1. Behavior Finance
   1. The Behavioral Finance Perspective
      1. Traditional finance vs. behavioral finance

* Traditional finance: Individuals are assumed to be risk-averse, self-interested utility maximizers. At the market level, prices incorporate all available and relevant information.
* Behavioral finance: Includes behavioral economics, investor psychology, behavioral science, experimental economics and cognitive psychology.
  + 1. Decision Making process
* Normative Analysis

Concerned with the rational solution to the problem at hand. It defines an ideal solution that actual decisions should strive to approximate.

Traditional finance assumptions about behavior as normative

* Descriptive Analysis

Concerned with the manner in which real people actually make decisions.

Behavioral finance explanations of behaviors as descriptive.

* Prescriptive Analysis

Concerned with practical advice and tools that help people achieve results more closely approximating those of normative analysis

Efforts to use behavioral finance in practice as prescriptive.

* + 1. Traditional finance perspectives on individual behavior

Rational investors are

* Make decisions consistent with utility theory.
* Revise expectations consistent with Bayes’ formula.
* They are self-interested and risk-averse, to have access to perfect information, and to process all available information in an unbiased way.
  + 1. Decision Theory (contrast to prospective theory)

Decision theory is focused on making the ideal decision when the decision maker is fully informed, mathematically able, and rational.

* Initial analysis focused on selecting the highest probability **weighted payoff**.
* Later evolution separated expected value, which is just the market price of an item paid by anyone vs. expected utility.
* Risk is defined as a random variable due to the one outcome that will occur from any probability-weighted analysis.
* Uncertainty is unknowable outcomes and probabilities.
* Subjective analysis extends decision theory to situations where probability cannot be objectively measured.
  + 1. Risk Averse

Expected utility theory generally assumes that individuals are risk-averse.

* Someone who is indifferent between 2 investments is called risk-neutral.
* Someone who prefers to invest in the uncertain alternative is called risk-seeking.
* Someone who prefers to invest in certain alternative is called risk averse.
  + 1. Challenges to traditional finance and the REM
* Decision making can be flawed by lack of information or decision-making process.
* People may prioritize short-term goals over long-term goals.
* Lack of perfect knowledge is the most serious challenge to REM.
* Wealth utility functions may not always be concave and people can sometimes exhibit risk seeking behavior.

Attitudes toward risk

We observe that people are not always risk-averse.

For example, people buy lottery tickets and insurance, in which expected utility is low.

For example, people exhibit risk averse when there is gain, while exhibit risk seeking when there is loss.

* + 1. Bounded Rationality

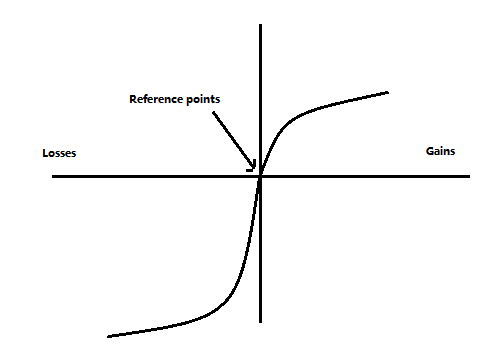
People are not fully rational when making decisions and **satisfice** when arriving at their decisions.

* Satisficing is finding an acceptable solution as opposed to optimizing.

Decision makers may choose to satisfice rather than optimize because of the high cost and time to find the optimal solution.

* When aspirations are reached/not reached, people tend to adjust the aspiration upwards/downwards.
* Decisions are made progressively until the goal is achieved; it’s a divide-and-conquer procedure.
  + 1. Prospect Theory

Prospect theory assigns value to gains and losses, instead of final wealth. The value function is defined by the deviations from a reference point and is normally concave for gains (risk averse), convex for losses (risk seeking), and steeper for losses than for gains (loss aversion).



Depending on the number of prospects, there are 6 operations in the editing process:

1. Codification: Investors identify and code outcomes as gains/losses and assign a probability.
2. Combinations: Investors combines those with identical values.
3. Segregation: The investors separates the certain and uncertain components of a gamble to gain better insight.

For example: (75% wins $100 + 25% wins of $150) = (100% wins $100 + 25% wins another $25).

1. Cancellation: Removes any outcomes common to two proposals.
2. Simplification: The investor will tend not to think in precise numbers. ($24.99 ~= $25)
3. Detection of dominance: Discard from consideration any proposal that is clearly dominated.

For example: 50% wins $500 dominates 50% winds $400.

* + 1. Studies Challenging the Effective Market Hypothesis

Fundamental Anomalies

* Size effect: small cap stocks outperform large cap stocks.
* Value effect: value stocks outperform growth stocks.

Technical Anomalies

* Moving Averages
* Trading Range Break (Support and Resistance)

Calendar Anomalies (January Effect)

* + 1. The Behavioral Finance Perspective

4 behavioral finance models that attempt to explain the behavior of individuals and markets.

* Consumption and savings
* Behavioral asset pricing
* Behavioral portfolio theory
* Adaptive markets hypothesis
  + 1. Consumption and savings

People may be affected by the following bias when establishing consumption and saving plan.

* Framing
* Self-control
* Mental accounting: People tend to classify their wealth into current income, currently owned assets or the PV of future income.
  + People will be more likely to use current income to meet current spending needs.
  + Any excess current income over current spending is saved and becomes currently owned assets. People are less likely to spend it.
  + Individuals are least likely to spend out of wealth classified as future income.
    1. Behavioral Asset Pricing

The behavioral asset pricing model adds a sentiment premium to the discount rate.

* + 1. Behavioral Portfolio Theory
* Based on empirical evidence and observation, individuals construct portfolio by layers. Allocation of funds to an investment of each layer depends on:
  + The importance of each goal to the investors.
  + Asset selection will be done by layer and based on the goal for that layer. The higher the goal is; the higher-risk assets will be selected.
  + The number of assets in a layer will reflect the investor’s risk aversion. Risk-averse investors will hold larger numbers of assets in each layer.
* If an investor believes they hold an information advantage, more concentrated positions will be hold.
* If an investor is **loss-averse**, the investor will hold larger cash positions to avoid the possible need to sell assets at a loss to meet liquidity needs.
  + 1. Adaptive Markets Hypothesis
* The relationship of risk and return is not stable. The market risk premium changes over time as the environment changes.
* Active management can find opportunities to exploit arbitrage and add value.
* No strategy works all the time.
* Adaption and innovation are essential to continued success
  + 1. Traditional Finance vs. Behavior Finance

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| --- | --- |
| **Traditional Finance** | **Behavior Finance** |
| Unlimited prefect knowledge | Capacity limitations on knowledge |
| Optimize to achieve utility maximization | Satisfice |
| Rational decision making | Cognitive limits on decision making  (Bounded Rationality) |
| Risk aversion | Reference dependence to determine gain/loss |