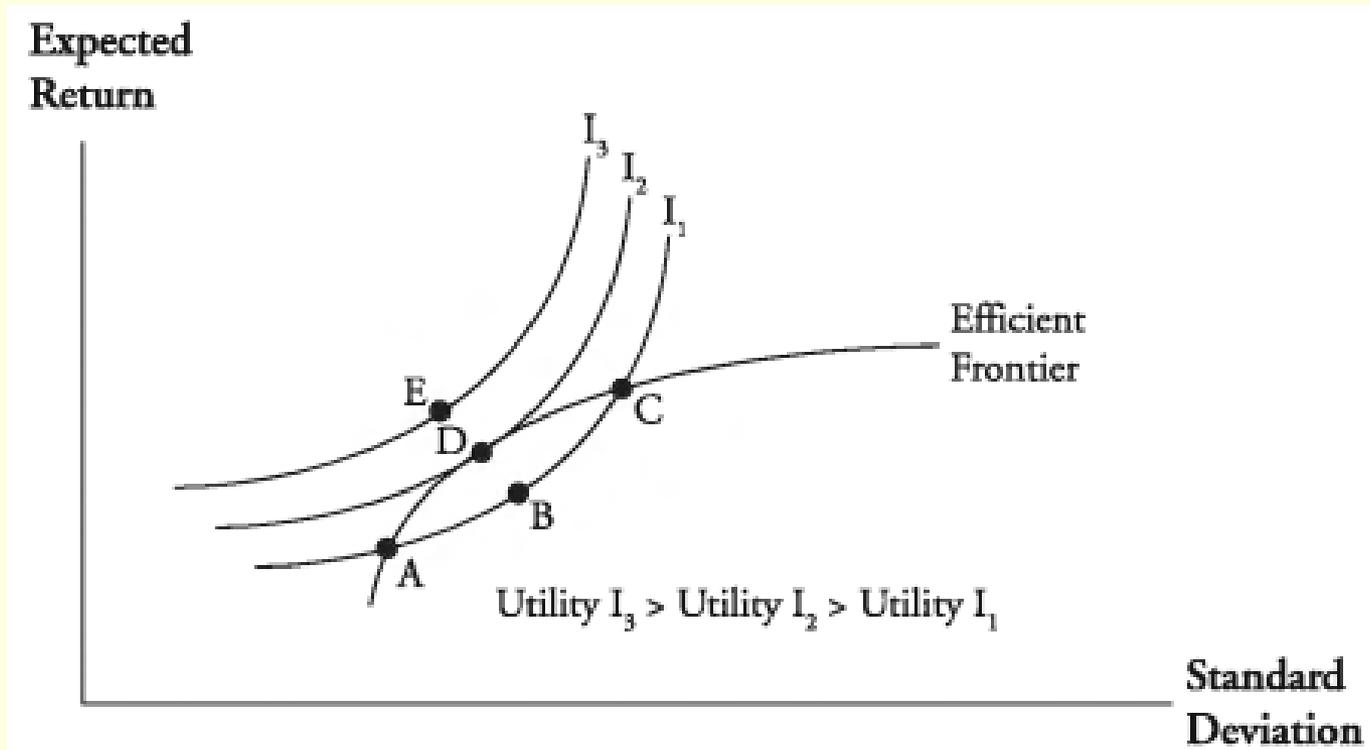
Traditional finance is based in utility theory

- Decisions are based on all available information, including
 - past price and volume data
 - firm, market, and investment-specific information
- Individuals generate an efficient frontier using
 - Expected returns, SD, and covariances of investments.
 - The result → single, market-wide utility-maximizing efficient frontier
- An indifference curve
 - Denotes optimal trade-offs between risk and return.
- The rational investor will select the portfolio that lies at the tangency of the efficient frontier and the investor's indifference curve that yields the greatest amount utility.

CONVENTIONAL APPROACH

Utility Theory

- Reflecting risk aversion, indifference curves are convex.
 - Diminishing marginal utility



CONVENTIONAL APPROACH

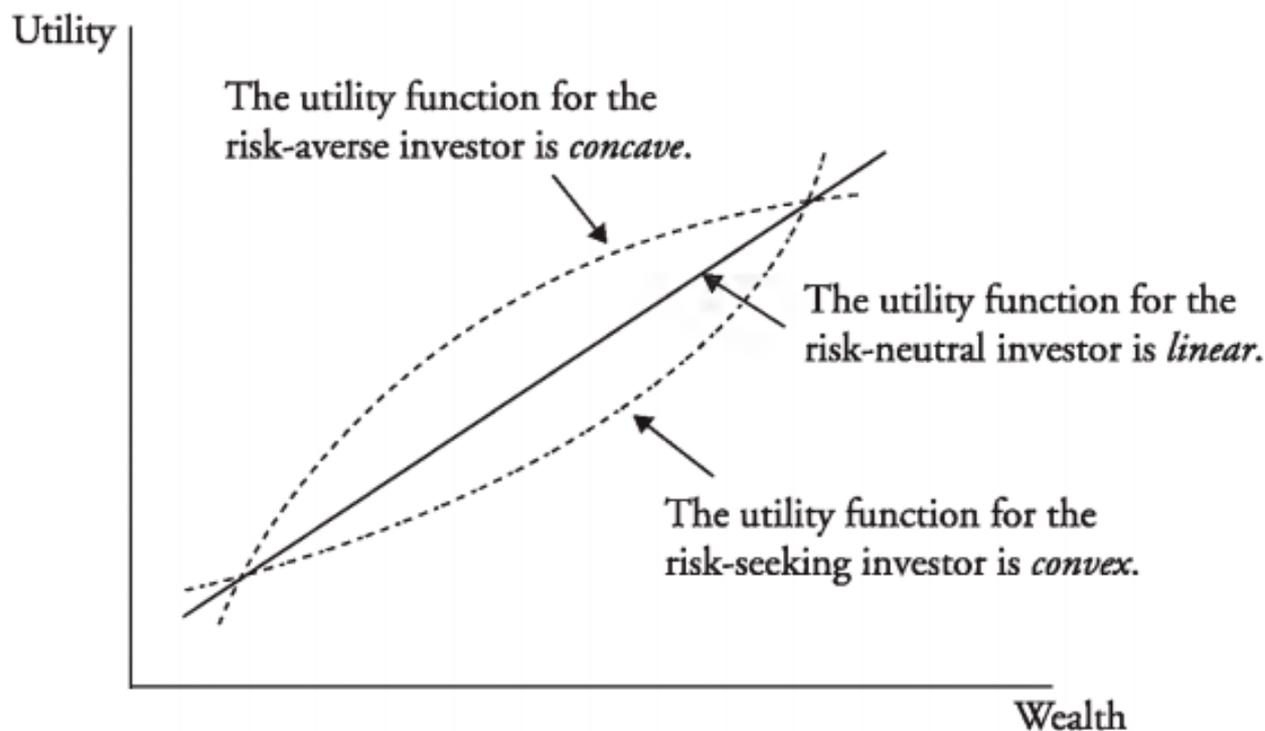
Utility Theory

- A risk-averse (rational) investor
 - Seek to maximize expected return for a given level of risk.
 - Given two alternatives with the same expected return but different levels of risk, investor will select the alternative with less risk.
 - Concave utility function: diminishing marginal utility; as wealth increases, utility increases at a decreasing rate.
- A risk-neutral investor
 - Indifferent between alternatives.
 - Acts as if unaware of risk (considers only returns)
 - Linear utility function.
- A risk-seeking investor
 - Prefer the riskier alternative.
 - Convex utility function: increasing marginal utility; each additional unit of wealth provides more and more utility.

CONVENTIONAL APPROACH

Utility Theory

Figure 2: Utility Functions for Risk-Averse, Risk-Neutral, and Risk-Seeking Investors'



BEHAVIORAL APPROACH

Bayesian Updating (Criticism)

- In a world of bounded rationality
 - People don't always know what good or objective information actually looks like.
 - They don't easily modify their beliefs.
 - This point is often made by behavioral economists.
- If people don't engage in rapid Bayesian updating
 - Asset prices won't be updated to reflect their fundamental values as predicted and expected by the conventional wisdom.

BEHAVIORAL APPROACH

Anomalies in Decision Making

- One group was presented with this problem:

In addition to whatever you own, you have been given \$1,000. You are now asked to choose between:

- A. A sure gain of \$500.
- B. A 50 percent chance to gain \$1,000 and a 50 percent chance to gain nothing.

BEHAVIORAL APPROACH

Anomalies in Decision Making

- Another group of subjects was presented with a different problem:

In addition to whatever you own, you have been given \$2,000. You are now asked to choose between:

- A. A sure loss of \$500.
- B. A 50 percent chance to lose \$1,000 and a 50 percent chance to lose nothing.

BEHAVIORAL APPROACH

Anomalies in Decision Making

- In the first group, 84 percent of participants chose A.
- In the second group, the majority, 69 percent, opted for B.
- The net expected value of the two prospective prizes was, in each instance, identical.

BEHAVIORAL APPROACH

Allais Paradox

- Allais asked subjects to make two hypothetical choices.
- The first choice was between alternatives “A” & “B,” defined as:
 - A - Certainty of receiving 100 million (francs).
 - B - Probability .1 of receiving 500 million.
Probability .89 of receiving 100 million.
Probability .01 of receiving zero.

BEHAVIORAL APPROACH

Allais Paradox

- The second choice was between alternatives “C” and “D,”:
 - C - Probability .11 of earning 100 million.
Probability .89 of earning zero.
 - D - Probability .1 of earning 500 million.
Probability .9 of earning zero.
- It is not difficult to show that an expected utility maximizer who prefers A to B must also prefer C to D.
- However, Allais reported that A was commonly preferred over B, with D preferred over C.

BEHAVIORAL APPROACH

Decision Making under Uncertainty

- Decision Analysis
 - Decision theorist Howard Raiffa
 - Introductory Lectures on Choices under Uncertainty (1968)
 - Introduced the analysis of decisions three approaches
 - Provide a more accurate view of a “real” person’s thought process.
- Raiffa’s contribution laid the foundation for a significant work in the field of behavioral finance

BEHAVIORAL APPROACH

Cognitive Psychology

Cognitive psychology

- The scientific study of cognition, or the mental processes that are believed to drive human behavior.
- It was brought to prominence by Donald Broadbent,
 - Perception and Communication (1958).
 - Treats mental processes like software running on a computer (the brain) and commonly describes human thought in terms of input, representation, computation or processing, and output.
- The term “cognitive psychology” was coined by Ulrich Neisser in 1967, when he published a book with that title.
- Research in cognitive psychology investigates a variety of topics, including memory, attention, perception, knowledge representation, reasoning, creativity, and problem solving.

BEHAVIORAL APPROACH

Decision Making under Uncertainty

Daily decision making

- Each day, people have little difficulty making hundreds of decisions.
- This is because
 - the best course of action is often obvious and
 - many decisions do not determine outcomes significant enough to merit a great deal of attention.

Facing uncertainty

- Uncertainties about the future,
 - To choose one among a number of possible actions,
- Most people cannot and do not systematically describe problems, record all the necessary data, or synthesize information to create rules for making decisions.
- Instead, most people venture down somewhat more subjective, less ideal paths of reasoning

BEHAVIORAL APPROACH

Decision Making under Uncertainty

A. Tversky and D. Kahneman

- An Analysis of Decision under Risk (1979)
- Judgment under Uncertainty: Heuristics and Biases (1982)
 - **Prospect Theory**
 - The intellectual foundation and seminal work of behavioral finance.
 - Examines mental processes as they directly relate to decision making under conditions of uncertainty.
 - Human judgment may take **heuristic shortcuts** that systematically diverge from basic principles of probability.
- Kahneman and Tversky explain the incidence, causes, and effects of human error in economic reasoning
- Nobel Prize in Economics (2002)

BEHAVIORAL APPROACH

Prospect Theory

Prospect Theory

- PT describes how individuals evaluate gains % losses
 - Value is assigned to gains and losses rather than to final assets
 - Rather than analyzing the risk of an investment relative to its return, investors analyze risk relative to possible gains & losses.
- Probabilities are replaced by **decision weights**.
- Implication:
 - Intuitive predictions and judgments under uncertainty do not follow the laws of probability or the principles of statistics.
 - Human decisions systematically depart from those predicted by standard economic theory.
 - Investors are more concerned with the change in wealth than they are in the resulting level of wealth.

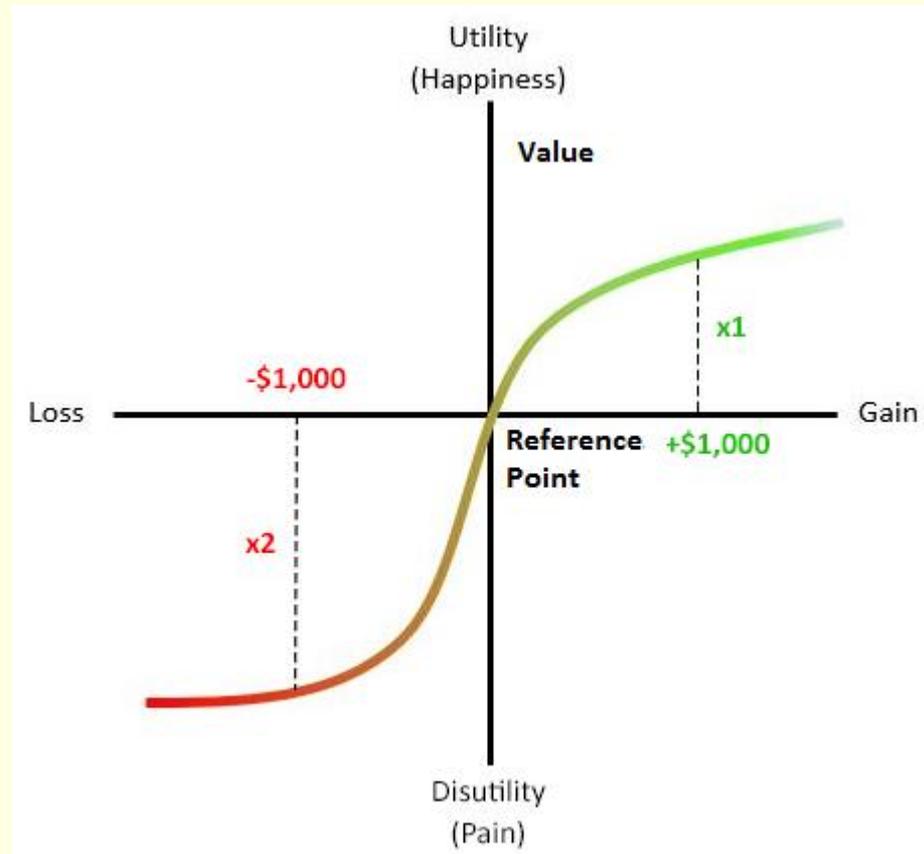
BEHAVIORAL APPROACH

Prospect Theory

- Investors place a greater value on a loss than on a gain
 - Given a potential loss and gain of equal sizes, the increase in utility associated with the potential gain is smaller than the decrease in utility associated with the potential loss.
- The value function
 - Passing through a reference point and assigning a “value” to each positive or negative outcome
 - Concave for gains, commonly convex for losses
 - Generally steeper for losses than for gains.
 - S shaped and asymmetrical in order to reflect loss aversion (i.e., the tendency to feel the impact of losses more than gains)
- Implication
 - Investors tend to fear losses and can become risk seeking in an attempt to avoid them.

BEHAVIORAL APPROACH

Prospect Theory



EDITING AND EVALUATING

Editing

According to prospect theory, investors make decisions in two phases: the editing phase and the evaluation phase.

- The editing state:
 - Alternatives are ranked according to a basic “rule of thumb” (heuristic).
 - Investors clarify their choices utilizing 6 steps
 - Codification, combination, segregation, cancellation, simplification, and detection of dominance.
- The evaluation phase:
 - Some reference point that provides a relative basis for appraising gains and losses is designated.

EDITING AND EVALUATING

Editing

1. Codification

- Investors "code" outcomes as gains or losses and assign a probability to each.
- To determine whether an outcome is a gain or a loss, the investor must select some reference point. For example, zero point.

2. Combination

- To gain a better understanding of possible outcomes, the investor combines those with identical values.

Assume the following outcomes with their associated probabilities.

(-5, 15%), (8, 30%), (8, 30%), (12, 10%), (12, 15%)

Simplify the set and make it easier to evaluate.

(-5, 15%), (8, 60%), (12, 25%)

EDITING AND EVALUATING

Editing

3. Segregation

- The investor separates the certain and uncertain components of a gamble to gain better insight into its risk.
- Assume a gamble offers payoffs of (50, 50%) and (100, 50%).
- In either case, the payoff is at least 50.

4. Simplification

- Investor tends not to think in precise numbers.
- If a gamble has outcomes with odds of 48% and 52%, the investor will tend to think of the odds as 50% | 50%.

EDITING AND EVALUATING

Editing

5. Cancellation:

- Identical outcomes between choices can be eliminated. Assume the investor must choose between two investments:
 - (-5, 20%), (4, 30%), (8, 30%), (10, 20%)
 - (-8, 10%), (-2, 25%), (6, 15%), (8, 30%), (12, 20%)
- By eliminating the outcome that occurs in both (8, 30%) investor can focus on how the possible outcomes of the investments differ:
 - (-5, 20%), (4, 30%), (10, 20%)
 - (-8, 10%), (-2, 25%), (6, 15%), (12, 20%)
- It sometimes leads to **isolation effect**, where investors focus on one outcome while consciously or subconsciously ignoring others.
- It can lead to different editing and, hence, different decisions.
- Investor may focus solely on a few very large outcomes with very low probabilities.

EDITING AND EVALUATING

Editing

Example: The isolation effect

- Assume an individual is asked to choose between two lotteries:
 - Lottery 1 offers payoffs of (\$1,000, 5%) and (0, 95%).
 - Lottery 2 offers payoffs of (\$1 00, 50%) and (0, 50%).
- By eliminating common outcomes, individuals will tend to ignore the zero payoffs and focus their attention on the non-zero payoffs and their probabilities.
- The expected values of the two lotteries are equal (\$50), but lottery 2 has a higher probability of providing a positive payout.
- The way this lottery choice is framed, different individuals could make different choices between the two lotteries.

EDITING AND EVALUATING

Editing

6. Detection of dominance:

- Investor will eliminate any choice that is strictly dominated by another.

■ Example:

- The lowest possible return for B > the highest possible return for A.
 - A: (2, 60%), (5, 40%)
 - B: (6, 75%), (12, 25%)
- Choice B strictly dominates choice A.

EDITING AND EVALUATING

Evaluation Phase

- In the evaluation phase, investors place values on alternatives in terms of expected utility.
- The expected utility of an alternative is the probability-weighted average of the utilities of its possible outcomes.
- Calculating expected utility in this manner, however, assumes that all outcomes, utilities, and probabilities are known and measureable. It overlooks the potentially subjective nature of utility and probabilities.

EDITING AND EVALUATING

Evaluation Phase

- Individuals place greater values on losses than on gains, and the current level of wealth can affect the utility.
 - The same gain, for example, provides a different amount of utility depending on the investor's current wealth.
- Individuals tend to overreact to (subconsciously increase the probability of) low-probability events, such as extreme gains or losses, and underreact to (subconsciously decrease the probability of) higher-probability events.
- This subjective probability weighting can be incorporated into an individual's expected utility expression

BEHAVIORAL APPROACH

Decision Making under Uncertainty

- Choices among risky prospects exhibit several pervasive effects that are inconsistent with the basic tenets of **utility theory**.

- **Certainty effect**
 - People underweight outcomes that are merely probable in comparison with outcomes that are obtained with certainty.
 - This tendency contributes to risk aversion in choices involving sure gain.

- **Isolation effect**
 - People generally discard components that are shared by all prospects under consideration.
 - This leads to inconsistent preferences when the same choice is presented in different forms.

BEHAVIORAL APPROACH

Decision Making under Uncertainty

- Researchers documented many biases in decision making process
 - Overconfidence,
 - Optimism,
 - Hindsight,
 - Overreaction
 - Nonlinear weighting of probabilities;
 - Framing
 - Regret avoidance
 -

BEHAVIORAL APPROACH

Later Developments

- Professor Robert Shiller (Yale University),
 - *Irrational Exuberance*
 - A. Greenspan (1996): “how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade?”
 - Shiller warned investors that stock prices, by various historical measures, had climbed too high.
- Professor Richard Thaler (University of Chicago)
 - *Can the Market Add and Subtract? Mispricing in Tech Stock Carve-Outs*
 - Irrational investor behavior set amid the tech bubble
 - This would not happen in a rational world

BEHAVIORAL APPROACH

Later Developments

- Professor Hersh Shefrin (Santa Clara University, California)
 - *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing.*
 - Investors have weighed positive aspects of past events with inappropriate emphasis relative to negative events.
 - This has created excess optimism in the markets.
 - He forecasts the demise of the asset bubble

- Andrei Shleifer (Harvard University)
 - *Inefficient Markets: An Introduction to Behavioral Finance (2000)*
 - a must read for those interested in the efficient market debate.

BEHAVIORAL APPROACH

Later Developments

- Daniel Kahneman and Mark Riepe
 - *Aspects of Investor Psychology: Beliefs, Preferences, and Biases Investment Advisors Should Know About (2007)*
 - The first work to tie together decision theory and financial advising.
 - To advise effectively, advisors must be guided by an accurate picture of the cognitive and emotional weaknesses of investors

- This work leveraged the decision theory work of Raiffa, categorizing behavioral biases on three grounds:
 - (1) biases of judgment,
 - (2) errors of preference, and
 - (3) biases associated with living with the consequences of decisions.

BEHAVIORAL APPROACH

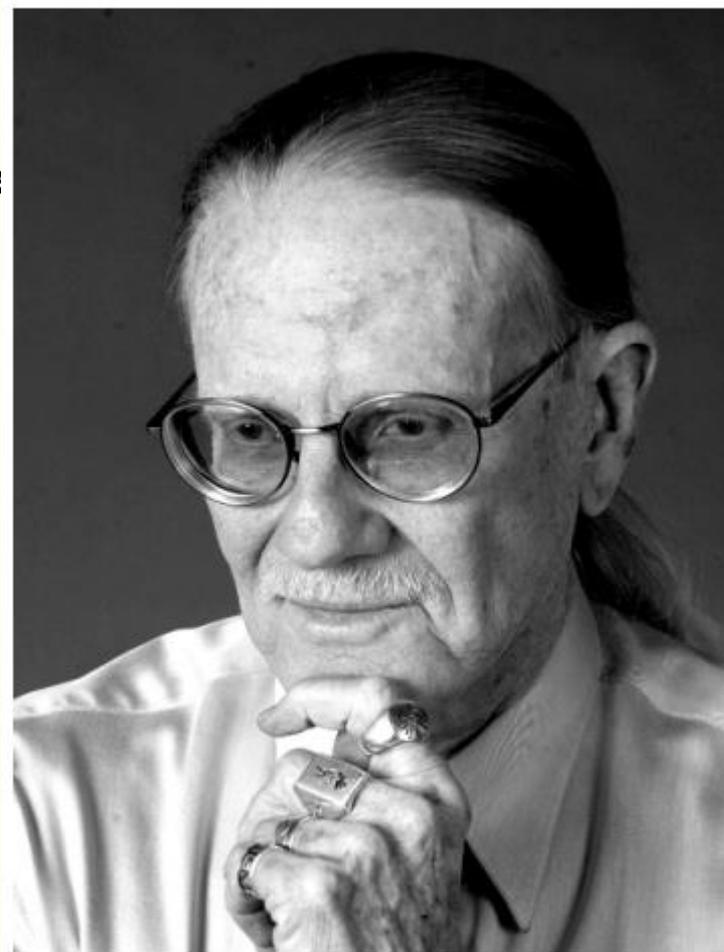
Later Developments

- Meir Statman (Santa Clara University)
 - *Behavioral Finance: Past Battles and Future Engagements*
 - His research posed decisive questions:
 - What are the cognitive errors and emotions that influence investors?
 - How can financial advisors and plan sponsors help investors?
 - What is the nature of risk and regret?
 - How do investors form portfolios?
 - How important are tactical asset allocation and strategic asset allocation?
 - What determines stock returns?

BEHAVIORAL APPROACH

Later Developments

- Vernon Smith
 - Known for developing standards for laboratory methodology that constitute the foundation for **experimental economics**.
 - He demonstrated the importance of alternative market institutions
 - Smith also performed “wind-tunnel tests” to estimate the implications of alternative market configurations before such conditions are implemented in practice.
 - The deregulation of electricity markets
 - Nobel Prize Winner (2002)



WHAT BEHAVIORAL FINANCE IS...

BEHAVIORAL FINANCE

VS

CONVENTIONAL FINANCE

WHAT BEHAVIORAL FINANCE IS

Market Efficiency

Behavioral finance ...

- is all about understanding why and how financial markets are inefficient. (R. Thaler and N. Barbersis)
- builds on a vast array of empirical studies that suggest that asset prices don't move in a fashion consistent with the predictions and assumptions of conventional finance.
- introduces psychological, sociological, neurological, and institutional factors to help explain the level and movements of asset prices those seem to diverge from fundamental values.

WHAT BEHAVIORAL FINANCE IS

Investors

- Behavioral finance assumes investors employ some combination of traditional finance and psychological biases when making investment decisions.
- Rather than prescribe how investors should make decisions, it attempts to explain why they make the decisions they make.

WHAT BEHAVIORAL FINANCE IS

Micro and Macro Level

Behavioral finance can be divided into two general categories:

- Micro behavioral finance is concerned with describing the decision-making processes of individuals. It attempts to explain why individuals deviate from traditional finance theory.
- Macro behavioral finance focuses on explaining how and why markets deviate from what we would term efficient in traditional finance.

TRADITIONAL VS BEHAVIORAL FINANCE

Perspective

- Traditional finance is prescriptive; it explains how investors should act based on mathematical models and theories.
- Behavioral finance is descriptive; it tries to explain observed investor decision making, which is clearly not fully explained by traditional finance.

TRADITIONAL VS BEHAVIORAL FINANCE

Short vs Long Run

- Efficient market theorists argue that prices eventually converge to their fundamental values.
- Behavioral finance proponents wouldn't necessarily disagree with **long-run** argument.
- Behavioral finance concerns with what happens in the short run
 - Wars are not a long-run phenomenon. Eventually, in the long run, societies converge to a relatively peaceful environment. But in the short run, wars can and do cause real damage.
- What triggers and sustains short-run deviations from fundamental values is critically important.
 - In the short run, markets are inefficient.
 - Booms and busts can have quite significant effects on the economy

TRADITIONAL VS BEHAVIORAL FINANCE

Rationality

- Traditional finance assumes investors exhibit risk aversion and make unbiased, utility maximizing decisions that would be considered appropriate for a rational economic man (REM).
 - REM will always selfishly seek the personal utility-maximizing decision, based on all available information.
 - REM is assumed to act rationally in a perfectly self interested manner as if ignoring others' utility, except for any personal utility derived from helping others.
 - Individuals behave in a manner that's consistent with asset prices, reflecting their fundamental values.
- People in standard finance are rational. People in behavioral finance are normal.

Meir Statman, Ph.D., Santa Clara University

TRADITIONAL VS BEHAVIORAL FINANCE

Rationality

- Bounded rationality:
 - Individuals act as rationally as possible, while recognizing that they are constrained by a lack of knowledge and cognitive ability.
- Investors gather what they consider to be an adequate amount of information and apply heuristics to analyze and shape the information into an acceptable decision.
- Rather than the utility-maximizing choice; investors make a satisfactory choice.
 - Rather than optimize, individuals satisfice.
- The investor does not necessarily make the theoretically optimal decision from a traditional finance perspective.

TRADITIONAL VS BEHAVIORAL FINANCE

Information and Decision

■ Traditional finance

- All investors possess the same information and interpret it accurately and instantly, without bias, in evaluating investments and in making utility-maximizing decisions to generate the same individual asset and market expectations.
- When new information is received, rational investors revise their expectations, utilizing a Bayesian approach

■ Behavioral finance

- Investors do not always make decisions consistent with this form of utility maximization.
- Investors' decisions, individually and collectively, are influenced by a lack of perfect information and the inability to interpret the information.
- Investors exhibit bounded rationality

TRADITIONAL VS BEHAVIORAL FINANCE

Asset prices

- The conventional finance point of view assumes that
 - Financial markets are efficient
 - Asset prices reflect the fundamental economic values
- Behavioral finance challenges this perspective
 - Market can be highly inefficient,
 - Asset prices don't necessarily reflect the fundamentals
 - Persistent deviation from the fundamental values.
 - This can be reflected in booms and busts.

WHAT BEHAVIORAL FINANCE IS

Profit

- Behavioral finance is investigating the connection between inefficient financial markets and **unexploited opportunities**.
 - There are pretty much always great opportunities for big-bill hunting in financial markets.
 - Big bills are lying on the sidewalk!!!
- These unexploited opportunities for gain in financial markets are vociferously denied by conventional finance theory.
 - There is no way to beat the market, no matter how much is invested in expertise to do so.
- Behavioral finance adherents, however, are convinced that an awareness of pertinent psychological biases is crucial to finding success in the investment arena.

WHAT BEHAVIORAL FINANCE IS

Profit

- R. Shiller (Yale University), argue that
 - Financial markets are inefficient (bubbles, anomalies etc)
 - The fact that people can't predict day-to-day changes in asset prices doesn't mean that smart investors can predict nothing at all
 - There are opportunities for smart investors.
- Asset prices persist in one direction or another
 - The past can predict the future, at least up to a point
- You can exploit market inefficiencies to make money if you have the appropriate tools
 - Behavioral finance can provide insights to beat the market.
- In a world of bounded rationality, a key question is:
 - Whether it's possible for really smart traders to identify them

WHAT BEHAVIORAL FINANCE IS

Profit

- Behavioral finance is the study of how investors make decisions – and how those decisions affect individual share prices and broad market movements.
- Studies have found that investors tend to behave irrationally in systematic and predictable ways, creating recurring opportunities in the market.
- Our behavioral finance funds seek to take advantage of investor irrationality, capitalizing on the anomalies created by investor behavior to pursue consistent capital growth.

J.P. Morgan Asset Management

WHAT BEHAVIORAL FINANCE IS

Profit



RANDOM WALK vs EFFICIENT MARKET

- Asset prices can follow a random walk even if they don't match their underlying fundamentals
 - The existence of a random walk is not proof of market efficiency.
 - A random walk with inefficient markets simply suggests that beating the market average would be difficult and highly unlikely.