DOWNLOAD PDF INVESTORS DO NOT MIND THEIR UTILITY FUNCTIONS

Chapter 1 : 15 Characteristics of Highly Successful Investors - calendrierdelascience.com

Investors Do Not Mind Their Utility Functions The concave utility function that is both necessary and sufficient for the risk premium has implications for more than mere asset returns.

Daniel Kahneman Both the assumptions and the behavioral predictions of rational choice theory have sparked criticism from various camps. As mentioned above, some economists have developed models of bounded rationality , which hope to be more psychologically plausible without completely abandoning the idea that reason underlies decision-making processes. Other economists have developed more theories of human decision-making that allow for the roles of uncertainty , institutions , and determination of individual tastes by their socioeconomic environment cf. Martin Hollis and Edward J. Further they outlined an alternative vision to neo-classicism based on a rationalist theory of knowledge. Within neo-classicism, the authors addressed consumer behaviour in the form of indifference curves and simple versions of revealed preference theory and marginalist producer behaviour in both product and factor markets. Both are based on rational optimizing behaviour. They consider imperfect as well as perfect markets since neo-classical thinking embraces many market varieties and disposes of a whole system for their classification. However, the authors believe that the issues arising from basic maximizing models have extensive implications for econometric methodology Hollis and Nell, , p. In particular it is this class of models â€" rational behavior as maximizing behaviour â€" which provide support for specification and identification. And this, they argue, is where the flaw is to be found. Hollis and Nell argued that positivism broadly conceived has provided neo-classicism with important support, which they then show to be unfounded. They base their critique of neo-classicism not only on their critique of positivism but also on the alternative they propose, rationalism. Demands are made of it that it cannot fulfill. Green and Ian Shapiro argue that the empirical outputs of rational choice theory have been limited. They contend that much of the applicable literature, at least in political science, was done with weak statistical methods and that when corrected many of the empirical outcomes no longer hold. When taken in this perspective, rational choice theory has provided very little to the overall understanding of political interaction - and is an amount certainly disproportionately weak relative to its appearance in the literature. Yet, they concede that cutting edge research, by scholars well-versed in the general scholarship of their fields such as work on the U. As the specific claims of robust neoclassicism fade into the history of economic thought, an orientation toward situating explanations of economic phenomena in relation to rationality has increasingly become the touchstone by which mainstream economists identify themselves and recognize each other. This is not so much a question of adherence to any particular conception of rationality, but of taking rationality of individual behavior as the unquestioned starting point of economic analysis. The well-known limitations of rational-actor theory, its static quality, its logical antinomies, its vulnerability to arguments of infinite regress , its failure to develop a progressive concrete research program, can all be traced to this starting-point. Schram and Caterino contains a fundamental methodological criticism of rational choice theory for promoting the view that the natural science model is the only appropriate methodology in social science and that political science should follow this model, with its emphasis on quantification and mathematization. Schram and Caterino argue instead for methodological pluralism. The same argument is made by William E. Connolly , who in his work Neuropolitics shows that advances in neuroscience further illuminate some of the problematic practices of rational choice theory. More recently Edward J. Nell and Karim Errouaki , Ch. The DNA of neoclassical economics is defective. Neither the induction problem nor the problems of methodological individualism can be solved within the framework of neoclassical assumptions. The neoclassical approach is to call on rational economic man to solve both. To make rational calculations projectible, the agents may be assumed to have idealized abilities, especially foresight; but then the induction problem is out of reach because the agents of the world do not resemble those of the model. The agents of the model can be abstract, but they cannot be endowed with powers actual agents could not have. Furthermore, Pierre Bourdieu fiercely opposed rational choice theory as grounded in a misunderstanding of how social agents operate. Bourdieu argued that social agents do not continuously calculate according to explicit rational and economic criteria.

According to Bourdieu, social agents operate according to an implicit practical logicâ€”a practical senseâ€”and bodily dispositions. Social agents act according to their "feel for the game" the "feel" being, roughly, habitus, and the "game" being the field. The argument they make is that by treating everything as a kind of "economy" they make a particular vision of the way an economy works seem more natural. Thus, they suggest, rational choice is as much ideological as it is scientific, which does not in and of itself negate its scientific utility. Thus, when living at subsistence level where a reduction of resources may have meant death it may have been rational to place a greater value on losses than on gains. Proponents argue it may also explain differences between groups. Economic decision making then becomes a problem of maximizing this utility function , subject to constraints e. This has many advantages. Furthermore, optimization theory is a well-developed field of mathematics. These two factors make rational choice models tractable compared to other approaches to choice. Most importantly, this approach is strikingly general. It has been used to analyze not only personal and household choices about traditional economic matters like consumption and savings, but also choices about education, marriage, child-bearing, migration, crime and so on, as well as business decisions about output, investment, hiring, entry, exit, etc. Despite the empirical shortcomings of rational choice theory, the flexibility and tractability of rational choice models and the lack of equally powerful alternatives lead to them still being widely used.

Chapter 2 : Utility Function: What is it and How is it Calculated? | Investopedia

Quite often, unqualified investors do not fully understand the economy of the project, send their BTC/ETH and get tokens that do not add value to the invested project or, sometimes even do not fit.

Investor behaviour often deviates from logic and reason, and investors display many behaviour biases that influence their investment decision-making processes. Kent Baker and Victor Ricciardi describe some common behavioural biases and suggest how to mitigate them. Investor behaviour often deviates from logic and reason. Emotional processes, mental mistakes, and individual personality traits complicate investment decisions. Thus, investing is more than just analysing numbers and making decisions to buy and sell various assets and securities. A large part of investing involves individual behaviour. Ignoring or failing to grasp this concept can have a detrimental influence on portfolio performance. Behavioural biases in investing encompass many types. For example, cognitive biases refer to tendencies to think and act in certain ways. A cognitive bias can be viewed as a rule of thumb or heuristic, which can lead to systematic deviations from a standard of rationality or good judgment. Some controversy still exists about whether some of these biases are truly irrational or whether they result in useful attitudes or behaviour. Other biases are more emotional in nature. An emotional bias is one that results in taking action based on feelings instead of facts. Given that some overlap exists between cognitive and emotional biases, we simply call them behavioural biases. An important aspect of avoiding such biases is to become aware of them. Thus, by avoiding behavioural biases investors can more readily reach impartial decisions based on available data and logical processes. Our purpose is to briefly discuss investor behaviour, review eight common behavioural biases, and then concentrate on two types of investors â€" overconfident investors and status quo investors. Baker and Nofsinger , and Baker and Ricciardi provide more detailed discussions of investor behaviour including behavioural biases. Investor Behaviour What is investor behaviour? The field of investor behaviour attempts to understand and explain decisions by combining the topics of psychology and investing on a micro level i. The decision-making process of investors incorporates both a quantitative objective and qualitative subjective aspect that is based on the features of the investment product or financial service. Investor behaviour examines the mental processes and emotional issues that individuals, financial experts, and traders reveal during the financial planning and investment management process. In practice, individuals make judgments and decisions that are based on past events, personal beliefs, and preferences. They establish short cuts or heuristics that can save time but lead them away from rational, long-term thinking. Understanding investor behaviour can inform investors about these biases and help them improve their decision-making processes in selecting investment services, products, and strategies. As a result of the financial crisis of , the discipline of psychology began to focus even more on the financial decision-making processes of individuals. This renewed interest by the social sciences and business disciplines has spurred new research on investor behaviour. Common Behavioural Biases â€" Investors exhibit many biases. Few of these behavioural biases exist in isolation because deep interactions exist among different biases. Nonetheless, the following list represents some common biases facing investors but others may be equally important depending on the specific situation. Baker and Nofsinger , Ricciardi , iShares , Parker , and Seawright provide further discussion of behavioural biases and how to deal with them. Representativeness results in investors labeling an investment as good or bad based on its recent performance. Consequently, they buy stocks after prices have risen expecting those increases to continue and ignore stocks when their prices are below their intrinsic values. Investors should have a clearly defined analytical process that they test and retest in order to refine and improve it over the long run. Regret aversion describes the emotion of regret experienced after making a choice that turns out to be either a bad or inferior choice. Investors who are influenced by anticipated regret are motivated to take less risk because this lessens the potential of poor outcomes. Disciplined investing requires overcoming the reluctance to realise losses. The disposition effect is harmful to investors because it can increase the capital gains taxes that investors pay and can reduce returns even before taxes. This bias occurs when investors have a preference for familiar investments despite the seemingly obvious gains from diversification. Investors display a preference for local assets with which they

are more familiar local bias as well portfolios tilted toward domestic securities home bias. An implication of familiarity bias is that investors hold suboptimal portfolios. To overcome this bias, investors need to cast a wider net and expand their portfolio allocation decisions to gain wider diversification and risk reduction. Investing internationally helps to avoid familiarity bias. The act of worrying is an ordinary and unquestionably widespread human experience. More anxiety about an investment increases its perceived risk and lowers the level of risk tolerance among investors. In turn, this concern increases the likelihood that investors will not buy the security. To avoid this bias, investors should match their level of risk tolerance with an appropriate asset allocation strategy. As a quick test, if investors cannot sleep because of apprehension about their investments, they probably should have a more conservative and hence less risk investment portfolio. Anchoring is the tendency to hold on to a belief and then apply it as a subjective reference point for making future judgments. Anchoring occurs when an individual lets a specific piece of information control his cognitive decision-making process. People often base their decisions on the first source of information to which they are exposed e. Many investors still anchor on the financial crisis of as a bad experience. As Ricciardi notes, this results in a higher degree of worry, which can cause them to underweight equities in their portfolios because they are excessively risk- and loss-averse. To avoid anchoring investors should consider a wide range of investment choices and not focus their financial decisions on a specific reference point of information. Investors who suffer from self-attribution bias tend to attribute successful outcomes to their own actions and bad outcomes to external factors. They often exhibit this bias as a means of self-protection or self-enhancement. Investors afflicted with self-attribution bias may become overconfident, which can lead to overtrading and underperformance. Keeping track of personal mistakes and successes and developing accountability mechanisms such as seeking constructive feedback from others can help investors gain awareness of self-attribution bias. Investors often chase past performance in the mistaken belief that historical returns predict future investment performance. Mutual funds take advantage of investors by increasing advertising when past performance is high to attract new investors. Research evidence demonstrates that investors do not benefit because performance typically fails to persist in the future. For example, using a sample of 1, domestic actively managed mutual funds, Soe and Luo show that using past performance as a strategy fails. For the five years ending March , only about 5 percent of the funds maintained top-half performance rankings over five consecutive month periods, while 6 percent were predicted to repeat by chance alone. To avoid this bias, investors should resist following the herd or jumping on the bandwagon. Although investors may feel better when investing with the crowd, such an investment strategy is unlikely to lead to superior long-term performance. These eight behavioural biases are some fundamental issues investors might face at different periods during their lifetimes. Another important issue to consider is the amount of attention and time they should spend on their investment decisions because this might result in overconfident or status quo behaviour. By avoiding behavioural biases investors can more readily reach impartial decisions based on available data and logical processes. Two Different Types of Investors Most investors can be classified as either overconfident or status quo investors. Overconfident investors tend to be overly active traders and status quo investors display a lack of attention to managing their portfolios. The best advice is to find an appropriate balance between the two types of investors. They may display overconfidence in both the quality of their information and their ability to act on it. Ricciardi observes that people tend to overestimate their skills, abilities, and predictions for success. Research documents that overconfident behaviour is connected to excessive trading and results in poor investment returns. It can also lead to investors failing to appropriately diversify their portfolios. Barber and Odean study the role of trading behaviour and gender bias for a sample of 35, individual accounts over a six-year period. Their findings reveal that males are not only more overconfident about their investing abilities but also trade more often than females. Compared to women, men also tend to sell their stocks at the incorrect time resulting in higher trading costs. Short-term performance may be more a stroke of luck than security selection or market timing skill. Individual investors are unlikely to have better information, intuition or analytical powers than others. In fact, the market has made fools out of many respected but overconfident investment professionals. Ultimately, individuals should be investing for the long-term rather than trading for the short-term. To resist this bias, investors should implement a disciplined

investment strategy. Changing this inertia requires strong motivation or incentives. Status quo bias occurs when investors fail to update their economic conditions despite potential gains from doing so. Instead, they stick to a position, such as holding a stock instead of selling it or otherwise act in a suboptimal manner. People also tend to defer savings for retirement or postpone opening a retirement account. After entering a k retirement plan, many employees do not actively manage or monitor their accounts. Mitchell, Mottola, Utkus, and Yamaguchi examine more than 1, company k plans with 1. Their evidence reveals that most savers exhibit severe inertia or inattention bias. Over a two-year period, most do not execute any trades. To resist this bias, investors should implement a disciplined investment strategy based on a portfolio approach. For example, they should match their level of risk tolerance with a predetermined asset allocation. This asset allocation strategy may encompass a diverse collection of mutual funds including stocks, bonds, and real estate both nationally and internationally. Another way to overcome status quo bias involves rebalancing a portfolio at least yearly. By using active asset allocation investors tend to shift gains from risky assets stocks during bull markets to safer assets bonds. During bear markets, they reallocate gains in the safer asset class bonds to the riskier asset class stocks. Although this active asset allocation provides less upside gains during bull markets, it lessens downside risk during bear markets. Concluding Remarks Investors display many behaviour biases that influence their investment decision-making processes.

Chapter 3 : calendrierdelascience.com | Institutional Investors: Power and Responsibility

In economics, utility function is an important concept that measures preferences over a set of goods and services. Utility is measured in units called utils, which represent the welfare or.

Power and Responsibility Commissioner Luis A. Thank you for that kind introduction. I am glad to be here at Georgia State University and the J. Mack College of Business. Before I begin, let me issue the standard disclaimer that the views I express this evening are my own, and do not necessarily reflect the views of the U. I am particularly pleased to be at a conference that focuses on the role of institutional investors and their impact on corporate control, market liquidity, and systemic risk. Role Played by Institutional Investors The topic of your conference recognizes the important role played by institutional investors and the great influence they exert in our capital markets. The role and influence of institutional investors has grown over time. For example, the proportion of U. Of course, institutional investors are not all the same. They come in many different forms and with many different characteristics. Among other things, institutional investors have different organizational and governance structures, and are subject to different regulatory requirements. The universe of institutional investors includes mutual funds and ETFs regulated by the SEC, as well as pension funds, insurance companies, and a wide variety of hedge funds and managed accounts, many of which are unregulated. To the contrary, they have a wide variety of distinct goals, strategies, and timeframes for their investments. As a result, their interaction with, and impact on, the market occurs in many different ways. These changes â€" largely driven by the trading of institutional investors â€" have resulted in huge increases in trading volumes. For example, in , the average daily volume on the NYSE was million shares. Simply stated, institutional investors are dominant market players, but it is difficult to fit them into any particular category. This poses a challenge for regulators, who must take into account all the many different ways institutional investors operate, and interact, with the capital markets. It is clear, however, that professionally-managed institutions can help ensure that our capital markets function as engines for economic growth. Institutional investors are known to improve price discovery, increase allocative efficiency, 11 and promote management accountability. They aggregate the capital that businesses need to grow, and provide trading markets with liquidity â€" the lifeblood of our capital markets. In doing all this, institutional investors â€" like all investors â€" depend on the assurance of a level playing field, access to complete and reliable information, and the ability to exercise their rights as shareowners. That is why fair and intelligent regulation is necessary for the proper functioning of our capital markets. With that in mind, I would like to discuss two specific regulatory issues of particular interest to institutional investors: First, the importance of reliable information to investors, and some troubling efforts to scale back disclosures and reduce transparency; and Second, the need for institutional investors to be heard on corporate governance issues, especially on executive compensation. Fair and accurate disclosure has been the central goal of U. A recent academic paper demonstrates the value of public disclosure in a compelling way. The authors found little evidence that institutions were able to exploit private information to improve investment returns. To achieve that goal, the legislation tries to reduce the cost of going public for these companies. This is an extremely broad swath of the market. The result could be an adverse impact on capital formation. For example, under the JOBS Act, an emerging growth company only has to provide two years rather than the typical three years of audited financial statements, and the company can omit the selected financial data otherwise required for any earlier period. In addition, these companies may also omit certain compensation-related disclosures. Moreover, in certain cases, the JOBS Act allows emerging growth companies to postpone compliance with new or revised financial accounting standards. This exemption may result in inconsistent accounting rules, damage financial transparency, and make it difficult for investors to compare the merits of investing in emerging growth companies against other investment options. Adding to these concerns, emerging growth companies are also exempted from the outside audit of internal controls required by the Sarbanes-Oxley Act, and from future rules that the Public Company Accounting Oversight Board PCAOB may issue with respect to certain auditor reporting requirements. Failure to comply with those standards makes the financial statement audit less

informative, and could potentially reduce the reliability of financial information available to investors. In that regard, there is good data to suggest that independent attestation of internal controls actually promotes good financial reporting. The study concluded that financial reporting is more reliable when the auditor is involved with the assessment of internal controls. Reducing the quality of information is simply unproductive. Regrettably, there continues to be efforts to lobby for limiting disclosure requirements, on the claim that reducing the amount of required disclosures will lower the cost of capital raising. In my view, that would be penny-wise and pound-foolish, as money raised for inefficient uses does not in the long-term create jobs or help the economy grow. The goal should be capital formation, not just capital raising. Proponents of less disclosure lose sight of the fact that capital raising is not the same as capital formation. True capital formation requires that the capital raised be invested in productive assets â€" like a factory, store, or new technology â€" or otherwise used to make a business more productive. The more productive those assets are, the greater the capital formation from the investment â€" and, importantly, the more jobs created. So, what can be done? Institutional investors, as well as members of the academic community, can play a valuable role in this debate, by monitoring the performance of emerging growth companies that elect to provide limited disclosure and determining if real capital formation is being helped or hurt. Your insights into the impact of these rules would be invaluable. Empowering Investors to Exercise Rights as Shareowners Institutional investors also have an important role in monitoring corporate governance issues. In recent years, these issues have included, among others, majority voting, splitting the Chairman and CEO roles, and focusing on the quality and diversity of Boards of Directors, as well as compensation structures and concerns about the runaway growth in executive pay. Reportedly, management wants these investors to oppose a shareholder proposal which seeks to separate the CEO and board chairman role at the bank. The supporters of the proposal are also taking their arguments directly to institutional investors, including meeting with funds that are substantial shareholders in J. The experience also underscores the potential impact of shareholder proposals on corporate governance matters. It has been reported that companies received over shareholder resolutions this proxy season. After all, it is often their votes that can make the difference. Conclusion Clearly, institutional investors have a great deal of power in our capital markets. The one indispensable fact to remember is that behind all institutional investors and their portfolio managers are millions of American workers, savers, policy holders, retirees, and other individual investors, who rely on those they entrust with their monies to provide for a safe and secure retirement, to help them save for a home or college education, and to participate in the American dream. Too often, public company management and other issuers â€" represented by their lawyers, investment bankers, and industry groups â€" dominate the regulatory discussion. Institutional investors need to exercise their collective influence to improve the ongoing dialogue. We need to hear their views on the benefits of transparency through disclosure, corporate governance, appropriate compensation structures and amounts, and other important issues. That call to action is also applicable to those academicians and researchers who have salient information on the roles of institutional investors and how their actions impact corporate America and the economy. As an SEC Commissioner, I also would be particularly interested in how SEC rules affect â€" and are affected by â€" the behavior of institutional investors. The SEC needs to hear from all credible voices that can add value to the ongoing public dialogue on the issues facing the capital markets today. You should speak out, and hold the SEC accountable to act on behalf of investors. I look forward to hearing what you have to say. Thank you for the opportunity to speak with you this evening. Blume and Donald B. Buy-side firms, like asset managers, buy financial products and services; while sell-side firms, like broker-dealers and investment banks, create and sell those products and services. When viewed in these simple terms, institutional investors are generally considered to be on the buy-side. However, mutual fund and asset management companies can also act like sell-siders when they market their own pooled-vehicles, whether directly or through broker-dealers. Douglas and George E. In those cases where an investor is trading on the basis of insider information that is, material non-public information obtained in violation of a duty , law enforcement and regulatory authorities should investigate and, where warranted, take appropriate enforcement action. There is extensive literature on the ability of institutional investors to exploit private information and on the costs and benefits of monitoring by institutional investors. A substantive review of such research is

beyond the scope of these remarks. Spencer Bachus, Chairman, and the Hon. House of Representatives November 29, , available at http: Scott Garrett, Chairman, and the Hon. House of Representatives October 4, , available at http: Institutional Shareholder Services Inc. Identifying Investor Concerns September , available at http: I look forward to reviewing the results of research in this area, after economists have had an opportunity to study the effects of such provisions. Levin, supra, note 27, at p. Such disclosure should not be difficult or burdensome to provide. Mutual funds and closed-end investment companies are already required to provide a subset of this information at the fund level, pursuant to Rule 30b under the Investment Company Act, and Exchange Act Section 14A d expressly permits duplicative disclosures to be omitted. In accordance with the Congressional mandate, the Commission proposed a rule to facilitate investment manager reporting of say-on-pay votes. President Roosevelt died the next day.

Chapter 4 : Optimal Portfolio Selection

Another way of presenting this notion is to graph total utility against wealth; Figure presents the utility function for an investor who follows Bernoulli's dictums, and contrasts it with utility functions for investors who do not.

The underlying principles of making a choice in risky and uncertain situation, namely, expected return and the degree of risk involved apply equally well to other choices. We will analyse below how an individual maximises his expected utility when risk or uncertainty is present. It is assumed that the individual knows the probabilities of making or gaining money income in different situations. Most individuals generally prefer the less risky situation that is, the situation with less variability in outcomes or rewards. In other words, most individuals seek to minimise risk and are called risk averter or risk averse. However, some individuals prefer risk and are therefore called risk-seekers or risk lovers. Some other individuals are indifferent toward risk and are called risk-neutral. But it is important to note that these different preferences toward risk depend on whether for an individual marginal utility of money diminishes or increases or remains constant. As shall be explained below, for a risk averse individual marginal utility of money diminishes as he has more money, while for a risk-seeker marginal utility of money increases as money with him increases. In case of risk-neutral individual marginal utility of money remains constant as he has more money. To explain the attitude toward risk we will consider a single composite commodity, namely, money income. But the outcomes or payoffs are measured in terms of utility rather than rupees. It will be seen from this figure that the slope of total utility function OL; decreases as the money income of the individual increases. Note that we measure money income on the X-axis and utility on the Y-axis. It will be seen from Fig. Thus in this concave utility function depicted in Fig. Suppose the individual is currently employed on a fixed monthly salary basis of Rs. There is no uncertainty about the income from this present job on a the fixed salary basis and hence no risk. Now, suppose that the individual is considering to join a new job of a salesman on a commission basis. This new job involves risk because his income in this case is not certain. This is because if he proves to be a successful salesman his income may increase to Rs. Suppose in this new job there is , chance of either earning Rs. When there is uncertainty, the individual does not know the actual utility from taking a particular action. But given the probabilities of alternative outcomes, we can calculate the expected utility. Whether the individual will choose the new risky job or retain the present salaried job with a certain income can be known by comparing the expected utility from the new risky job with the utility of the current job. It will be seen from the utility function curve OU in Fig. Further, in case of new risky job if he is proved to be a successful salesman and his income increases to Rs. Given that the probability of success or failure as a salesman is 0. Though the individuals is risk-averse as revealed by the nature of his utility function of money income, but since the expected utility of the risky job is greater than the utility of the present job with a certain income he will choose the risky job. Let us now slightly change the data. Suppose that if the individual in his new job proves to be successful and earns Rs. We are now in a position to provide a precise definition of risk-averse individual. Precisely speaking, a person who prefers a certain given income to a risky job with the same expected income is called risk averter or risk-averse. Risk aversion is the most common attitude toward risk. Risk Lover On the other hand, a person is risk-preferred or risk-loving who prefers a risky outcome with the same expected income as a certain income. In case of a risk-loving individual, marginal utility of income to the individual increases as his money income increases as shown by the convex total utility function curve OU in Fig. Suppose this risk-loving individual has a present job with a certain income of Rs. Now, if he is offered a risky job with his income of Rs. As mentioned above, most of the individuals are risk averse but there is a good deal of evidence of people who are risk seekers. It is risk-loving individuals who indulge in gambling, buy lotteries, engage in criminal activities such as robberies, big frauds even at risk of getting heavy punishment if caught. A person is called risk neutral, if he is indifferent between a certain given income and an uncertain income with the same expected value. An individual will be risk neutral if his marginal utility of money income remains constant with the increase in his money. The total utility function of a risk neutral person is shown in Fig. It will be seen from this figure that utility of a certain income of Rs. Now, in a risky

job when income increases to Rs. On the other hand, if in a new risky job, he proves to be a bad salesman, his income goes down to Rs. We assume that there is equal probability of high and low income in the new risky job. Note that expected value of income in the new job with an uncertain income is 20, as 0. That is, risk-neutral person is indifferent between them. Risk Aversion and Fair Bets: People differ greatly in their attitudes towards risk. A fair game or gamble is one in which the expected value of income from a gamble is equal to the same amount of income with certainty. The person who refuses a fair bet is said to be risk averse. Thus, the risk averter is one who prefers a given income with certainty to a risky gamble with the same expected value of income. Risk aversion is the most common attitude towards risk. It is because of the attitude of risk aversion that many people insure against various kinds of risk such as burning down of a house, sudden illness of a severe nature, car accidence and also prefer jobs or occupations with stable income to jobs and occupations with uncertain income. This attitude of risk aversion can be explained with Neumann-Morgenstern method of measuring expected utility. It may be noted that marginal utility of income of a risk-averter diminishes as his income increases. It will be seen from this figure that N- M utility curve starts from the origin and has a positive slope throughout indicating that the individual prefers more income to less. Further the N-M utility curve shown in Figure Therefore, the utility curve in Figure As his income further increases to Rs. If he wins the game, his income will rise to Rs. The expected money value of his income in this situation of uncertain outcome is given by: Though the expected value of his uncertain income prospect is equal to his income with certainty a risk averter will not accept the gamble. This is because as he acts on the basis of expected utility of his income in the uncertain situation that is, Rs. Therefore, the person will refuse to accept the gamble that is, he will not gamble. It should be carefully noted that his rejection of gamble is due to diminishing marginal utility of money income for him. The gain in utility from Rs. That is why his expected utility from the uncertain income prospect has been found to be lower than the utility he obtains from the same income with certainty. It follows from above that in case marginal utility of money income diminishes a person will avoid fair gambles. Such a person is called risk averter as he prefers an income with certainty i. Let us illustrate it with another example. Suppose to our person with a certain income of Rs. It will be seen from this straight-line segment GH that the expected utility from the expected money value of Rs. Thus the person will prefer the first gamble which has lower variability to the second gamble which has a higher degree of variability of outcome. It should be remembered that risk in this connection is measured by the degree of variability of outcome. In the first gamble, the degree of variability of outcome is less and therefore the risk is less and in the second gamble, the degree of variability is greater which makes it more risky. And in case of income with certainty there is no variability of outcome and therefore involves no risk at all. A risk-averse person therefore prefers the income with certainty to any gamble with the same expected money value as the income with certainty.

Chapter 5 : Risk aversion - Wikipedia

Hyperbolic absolute risk aversion (HARA) is the most general class of utility functions that are usually used in practice (specifically, CRRA (constant relative risk aversion, see below), CARA (constant absolute risk aversion), and quadratic utility all exhibit HARA and are often used because of their mathematical tractability).

Risk and Risk Aversion The idea of risk is intimately tied up with the notion of uncertainty. We will work with the idea that the greater the uncertainty, the greater the risk. A convenient way to represent uncertainty is with a probability distribution. However, a probability distribution has a great deal of information. Our challenge is to distil much of that information into a single number. In order to do that, we will assume that our probability distribution is symmetric, i. This is not unreasonable given the empirical distribution of returns on securities. With this assumption, a good measure of the uncertainty in a probability distribution is the standard deviation s of the random variable that is being represented. The standard deviation, intuitively, quantifies the spread of the distribution, i. Strictly speaking, the use of s as a single measure is valid only if the random variable is normally distributed. Now, most people dislike uncertainty. Hence, portfolios or strategies that result in high standard deviation of wealth are less preferred compared to those that have low standard deviation. We will do this by means of a utility function. The utility function that we will employ is the following. The square of the standard deviation is known as variance, and the constant of proportionality is 0. This utility function can be demonstrated graphically by the use of the notion of indifference curves. An indifference curve has the property that the individual is indifferent between all the portfolios that lie on that curve. We are now ready to use this machinery to investigate the optimal allocation between a risky portfolio and the risk-free asset. Investing in stocks can be risky. However, this risk can be reduced by allocating part of our investment to risk-free assets. Portfolios Definition of a Portfolio: Formally, a portfolio is defined by a set of portfolio weights. Given a list of assets, a portfolio is defined as a set of numbers, wi, such that the sum of the wi equals unity, and wi is the proportion of the wealth in the portfolio allocated to asset i. Hence, we can simply agree to include all assets in the economy in the asset list, and specify portfolios simply by a set of portfolio weights. Under this convention, if there are n assets in the economy, each portfolio is defined as a vector with n components. Mean and Variance of a portfolio with one risky and one risk-free asset Let C denote the complete portfolio, P the risky portfolio, and f the risk-free asset. The line joining all such combinations is called the Capital Allocation Line. Investment Strategies involving one risky asset, and a riskfree assset What is the optimal amount to invest in the risky asset portfolio if there is one risky portfolio and one riskfree asset? Suppose the investor likes expected return, but dislikes variance of returns, and his tradeoff between expected return and variance is constant. We can depict his preferences graphically using indifference curves: The optimal combination of the risky portfolio, P, and the riskfree asset is given by: This is obtained by maximizing the utility function subject to the relationships between expected return and standard deviation for the combined portfolio and the expected returns and standard deviations of returns of the risky portfolio and riskfree asset. Click here for a Java program that can be used to compute the portfolio proportions for the optimal combination portfolio. Passive Investment Strategies and the Capital Market Line Under what circumstances would we wish to use the strategy delineated above? Suppose an investor wishes to follow a passive strategy, viz. Why might an investor choose a passive strategy? There are two important reasons: The alternative active strategy is expensive, because it requires analysis. If there are many knowledgeable investors in the market, securities are already likely to be fairly priced, and no undervalued or overvalued securities can be easily located. See further discussion of this in my Efficient Markets webnotes. Optimal Risky Portfolios Portfolios of Two Risky Assets If we wish to construct a portfolio with more than one risky asset, we still use the general utility function approach described above. However, the combination line indicating the expected return-variance combinations that can be obtained with more than one risky asset is no longer linear. We need to consider how portfolio variance changes as we change portfolio proportions. Let us look at the simple case, where there are exactly two risky assets or portfolios , D and E. Then the expected return and variance of returns is given below: We see below the combination line of the two risky

assets, D and E. Note that the portfolio standard deviation is less than the weighted average of the individual standard deviations. Also, the slope of the combination line at any point indicates the reward-to-variability ratio at that point. The minimum variance portfolio of risky assets D and E is given by the following portfolio proportions: The optimal portfolio for an investor with a risk aversion parameter, A, can be represented by the formula: Graphically, this is the point on the combination line where the slope of the indifference curve is equal to the reward-variability ratio. Optimal Portfolio Choice with two risky assets and one risk-free asset. The optimal portfolio choice if there are two risky assets and one riskfree asset can be represented graphically in a similar manner. The portfolio proportions for the tangent risky portfolio, P, are: The overall optimal portfolio is then easily computed because this is again a question of choosing the proportion to be invested in a risky asset and a riskfree asset. Click here for a Java program that can be used to compute the portfolio proportions for the overall portfolio. To see an example of how you can estimate expected returns and variances, and then construct the combination line for two risky assets, go to the spreadsheets on the Webnotes page. Diversification and Portfolio Risk If we have more than two assets, say n assets, then, the expected return is still the weighted average of the expected returns on the component assets, where the weights are the portfolio proportions. The portfolio variance, however, now involves the covariance between every pair of assets. This can also be represented using the correlation coefficients, rij, as below: This can be further simplified in terms of the average variance, and the average covariance: The greater the number of assets in the portfolio, the closer the portfolio variance gets to the average covariance, and the less it is influenced by the variance of any particular asset. This limit portfolio variance, which cannot be avoided, is called market risk, or nondiversifiable risk, or systematic risk. The risk that can be eliminated from each asset is called idiosyncratic risk, asset-specific risk, diversifiable risk or non-systematic risk. A corollary of this result is that the variance of all well-diversified portfolios are likely to be close to each other. However, for a given level of risk, an investor will only consider the portfolio with the highest expected return. The set of such portfolios is called the efficient frontier, and is shown below. The Optimum Portfolio with many risky assets and a risk-free asset.

Chapter 6 : Economics | calendrierdelascience.com

The efficient frontier can be combined with an investor's utility function to find the investor's optimal portfolio, the portfolio with the greatest return for the risk that the investor is willing to accept.

For reasons to be discussed later, limitations in their mathematical framework initially made the theory applicable only under special and limited conditions. This situation has dramatically changed, in ways we will examine as we go along, over the past six decades, as the framework has been deepened and generalized. Refinements are still being made, and we will review a few outstanding problems that lie along the advancing front edge of these developments towards the end of the article. Despite the fact that game theory has been rendered mathematically and logically systematic only since , game-theoretic insights can be found among commentators going back to ancient times. Consider a soldier at the front, waiting with his comrades to repulse an enemy attack. But if he stays, he runs the risk of being killed or woundedâ€”apparently for no point. On the other hand, if the enemy is going to win the battle, then his chances of death or injury are higher still, and now quite clearly to no point, since the line will be overwhelmed anyway. Based on this reasoning, it would appear that the soldier is better off running away regardless of who is going to win the battle. Of course, this point, since it has occurred to us as analysts, can occur to the soldiers too. Does this give them a reason for staying at their posts? If each soldier anticipates this sort of reasoning on the part of the others, all will quickly reason themselves into a panic, and their horrified commander will have a rout on his hands before the enemy has fired a shot. Long before game theory had come along to show analysts how to think about this sort of problem systematically, it had occurred to some actual military leaders and influenced their strategies. Thus the Spanish conqueror Cortez, when landing in Mexico with a small force who had good reason to fear their capacity to repel attack from the far more numerous Aztecs, removed the risk that his troops might think their way into a retreat by burning the ships on which they had landed. With retreat having thus been rendered physically impossible, the Spanish soldiers had no better course of action but to stand and fightâ€”and, furthermore, to fight with as much determination as they could muster. He took care to burn his ships very visibly, so that the Aztecs would be sure to see what he had done. They then reasoned as follows: Any commander who could be so confident as to willfully destroy his own option to be prudent if the battle went badly for him must have good reasons for such extreme optimism. The Aztecs therefore retreated into the surrounding hills, and Cortez had his victory bloodlessly. These two situations, at Delium and as manipulated by Cortez, have a common and interesting underlying logic. Notice that the soldiers are not motivated to retreat just, or even mainly, by their rational assessment of the dangers of battle and by their self-interest. Rather, they discover a sound reason to run away by realizing that what it makes sense for them to do depends on what it will make sense for others to do, and that all of the others can notice this too. Even a quite brave soldier may prefer to run rather than heroically, but pointlessly, die trying to stem the oncoming tide all by himself. Thus we could imagine, without contradiction, a circumstance in which an army, all of whose members are brave, flees at top speed before the enemy makes a move. What we have here, then, is a case in which the interaction of many individually rational decision-making processesâ€”one process per soldierâ€”produces an outcome intended by no one. Most armies try to avoid this problem just as Cortez did. During the Battle of Agincourt Henry decided to slaughter his French prisoners, in full view of the enemy and to the surprise of his subordinates, who describe the action as being out of moral character. The reasons Henry gives allude to non-strategic considerations: However, a game theorist might have furnished him with supplementary strategic and similarly prudential, though perhaps not moral justification. His own troops observe that the prisoners have been killed, and observe that the enemy has observed this. Metaphorically, but very effectively, their boats have been burnt. The slaughter of the prisoners plausibly sent a signal to the soldiers of both sides, thereby changing their incentives in ways that favoured English prospects for victory. These examples might seem to be relevant only for those who find themselves in sordid situations of cut-throat competition. Perhaps, one might think, it is important for generals, politicians, mafiosi, sports coaches and others whose jobs involve strategic manipulation of others, but the philosopher should only

deplore its amorality. Such a conclusion would be highly premature, however. The study of the logic that governs the interrelationships amongst incentives, strategic interactions and outcomes has been fundamental in modern political philosophy, since centuries before anyone had an explicit name for this sort of logic. Philosophers share with social scientists the need to be able to represent and systematically model not only what they think people normatively ought to do, but what they often actually do in interactive situations. The best situation for all people is one in which each is free to do as she pleases. Often, such free people will wish to cooperate with one another in order to carry out projects that would be impossible for an individual acting alone. But if there are any immoral or amoral agents around, they will notice that their interests might at least sometimes be best served by getting the benefits from cooperation and not returning them. Suppose, for example, that you agree to help me build my house in return for my promise to help you build yours. After my house is finished, I can make your labour free to me simply by reneging on my promise. I then realize, however, that if this leaves you with no house, you will have an incentive to take mine. This will put me in constant fear of you, and force me to spend valuable time and resources guarding myself against you. I can best minimize these costs by striking first and killing you at the first opportunity. Of course, you can anticipate all of this reasoning by me, and so have good reason to try to beat me to the punch. Since I can anticipate this reasoning by you, my original fear of you was not paranoid; nor was yours of me. In fact, neither of us actually needs to be immoral to get this chain of mutual reasoning going; we need only think that there is some possibility that the other might try to cheat on bargains. Once a small wedge of doubt enters any one mind, the incentive induced by fear of the consequences of being preemptedâ€”hit before hitting firstâ€”quickly becomes overwhelming on both sides. If either of us has any resources of our own that the other might want, this murderous logic will take hold long before we are so silly as to imagine that we could ever actually get as far as making deals to help one another build houses in the first place. The people can hire an agentâ€”a governmentâ€—whose job is to punish anyone who breaks any promise. So long as the threatened punishment is sufficiently dire then the cost of reneging on promises will exceed the cost of keeping them. The logic here is identical to that used by an army when it threatens to shoot deserters. If all people know that these incentives hold for most others, then cooperation will not only be possible, but will be the expected norm, and the war of all against all becomes a general peace. Few contemporary political theorists think that the particular steps by which Hobbes reasons his way to this conclusion are both sound and valid. Working through these issues here, however, would carry us away from our topic into details of contractarian political philosophy. What is important in the present context is that these details, as they are in fact pursued in the contemporary debates, all involve sophisticated interpretation of the issues using the resources of modern game theory. Notice that Hobbes has not argued that tyranny is a desirable thing in itself. The structure of his argument is that the logic of strategic interaction leaves only two general political outcomes possible: Sensible agents then choose tyranny as the lesser of two evils. The distinction between acting parametrically on a passive world and acting non-parametrically on a world that tries to act in anticipation of these actions is fundamental. The values of all of these variables are independent of your plans and intentions, since the rock has no interests of its own and takes no actions to attempt to assist or thwart you. Furthermore, his probable responses should be expected to visit costs upon you, which you would be wise to consider. Finally, the relative probabilities of his responses will depend on his expectations about your probable responses to his responses. The logical issues associated with the second sort of situation kicking the person as opposed to the rock are typically much more complicated, as a simple hypothetical example will illustrate. Suppose first that you wish to cross a river that is spanned by three bridges. Assume that swimming, wading or boating across are impossible. The first bridge is known to be safe and free of obstacles; if you try to cross there, you will succeed. The second bridge lies beneath a cliff from which large rocks sometimes fall. The third is inhabited by deadly cobras. Now suppose you wish to rank-order the three bridges with respect to their preferability as crossing-points. The first bridge is obviously best, since it is safest. To rank-order the other two bridges, you require information about their relative levels of danger. Your reasoning here is strictly parametric because neither the rocks nor the cobras are trying to influence your actions, by, for example, concealing their typical patterns of behaviour because they know you are studying them. It is obvious what you should do here: Now

let us complicate the situation a bit. Your decision-making situation here is slightly more complicated, but it is still strictly parametric. However, this is all you must decide, and your probability of a successful crossing is entirely up to you; the environment is not interested in your plans. However, if we now complicate the situation by adding a non-parametric element, it becomes more challenging. Suppose that you are a fugitive of some sort, and waiting on the other side of the river with a gun is your pursuer. She will catch and shoot you, let us suppose, only if she waits at the bridge you try to cross; otherwise, you will escape. As you reason through your choice of bridge, it occurs to you that she is over there trying to anticipate your reasoning. It will seem that, surely, choosing the safe bridge straight away would be a mistake, since that is just where she will expect you, and your chances of death rise to certainty. So perhaps you should risk the rocks, since these odds are much better. But wait â€¦ if you can reach this conclusion, your pursuer, who is just as rational and well-informed as you are, can anticipate that you will reach it, and will be waiting for you if you evade the rocks. So perhaps you must take your chances with the cobras; that is what she must least expect. But, then, no â€¦ if she expects that you will expect that she will least expect this, then she will most expect it. This dilemma, you realize with dread, is general: You appear to be trapped in indecision. All that might console you a bit here is that, on the other side of the river, your pursuer is trapped in exactly the same quandary, unable to decide which bridge to wait at because as soon as she imagines committing to one, she will notice that if she can find a best reason to pick a bridge, you can anticipate that same reason and then avoid her. We know from experience that, in situations such as this, people do not usually stand and dither in circles forever. However, until the s neither philosophers nor economists knew how to find it mathematically. As a result, economists were forced to treat non-parametric influences as if they were complications on parametric ones. This is likely to strike the reader as odd, since, as our example of the bridge-crossing problem was meant to show, non-parametric features are often fundamental features of decision-making problems. Classical economists, such as Adam Smith and David Ricardo, were mainly interested in the question of how agents in very large marketsâ€”whole nationsâ€”could interact so as to bring about maximum monetary wealth for themselves. Economists always recognized that this set of assumptions is purely an idealization for purposes of analysis, not a possible state of affairs anyone could try or should want to try to attain. But until the mathematics of game theory matured near the end of the s, economists had to hope that the more closely a market approximates perfect competition, the more efficient it will be. No such hope, however, can be mathematically or logically justified in general; indeed, as a strict generalization the assumption was shown to be false as far back as the s. This article is not about the foundations of economics, but it is important for understanding the origins and scope of game theory to know that perfectly competitive markets have built into them a feature that renders them susceptible to parametric analysis. Because agents face no entry costs to markets, they will open shop in any given market until competition drives all profits to zero.

Chapter 7 : The Annuity Puzzle: How Big Is The Free Lunch Being Left On The Table? | Seeking Alpha

Investors will hold varying amounts of the risky asset and varying amounts of the risk-free asset in their portfolios. Asset allocation may involve The decision as to the allocation between a risk-free asset and a risky asset and the decision as to the allocation among different risky assets.

Matthew Rabin has showed that a risk-averse, expected-utility-maximizing individual who, from any initial wealth level [One solution to the problem observed by Rabin is that proposed by prospect theory and cumulative prospect theory , where outcomes are considered relative to a reference point usually the status quo , rather than to consider only the final wealth. Another limitation is the reflection effect which demonstrates the reversing of risk aversion. This effect was first presented by Kahneman and Tversky as a part of the prospect theory , in the behavioral economics domain. The reflection effect is an identified pattern of opposite preferences between negative prospects as opposed to positive prospects. According to this effect, people tend to avoid risks under the gain domain, and to seek risks under the loss domain. Meaning, no risk aversion is expected under the loss domain. When posing the same problem under the loss domain - with negative values, most people prefer a loss of with 80 percent chance, over a certain loss of The reflection effect as well as the certainty effect is inconsistent with the expected utility hypothesis. It is assumed that the psychological principle which stands behind this kind of behavior is the overweighting of certainty. Meaning, options which are perceived as certain, are over-weighted relative to uncertain options. This pattern is an indication of a risk seeking behavior in negative prospects and eliminates other explanations for the certainty effect such as aversion for uncertainty or variability. Subsequently, an extensive investigation revealed its possible limitations, suggesting that the effect is most prevalent when either small or large amounts and extreme probabilities are involved. Risk aversion psychology Attitudes towards risk have attracted the interest of the field of neuroeconomics and behavioral economics. A study by Christopoulos et al. Public understanding and risk in social activities[edit] In the real world, many government agencies, e. Health and Safety Executive , are fundamentally risk-averse in their mandate. This often means that they demand with the power of legal enforcement that risks be minimized, even at the cost of losing the utility of the risky activity. It is important to consider the opportunity cost when mitigating a risk; the cost of not taking the risky action. The public understanding of risk, which influences political decisions, is an area which has recently been recognised as deserving focus. In Cambridge University initiated the Winton Professorship of the Public Understanding of Risk , a role described as outreach rather than traditional academic research by the holder, David Spiegelhalter. Many playgrounds have been fitted with impact-absorbing matting surfaces. However, these are only designed to save children from death in the case of direct falls on their heads and do not achieve their main goals. Shiela Sage, an early years school advisor, observes "Children who are only ever kept in very safe places, are not the ones who are able to solve problems for themselves. Children need to have a certain amount of risk taking However, a controversy arose around fraudulent allegations that it caused autism. This alleged causal link was thoroughly disproved, [23] and the doctor who made the claims was expelled from the General Medical Council. Even years after the claims were disproved, some parents wanted to avert the risk of causing autism in their own children. They chose to spend significant amounts of their own money on alternatives from private doctors. These alternatives carried their own risks which were not balanced fairly, most often that the children were not properly immunized against the more common diseases of measles, mumps and rubella. Mobile phones may carry some small [24] [25] health risk. While most people would accept that unproven risk to gain the benefit of improved communication, others remain so risk averse that they do not. One experimental study with student-subject playing the game of the TV show Deal or No Deal finds that people are more risk averse in the limelight than in the anonymity of a typical behavioral laboratory. In the laboratory treatments, subjects made decisions in a standard, computerized laboratory setting as typically employed in behavioral experiments. In the limelight treatments, subjects made their choices in a simulated game show environment, which included a live audience, a game show host, and video cameras.

Chapter 8 : Utility Theory and Attitude toward Risk (Explained With Diagram)

Each individual is an expected utility maximizer with utility function pln(x) + (1âˆ'p)ln(y) a 2, where p is the probability of an accident, x is wealth if there is an accident, and y is wealth if there is no accident.

Risk Aversion Do human beings seek out risk or avoid it? How does risk affect behavior and what are the consequences for business and investment decisions? The answers to these questions lie at the heart of any discussion about risk. Individuals may be averse to risk but they are also attracted to it and different people respond differently to the same risk stimuli. In this chapter, we will begin by looking at the attraction that risk holds to human beings and how it affects behavior. We will then consider what we mean by risk aversion and why it matters for risk management. We will follow up and consider how best to measure risk aversion, looking at a range of techniques that have been developed in economics. In the final section, we will consider the consequences of risk aversion for corporate finance, investments and valuation. The Duality of Risk In a world where people sky dive and bungee jump for pleasure, and gambling is a multi-billion dollar business, it is clear that human beings collectively are sometimes attracted to risk and that some are more susceptible to its attraction than others. While psychoanalysts at the beginning of the twentieth century considered risk-taking behavior to be a disease, the fact that it is so widespread suggests that it is part of human nature to be attracted to risk, even when there is no rational payoff to being exposed to risk. At the same time, though, there is evidence that human beings try to avoid risk in both physical and financial pursuits. The same person who puts his life at risk climbing mountains may refuse to drive a car without his seat belt on or to invest in stocks, because he considers them to be too risky. As we will see in the next chapter, some people are risk takers on small bets but become more risk averse on bets with larger economic consequences, and risk-taking behavior can change as people age, become wealthier and have families. In general, understanding what risk is and how we deal with it is the first step to effectively managing that risk. I am rich but am I happy? Utility and Wealth While we can talk intuitively about risk and how human beings react to it, economists have used utility functions to capture how we react to at least economic risk. Individuals, they argue, make choices to maximize not wealth but expected utility. We can disagree with some of the assumptions underlying this view of risk, but it is as good a staring point as any for the analysis of risk. In this section, we will begin by presenting the origins of expected utility theory in a famous experiment and then consider possible special cases and issues that arise out of the theory. Petersburg Paradox and Expected Utility: The Bernoulli Contribution Consider a simple experiment. I will flip a coin once and will pay you a dollar if the coin came up tails on the first flip; the experiment will stop if it came up heads. If you win the dollar on the first flip, though, you will be offered a second flip where you could double your winnings if the coin came up tails again. The game will thus continue, with the prize doubling at each stage, until you come up heads. How much would you be willing to pay to partake in this gamble? This is the experiment that Nicholas Bernoulli proposed almost three hundred years ago, and he did so for a reason. This gamble, called the St. Petersburg Paradox, has an expected value of infinity but most of us would pay only a few dollars to play this game. It was to resolve this paradox that his cousin, Daniel Bernoulli, proposed the following distinction between price and utility: The price of the item is dependent only on the thing itself and is equal for everyone; the utility, however, is dependent on the particular circumstances of the person making the estimate. First, he noted that the value attached to this gamble would vary across individuals, with some individuals willing to pay more than others, with the difference a function of their risk aversion. He was making an argument that the marginal utility of wealth decreases as wealth increases, a view that is at the core of most conventional economic theory today. Technically, diminishing marginal utility implies that utility increases as wealth increases and at a declining rate. Another way of presenting this notion is to graph total utility against wealth; Figure 2. While the argument for diminishing marginal utility seems eminently reasonable, it is possible that utility could increase in lock step with wealth constant marginal utility for some investors or even increase at an increasing rate increasing marginal utility for others. The classic risk lover, used to illustrate bromides about the evils of gambling and speculation, would fall into the latter category. The relationship between utility and wealth lies

at the heart of whether we should manage risk, and if so, how. After all, in a world of risk neutral individuals, there would be little demand for insurance, in particular, and risk hedging, in general. It is precisely because investors are risk averse that they care about risk, and the choices they make will reflect their risk aversion. Von Neumann and Morgenstern In the bets presented by Bernoulli and others, success and failure were equally likely though the outcomes varied, a reasonable assumption for a coin flip but not one that applies generally across all gambles. Rather than think in terms of what it would take an individual to partake a specific gamble, they presented the individual with multiple gambles or lotteries with the intention of making him choose between them. They argued that the expected utility to individuals from a lottery can be specified in terms of both outcomes and the probabilities of those outcomes, and that individuals pick one gamble over another based upon maximizing expected utility. The Von-Neumann-Morgenstern arguments for utility are based upon what they called the basic axioms of choice. The first of these axioms, titled comparability or completeness, requires that the alternative gambles or choices be comparable and that individuals be able to specify their preferences for each one. The third, referred to as the independence axiom specifies that the outcomes in each lottery or gamble are independent of each other. This is perhaps the most important and the most controversial of the choice axioms. Essentially, we are assuming that the preference between two lotteries will be unaffected, if they are combined in the same way with a third lottery. In other words, if we prefer lottery A to lottery B, we are assuming that combining both lotteries with a third lottery C will not alter our preferences. The fourth axiom, measurability, requires that the probability of different outcomes within each gamble be measurable with a probability. What these axioms allowed Von Neumann and Morgenstern to do was to derive expected utility functions for gambles that were linear functions of the probabilities of the expected utility of the individual outcomes. As we will see later in this chapter, it is disagreements about the appropriateness of these axioms that have animated the discussion of risk aversion for the last few decades. The importance of what Von Neumann and Morgenstern did in advancing our understanding and analysis of risk cannot be under estimated. By extending the discussion from whether an individual should accept a gamble or not to how he or she should choose between different gambles, they laid the foundations for modern portfolio theory and risk management. After all, investors have to choose between risky asset classes stocks versus real estate and assets within each risk class Google versus Coca Cola and the Von Neumann-Morgenstern approach allows for such choices. In the context of risk management, the expected utility proposition has allowed us to not only develop a theory of how individuals and businesses should deal with risk, but also to follow up by measuring the payoff to risk management. Gambling, whether on long shots on the horse track or card tables at the casinos, cannot be easily reconciled with a world of risk averse individuals, such as those described by Bernoulli. Put another way, if the St. Petersburg Paradox can be explained by individuals being risk averse, those same individuals create another paradox when they go out and bet on horses at the track or play at the card table since they are giving up certain amounts of money for gambles with expected values that are lower in value. Economists have tried to explain away gambling behavior with a variety of stories. The first argument is that it is a subset of strange human beings who gamble and that that they cannot be considered rational. This small risk-loving group, it is argued, will only become smaller over time, as they are parted from their money. While the story allows us to separate ourselves from this unexplainable behavior, it clearly loses its resonance when the vast majority of individuals indulge in gambling, as the evidence suggests that they do, at least sometimes. The second argument is that an individual may be risk averse over some segments of wealth, become risk loving over other and revert back to being risk averse again. Friedman and Savage, for instance, argued that individuals can be risk-loving and risk-averse at the same time, over different choices and for different segments of wealth: In effect, it is not irrational for an individual to buy insurance against certain types of risk on any given day and to go to the race track on the same day. They were positing that we are all capable of behaving irrationally at least relative to the risk averse view of the world when presented with risky choices under some scenarios. Why we would go through bouts of such pronounced risk loving behavior over some segments of wealth, while being risk averse at others, is not addressed. The third argument is that gambling cannot be compared to other wealth seeking behavior because individuals enjoy gambling for its own sake and that they are willing to accept the loss in wealth for

the excitement that comes from rolling the dice. Here again, we have to give pause. Why would individuals not feel the same excitement when buying stock in a risky company or bonds in a distressed firm? If they do, should the utility of a risky investment always be written as a function of both the wealth change it creates and the excitement quotient? The final and most plausible argument is grounded in behavioral quirks that seem to be systematic. To provide one example, individuals seem to routinely over estimate their own skills and the probabilities of success when playing risky games. As a consequence, gambles with negative expected values can be perceived wrongly to have positive expected value. Thus, gambling is less a manifestation of risk loving than it is of over confidence. We will return to this topic in more detail later in this chapter and the next one. While much of the discussion about this topic has been restricted to individuals gambling at casinos and race tracks, it clearly has relevance to risk management. Rather than going through intellectual contortions trying to explain such phenomena in rational terms, we should accept the reality that such behavior is neither new nor unexpected in a world where some individuals, for whatever reason, are pre-disposed to risk seeking. Which one would you pick? With conventional expected utility theory, where investors are risk averse and the utility function is concave, the answer is clear. If you would reject the first gamble, you should reject the second one as well. The colleague refused but said he would be willing to accept the bet if he was allowed one hundred flips with exactly the same pay offs. Samuelson argued that rejecting the individual bet while accepting the aggregated bet was inconsistent with expected utility theory and that the error probably occurred because his colleague had mistakenly assumed that the variance of a repeated series of bets was lower than the variance of one bet. In a series of papers, Rabin challenged this view of the world. He showed that an individual who showed even mild risk aversion on small bets would need to be offered huge amounts of money with larger bets, if one concave utility function relating utility to wealth covered all ranges of his wealth. For example, an individual who would reject a The conclusion he drew was that individuals have to be close to risk neutral with small gambles for the risk aversion that we observe with larger gambles to be even feasible, which would imply that there are different expected utility functions for different segments of wealth rather than one utility function for all wealth levels. His view is consistent with the behavioral view of utility in prospect theory, which we will touch upon later in this chapter and return to in the next one. There are important implications for risk management. If individuals are less risk averse with small risks as opposed to large risks, whether they hedge risks or not and the tools they use to manage those risks should depend upon the consequences. Large companies may choose not to hedge risks that smaller companies protect themselves against, and the same business may hedge against risks with large potential impact while letting smaller risks pass through to their investors. It may also follow that there can be no unified theory of risk management, since how we deal with risk will depend upon how large we perceive the impact of the risk to be. Measuring risk aversion in specific terms becomes the first step in analyzing and dealing with risk in both portfolio and business contexts. In this section, we examine different ways of measuring risk aversion, starting with the widely used but still effective technique of offering gambles and observing what people choose to do and then moving on to more complex measures. Certainty Equivalents As we noted earlier, a risk-neutral individual will be willing to accept a fair bet. The flip side of this statement is that if we can observe what someone is willing to pay for this bet or any other where the expected value can be computed , we can draw inferences about their views on risk. In technical terms, the price that an individual is willing to pay for a bet where there is uncertainty and an expected value is called the certainty equivalent value. We can relate certainty equivalents back to utility functions. Assume that you as an individual are offered a choice between two risky outcomes, A and B, and that you can estimate the expected value across the two outcomes, based upon the probabilities, p and 1-p , of each occurring:

Chapter 9 : Game Theory (Stanford Encyclopedia of Philosophy)

However, if we assume that in the region near the selected initial point, the Investor's utility function can be adequately approximated by a negative exponential function, we can continue to use (e-v/t) to measure the desirability of a portfolio for the Investor in question.

Would you give everything just to become successful as these men? If someone offered to explain to you in detail the basic characteristics possessed by every successful investor, will you listen and learn whole heartedly? If your answer to the last question above is yes? Then please read on as I share with you 15 characteristics possessed by successful investors such as Warren Buffett. The poor spend their money and invest what is left. Rockefeller 15 Characteristics of Highly Successful Investors 1. Highly successful investors are proactive learners The first characteristic of highly successful investors is that they are proactive learners. They spend more time studying than the average investors. They are also voracious readers. Successful investors know that their cup of knowledge must never be full so they always keep their minds open; ever ready to learn. Both processes can never be achieved without humility. They read books, journals and magazines ranging from investing to personal development. They also attend seminars to improve themselves. They always invest with a planned exit strategy "Go to the mouse you foolish investor and learn. A mouse never entrusts its life to only one hole. They know that the future is unpredictable so they prepare in advance for it. Average investors try to predict the future of their investments; they count their chickens before they are hatched. Successful investors do the opposite; they prepare for the best while still preparing for the worst. Professional investors always have an exit strategy before they invest. Knowing your exit strategy is an important investment fundamental. Do you want to be a successful investor? Then plan your exit before you enter any investment. When they get to the middle of the game, they then realize they are the prey and try to escape but it will be too late. Only the preys with a well defined exit strategy will escape, the rest will be slaughtered by the real predators. They are patient Successful investors are very patient. When they make their calculations on an investment, they are prepared to wait to make sure their plan materialize. They plan to take advantage of a short term bulls market but as a back up plan, they still plan to hold on for as long as. I buy on assumption they could close the market the next day and not re-open it for five years. Highly successful investors have strong emotional control Every true investor knows that the market is driven by sentiment. Market surges and declines are mainly caused by two emotional factors; fear and greed. Average investors invest based on these emotions but successful investors have a stronger control over these emotions. No matter the market conditions, they still respect the chance of winning or losing. Winning and losing are just part of the game. They have a well defined investing strategy "A winning strategy must include losing. While some successful investors implement the portfolio diversification strategy, others like Warren Buffett follow the portfolio focus strategy. It makes very little sense to those who know what they are doing. No matter the strategy you use, just make sure you know what you are doing. Do you diversify or focus your portfolio? While Warren Buffett strongly advocates portfolio focus strategy, I believe there are professional investors making a kill using the diversification strategy. Different strokes for different folks. Do you invest for short term or long term? Successful investors such as Warren Buffett invest for long term while George Soros mainly invest for short term and still became a success. Are you investing for capital gains or cash flow? Most fund managers invest for capital gains but successful investors like Warren Buffett invest mainly for cash flow, capital gains may come later. Are you a fundamental or technical investor? Most average investors try to be both but professional investors know that technical analysis and fundamental analysis may sometime contradict each other. George Soros and Sir John Templeton are examples of technical investors while Warren Buffett is a fundamental investor. This is not merely a catchy slogan. It is the very essence of successful investments. They are focused "The men who have succeeded are men who have chosen one line and stuck to it. They take it one step at a time; one investment at a time. For instance; Tim Ferris said on his blog that he would rather stick to angel investing than attempt to stock trade because he understands angel investing better. Successful investors use trend to their advantage "Your greatest and most powerful business survival strategy

is going to be the speed at which you handle the speed of change. That speed of change is trend. Profit from folly rather than participate in it. They are persistent "When everything seems to be going against you, remember that the airplane takes off against the wind, not with it. They jump from one strategy to another and are always looking for the next hot tip. They quit on one yard line. They give up the at last minute of the game one foot from a winning touch down. They thrive on risk "Risk comes from not knowing what you are doing. Every professional investor, whether on the winning or losing side still respect the probability of success or failure. A major difference between a professional investor and an average investor is that a professional investor will always invest with a strong risk management system in place. Have you ever heard of the word "Hedge? Successful investors are disciplined Successful investors are strict with themselves when it comes to investing. Aside their investing rules and principles, they are still guided by a strong self imposed standard. Professional investors know that it takes a great deal of discipline to stick to your investing strategies despite distractions from self proclaimed investment pundits. Rule one -- never lose money. Rule two -- never forget rule one. They know how to use leverage to their advantage Before I proceed, I want to ask a question. The second most important word is leverage. Your leverage can be your professional team, your investing experience or inside information. They learn quickly from their mistakes "Even a mistake may turn out to be the one thing necessary to a worthwhile achievement. You can never become successful investors without making some miscalculations or mistakes. Successful investors make mistakes but they are not discouraged by these mistakes because they know mistakes are part of the process to becoming a better investor. Average investors perceive mistakes as bad but successful investors see mistakes as an opportunity to learn something new. They have a team of professional advisors "It is better to hang out with people better than you. Pick out associates whose behavior is better than yours and you will drift in that direction. Average investors try to beat the market alone while professional investors invest as part of a team. Successful investors also have a network of friends made of professional investors. They share advice and brainstorm on investing challenges with their investor friends. Remember, birds of the same feathers flock together. I can confidently tell you that the street is tougher, challenging, daring, exciting and more rewarding. In school; you play alone. But on the street, you play with the big boys. They have a strong financial background "Business and financial intelligence are not picked up within the four walls of school. You pick them up on the streets. On the streets, you are taught how to make money. Successful investors have a solid financial foundation; a foundation molded on the streets. On the streets, you learn from your own experience. Successful investors build up their financial base by attending seminars, reading books and journals, learning from a mentor and listening to tapes; after which they go out on their own to gain street experience. Average investors try to hone their investing skills while still striving to avoid loss. Successful investors on the other hand know that experience come with losing money and learning from the loss. Successful investors are passionate about the game of investing "Men of means look at making money as a game which they love to play. Paul Getty Why are you an investor? Your answer to this question will determine if you will be successful in the world of investing or not. A famous author once said this: If you take a look at average investors, they are always after how much they are going to make now but successful investors use delayed gratification and compounding to gain an edge. If you win, the money will be there. Paul Getty In conclusion, these are the 15 characteristics possessed by every successful investor.